11 Water

11.1 Introduction

11.1.1 This chapter presents the Principal Assessment of the likely significant effects of the Proposed Order on the water environment including water quality, hydrology, hydrogeology, hydromorphology, flood risk and water resources, and also describes how these changes could impact on any water dependent ecosystems, such as wetlands. The Principal Assessment compares the 2029 Permitted Operation (32 mppa) and the 2029 Proposed Operation (40 mppa) operational conditions in accordance with the project-wide assessment framework described in Chapter 5: Methodology.

11.1.2 As detailed in Chapter 4: Proposed Order, the Proposed Order seeks to amend the existing planning restriction of 32 mppa to 40 mppa and does not involve new physical infrastructure. However, increased passenger numbers may affect the water environment through changes in aircraft activity and associated operational characteristics. Accordingly, an assessment has been undertaken to assess the likely significant effects of the 2029 Proposed Operation on water.

11.1.3 The water environment chapter was prepared by Senior Hydrogeologist, Lucy Ledgard BSc MSc EnvPartner CIWEM and Principal Hydrogeologist, Darragh Reilly MSc BSc PGeo with six years and ten years' experience respectively. Darragh has undertaken numerous EIAs for infrastructure projects in Ireland and the UK. Project examples include the Dublin Airport Underpass and Bord na Mona gas energy generation project EIAs. Lucy is currently preparing EIAs for two SSE gas generation projects in Ireland, undertaking data review, baseline development and impact assessment. She also has wider experience of hydrogeological assessment across the UK and internationally.

11.2 Legislation, Policy and Guidance

11.2.1 This section sets out the legislation, policy and guidance sources, which have informed the scope and methodology for assessment of effects on the water environmental factor. More general sources applicable to the methodology for the EIAR can be found in Chapter 5: Methodology.

Legislation

11.2.2 The following European legislation and transposing Irish regulations are of relevance to this water environment assessment and Proposed Order:

- Dublin Airport (Passenger Capacity) Act 2026 (No. 25 of 2026)[1]
- EIA Directive 2011/92/EU (as amended by Directive 2014/52/EU)[2]
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018)[3]

Policy

11.2.3 The Fingal County Development Plan 2023-2029[4], prepared in accordance with the provisions of the Planning and Development Act 2000 (as amended)[5], sets out a range of proposed policy objectives for development up to 2029. The plan incorporates the mandatory objectives listed in the Act, including conservation and protection of the environment and promotion of compliance with environmental standards.

[1] Dublin Airport (Passenger Capacity) Act 2026 – No. 25 of 2026 – Houses of the Oireachtas, Available at: https://www.oireachtas.ie/en/bills/bill/2026/70/
[2] EIA Directive 2011/92/EU (as amended by Directive 2014/52/EU), Available at: https://eur-lex.europa.eu/legal-content/UK/TXT/?uri=celex:32011L0092
[3] European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018), Available at: https://www.irishstatutebook.ie/eli/2018/si/296/made/en/print
[4] Fingal Development Plan 2023-2029 | Fingal County Council, Available at: https://www.fingal.ie/development-plan
[5] Planning and Development Act 2000 | Law Reform, Available at: https://revisedacts.lawreform.ie/eli/2000/act/30/front/revised/en/html

11.2.4 The Water Action Plan 2024[6] sets out a roadmap to restore Ireland's waterbodies to 'good' status or better and protect against further deterioration in the period from 2023 to 2027, through an integrated catchment management approach.

Guidance

11.2.5 The following guidance documents are of relevance to this water environment assessment and Proposed Order:

- Department of Housing, Local Government and Heritage (DHLGH), 2018. River Basin Management Plan 2022-2027[7]
- Environmental Protection Agency (EPA), May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (hereafter referred to as 'the EPA Guidelines')[8]
- 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), European Union, 2017[9]
- EPA, 2013. Management of Contaminated Land and Groundwater at EPA Licensed Sites [10]
- TII (December 2025) PE-ENV-01202, 'Water Impact Assessment for National Roads, Light Rail, Metro and Rural Cycleways- Overarching Technical Document' (hereafter referred to as 'the TII Guidelines').[11]
- Institute of Geologists of Ireland (IGI), 2013. Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements[12]
- DHLGH, 2009. The Planning System and Flood Risk Management – Guidelines for Planning Authorities[13]

11.2.6 There is also a statutory local area plan document for Dublin Airport, Dublin Airport Local Area Plan (2020).

11.2.7 A separate Water Framework Directive (WFD) Compliance Assessment has been prepared for the Proposed Order and is provided in EIAR Volume 4, Appendix 11-2. This assessment considers the potential effects of the Proposed Order on the status of receiving water bodies and the measures relevant to avoiding, preventing or reducing deterioration in water body status. Its findings have been taken into account in the assessment presented in this chapter, particularly in relation to surface water quality and the drainage and pollution control measures described in Sections 11.5 and 11.6.

11.3 Assessment Methodology

Overall Approach

11.3.1 The following sources of information that define the Proposed Order have been reviewed and form the basis of this assessment:

- EIAR Volume 2 Chapter 2: Site and Surroundings
- EIAR Volume 2 Chapter 4: Proposed Order

[6]The Water Action Plan, Available at: https://www.gov.ie/en/policy-information/8da54-river-basin-management-plan-2022-2027/
[7] River Basin Management Plan 2022 - 2027, Available at: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/
[8] Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) | Environmental Protection Agency, Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment-reports-eiar.php
[9] Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report, Available at: https://publications.europa.eu/resource/cellar/2b399830-cb4b-11e7-a5d5-01aa75ed71a1.0001.03/DOC_1
[10] Management of Contaminated Land and Groundwater at EPA Licensed Sites, Available at: https://www.epa.ie/publications/compliance--enforcement/waste/Guidance_on_the_Management_of_Contaminated_Land_and_Groundwater_at_EPA_Licensed_Sites.pdf
[11]PE-ENV-01202, 'Water Impact Assessment for National Roads, Light Rail, Metro and Rural Cycleways- Overarching Technical Document, Available at: https://publications.tii.ie/document/?id=3478
[12] Institute of Geologists of Ireland (IGI), 2013. Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements, Available at: https://igi.ie/assets/files/Codes%20and%20Guidelines/IGI%20Enviro%20Impact%202013.pdf
[13] The Planning System and Flood Risk Management - Guidelines for Planning Authorities (Nov 09), Available at: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/the-planning-system-and-flood-risk-management-guidelines-for-planning-authorities-nov-09/

- EIAR Volume 3 Figures 11-1 to 11-5
- Drainage Report (EIAR Volume 4 Appendix 11-1)
- Water Framework Directive (WFD) Assessment (EIAR Volume 4 Appendix 11-2)

11.3.2 As described in Chapter 5: Methodology, the assessment has been undertaken using the following methodology based on the EPA Guidelines:

- Establishment of the baseline conditions, including identification and assessment of the receiving environment and receptor sensitivity;
- Identification of mitigation measures that form part of the Proposed Order operation;
- Identification of the potential impacts, and assessment of the magnitude of potential effects, including cumulative effects and their significance;
- Consideration of mitigation measures; and
- Assessment of residual effects.

11.3.3 In accordance with the An Coimisiún Pleanala Scoping Opinion, the assessment has had regard to the consultation submissions received from the Environmental Protection Agency (EPA) and Uisce Éireann. The Scoping Opinion matters raised relevant to the water environment have been considered in establishing the assessment methodology, characterising the receiving environment and assessing potential effects, including those relating to water quality, drainage infrastructure, pollution control and discharges. These matters are addressed in Sections 11.4 to 11.6, with further supporting information provided in the Drainage Report (EIAR Volume 4, Appendix 11-1) and the WFD Compliance Assessment (EIAR Volume 4, Appendix 11-2).

Study Area

11.3.4 The study area is based on the Dublin Airport Site. To enable a structured approach to the assessment the Dublin Airport Site has been divided into sectors which are described in detail in Chapter 2: Site and Surroundings. Figure 2-2 provides a map showing the location of the sectors.

11.3.5 The study area for surface water receptors encompasses all catchments that receive stormwater and overland flow from the Dublin Airport Site and a 1 km buffer around it. For groundwater, the study area comprises the Dublin Airport Site and a 1 km buffer. This study area takes account of surface water and groundwater receptors within and adjacent to the Dublin Airport Site, their catchments and any water-dependent habitats that could be hydraulically connected to these waterbodies and therefore potentially affected.

11.3.6 The 1 km study area has been defined using professional judgement, informed by the hydrogeological and hydrological setting of the Dublin Airport Site, the nature and scale of the Proposed Order, potential pollutant pathways, the extent of relevant catchments and groundwater bodies, and experience of comparable airport and infrastructure assessments. The area beyond the selected study area has also been reviewed and no additional receptors with the potential to be affected have been identified. The selected study area is therefore considered appropriate for the assessment.

Approach to Establishing the Baseline Environment

11.3.7 The baseline water environment has been determined from desktop review, and previous site studies / investigations, as follows:

- Aquatic, Hydrological and Hydrogeological studies undertaken to establish baseline conditions for the Dublin Airport Site and monitoring conducted in 2020 and 2021
- Ordnance Survey Ireland (OSI) website for historical maps of 1:2,500 scale and 1:10,560 scale and aerial photographs
- OSI discovery series of 1:50,000 scale, accessed July 2026
- Geological Survey Ireland (GSI) website for public viewer and groundwater maps, accessed July 2026
- EPA website Geo Portal (envision map viewer), Last Accessed July 2026
- Topography maps from GSI Open Topography Viewer

- Existing site investigation information,
- EPA online map viewer, https://gis.epa.ie/EPAMaps/, Last Accessed July 2026
- EPA Catchments online map viewer, www.catchments.ie , Last Accessed July 2026
- EPA Hydronet online map viewer, https://epawebapp.epa.ie/hydronet/, accessed July 2026
- National Parks and Wildlife Service (NPWS) designated sites and protected areas online map viewer, www.npws.ie/mapping, accessed July 2026
- Wetland Surveys Ireland wetland inventory online map viewer, www.wetlandsurveys.ie, accessed July 2026
- Response to the Request for Further Information Fingal County Council, during the determination of Proposed Underpass F22A-0460, December 2022
- daa Airfield Underpass Ground Investigation, project number: 21-1219, Causeway Geotech Limited (CGL), June 2022
- Site investigations 2022 to 2023 in the area of the South Apron
- Dublin Airport Authority surface water routine and no-routine monitoring data 2021 – 2023 taken by Fitz scientific
- daa Proposed Order for Amendment of 32mppa Conditions Drainage Report, Nicholas O'Dwyer Ltd, 2026
- Proposed Order for Future Operations at Dublin Airport, Water Framework Directive (WFD) Assessment, AWN Consulting LTD 2026
- De-Icer Modelling Report, Assessment of De-icer Pollution Impacts from Airport Passenger Growth, Gresham Smith 2026
- Causeway Geotech, NASAH South Apron, date May 2023, Report reference: D18362-01-CWG-SAH-XX-XXX-RP-X-XXXX-0001-Rev2-S1
- Dublin Airport 2021 - 2023 Environmental Monitoring Report, Fehily Timoney 2024
- DAA Cargo Relocation Ground investigation Report, 25-0509, Causeway Geotech LTD, 2025
- Dublin Airport Cargo Relocation Project Site Investigation Report, project number: P21195-FT-EGN-RP-EN-0010, FT, August 2025

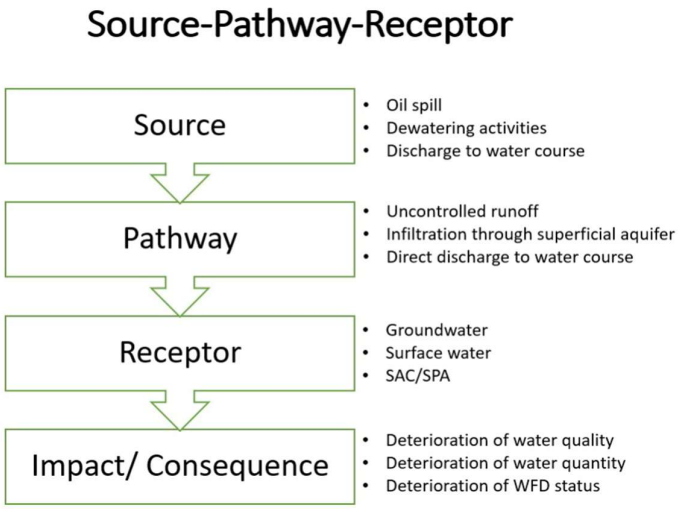
Identifying Significant Environmental Effects

11.3.8 A qualitative assessment of the likely significant effects on the water environment has been undertaken, using the source-pathway-receptor approach (refer to Plate 11-1), in accordance with TII and EPA guidelines. For a potential impact on the water environment to occur, the following is required:

- An impact source (such as the release of polluting chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or the loss or damage to all or part of a water body)
- A receptor that is sensitive to that impact (i.e. water bodies and the services they support)

- A pathway by which the two are linked

Plate 11-1: Source-Pathway-Receptor model



11.3.9 The first stage in applying the Source-Pathway-Receptor model is to identify the causes or 'sources' of potential impact arising from the project. The potential sources have been identified through consideration of the nature, characteristics and magnitude of the Proposed Order, together with the relevant operational methodologies and timescales. The next stage is to identify the potential receptors, comprising those elements of the water environment that could be affected by the identified sources.

11.3.10 The last stage of the model is, therefore, to determine if there is a viable exposure pathway or a 'mechanism' linking the source to the receptor. This has been undertaken in the context of local conditions relative to the water receptors within the study area, such as topography, geology, climatic conditions and the nature of the impact (e.g. the mobility of a liquid pollutant or the proximity to works that may physically impact a water body).

11.3.11 The assessment of the likely significant effects is qualitative and considers the operation of the airport as a whole under the Proposed Order, as well as cumulative effects with other environmental factors and with other developments. This assessment has considered the risk of pollution to surface water bodies and groundwater directly, and indirectly from activities, particularly in relation to those water features which are within or close to the Dublin Airport Site (Within Study Area: Paragraph 11.3.4). All current (Paragraph 11.4.88 to 11.4.95) and existing planned measures (Paragraph 11.5 Future receiving environment) for managing the risk of pollution from runoff at Dublin Airport have also been considered.

Determination of Sensitive Receptors

11.3.12 When undertaking the impact assessment following the source-pathway-receptor process, the following has been considered:

- The baseline status of the water environment within the Dublin Airport Site and relevant surrounds with respect to surface water, groundwater and flood risk;
- Likely impacts of the Proposed Order on the water environment based on a source-pathway-receptor approach; and
- Any residual effects and additional mitigation measures required to limit them.

11.3.13 A qualitative assessment has been used to assign a sensitivity rating to receptors, also called 'value of the receptor' which considers their likely adaptability, tolerance, and recoverability, as well as any designations. In the absence of specific criteria for rating sensitivity in the EPA Guidance[14], the criteria from the TII Guidelines[15] have been used to assign a sensitivity rating from Negligible to Very High, as presented in Table 11-1.

[14] Environmental Protection Agency (EPA), Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022).
[15] TII (2025), Water Impact Assessment for National Roads, Light Rail, Metro and Rural Cycleways- Overarching Technical Document.

Table 11-1: Receptor Sensitivity / Importance

Sensitivity/ importance	Description	Example
Very High	Receptor has a high quality or value on a regional, national or international scale	• **Hydrology** - River, wetland or surface water body protected by EU legislation (e.g. designated under the Habitats Regulations or 'Salmonid waters'); or by national habitat legislation (e.g. Natural Heritage Areas). - Inner source protection area for regionally important potable public water source supplying >2500 homes. - Watercourse or surface water feature which supports protected ecosystems of national importance. - River water body of quality Class A (Biotic Index Q4, Q5). - Flood plain protecting >50 residential or commercial properties. • **Hydrogeology** - Groundwater body which supports a river, wetland, SWDE or groundwater dependent terrestrial ecosystem (GWDTE) protected by EU legislation (Special Area of Conservation (SAC) or Special Protected Area (SPA) status) or by national legislation. - Groundwater body which provides significant baseflow to a very high value surface water body or habitat. - All undesignated turloughs.
High	Receptor has a high quality or value on a local or county scale	• **Hydrology** - SWDE of county importance. - Locally important potable water source supplying >1000 homes. - Outer source protection area for regionally important potable water source supplying >2500 homes. - Inner source protection area for locally important potable water source. - Watercourse or surface water feature which supports protected ecosystems of local importance. - River water body of quality Class B (Biotic Index Q3-4). - Flood plain protecting 5 – 50 residential or commercial properties. - Salmon fisheries. • **Hydrogeology** - Groundwater body which supports a GWDTE of county importance. - Groundwater provides significant baseflow to high value surface water body. - Regionally important aquifer. Caves and swallow holes.
Medium	Attribute has a medium quality or value on local scale	• **Hydrology** - SWDE or GWDTE of local importance. - Locally important potable water source supplying >50 homes. - Outer source protection area for locally important water source. - River water body of quality Class C (Biotic Index Q3, Q2-3). - Flood plain protecting between 1 and 5 residential or commercial properties. - Water source supplying large scale agriculture or industry. • **Hydrogeology** - Groundwater body which supports GWDTE of local importance. - Locally important aquifer. - Springs and enclosed depressions.
Low to Negligible	Attribute has little to no quality or value on local scale	• **Hydrology** - Watercourse with little/no hydrological importance to protected ecosystems. - Designated as a Heavily Modified Water Body (HMWB) or Artificial Water Body (AWB). - Local water source used for domestic/agricultural purposes (not potable).

Sensitivity/ importance	Description	Example
		- Outer source protection area for locally important water source. - River water body of quality Class D (Biotic Index Q2, Q1). - Fish sporadically present or restricted, with no species of conservation concern. • **Hydrogeology** - Groundwater body which provides minimal support to GWDTE of local importance. - Poor bedrock aquifer with minimal abstractions. - Karst boreholes.

Describing Potential Effects

11.3.14 The methodology used for describing the potential effects is based on the EPA Guidelines, and considers the extent, intensity, complexity, probability, duration, frequency and reversibility of an impact. The likelihood of an effect occurring is based on a scale of certain, likely or unlikely. In the absence of specific criteria for the description of the magnitude of impact with respect to the water environment in the EPA Guidance, the criteria from Table 3.3 of the TII Guidelines have been used and are presented in Table 11-2.

Table 11-2: Describing Magnitude of Impacts on the Water Environment

Impact Level	Description	Typical Examples
Very High	Causes major alteration or complete loss of a receptor. Effects likely to be widespread and permanent.	• **Hydrogeology** - Total loss of aquifer. - Changes to aquifer or unsaturated zone resulting in total loss of existing water supply springs and wells, river baseflow or ecosystems. - Impact affects groundwater body and WFD status. • **Hydrology** - Total loss of fishery. - Total loss of amenity value. - Total loss of SWDE.
High	Notable permanent or longer-term change to a receptor.	• **Hydrogeology** - Removal of large proportion of aquifer. - Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. - Potential high risk of pollution to groundwater from routine runoff. • **Hydrology** - Extensive loss of fishery. - Extensive reduction in amenity value. - Notable change to SWDE. - Increase in predicted peak flood level >100mm.
Medium	Moderate or longer-term change over a restricted extent or a moderate permanent change in a receptor.	• **Hydrogeology** - Removal of moderate proportion of aquifer. - Changes to aquifer or unsaturated zone resulting in moderate change to water supply springs and wells, river baseflow or ecosystems. - Potential medium risk of pollution to groundwater from routine runoff. - Impact does affect groundwater body, but WFD status remains unchanged. • **Hydrology** - Partial loss of fishery. - Partial reduction in amenity value. - Increase in predicted peak flood level of 50-100 mm.
Low	Minor short/medium-term change over a restricted extent, or a minor permanent change in a receptor.	• **Hydrogeology** - Removal of small proportion of aquifer. - Changes to aquifer or unsaturated zone resulting in moderate change to water supply springs and wells, river baseflow or ecosystems.

Impact Level	Description	Typical Examples
		- Potential low risk of pollution to groundwater from routine runoff. - Impact does not affect groundwater body, and WFD status remains unchanged. • **Hydrology** - Minor loss of fishery. - Slight reduction in amenity value. - Increase in predicted peak flood level of 10-50 mm.
Negligible	Minor momentary change over a localised extent or imperceptible change to a receptor.	• **Hydrogeology** - No change to aquifer size. - Very little/no risk of pollution to groundwater from routine runoff. • **Hydrology** - Negligible loss of fishery. - Amenity value unchanged. - Little change in predicted peak flood level (i.e. <10 mm).

Source: Based on criteria outlined within Table 3.3 of the TII 'Water Impact Assessment for National Roads, Light Rail, Metro and Rural Cycleways – Overarching Technical Document' (2025).

11.3.15 Impacts are not always negative and positive impacts are sometimes possible, for example positive impacts can be possible through enhancements of geological exposure or reduction in serious pollution risk or to surface waters. Impacts will, therefore, be identified as positive, neutral or negative.

11.3.16 Duration of impacts have been assigned based on the EPA EIAR Guidelines (2022), considering that impacts can be identified as:

- **Momentary** – effects lasting from seconds to minutes.
- **Brief** – effects lasting less than a day.
- **Temporary** - related and lasting <1 year.
- **Short-term** - lasting 1 to 7 years.
- **Medium-term** - lasting between 7 to 15 years.
- **Long-term** - lasting 15 to 60 years.
- **Permanent** - lasting over 60 years.

Significance of Effects

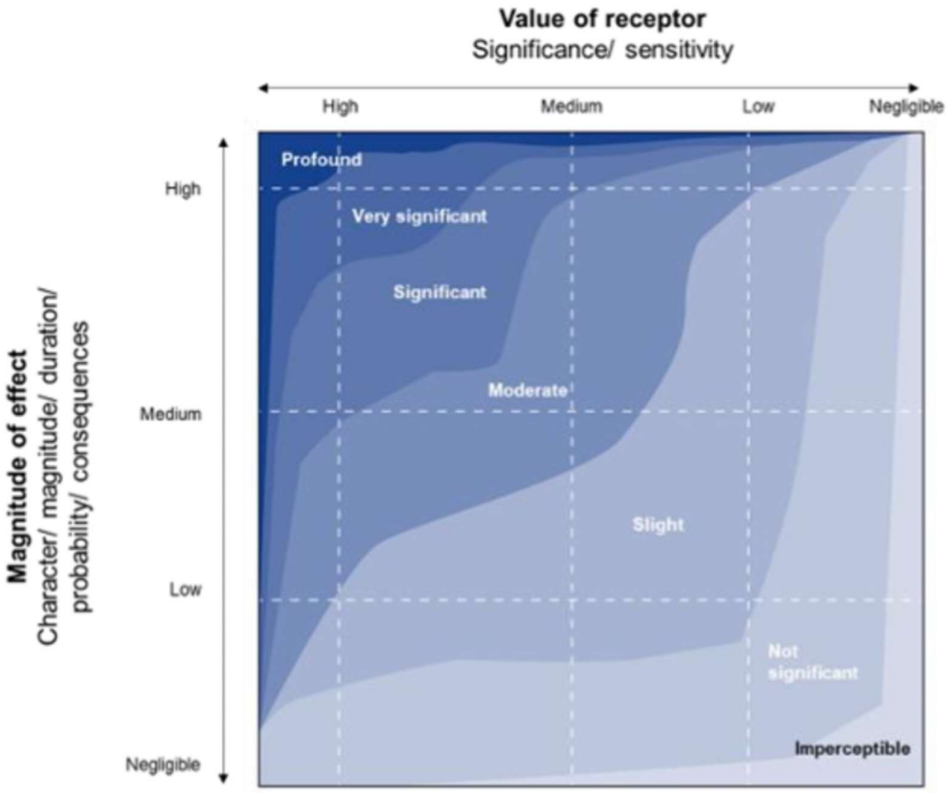
11.3.17 The methodology used for describing the potential impacts considers the "quality" of the impacts (i.e., whether it is adverse or beneficial), the "probability" of the event occurring and the "duration" of the impacts (i.e., whether it is short or long-term) and a rating of negligible to high, as per the EPA Guidelines.

11.3.18 The description or magnitude of impact is then combined with the sensitivity rating of the receptor to determine the significance of the potential effect (Plate 11-2). Given that the specific criteria for the description of magnitude of impact and receptor sensitivity is drawn from the TII Guidelines, the subsequent rating of effect significance (referred to impact significance in the document) is outlined below.

- **Imperceptible** - an effect capable of measurement but without significant consequences.
- **Not significant** – an effect which causes noticeable changes in the character of the environment but without significant consequences.
- **Slight** – an effect which causes noticeable changes in the character of the attribute without affecting its sensitivities.
- **Moderate** – an effect that alters the character of an attribute in a manner that is consistent with existing and emerging baseline trends.

- **Significant** – an effect, which by its character, magnitude, duration or intensity, alters the sensitive aspects of the environment.
- **Very Significant** – an effect which by its character, magnitude, duration or intensity, significantly alters most of the sensitive aspect of an attribute.
- **Profound** – an effect which obliterates sensitive characteristics.

Plate 11-2: Effect significance ratings (TII, 2025 and EPA, 2022)



11.3.19 Effects assessed as less than moderate are not considered significant. In accordance with the EPA Guidelines, the assessment therefore focuses on effects that have the potential to be significant for the purposes of EIA.

Application of the Assessment Framework

11.3.20 The purpose of this subsection is to explain how the assessment framework set out in EIAR Chapter 5 Methodology has been applied to the Water assessment. This chapter should be reviewed in conjunction with Chapter 4: Proposed Order which defines the Proposed Order and the agreed operational assumptions adopted throughout the EIAR, and Chapter 5: Methodology which defines the common assessment methodology, assessment scenarios, significance approach, baseline methodology and cumulative assessment methodology.

11.3.21 As set out in Chapter 5: Methodology, the Principal Assessment compares the 2029 Permitted Operation with the 2029 Proposed Operation. 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 water environment 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 reporting residual effects.

11.3.22 Supporting Assessments have not been undertaken for this chapter as they would not materially assist in identifying or evaluating the likely significant effects of the Proposed Order on the water environment. The Proposed Order does not involve physical development or changes to the existing impermeable area, drainage catchments or surface water runoff rates. The principal potential effects relate to

increased de-icer loading and the risk of accidental pollution associated with increased airport activity. These matters are assessed in the Principal Assessment, taking account of the existing drainage and pollution control arrangements and the ongoing operational improvements described in Section 11.5. The potential effects of increased de-icer loading are also informed by the dedicated De-icer Pollution Modelling Report. Additional comparisons with earlier operational scenarios would not materially change the assessment findings or provide further information relevant to determining the significance of effects on the water environment.

11.3.23 The Future Receiving Environment includes the ongoing operational pollution control measures and improvements being implemented at Dublin Airport independently of the Proposed Order. These comprise enhancements to existing drainage and pollution control systems, operational controls and discharge arrangements, and glycol recovery measures, as described in Section 11.5. These measures form part of the airport's ongoing operational management arrangements and are distinct from the separately permitted Airfield Drainage Project (ADP), which is not assumed to be operational in the 2029 Principal Assessment. Both the 2029 Permitted Operation and 2029 Proposed Operation are assessed against the same Future Receiving Environment, incorporating those operational improvements expected to be in place by the assessment year.

Limitations and Assumptions

11.3.24 Geological and hydrogeological conditions have been interpreted from the available site investigation data. As site investigations provide information at discrete locations, subsurface conditions between investigation points may differ from those encountered and interpreted. Site-specific seasonal groundwater level data for the Dublin Airport Site are also limited; consequently, the assessment of groundwater conditions is based on observations recorded during previous site investigations and the available monitoring data. Groundwater levels may also vary over time in response to seasonal and other influences.

11.3.25 In the absence of detailed ground investigation data sufficient to establish the presence and degree of hydraulic connectivity across the Dublin Airport Site, a reasonable worst-case assumption has been adopted for the purposes of the assessment. It has therefore been assumed that groundwater is present within the superficial deposits and that these deposits are in hydraulic continuity with the underlying bedrock formations forming the Dublin and Swords Groundwater bodies (GWBs). This approach ensures that potential effects on groundwater are not excluded or underestimated as a result of uncertainty in the available data.

11.3.26 The location accuracy of published data is variable. For example, the location of boreholes, wells and springs on GSI mapping is generally to within a radius of 10m to 500m. In addition, the GSI groundwater dataset may be incomplete as there is no statutory requirement to register boreholes or wells unless the well has an abstraction rate of 25m^3/d. Hence, the presence (historical or current) of boreholes or wells not recorded on the website cannot be discounted. Additionally, no details on the borehole or current operational status are available on the third party mapped boreholes.

11.3.27 This chapter does not undertake an assessment of compliance of the Proposed Order with the objectives of the European Union (EU) Water Framework Directive (WFD) (Directive 2000/60/EC). A separate WFD Compliance Assessment has been undertaken by Nicolas O'Dwyer and is provided in EIAR Volume 4, Appendix 11-2. The conclusions of that assessment have been taken into account in this chapter, where relevant to the assessment of effects on the water environment.

11.3.28 Where uncertainty remains, reasonable worst-case assumptions have been applied to the relevant assessment inputs and scenarios, including where there is uncertainty in future conditions, pollutant pathways or the response of water receptors. These assumptions have been selected so that the potential effects of the Proposed Order are not understated, and on this basis the assessment is considered robust.

11.4 Current Receiving Environment

11.4.1 The Current Receiving Environment is described for the Dublin Airport Site, with the location of individual receptors identified by sector where relevant. Figure 11-1 (EIAR Volume 3) illustrates the surface waterbodies and catchments in and around the Dublin Airport Site.

Land Use, Topography and Rainfall

11.4.2 Dublin Airport is located north of Dublin City in County Fingal. The Dublin Airport Site is divided into sectors relating to the current land use, Figure 2-2 (EIAR Volume 3) provides a map showing the location of each of the sectors.

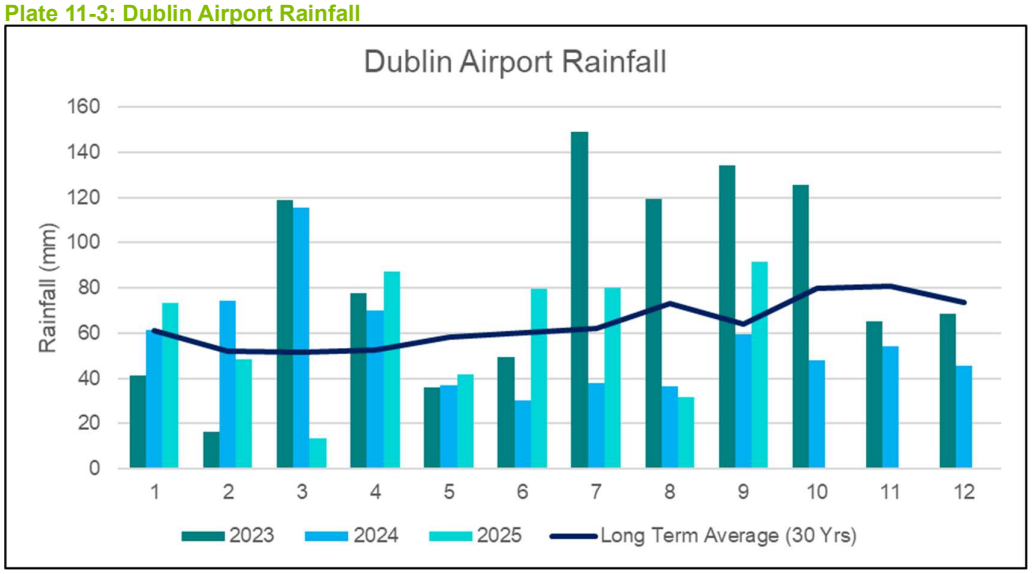
11.4.3 The sectors approximate to the following land uses within the airport boundary:

- Sector A: Runways and Taxiways
- Sector B: North Apron and Hangars
- Sector C: Terminal 1 and Old Central Terminal Building (OCTB)
- Sector D: Terminal 2
- Sector E: South Apron and Cargo Terminals
- Sector F: Ground Transportation Centre (GTC), Car Parks and Accommodation
- Sector G: Car Hire Compound and Long-Term Parking Red/Green
- Sector H: Eastlands South, a largely undeveloped area of land within daa's ownership
- Sector I: West Apron
- Sector J: another largely undeveloped area of land within daa's ownership
- Sector K: an area of land with drainage infrastructure for Apron 5M currently under

11.4.4 The surrounding land use is characterised by farmland with scattered residential properties, two golf courses (one to the north and south of the Dublin Airport Site) and car parking. The M1 motorway borders the airport to the east, and the M50 motorway is located 1km south of the Dublin Airport Site.

11.4.5 The topography of the airport is relatively flat at an approximate elevation of 80m to 60m Ordnance Datum (OD) across most of the airport west to east, with a lower topography of 50m in the north-east corner close to the M1. The regional topographic gradient being gently sloping to the north-east toward the Malahide Estuary and the eastern Irish coastline.

Plate 11-3: Dublin Airport Rainfall



(Source; Met Éireann, 2024)

11.4.6 A Met Éireann weather observing station (Station No. 532) has operated at Dublin Airport since 1941. Plate 11-3 presents the monthly Long-Term Average (LTA) rainfall for 1992–2025, together with recorded monthly rainfall for 2023–2025. The LTA annual rainfall at Dublin Airport is 770 mm, which is within the typical annual range of 750–1,000 mm for the eastern half of Ireland reported by Met Éireann. Monthly rainfall is generally lower during spring and summer and higher during autumn and winter.

Hydrology

11.4.7 The description of the baseline condition of the surface water environment considers the following key receptors:

- Surface waterbodies, and associated water quality and hydromorphology
- WFD river sub basins
- Surface water abstraction / monitoring / discharge points
- Designated sites with surface water dependent habitats or species
- Surface water flood risk areas

Surface water bodies and sub basins

11.4.8 The Dublin Airport Site is located within four WFD sub-basins, see Figure 11-1:

- The Mayne River sub-basin, which includes the Cuckoo Stream, is a sub-basin of the Liffey and Dublin Bay Catchment. The majority of the Proposed Order is within the Mayne River sub-basin, which covers the majority of the airport footprint, including Sectors A to J. The Cuckoo Stream flows into the Mayne River, which subsequently flows into the Baldoyle Estuary SAC.
- The Sluice sub-basin includes the Forrest Little Stream, Kealy's Stream and Wad Stream. This sub-basin drains the majority of the North Runway (10L/28R), the North Apron, and GTC within sectors A, B, E, G, H, K. Forrest Little Stream and Kealy's Stream flow into the Sluice River, which then flows into the Baldoyle SAC.
- The Santry River sub-basin, which extends across the western part of the South Runway (10R/28L) and airport car parking within Sector A. The Santry River flows into Dublin Bay behind Bull Island SPA. This sub-basin is not hydrologically connected to any areas s associated with the Proposed Order.
- The Ward River sub-basin includes the Barberstown Stream and Huntstown Stream which flow into the Ward River to the north of the Dublin Airport Site. The Ward River's natural catchment extends across the western part of the North Runway (10L/28R); however, it does not receive drainage from the North Runway (10L/28R) crossing Sectors A and J. The Ward River flows into the Malahide Estuary SAC. This sub-basin is not directly hydrologically connected to the Proposed Order.

11.4.9 The four sub-basins lie within two WFD sub-catchments as follows:

- The Mayne sub-catchment (09_17 Mayne_SC_010), a sub-catchment of the Liffey and Dublin Bay WFD Catchment (ID09)
- The Broadmeadow sub-catchment (08_3 Broadmeadow_SC_010), a sub-catchment of the Nanny-Delvin Catchment (ID 09)

11.4.10 Table 11-3 summarises each of the WFD Waterbodies, the catchments they fall within, and which sectors they interact with. The sectors referred to in Table 11-3 are set out in section 11.4.3.

Table 11-3: Summary of WFD Catchment, Sub catchments and Waterbodies

WFD Catchment	WFD Sub catchments	WFD River Sub Basin	Water Body	Water body within Sector	Sector within catchment
Liffey and Dublin Bay	Mayne_SC_010	Mayne River	Mayne Stream	None	A
			Cuckoo Stream	A, D, E, H	J, I, B, C, F, G

WFD Catchment	WFD Sub catchments	WFD River Sub Basin	Water Body	Water body within Sector	Sector within catchment
		Sluice River	Forrest Little Stream	A	
			Kealy Stream	F, G	H, E
			Wad Stream	None	K, F, B
		Santry River	Santry River	None	A
	Broadmeadow_SC_010	Ward River	Barberstown Stream	A (although the North Runway (10L/28R) itself does not drain to the Ward River)	**J**
			St. Margaret's Stream	A (although the North Runway (!0L/28R) itself does not drain to the Ward River)	

11.4.11 The catchment characteristics, surface water quality and WFD status of each of these sub-basins is considered below. The Q-value system is used to assess the quality of Irish Rivers in terms of organic and inorganic pollutants. It has a nine-point scale ranging from Q5 indicating high quality and an unpolluted watercourse, to Q1 which indicates bad quality and a seriously polluted watercourse. The values are summarised in Table 11-4.

Table 11-4: **EPA River Quality Q Indices Summary**[16]

Q Values	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly Polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately Polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously Polluted	Unsatisfactory

The Mayne River sub-basin, including Cuckoo Stream

11.4.12 The majority of Dublin Airport currently drains to the Cuckoo Stream of the Mayne River sub-basin (WFD Sub-basin Mayne_010). There is an existing surface water collection network which collects both Greenfield flows upstream of the airport and airfield hard standing runoff and conveys it towards the Cuckoo Stream via a series of drains, pipelines to the Airfield Trunk culvert. The Airport Trunk Culvert starts to the east of R108 and heads south-east towards the Cuckoo Supply Channel. The Cuckoo Supply Channel runs in an easterly direction from the South Apron and is culverted beneath the R132 after which it becomes the Cuckoo Stream. The airport catchment consists of the terminal, other buildings, the West and Central Aprons, and the majority of the South Runway (10R/28L), within Sectors A to J. A small part of the western extent of the South Runway (10R/28L) drains directly to the River Mayne.

11.4.13 The Cuckoo Stream effectively forms the northern branch of the River Mayne, joining the southern branch which flows into the Baldoyle Estuary SAC at Mayne Bridge 2km below the confluence. The River Mayne catchment is approximately 17km^2, with a significant proportion comprising urbanised landscape including approximately 3.5km^2 within the airport boundary. The length of the watercourse channel between the airport boundary and the outfall into the Baldoyle Estuary is 7.4km.

[16] Source: https://epawebapp.epa.ie/qvalue/webusers/ Last Accessed July 2026

11.4.14 The Cuckoo Stream branch of the River Mayne is not monitored for water quality by the EPA for WFD classification monitoring purposes. However, a site downstream of the confluence of the Cuckoo Stream with the River Mayne is monitored periodically (13 records between 1988 to 2025) by the EPA at Wellfield Bridge (station code RS09M030500, approximately 5.5km east-south-east of the airport). The most recent classification was in 2025 where the water quality was classified as *Poor* with a Q value[17] of 3*, i.e., moderately polluted. The EPA data indicates that this site has historically varied between Q3 and Q2-3 during monitoring (1988 – 2025).

11.4.15 daa has undertaken biological and water chemistry monitoring of the Cuckoo Stream, including locations where the stream exits the Dublin Airport Site. The available biological monitoring records comprise surveys undertaken between 2006 and May 2019, using biological sampling and water quality assessment in accordance with the EPA Q-value methodology. No more recent biological monitoring results were available for review. More recent water chemistry monitoring data, including results collected between 2020 and 2024, are presented separately below. Available biological monitoring data provided by daa for the Cuckoo Stream (from 2006 [18]) report Q values of 1-2, which shows the stream to be seriously polluted and therefore having *Bad* Ecological Status under the WFD. This has been the situation since at least 2006 (varying between Q1-2 and Q1 during that period); earlier data is not available. These results are from localised data points rather than the full WFD water body, which is rated as poor [19]. The Mayne River monitoring had reported Q values of three in May 2019, indicating the river is moderately polluted and has a *Poor* Ecological Status under the WFD.

11.4.16 Table 11-5 summarises surface water monitoring data for sampling points at four locations within the Cuckoo Stream/ Mayne sub-basin, collected by Fitz Scientific between March 2020 and February 2021. Results indicate that it does not meet the standard for *Good* status. Further data collected through 2023 by daa is consistent with the stream not meeting *Good* status, see Table 11-6. The monitoring locations are shown on Figures 11-2 and 11-3 (EIAR Volume 3). Concentrations are presented as calculated average concentrations from all samples in the monitoring period.

[17] The EPA classifies river biological quality using Q values. Q values measure the ecological health of rivers based on the population of aquatic invertebrates present; it ranges from 5 (High) to 1 (Bad).
[18] Conservation Services, *Biological Monitoring of Surface Water Quality in the Vicinity of Dublin Airport*, report reference: 19112/DS19/F, dated 06 June 2019.
[19] Proposed Order for Future Operations at Dublin Airport, Water Framework Directive (WFD) Assessment, AWN Consulting LTD 2026

Table 11-5: Monitoring Data for Cuckoo / Mayne, 2020-2021

Monitoring Point	S.I. No. 77/2019 Criteria for Good Status[20]	Cuckoo Mayne 1	Cuckoo Mayne 2	Cuckoo Mayne 3	Cuckoo Mayne 4
Location	NA	53.4117, -6.2391	53.4206, -6.2329	53.4091, -6.1635	53.4097, -61565
Detergents as Methylene blue active substances (MBAS)	NC	101 µg/L	86 µg/L	175 µg/L	136 µg/L
Propylene glycol	NC	Below detection	Below detection	4.5 mg/L	Below detection
Total Petroleum Hydrocarbons (TPH, carbon band C10-C40)	NC	Below detection	Below detection	Below detection	47 µg/L
Ammonia as nitrogen (N)	0.065 mg/L as N	0.11 mg/L as N	0.10 mg/L as N	0.78 mg/L as N	0.85 mg/L as N
Phosphate (P) (Ortho)	0.035 mg/L	0.051 mg/L as P	0.056 mg/L as P	0.193 mg/L as P	0.042 mg/L as P
Biological Oxygen Demand	1.5 mg/L	Below detection	3.1 mg/L	13.6 mg/L	5.9 mg/L
Chemical Oxygen Demand	NC	23.3 mg/L	8.8 mg/L	30.1 mg/L	24.8 mg/L
pH	NC	7.82	8.01	7.70	8.09
Dissolved Oxygen	NC	10.6 mg/L	9.6 mg/L	7.8 mg/L	7.4 mg/L

[20] NA – Not Applicable, NC – No Criteria for good status, µg/L – micrograms per litre, mg/L – milligrams per litre.

Table 11-6: Dublin Airport Water Quality Results 2022 - 2024 for Cuckoo Stream

Monitoring Point	Units	S.I. No. 77/2019 Criteria for Good Status [21]	M 1	M2	M3	M4	M5	C1	C12	C2A	C2B	C3	C4[22]	C5	C7	C8
Detergents as Methylene blue active substances (MBAS)	ug/L	NC	-	119.52	-	-	-	-	-	-	-	268.8	1296.	190.92	186.167	-
Propylene glycol	mg/L	NC	-	-	-	-	9.26	-	Below Limit of Detection	-	-	Below Limit of Detection	Below Limit of Detection	48.72	21.7	Below Limit of Detection
Total Petroleum Hydrocarbons (TPH, carbon band C10-C40)	mg/L	NC	-	Below Limit of Detection	-	-	Below Limit of Detection	-	-	-	-	1369.5	Below Limit of Detection	-	509.5	1814.5
Ammonia as nitrogen (N)	mg/L as N	0.065	0.21	0.13	0.254	0.088	0.02	0.1931	0.1129	0.15	0.2192	0.2351	6.3944	0.1563	4.0759	0.8557
Phosphate (P) (Ortho)	mg/L	0.035	0.118	0.02	0.0567	0.0459	0.01	0.139	0.06	0.125	0.0967	0.1462	6.522	0.0488	0.3786	0.0316
Biological Oxygen Demand	mg/L	1.5	0.88	1.15	3.9	9.41	7	2.333	1.282	1.757	1.957	12.072	530.81	24.934	33.971	3.697
Chemical Oxygen Demand	mg/L	NC	22.5	15.68	59	38.46	25	20.633	22.357	30	41.89	87.61	1777.94	61.31	72.6	53.375
pH	mg/L	NC	7.63	8.06	8.71	7.86	7.88	7.78	8.07	7.56	7.73	7.89	7.57	8.64	7.75	7.87
Dissolved Oxygen	mg/L	NC	9.01	8.93	9.62	9.8	8.2	9.77	10.3	8.14	9.13	8.99	8.84	8.7	8.14	8.31

[21] NA – Not Applicable, NC – No Criteria for good status, μg/L – micrograms per litre, mg/L – milligrams per litre. Where a dash (-)appears, indicates no measurement was taken.
*Locations displayed on Figure 11-15
[22] The average COD and BOD for C4 are raised, this is due to higher values recorded for May 2024. The average prior to this was 65.54 mg/l 5.8 mg/l for COD and BOD respectively. There was also a spike in PH and ammonia during May 2024. An offsite pollution incident as a result of suspected agricultural effluent entering surface water occurred outside the airport during May 2024. It is also understood that this issue has been reported to Irish Water and FCC and that there is an ongoing investigation into this incident.

11.4.17 Between 2022-2023, daa contracted a specialist environmental consultant to conduct a per and poly-fluoroalkylated substances (PFAS) monitoring programme, including surface water monitoring, for the Dublin Airport Site[23]. PFAS are commonly associated with firefighting foams. The highest average perfluorooctane sulfonate (PFOS) concentrations (a specific type of PFAS) (up to 22.08ng/l against the EQS of 0.65ng/l) in landside surface waters are located to the east of the airport in the Sluice, Cuckoo Stream and Kealy's Stream.

11.4.18 In the Sluice, maximum PFOS concentrations in the downstream monitoring location were approximately half of an upstream monitoring location, indicating that PFOS concentrations are being diluted in the Sluice. In the Cuckoo Stream, PFOS concentrations in surface water generally decrease downstream as dilution occurs, but not to a significant extent. The monitoring locations are shown on figures with the 2024 environmental monitoring report[23].

11.4.19 Current fire-fighting training practices are carried out on an impermeable concrete base surrounded by ACO open channel grating. Since 2013, the firefighting foam used by the Dublin Airport Fire Service has been a fluorine-free foam approved by the International Civil Aviation Organisation (ICAO). Fluorine-free foams do not contain PFAS. Surface water monitoring at this location consistently recorded the highest concentrations of PFOS at the current firefighting training ground associated with historical use of materials. Surface water from the Fire Station and training area discharges via the Dublin Airport drainage network to the Cuckoo Stream.

11.4.20 The Ecological or Potential WFD status of the Mayne and the Cuckoo Stream is classified as *Poor* for the period 2019-2024 (Cycle 3[24]) and '*At Risk'*. The River Mayne is at risk due to Poor ecological status, with nutrients and diffuse urban sources of pollution causing significant pressures[25]. A summary of the current WFD status for the Mayne water body is provided in Table 11-7.

Table 11-7: WFD Potential Summary for Mayne Water Body (Mayne_010)[26]

WFD Parameter	Status / Summary 2019-2024 monitoring data
Water Body ID	Mayne 010
Water Body Name	Mayne
Water Body Type	River
Water Body Length (m)	16.52km
Hydromorphological Designation	Unknown
Overall Ecological Potential	Poor
Current Overall Potential	Poor
Supporting Chemistry Conditions	Pass
General Conditions	Pass
Oxygenation Conditions	Pass
Dissolved Oxygen (% Sat)	Pass
Other determinant for oxygenation conditions	High
Acidification Conditions	Pass
pH	Pass
Nutrient Conditions	Pass
Nitrogen Conditions	Good
Nitrate	Good
Ammonium	High
Phosphorous Conditions	Moderate
Orthophosphate	Moderate

[23] Dublin Airport 2021 - 2023 Environmental Monitoring Report, Fehily Timoney 2024
[24] Cycle 3 risk represents the risk for each waterbody of failing to meet their Water Framework Directive (WFD) objectives by 2027.
[25] WFD Cycle 3. Catchment Liffey and Dublin Bay. Sub-catchment Mayne_SC_010. Available online: https://catchments.ie/wp-content/files/catchmentassessments/09%20Liffey%20and%20Dublin%20Bay%20Catchment%20Summary%20WFD%20Cycle%203.pdf Accessed July 2026
[26] Source https://www.catchments.ie/data/#/waterbody/IE_EA_09M030500?_k=10o815 Accessed July 2026

11.4.21 According to the Inland Fisheries Ireland (IFI), the Mayne River and tributaries including the Cuckoo Stream are currently non-salmonid[27].

11.4.22 The Cuckoo channel is an open channel drainage system within the airfield which is upstream of the Cuckoo Stream. The Cuckoo channel is a mixture of culverted sections and modified open channel as it passes through the airfield.

11.4.23 Baseline hydromorphological information is provided in the WFD Screening Assessment prepared by cbec eco-engineering UK Ltd 2024[28] for the IA Application (Planning application F23A/0781 Document 00115563_K0027ZS1_20231217_0802). This refers to details of a fluvial geomorphological audit of the Cuckoo Stream and states that the Cuckoo channel was altered historically, the channel planform type, airside, was characterised as being a straightened, over-deepened, single thread channel and the upper part of the airfield includes a constructed inset floodplain.

Forest Little / Sluice sub-basin

11.4.24 The Sluice River catchment is approximately 10km^2 in area, with approximately 2.4km^2 falling within the northern and eastern extent of the airport boundary, draining buildings, roads, several large car parks, aircraft stands, the North Runway (10L/28R), and associated taxiways, including sectors A, B, D, F, G and K, see Figure 11-1. Forrest Little Stream, Kealy's Stream and the Wad Stream all drain the Sluice River Sub-Basin. The Forest Little / Sluice River flows from west-north-west to east-south-east, discharging to the north of Baldoyle Estuary SAC at Portmarnock Bridge, approximately 7km east-south-east from the Study Area, the final 2km of the channel being under tidal influence, see Figure 11-1.

11.4.25 Sluice River has been monitored for water quality status by the EPA periodically since 2021, with a total of 7 records available. Monitoring has taken place at three locations, with the closest to the airport site being Forrest Little Bridge (Station code RS09S070300), and Belfast Rd Bridge (Kilronan Br) (Station code RS09S070400) which are approximately 500m North and 550 m Northeast respectively of the Dublin Airport Site. The most recent classification was in 2025 at Belfast Rd Bridge where the water quality was classified as *Poor* with a Q value[29] 3, i.e., *moderately polluted,* historically the results have varied between 3 and 3* during monitoring (2021-2025). The Forrest Little Bridge has been classified once in 2021 as *Poor* with a Q value of 2-3 i.e., *moderately polluted.*

11.4.26 Biological monitoring of the Forest Little / Sluice system has been undertaken by daa through Conservation Services, using biological sampling and water quality assessment in accordance with the EPA Q-value methodology. The available daa biological monitoring records extend to September 2019[6]. At the two monitoring locations closest to the airport (F4A/B and F5), recorded Q-values increased from Q1–2 in 2006 and 2007 to Q3 in September 2017, indicating an improvement in biological water quality between those monitoring periods. At the most downstream monitoring location (F6), which has been monitored since September 2013, Q3 values were recorded during much of the period to May 2019, with a Q2–3 result in October 2018. These results indicate that biological water quality varied between monitoring occasions and do not, in themselves, establish a sustained improvement beyond the period covered by the available records. More recent EPA biological monitoring results, including the 2021 and 2025 classifications described in Paragraph 11.4.25, and water chemistry monitoring data presented in Table 11-8 and Table 11-9, provide additional evidence of the receiving water environment. The available information indicates that the Forest Little / Sluice system remains affected by water quality pressures and does not consistently achieve Good ecological quality.

11.4.27 Table 11-8 summarises surface water monitoring data for sampling points at three locations within the Forest Little / Sluice sub-basin collected by Fitz Scientific between March 2020 and February 2021. Results indicate that the Forest Little / Sluice sub-basin does not meet the standard for *Good* status. Further data collected through 2023 by daa, from the Kealy and Wad streams within the sub-catchment, is consistent with the Forest Little / Sluice sub-basin not meeting good status. The monitoring locations are shown on Figures 11-2 and 11-3 (EIAR Volume 3). Concentrations are presented as calculated average concentrations from all samples in the monitoring period.

[27] Freshwater capable of supporting salmon or trout.
[28] cbec eco engineering, Infrastructure Application, WFD Screening Assessment, July 2024, Fingal Council Planning application F23A/0781 Document 00115563_K0027ZS1_20231217_0802.
[29] The EPA classifies river biological quality using Q values. Q values measure the ecological health of rivers based on the population of aquatic invertebrates present; it ranges from 5 (High) to 1 (Bad).

Table 11-8: Monitoring Data for Forest Little / Sluice, 2020-2021

Monitoring Point	S.I. No. 77/2019 Criteria for Good Status[30]	Forest Little 1	Forest Little 2	Forest Little 3
Location	NA	53.4386, -6.2280	53.4268, -6.1772	53.4228, -6.1565
Detergents as MBAS	NC	94µg/L	92µg/L	109µg/L
Propylene glycol	NC	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
TPH C10-C40	NC	Below Limit of Detection	22.5 µg/L	Below Limit of Detection
Ammonia as nitrogen (N)	0.065 mg/L as N	0.07 mg/L as N	0.06 mg/L as N	0.06 mg/L as N
Phosphate (P) (Ortho)	0.035 mg/L	0.06 mg/L as P	0.05 mg/L as P	0.05 mg/L as P
Biological Oxygen Demand	1.5 mg/L	3.8 mg/L	2.1 mg/L	Below Limit of Detection
Chemical Oxygen Demand	NC	13 mg/L	10.7 mg/L	9.5 mg/L
pH	NC	7.54	7.53	7.85
Dissolved Oxygen	NC	9.0 mg/L	9.6 mg/L	9.6 mg/L

[30] NA – Not Applicable, NC – No Criteria for good status, µg/L – micrograms per litre, mg/L – milligrams per litre.

11.4.28 11-9 summarises surface water monitoring data for sampling points collected in the Sluice catchment between 2022 and 2024. Concentrations are presented as calculated average concentrations from all samples in the monitoring period.

11.4.29 The Ecological or Potential WFD status of the Forest Little / Sluice for the 2019 to 2024 period is *poor*, while the risk status for Cycle 3 is "Review"[31]. As noted above, for other streams within the Mayne sub-catchment, the Mayne and the Cuckoo, their status is classified as *Poor* for the period 2019 - 2024 and *At Risk*. The EPA note that the water body is under significant pressure from anthropogenic sources.

11.4.30 According to the IFI, the Sluice system is salmonid with brown trout historically in the lakes at Abbeyville, though there has been no recent survey on the lakes and in the Sluice downstream of Abbeyville. Towards the downstream part of the stream, where the water quality is improved (Q3) and the substrate is very suitable, brown trout could be present as well as other fish species such as eel and stickleback. This is supported by a 2016 IFI fisheries survey which recorded eel, brown trout (young-of-year), stickleback and flounder on the Sluice River at Portmarnock Bridge[32].

[31] Waterbodies that are categorised as Review either because additional information is needed to determine their status before resources and more targeted measures are initiated or the measures have been undertaken, e.g. a wastewater treatment plant upgrade, but the outcome hasn't yet been measured/monitored.
[32] Kelly, F.L., Matson, R., Delanty, K., Connor, L., O'Brien, R., Gordon, P., Corcoran, W., McLoone, P., Coyne, L., Morrissey, E., Cierpal, D., Rocks., K., Buckley, S., Kelly, K., McWeeney, D. and Puttharee, D. (2017) Sampling Fish in Rivers 2016. National Research Survey Programme. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24, Ireland.

Table 11-9: Monitoring Data for Forest Little/Sluice Catchment, 2022-2024

Monitoring Point	Units	S.I. No. 77/2019 Criteria for Good Status[33]	K1	K2	K3	K4	K5	W1
Detergents as MBAS	mg/L	NA	177.61	183.86	277	164.67	252.35	-
Propylene glycol	mg/L	NC	Below Detection Limit	-	-	-	-	-
TPH C10-C40	mg/L	NC	902.5	1005	796.5	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
Ammonia as nitrogen (N)	mg/L as N	0.065mg/L as N	0.133	0.236	0.241	1.04	0.197	0.06
Phosphate (P) (Ortho)	mg/L	0.035mg/L	0.016	0.02	0.028	0.074	0.017	0.019
Biological Oxygen Demand	mg/L	1.5mg/L	1.322	4.89	1.75	2.84	1.51	1.33
Chemical Oxygen Demand	mg/L	NC	18.86	27.69	20.32	21.40	20.78	35.29
pH		NC	7.56	8.41	7.85	8.19	7.67	7.85
Dissolved Oxygen	mg/L	NC	9.75	9.22	9.95	9.16	9.17	10.2

Ward sub-basin

11.4.31 The western end of the North Runway (10L/28R) is within the Ward sub-basin (WFD Sub-basin Ward_030), a subdivision of the Broadmeadow sub-catchment. The Ward sub basin intersects some of Sectors A and J. The Ward River sub-basin is approximately 32.9km^2 in area; approximately 1km^2 of the airport is shown to be within the Ward River catchment. However, the surface water drainage does not discharge from hardstanding areas into this catchment. It is discharged to the Forrest Little or is diverted to the drainage system when the diversion level of 3mg/l BOD is exceeded.

11.4.32 Two tributaries of the Ward are located to the north and west of the Proposed Order; these are named St. Margaret's Stream and Barberstown Stream and flow in westerly and northerly directions respectively. The tributaries confluence approximately 1.1km north-west of the Airport's North Runway (10L/28R), prior to flowing into the Ward River immediately upstream of Toberburr Road, approximately 1km further downstream. The Ward River discharges to Malahide Estuary SAC 7km downstream of the confluence and approximately 4km north-east of the Study Area.

11.4.33 The EPA monitors the Ward River and tributaries in multiple locations downstream of the airport. The nearest downstream EPA surface water quality monitoring point within the Ward sub-basin that was monitored periodically between 1973-2024 is the bridge north of Killeek (station code RS08W010300). At this monitoring point, the surface water quality is classified by the EPA as *Moderate* with a Q[34] value of 3-4 in 2024. River water quality upstream of this was also classified by the EPA as *Moderate* (Q value of 3-4*) in 2024 at Coolatrath Bridge (station code RS08W010070, located 4.6km upstream), indicating that there is no significant deterioration in the Q value of watercourses within the Ward sub-basin downstream of the airport.

[33] NA – Not Applicable, NC – No Criteria for good status, μg/L – micrograms per litre, mg./L – milligrams per litre.
[34] The EPA classifies river biological quality using Q values. Q values measure the ecological health of rivers based on the population of aquatic invertebrates present; it ranges from 5 (High) to 1 (Bad).

11.4.34 Table 11-10 summarises monitoring data for sampling points within the Ward sub-basin collected by daa between March 2020 and February 2021. No further data was collected through 2023 by daa. Concentrations are presented as calculated as the average concentrations from all samples in the monitoring period.

Table 11-10: Monitoring Data for Ward, 2020-2021

Monitoring Point	S.I. No. 77/2019 Criteria for Good Status[35]	Ward 1	Ward 2	Ward 3	Ward 4
Location	NA	53.4356, -6.3013	53.4553, -6.2764	53.4640, -6.2188	53.4426, -6.2678
Detergents as MBAS	NC	95.4µg/L	74.3µg/L	116µg/L	74.4µg/L
Propylene glycol	NC	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
TPH C10-C40	NC	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
Ammonia as nitrogen (N)	0.065mg/L as N	0.25mg/L as N	0.09mg/L as N	1.03mg/L as N	0.10mg/L as N
Phosphate (P) (Ortho)	0.035mg/L	0.08mg/L as P	0.08mg/L as P	0.08mg/L as P	0.07mg/L
Biological Oxygen Demand	1.5mg/L	4.6mg/L	Below Limit of Detection	2.6mg/L	3.4mg/L
Chemical Oxygen Demand	NC	19mg/L	16.3mg/L	12.6mg/L	10.1mg/L
pH	NC	7.87	7.86	7.93	7.69
Dissolved Oxygen	NC	8.8mg/L	9.7mg/L	9.7mg/L	8.3mg/L

11.4.35 Under the WFD the Ecological or Potential WFD Status of the Ward sub-basin for the period 2019 to 2041 is classified as *Moderate*. The risk status of the Ward is given as *at risk* with significant agricultural and urban wastewater and runoff pressures operating within the catchment[36].

The Santry River sub-basin

11.4.36 A small part of Dublin Airport Sector A drains to the Santry River sub-basin (WFD Sub-basin Santry_010). The Santry River originates to the west of the airport and flows to the south of the South Runway (10R/28L), and into Dublin Bay behind Bull Island, approximately 11km downstream of the airport. The catchment of the Santry sub-basin is approximately 9.7km^2 which includes approximately 1.5km^2 of the airport, including the western part of the South Runway (10R/28L) and airport car parking.

11.4.37 There are multiple monitoring points on the Santry River, downstream of the airport. The nearest downstream EPA surface water quality monitoring point within the Santry water body that was monitored between 1998 and 2025, is at the Clonshaugh Road Bridge (station code RS09S010300), located 6km downstream of the airport. At this monitoring point, the EPA classified surface water quality as *Poor* with a Q[37] value of 2-3 in 2025.

11.4.38 Table 11-11 summarises monitoring data for sampling points within the Santry sub-basin collected by daa for 2020-2021. Further data collected through 2023 by daa is consistent with the stream not meeting *good* status, see Table 11-12. The monitoring locations are shown on Figures 11-2 and 11-3 (EIAR

[35] NA – Not Applicable, NC – No Criteria for good status, µg/L – micrograms per litre, mg./L – milligrams per litre.
[36] WFD Cycle 3. Catchment Nanny-Delvin. Sub=catchment Nanny Delvin_SC-010. Available online: https://catchments.ie/wp-content/files/catchmentassessments/08%20Nanny-Delvin%20Catchment%20Summary%20WFD%20Cycle%203.pdf, Accessed July 2026
[37] The EPA classifies river biological quality using Q values. Q values measure the ecological health of rivers based on the population of aquatic invertebrates present, it ranges from 5 (High) to 1 (Bad).

Volume 3). Concentrations are presented as calculated average concentrations from all samples in the monitoring period.

Table 11-11 Monitoring Data for Santry River, 2020-2021

Monitoring Point	S.I. No. 77/2019 Criteria for Good Status[38]	Santry 1	Santry 2	Santry 3
Location	NA	53.4098, -6.2706	53.3966, -6.2055	53.3802, -6.1767
Detergents as MBAS	NC	99.7µg/L	76µg/L	76.3µg/L
Propylene glycol	NC	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
TPH C10-C40	NC	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
Ammonia as nitrogen (N)	0.065mg/L as N	0.04mg/L as N	0.11mg/L as N	0.05mg/L as N
Phosphate (P) (Ortho)	0.035mg/L	0.034mg/L as P	0.056mg/L as P	0.056mg/L as P
Biological Oxygen Demand	1.5mg/L	Below Limit of Detection	Below Limit of Detection	Below Limit of Detection
Chemical Oxygen Demand	NC	14.7mg/L	15.0mg/L	11.0mg/L
pH	NC	7.78	7.84	7.93
Dissolved Oxygen	NC	9.1mg/L	9.2mg/L	9.6mg/L

Table 11-12 Dublin Airport Water Quality Results 2022 to 2024, for Santry

Monitoring Point	Units	S.I. No. 77/2019 Criteria for Good Status[39]	S1	S2	S3	SM4
Detergents as MBAS	mg/L	NC	-	-	117.34	148.5
Propylene glycol		NC	-	-	-	-
TPH C10-C40	mg/L	NC	-	-	921	Below Limit of Detection
Ammonia as nitrogen (N)	mg/L as N	0.065mg/L as N	0.043	0.11	0.111	0.16
Phosphate (P) (Ortho)	mg/L	0.035mg/L	0.046	0.098	0.05	0.056
Biological Oxygen Demand	mg/L	1.5mg/L	0.825	1.89	1.34	1.52
Chemical Oxygen Demand	mg/L	NC	20.88	23.36	19.41	25.8

[38] NA – Not Applicable, NC – No Criteria for good status, µg/L – micrograms per litre, mg./L – milligrams per litre.
[39] NA – Not Applicable, NC – No Criteria for good status, µg/L – micrograms per litre, mg./L – milligrams per litre.

Monitoring Point	Units	S.I. No. 77/2019 Criteria for Good Status[39]	S1	S2	S3	SM4
pH		NC	7.56	7.69	7.70	7.97
Dissolved Oxygen	mg/L	NC	9.22	9.79	9.48	9.52

11.4.39 The WFD status of the Santry is classified as *Poor* for the period 2019 - 2024 and *At Risk*. The Santry River is at risk due to Poor ecological status and diffuse urban sources of pollution causing significant pressures[40].

11.4.40 According to IFI the Santry River is currently non-salmonid due to the presence of a number of impassable features to fish located towards the lower end of the system.

Surface water abstractions / and discharges

11.4.41 The water bodies within the study area are not designated as drinking water rivers and there are no surface water abstraction locations shown by the EPA within the study area.

11.4.42 There is one Section 4 Discharge Licence[41], issued by the local authority, within the study area not within the Proposed Order Dublin Airport Site, held by the Irish Kennel Club, which permits discharges to surface waters. In this instance, the licence allows for discharges from the National Show Centre Cloghran to Forest Little Stream.

11.4.43 There are three companies with pollution control or industrial emissions licences which are licensed by the EPA within the Dublin Airport Site:

- Industrial Emissions Licence, P0480-02[42] licensed in 2006, Dublin Aerospace Limited, located at Hangars 1 and 5. This pertains to airport motive equipment
- Integrated Pollution Control Licence, P0921-01, International Aerospace Coatings Limited, located at Hangar 3. The nature of the activity is the aircraft stripping and painting. According to the Integrated Pollution Prevention Control (IPPC) application documents uncontaminated storm water from the roof and road surrounding Hangar 3 is discharged from the site to the nearby Sluice River (via tributary streams)
- Integrated Pollution Control Licence, P0189-01[43] licensed in 1998, Anglo Beef Processors Ireland (Swords), located to the north of Stokehole Lane. The status of this is licensed NFA (no further action)

11.4.44 The licence documents P0480-02 state, Storm water from Hangars 1-5 is discharged to the nearby Sluice River (via tributary streams) from three surface discharge points, SWI, SW2 and SW3. Each of these emission points is associated with an area of the licensed site and are tested for organic matter and pH. The discharge to sewer (SW3) is through an oil interceptor. All other waste and process water is discharged to sewer.

11.4.45 No effluent is discharged from the Dublin Airport Site apart from domestic effluent. There are no Section 4 discharges to water within the site boundary[44].

[40] WFD Cycle 3. Catchment Liffey and Dublin Bay. Sub-catchment Mayne_SC_010. Available online: https://catchments.ie/wp-content/files/catchmentassessments/09%20Liffey%20and%20Dublin%20Bay%20Catchment%20Summary%20WFD%20Cycle%203.pdf, Accessed July 2026
[41] Granted under the Local Government (Water Pollution) Act 1977, as amended in 1990.
[42] https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=P0480-02 – Accessed 20/11/2023.
[43] https://gis.epa.ie/EPAMaps/Water _ Accessed 06/12/2023.
[44] Licensed and licensable Section 4 discharges to water to support the characterisation of waterbodies for the 2nd Cycle of River Basin Management Planning. These sites were collected by RPS, upon appointment by EPA in October 2015. This dataset takes in account, among other datasets, the Section 4s dataset developed in 2005 as Point Source Pressures for the Article 5 Characterisation and Risk Assessment Report for the Water Framework Directive 2000/60/EC; (European Communities (Water Policy) Regulations 2003 (SI 722 of 2003)).

Designated sites with surface water dependent habitats or species

11.4.46 There are three designated sites downstream of the Dublin Airport Site. More details on these designated sites and others outside the study area are included in Chapter 12: Biodiversity, and in the Natura Impact Statement (Appendix 12-1, EIAR Volume 4).

11.4.47 The Malahide Estuary SPA (site code 4025) and SAC (site code 205) which is located approximately 4.2km north-east of the northern extent of Dublin Airport receives flows from the Ward River. The Malahide Estuary is approximately 8km north-east downstream of the airport boundary. The Malahide Estuary SPA and SAC encompass the estuary, saltmarsh habitats and shallow subtidal areas at the mouth of the estuary. Following the construction of a railway viaduct in the 19th Century, the estuary became lagoonal in character and is only partly tidal (see Chapter 12: Biodiversity for more information).

11.4.48 The Cuckoo Steam (via the Mayne River) and the Sluice River discharge to the Baldoyle Estuary SPA and SAC (Site Code 000199) which is located approximately 5.6km east-south-east from the airport, and approximately 6.5km downstream of the airport boundary. The Mayne River flows into the centre of Baldoyle Estuary at Mayne Bridge while the Sluice River discharges to the head of the estuary at Portmarnock Bridge. The aquatic habitat for which the SAC is designated is Annex 1 Habitat 1140 (mudflats and sandflats not covered by seawater at low tide, see Chapter 12: Biodiversity for more information).

11.4.49 Santry River runs through the North Bull Island SPA (Site Code 4006) and North Dublin Bay SAC (Site Code 206) which is located approximately 7km south-east from the airport. The River Santry flows east and south from the west of the airport through Dublin suburbs to discharge into the estuary or saltmarsh area behind North Bull Island. The designated site encompasses all of the inner part of North Dublin Bay, including North Bull Island and the salt marshes behind. The SPA is of international importance for waterfowl. The aquatic habitat for which the SAC is designated is Annex 1 Habitat 1140 (mudflats and sandflats not covered by seawater at low tide), 1310 Salicornia Mud and salt meadows (1330, 1410) (see Chapter 12: Biodiversity for more information).

11.4.50 According to the EPA map viewer, there are no designated areas (SACs, SPAs and NHAs), located within a 1km radius of the Dublin Airport Site. There is one proposed NHA 1.3km from the site. Feltrim Hill proposed NHA (pNHA) (Site Code 1208) is a site of geological educational importance; it does not include water dependent processes and therefore is not considered a surface water dependent habitat and is scoped out of this assessment.

Hydrogeology

11.4.51 In accordance with the approach set out in the TII Guidelines and IGI guidance identified in Section 11.2, the baseline condition of the groundwater environment has been characterised to establish the hydrogeological conditions, pathways and receptors relevant to the assessment. This includes:

- Aquifers, and associated water quality, levels and flows
- WFD groundwater bodies
- Groundwater abstraction / monitoring points / discharges
- Karst landforms and traced underground connections
- Groundwater dependent terrestrial ecosystems (GWDTEs)
- Areas of groundwater flood risk

Aquifers and groundwater conditions

Geology

11.4.52 The baseline superficial deposits and bedrock geology at Dublin Airport are detailed in Chapter 10: Land and Soils. A summary of the mapped geology, aquifer classifications, groundwater vulnerability and subsoil permeability beneath the Dublin Airport Site is provided below (GSI, 2023)[45] (see Figure 10-4 and 11-5 (EIAR Volume 3)):

- The Dublin Airport Site is mostly underlain by made ground associated with the airport facilities, with the exception of Sector H and J which are greenfield sites. These are underlain by a mixture of poor and well drained mineral soil derived from glacial till
- The superficial deposits beneath the majority of the Dublin Airport Site comprise of glacial till (diamicton or also known as boulder clay) with the exception of a few small areas where bedrock outcrop or subcrops are mapped in Sectors I, J and A
- There are four bedrock formations present across the Dublin Airport Site:
    1. The Malahide Formation, comprising argillaceous limestone and shale, is mapped across the northern and western areas of the airport. Found beneath Sectors A, B, C and J
    2. The Tober Colleen Formation, comprising calcareous shale and limestone conglomerate, is mapped across the central and south-eastern areas of the airport. Found beneath All Sectors A – K
    3. The Waulsortian Limestones, comprising massive, unbedded limestones, is mapped towards the north-east of the airport. Found in Sectors B, F and K;
    4. The Lucan Formation, comprising dark limestone and shale, is located in a small area to the south-east of the airport, found in the south-east of Sector H

11.4.53 The bedrock is folded and faulted, with anticlinal and synclinal fold axes in a north-east to south-west orientation. Most of the mapped faults are oriented in a north-north-west to south-south-east orientation with a secondary set orientated from north-east to south-west.

Site investigations

11.4.54 There have been numerous site investigations undertaken within the Dublin Airport Site, a summary of the relevant site investigations to the groundwater assessment are included below. All site investigations undertaken on the Dublin Airport Site are detailed in Chapter 10: Land and Soils.

- Two site investigations were conducted in the airfield area (Sections A, C and D) in 2018, with a third completed along the line of the Underpass project beneath Runway 16/34 in 2022
- From the 2018 site investigations, one was a relatively shallow investigation that included 27 trial pits and 17 boreholes to maximum depths of 3.0m and 6.0m below ground level (bgl), respectively. The second was a deeper investigation that included the drilling of seven boreholes, six of which extended into bedrock
- In 2022, 11 boreholes were installed within the area of the Underpass beneath Runway 16/34 Sectors I, A, and C, named BH101 to BH111. Depth to bedrock was found to range between 21.4m bgl (BH102 in the west) and 32.55m bgl (BH111 in the east), with corresponding to top of bedrock elevations ranging between 32.35m OD (BH109 in the east) and 41.25m OD (BH102 in the west). Depth to bedrock tended to increase from west to east
- Site investigation information from 2018[46] provided by daa indicates that boreholes drilled around the taxiways and Crosswind Runway (16/34), west of Piers 1, 2 and 3, encountered Bedrock at depths between 17.35m and 28.70m bgl
- The overburden was logged as stiff, slightly sandy, gravelly clay, with similar descriptions provided on logs for earlier boreholes drilled in 2018[31,47]. This is also consistent with the GSI's classification of the overburden as 'low permeability subsoil'

[45] Geological Survey of Ireland (GSI) (2023). Geological Survey Ireland Spatial Resources. Available at: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228, accessed June 2023.
[46] Ground Investigations Ireland, Additional Airfield Boreholes Ground Investigation Report, dated 17 July 2018, reference: 7687-04-18.
[47] Ground Investigations Ireland, 244 Airfield Surveys Phase 2 Ground Investigation Report, dated: 10 January 2019, reference: 7926-07-18.

- Site investigations were undertaken in 2022 to 2023 in the area of the South Apron, this included shallow trial pits and boreholes of varying depths[48]
- Between 2022-2023, daa contracted a specialist environmental consultant to conduct a per and poly- fluoroalkylated substances monitoring programme, including surface water monitoring, groundwater monitoring and site investigations, and prepare an environmental monitoring report for the Dublin Airport site.[49] Groundwater levels were measured during this investigation in the areas of the North Runway and North Apron. This monitoring was continued through 2023- 2025, Table 11-13 below includes the data from the 2022-2025.
- Site investigation was undertaken in 2025 in Sector H for the cargo relocation. This included shallow trial pits and boreholes of varying depths. In the deeper monitoring well, in the west of Sector H, depth to groundwater readings ranged between 3.01 m and 3.16 m bgl[50].

Table 11-13 Summary of groundwater level data from PFAS environmental monitoring 2022-2025

Area	High GWL (mbgl)	Low GWL (mbgl)
North Apron (Shallow BHs)	0.60	3.30
North Apron (Deep BHs)	8.91	11.8
North Runway (All BHs)	0.00	5.08

Hydrogeology

11.4.55 Groundwater is present in the underlying limestone beneath the Dublin Airport Site, however, there is no mapped gravel aquifer underlying the airport. The overburden was logged as stiff, slightly sandy, gravelly clay. This is consistent with the GSI's classification of low permeability subsoil.

11.4.56 Groundwater vulnerability is designated by the GSI as *Low* to *Rock at or near surface* across the Dublin Airport Site. Table 11-14 below details the groundwater vulnerability of each sector. The higher risk areas are where the superficial deposits are thinner or bedrock outcrops / subcrops in the northern half of the Dublin Airport Site.

Table 11-14 Groundwater Vulnerability per Sector

Sector	Groundwater Vulnerability	Bedrock aquifer
A	Low – rock at or near surface. Most of the area is in Low vulnerability. A section of the North Runway (10L/28R) is designated as rock at or near surface	Locally Important Aquifer, Poor Bedrock Aquifer in southeast corner of sector
B	Moderate – High. south edge of Sector B is within high vulnerability.	Locally Important Aquifer
C	Moderate – High. High vulnerability on the east of Sector C	Locally Important Aquifer in north of sector, Poor Bedrock Aquifer in south
D	Low – Extreme Low vulnerability seen in the south-west of Sector D, high vulnerability in the Northeast	Poor Bedrock Aquifer
E	Low – Medium. Most of Sector E is low vulnerability with very small section in north-west high vulnerability	Poor Bedrock Aquifer
F	Low – rock at or near surface. Low vulnerability in east of Sector F, increasing to the north-west	Poor Bedrock Aquifer, Northwest corner of sector Locally Important Aquifer
G	Low	Poor Bedrock Aquifer
H	Low	Locally Important Aquifer, Poor Bedrock Aquifer of the Lucian Formation in south-east of sector H.

[48] Causeway Geotech, NASAH South Apron, date May 2023, Report reference: D18362-01-CWG-SAH-XX-XXX-RP-X-XXXX-0001-Rev2-S1
[49] Dublin Airport 2021 - 2023 Environmental Monitoring Report, Fehily Timoney, 2024 https://www.dublinairport.com/docs/default-source/sustainability-reports/2021-2023-environmental-monitoring-report.pdf?sfvrsn=36299b4d
[50] Causeway Geotech (2025), DAA Cargo relocation Ground Investigation Report, report reference: 25-0509

Sector	Groundwater Vulnerability	Bedrock aquifer
I	Low – Extreme. Low vulnerability in most of Sector I, increases to extreme in the north-east corner of the sector	Locally Important Aquifer
J	Low – rock at or near surface. Lower vulnerability seen in the south and west of the sector, increasing to rock at or near surface in the north-east of the sector	Locally Important Aquifer
K	High	Locally Important Aquifer in northern half of sector K, Poor Bedrock Aquifer in south of sector K.

11.4.57 In Ireland, aquifers are divided into three categories by the GSI according to their productivity as follows:

- Regionally Important Aquifer: An aquifer capable of supplying regionally important abstractions (e.g. large public water supplies) or excellent yields (>400 m^3/d). This group is subdivided into the following types: (Rk) Regionally Important Karstified Bedrock Aquifer, (Rf) Regionally Important Fissured Bedrock Aquifer, (Rg) Regionally Important Sand/Gravel Aquifer. Regionally important karstified aquifers may be further subdivided based on whether groundwater flows mainly through conduits (Rkc) or more diffusely through solutionally-enlarged fissures (Rkd)
- Locally Important Aquifer: An aquifer capable of supplying locally important abstractions (e.g. smaller public water supplies, group schemes), or good yields (100-400 m^3/d). This group is subdivided into the following types: (Lm) Locally Important Bedrock Aquifer - Generally Moderately Productive, (Ll) Locally Important Bedrock Aquifer - Moderately Productive only in Local Zones, (Lk) Locally Important Karstified Bedrock Aquifer, (Lg) Locally Important Sand/Gravel Aquifer
- Poor Aquifer: An aquifer capable of supplying small abstractions (e.g. domestic supplies, small group schemes), or moderate to low yields (<100 m^3/d). This group is subdivided into the following types: (Pl) Poor Bedrock Aquifer - Generally Unproductive except in Local Zones, (Pu) Poor Bedrock Aquifer - Generally Unproductive

11.4.58 The bedrock aquifer beneath the most northwestern area of the airport and surrounding area is classified as a Locally Important (Ll) Aquifer. Towards the south-eastern area of the airport, the area is classified as a Poor Aquifer (Pl), this area corresponds to parts of the Tober Colleen Formation.

11.4.59 No gravel aquifers are mapped beneath the footprint of the airport or within a 1km radius.

11.4.60 There are no mapped public supply or group scheme Source Protection Areas mapped within a 2km radius of the Dublin Airport Site. Additionally, the nearest mapped source protection zone is located approximately 11km west of the airport at Dunboyne, County Meath.

11.4.61 According to the information on GSI online database, groundwater recharge is mapped as between 62mm/yr and 75mm/yr and characterised as ‘Made ground’.

11.4.62 Two superficial boreholes were tested within the area of the Underpass project beneath Runway 16/34 in the Dublin Airport Site; named BH105 to BH107 during April and May 2022. The pre-test groundwater level was noted between 4.46m bgl and 6.32m bgl for BH105 and BH107 respectively. Additionally, the testing undertaken confirmed the limited productivity of the superficial aquifer.

11.4.63 Regionally, it is anticipated that the groundwater flow direction within the bedrock aquifer is to the east or north-east towards the coast. However, local variations in groundwater flow direction may occur where shallow groundwater is in hydraulic continuity with surface water streams.

11.4.64 The direction of shallow groundwater flow in the superficial deposits may vary depending on composition, local permeability differences and the proximity to surface watercourses. It is expected that shallow groundwater discharge (baseflow) to surface watercourses will only occur where they are in hydraulic continuity. However, there is no available data to determine the degree of hydraulic continuity.

11.4.65 The nearest surface water body to the Dublin Airport Site is the culverted Cuckoo Stream which flows in a south-eastern direction across the Dublin Airport Site. It is considered that hydraulic connectivity with shallow groundwater in the superficial deposits and Cuckoo Stream is negligible in proximity to the Proposed Order due the culverted nature of the Stream.

Groundwater quality

11.4.66 There is an area of known legacy contamination in Sector B from The Former Wheel and Brake Workshop within the groundwater in the superficial deposits, and at north-east area of Hangar 1 in both Superficial and bedrock groundwater. This site is licensed under EPA Licence P0480-02 with routine groundwater monitoring occurring as well as one groundwater monitoring round in 2023 to update the conceptual site model (CSM) (AECOM, 2023). The update to the CSM report concludes that Chlorinated hydrocarbon contamination (CHC) at the Former Wheel and Brake Workshop in the shallow groundwater is localised around one borehole. At the north-eastern area of Hanger 1, a CHC plume is also present but shrinking in size, there were some elevated Total Petroleum Hydrocarbons (TPH) found, widespread detection of Perfluoroalkyl chemicals (PFAS) and elevated Arsenic, manganese and Nickel.

11.4.67 A groundwater monitoring program is in place, comprising of annual groundwater quality and level data at the Castlemoate House site which is located directly north of the Dublin Airport Site. This is in place to monitor a historical landfill site; more details are included in Chapter 10: Land & Soils.

11.4.68 Monitoring reports have been provided for Groundwater quality and levels from boreholes in the vicinity of Hangars 1 to 6 on the Dublin Airport Site during 2024 and Q1, Q2 2025. This monitoring is in relation to the EPA Licence P0480-02. More details are included in Chapter 10: Land & Soils.

PFAS

11.4.69 Between 2021-2023, daa contracted a specialist environmental consultant to conduct a per and poly-fluoroalkylated substances monitoring programme, including surface water monitoring, groundwater monitoring and site investigations, and prepare an environmental monitoring report for the Dublin Airport Site.

11.4.70 This investigation found PFAS contamination in the soil and groundwater in the areas of Sector B and a site beneath the North Runway (Sector A), which was once a fire training area. This site is close to sector J. Elevated PFAS was found in all surface water bodies sampled across the site.

11.4.71 Groundwater samples were collected from the North Apron, North Runway and Castlemoate House; along with samples also collected from the Gardener's Well and an off-site private reservoir north of the North Runway. PFAS was detected in several samples across the various locations and monitoring rounds.[51]

11.4.72 Soil samples collected in 2025 from within Sector H were also analysed for PFAS but without any detections.

11.4.73 Further details concerning PFAS are provided in Chapter 10: Land & Soils.

WFD Groundwater bodies

11.4.74 There are three WFD groundwater bodies (GWB) beneath the Dublin Airport Site. The majority of the site is within Dublin GWB (IE_EA_G_008), Swords GWB (IE_EA_G_011) covers the north- west of the Dublin Airport Site, including some of sector's A, J, and B. The Industrial Facility (P0480-02) (IE_EA_G 086) is beneath the north-east of the Dublin Airport Site including the far north-east of Sector A, east of Sector B, north of Sector G, most of Sector F and Sector K. Table 11-15 details the status of the WFD groundwater bodies.

Table 11-15 WFD Groundwater Bodies Status

GWB name	Overall Status (2019-2024)	Chemical Status (2019-2024)	Quantitative Status (2019-2024)	WFD 3rd Cycle of risk classification
Dublin GWB (IE_EA_G_008)	Good	Good	Good	Review
Swords GWB (IE_EA_G_011)	Good	Good	Good	Not at risk
The Industrial Facility (P0480-02) (IE_EA_G 086)	Good	Good	Good	At risk

[51] Dublin Airport 2021 - 2023 Environmental Monitoring Report, Fehily Timoney 2024

Groundwater abstraction/ monitoring points / discharges

11.4.75 There is one borehole (borehole ID 2923NEW034) mapped by the GSI within the airport boundary, located at the airport business park to the east of the airport. The borehole is reported to have been drilled in 1991 and is for industrial use; the borehole has a good yield (300 cubic metres per day (m^3/d)). No borehole log is available to confirm the depth and details for this borehole. Additionally, the current condition and operational status are not known.

11.4.76 All other wells / springs identified are located to the south and west of the Dublin Airport Site. Table 11-16 summarises groundwater abstraction wells or springs on the GSI database located within a 1km radius of the airport boundary.

11.4.77 The airport's water supply (for all purposes) is solely provided by mains water.

Table 11-16 Groundwater Abstraction Wells or Springs

GSI Well Name	Well Type	Year Drilled	Source Use	GSI Yield Class	Approximate Distance from Dublin Airport Site (km)
2923NEW034	Borehole	1991	Industrial	Good	0.30
2923NEW036	Borehole	1988	Industrial	Moderate, 87m^3/d	1.00
2923NEW037	Borehole	1988	Industrial	Not recorded	0.30
2923NEW015	Borehole	19th Century (C)	Industrial	Good, 130m^3/d	0.40
2923NEW061	Borehole	1988	Industrial	Moderate, 87m^3/d	0.50
2923NEW062	Borehole	1988	Industrial	Good, 200m^3/d	0.50
2923NEW016	Borehole	19th C	Domestic	Good, 109m^3/d	0.50
2923NEW035	Borehole	1984	Unknown	Moderate, 48.5m^3/d	0.55
2923NEW017	Borehole	19th C	-	Good, 164m^3/d	0.65
2923NEW023	Spring	Not applicable	Unknown	Low Spring	0.80
2923NEW024	Spring	Not applicable	Unknown	Low Spring	0.70

Karst Landforms

11.4.78 There are no karst features mapped within the Dublin Airport Site or within 1km of the Site (GSI, 2023). The nearest karst feature is 3km to the east of the airport, this being a spring named St. Doolagh Well.

Groundwater dependent terrestrial ecosystems (GWDTE)

11.4.79 There are three designated sites downstream of the Dublin Airport Site.

11.4.80 The Malahide Estuary SPA and SAC (Site Code 205) is located approximately 4km north-east of northern extent of Dublin Airport and receives flows from the Ward River. The qualifying interests listed for the Malahide SPA / SAC do not include groundwater dependent habitats and therefore is not considered to be a GWDTE and has been scoped out of the assessment.

11.4.81 The Cuckoo Steam (via the Mayne River) and the Sluice River discharge to the Baldoyle Estuary SPA and SAC (Site Code 199) which is located approximately 5.6km east-south-east from the airport. The qualifying interests listed for the Baldoyle Estuary SPA / SAC do not include groundwater dependent habitats and therefore is not considered to be a GWDTE and has been scoped out of the assessment.

11.4.82 Santry River runs through the North Bull Island SPA (Site Code 4006) and North Dublin Bay SAC (Site Code 206) which is located approximately 7km south-east from the airport. The site qualifying interests are classified as GWDTE as the site is of international importance for waterfowl and the aquatic habitat for which the SAC is designated is Annex 1 Habitat 1140 (mudflats and sandflats not covered by seawater at low tide), 1310 Salicornia Mud and salt meadows (1330, 1410) and Humid due slacks [2190]. This is considered to be a GWDTE and has been included in this assessment.

11.4.83 According to the EPA map viewer, there are no designated areas (SACs, SPAs and NHAs), located within a 1km radius of the Dublin Airport Site. There is one proposed NHA 1.3km from the proposed site.

Feltrim Hill pNHA (Site Code 1208) is not considered a groundwater dependent habitat and therefore is scoped out of this assessment.

Groundwater flood risk

11.4.84 According to the GSI's Groundwater Flooding Data Viewer, there are no areas of historic groundwater flooding within the study area. The site is predominantly underlain by low-permeability subsoils, and no karst features have been mapped within the Dublin Airport Site or within 1 km of the Site. On the basis of the available groundwater flooding records and geological conditions, the risk of groundwater flooding is considered to be low.

Surface water flood risk

11.4.85 The Dublin Airport Site lies within the catchments of the Mayne, Sluice, Santry and Ward Rivers, as described above. The site is situated on relatively elevated ground, generally between approximately 60 m and 80 m OD, with ground levels falling towards the north-east. Given the site's inland location and elevation, the risk of coastal or tidal flooding is considered negligible. Surface water runoff is managed through an established drainage network comprising drains, pipelines and culverts, which convey runoff towards the receiving watercourses. While localised surface water flooding may occur during periods of intense rainfall, the existing drainage infrastructure provides for the management of runoff across the airport site. Summary of Baseline Conditions

11.4.86 Table 11-17 provides a summary of the baseline conditions of the water environment and the sensitivity of each surface water and groundwater receptor identified.

Table 11-17 Summary of Baseline Conditions and Attribute Sensitivity

Attribute type	Attribute name	Location	Baseline condition	Data source	Attribute importance/ sensitivity
Surface water/ hydrology					
Surface watercourses (and quality)	Mayne River sub basin (includes Cuckoo Stream)	Within Dublin Airport Site boundary Sectors: A, D, E, and H	Classified as Poor WFD status and At Risk (2021, most recent) Quality Class C (Biotic Index Q2- 3) Hydromorphology status listed as unknown	EPA Map Viewer	Medium
	Sluice River sub basin (Includes Forrest Little Stream, Kealy Stream, and Wad Stream)	Within Dublin Airport Site boundary. Sectors A, F and G	Classified as poor WFD status and Review (2021, most recent) Quality Class C (Biotic Index Q2- 3) Hydromorphology status listed as unknown	EPA Map Viewer	Medium
	Santry River sub basin	The waterbody is outside Dublin Airport Site boundary; the west of the South Runway (10R/28L) (Sector A) drains into the waterbody	Classified as poor WFD status and At Risk (2021, most recent) Quality Class C (Biotic Index Q2- 3) Hydromorphology status listed as unknown	EPA Map Viewer	Medium
	Ward River sub basin	Within Dublin Airport Site boundary (Sector A), although the North Runway (10L/28R) itself does not drain to the Ward River	Classified as moderate WFD status and At Risk (2021, most recent) Quality Class B (Biotic Index Q3-4) Hydromorphology status listed as unknown	EPA Map Viewer	High
SWDEs/ Designated sites	Malahide Estuary SPA and SAC	Approximately 4km north-east of northern extent of Dublin Airport and receives flows from the Ward River	Designated status Contains wetland habitats as a qualifying interest and in a favourable conservation condition	NPWS Map Viewer	Very High
	Baldoyle Estuary SPA and SAC	Approximately 5.6km east-south-east from the airport, receiving flow from the Mayne River			Very High
	North Bull Island SPA and North Dublin Bay SAC	Approximately 7km south-east from the airport, receiving flows from the Santry River			Very High
Groundwater/ hydrogeology					
Superficial deposits	Industrial Made Ground	Within Dublin Airport Site boundary, all sectors	Not designated as an aquifer by the GSI, considered likely to act as pathway to bedrock aquifer	GSI Map Viewer	Low to Negligible (likely direct hydrogeological connection between Dublin Airport Site and nearby designated sites)

Attribute type	Attribute name	Location	Baseline condition	Data source	Attribute importance/ sensitivity
	Glacial Till (diamicton/boulder clay)	Within Dublin Airport Site boundary all sectors	Not designated as an aquifer by the GSI, considered likely to act as pathway to bedrock aquifer	GSI Map Viewer	Low to Negligible (likely direct hydrogeological connection between Dublin Airport Site and nearby designated sites)
Bedrock	Malahide Formation	Underlying Dublin Airport Site, Sectors A, B, C, and J and surrounding area	Locally important aquifer (Ll)	GSI Map Viewer	Medium (likely direct hydrogeological connection between Dublin Airport Site and nearby designated sites)
	Waulsortian Limestones	Underlying Dublin Airport Site, Sectors B, F and K and surrounding area	Ll	GSI Map Viewer	Medium (likely direct hydrogeological connection between Dublin Airport Site and nearby designated sites)
	Lucan Formation	Underlying Dublin Airport Site Sector H and surrounding area	Ll	GSI Map Viewer	Medium (likely direct hydrogeological connection between Dublin Airport Site and nearby designated sites)
	Tober Colleen Formation	Underlying Dublin Airport Site, Sectors A-K and surrounding area	Poor Aquifer (Pl)	GSI Map Viewer	Low to Negligible (likely direct hydrogeological connection between Dublin Airport Site and nearby designated sites)
Groundwater abstractions/ supplies	Groundwater abstraction wells	Within the airport boundary	There is one historical borehole within the airport boundary, and further historical boreholes located to west and south of the airport. They are mostly for industrial use except one is for domestic use, the current conditions and operational status of all of these is unknown.	GSI Map Viewer	Low to Negligible
WFD groundwater bodies (GWBs)	Dublin GWB (IE_EA_G_008)	Underlying Dublin Airport Site all sectors and surrounding area	Good WFD status and review for 3rd cycle risk classification, provides support to GWDTE protected by EU legislation.	GSI Map Viewer	Very High
	Swords GWB (IE_EA_G_011	Underlying Dublin Airport Site, Sectors A, J, and B and surrounding area	Good WFD status and not at risk of achieving good in 3rd cycle, provides support to GWDTE protected by EU legislation.	GSI Map Viewer	Very High

Attribute type	Attribute name	Location	Baseline condition	Data source	Attribute importance/ sensitivity
	The Industrial Facility (P0480-02) (IE_EA_G 086)	Underlying Dublin Airport Site, Sectors A, B, F, G, and K and surrounding area	Good WFD status and at risk for the 3rd cycle risk classification, does not provide support to GWDTE	GSI Map Viewer	Low to negligible
GWDTEs	North Bull Island SPA (Site Code 4006) and North Dublin Bay SAC (Site Code 206)	East of the Dublin Airport Site	Designated status of EU and international importance. Contains Humid dune slacks as a qualifying interest and in a favourable conservation condition.	NPWS Map Viewer	Very High

11.4.87 The water-quality information used to characterise the Current Receiving Environment includes monitoring undertaken both before and after 2023. The longer-term monitoring record indicates that the principal receiving waters were already generally of Poor or Bad ecological status before 2023 and does not indicate a material change in receptor sensitivity arising from airport growth since that time. The use of more recent monitoring data therefore does not reduce the sensitivity assigned to the receiving water environment or otherwise understate the effects of the Proposed Order. In addition, the principal throughput-related water-quality effect, arising from increased de-icer use associated with higher aircraft activity, is assessed separately through dedicated modelling of the 2029 Permitted Operation and 2029 Proposed Operation.

Current Design and Management

Existing Drainage, Discharges and Monitoring

11.4.88 Dublin Airport has an existing stormwater drainage network that conveys surface water runoff via heavy duty slot drains, fluted channels/ carrier drains and gullies to an underground pipe network and ultimately local watercourses. Kealy's Stream drains the majority of the Sector B (Hangars and the North Apron), most of Sector F (GTC) and Sector G (Car hire and long-term Carpark). A small portion of the North runway (Sector A) is within the Ward Sub-Basin and in this area all hardstanding is drained, collected and diverted to the Kealy Stream. A portion of the South Runway (10R/28L) (Sector A) drains to the Mayne River sub-catchment, whilst another portion drains to the Santry River. The surface water network provides attenuation to most hardstanding and developed areas, with the exception of the Mayne and Santry sub-catchments, as well as collecting flows from the greenfield area between the North Runway (10L/28R) and South Runway (10R/28L), and conveying this via the airfield trunk culvert into the Cuckoo Stream.

11.4.89 The Airfield Trunk Culvert commences to the east of the R108 and traverses the airport campus in a south-easterly direction towards the Cuckoo channel adjacent to the South Apron. Both clean and contaminated flows are mixed in the Airfield Trunk Culvert creating higher volumes of contaminated runoff.

11.4.90 Pollution retention facilities are provided for the runways, the aprons and the taxiways to collect de-icing chemicals which are mobilised to the surface water drainage network after rainfall events. Surface water runoff from other hardstanding areas, including roads and car-parking, does not have any formal treatment prior to downstream discharge. The pollution control system diverts contaminated flow to sewers where it is treated at an offsite public facility. Other areas discharge directly via oil interceptors. The paved area drainage network is sealed to protect groundwater from contamination. Operational discharges at the airport are controlled where contaminated under a trade effluent licence to the UE owned sewer or in the case of clean water discharge to surface water this is controlled under planning conditions for the airport.

11.4.91 For more information on the Drainage, discharges and monitoring refer to the Drainage Report (EIAR Volume 4 Appendix 11-1).

Attenuation

11.4.92 Attenuation facilities are provided within parts of the Dublin Airport Site to manage surface water runoff and control discharge rates during rainfall events. The design standards and discharge arrangements vary across the existing drainage catchments. Underground attenuation facilities are present along the Cuckoo Stream downstream of the Cuckoo culvert, providing attenuation for flows from the Cuckoo Stream sub-catchment. Additional local attenuation facilities serve various apron areas and other stormwater catchments. Further details of the existing attenuation arrangements, including their design capacities and discharge rates, are provided in the Drainage Report (EIAR Volume 4, Appendix 11-1).

11.4.93 There are areas of the Mayne River Catchment and Santry River catchment within the airport complex which are currently unattenuated, despite draining part of the South Runway (10R/28L), which impacts on the rate and quality of the surface water discharge to the receiving watercourse. There are no aircraft stands in this area.

Pollution control

11.4.94 The pollution prevention control mitigation measures will be unchanged and as described within the Drainage Report (EIAR Volume 4 Appendix 11-1) include the following:

- The pollution control system operates with a runoff management approach, in accordance with SuDS principles.

- Source control measures for the recovery of de-icing and anti-icing chemicals, including the use of Glycol Recovery Vehicles (GRVs), where available and authorised for operation.
- Site Control; oil interceptors, which are in position throughout the site to remove hydrocarbons which may be present in the surface water runoff.

11.4.95 The existing drainage strategy includes two Pollution Control Facilities (PCFs) serving the Cuckoo Stream and Forest Little Stream drainage catchments. These facilities identify and capture contaminated runoff through the existing monitoring and pollution control network, storing it in tanks before controlled discharge to the Uisce Éireann public sewer network in accordance with the applicable Trade Effluent Discharge Licence (TEDL). The PCFs can also be operated to segregate contaminated runoff in the event of an emergency spill. Clean surface water runoff is discharged separately to receiving watercourses through the existing drainage network, as described in the Drainage Report (EIAR Volume 4, Appendix 11-1).

11.5 Future Receiving Environment

11.5.1 The Proposed Order does not itself involve physical development and the Dublin Airport Site will continue to operate generally as described in Chapter 2: Site and Surroundings. However, a number of changes to the existing drainage infrastructure and pollution control measures are in progress or planned as part of the ongoing operation and management of the airport. These changes are relevant to the Future Receiving Environment and have therefore been taken into account in establishing the baseline conditions for the Principal Assessment Year, 2029.

11.5.2 The Dublin Airport's Airfield Drainage Project (ADP) is the long-term measure by which pollution control will be implemented at Dublin Airport. It is expected to be operational by 2031.

11.5.3 In the interim, a range of operational measures are being progressed which will improve the pollution control system performance, thereby progressively reducing risk of impacts to receiving waters. These ongoing measures comprised improvements to the existing pollution networks and control systems, upgrades to operating control and discharge mechanisms and increased numbers of GRVs.

11.5.4 The interim drainage and pollution control measures described in Paragraph 11.5.3 are being commissioned and will be in place when the Proposed Order comes into effect. Their implementation has therefore been assumed in defining the Future Receiving Environment for the purposes of the Principal Assessment. The assessment does not rely on the full implementation of the separately permitted Airfield Drainage Project, which is not expected to be operational until 2031. The interim measures are described and assessed in the standalone Water Framework Directive (WFD) Compliance Assessment provided in EIAR Volume 4, Appendix 11-2, while the De-icer Pollution Modelling Report demonstrates their effect on the receiving water environment.

11.5.5 Wider changes to the water environment may also occur between the Current Receiving Environment and 2029 as a result of factors including legislative and regulatory requirements, climate change and population growth. The nature and extent of these changes cannot be predicted with sufficient certainty for inclusion in the Future Receiving Environment. Accordingly, except for known or reasonably foreseeable changes such as the drainage and pollution control measures described above, the Current Receiving Environment is assumed to remain broadly representative of conditions in 2029.

11.6 Assessment of Likely Significant Effects

11.6.1 The Proposed Order would amend the existing passenger throughput cap at Dublin Airport from 32 mppa to 40 mppa. It is an operational proposal and does not include new airport infrastructure, demolition, construction or enabling works, or other physical alterations to the airport estate. Accordingly, there is no construction phase associated with the Proposed Order and the assessment considers the likely significant environmental effects arising from the operational changes associated with increased passenger throughput and aircraft movements using existing and permitted airport infrastructure. Further information on the Proposed Order is provided in Chapter 4: Proposed Order. The assessment applies the Source–Pathway–Receptor methodology described in Paragraph 11.3.7.

11.6.2 This section presents the findings of the Principal Assessment, which compares the 2029 Permitted Operation with the 2029 Proposed Operation. Both scenarios are assessed against the Future Receiving Environment described in Section 11.5, including the drainage and pollution control measures assumed to be in place by 2029.

11.6.3 Table 11-18 presents the screening of water environment receptors for potential effects arising from the Proposed Order. Receptors are screened in where a complete Source–Pathway–Receptor linkage is identified and are assessed further below. Where no complete linkage is present for a receptor within a particular sector, no effect could arise through that pathway, and the receptor is screened out from further assessment for that sector. As described in Section 11.4, the existing flood risk environment has been considered, including potential flooding from surface water and groundwater sources. The Proposed Order does not involve physical development, changes to impermeable areas, drainage catchments, surface water runoff rates, watercourses or groundwater flow pathways. Consequently, it would not alter existing flood risk within the Dublin Airport Site or increase flood risk elsewhere, and changes to flood risk are screened out from further assessment (Table 11-18). The following effects have therefore been screened out:

- Changes to flood risk
- Changes to surface water flows
- Changes to groundwater level and flow

Table 11-18: Screening of Receptors Likely to be Impacted by the Proposed Order

Receptor	Receptor screened in or out	Justification
Mayne River sub basin (includes Cuckoo Stream)	In	The footprint of the Dublin Airport Site lies within the Cuckoo Stream and Mayne River Catchment. Drainage network will discharge into this sub basin potential for contamination from Dublin Airport Site.
Sluice River sub basin (Includes Forrest Little stream, Kealy Stream and Wad Stream)	In	The footprint of the Dublin Airport Site lies within the Sluice River catchment. Drainage network will discharge into this sub basin potential for contamination from Dublin Airport Site.
Santry River sub basin	In	The footprint of the Dublin Airport Site lies within the Santry River catchment. Drainage network will discharge into this sub basin potential for contamination from Dublin Airport Site.
Ward River sub basin	Out	The footprint of the Dublin Airport Site lies within the Ward River catchment, however surface runoff within the Dublin Airport Site is directed to the Sluice River sub basin, therefore no potential impacts are expected.
SWDTE Malahide Estuary SPA and SAC	Out	Given the distance between the Dublin Airport Site and these designated biodiversity sites, any pollutants would likely be diluted down upon reaching either site. These sites have therefore been screened out of further assessment but have also been assessed within the Chapter 12: Biodiversity.
SWDTE Baldoyle Estuary SPA and SAC	Out	Given the distance between the Dublin Airport Site and these designated biodiversity sites, any pollutants would likely be diluted down upon reaching either site. These sites have therefore been screened out of further assessment but have also been assessed within the Chapter 12: Biodiversity.
SWDTE North Bull Island SPA and North Dublin Bay SAC	Out	Given the distance between the Dublin Airport Site and these designated biodiversity sites, any pollutants would likely be diluted down upon reaching either site. These sites have therefore been screened out of further assessment but have also been assessed within the Chapter 12: Biodiversity.
Superficial deposits	In	Superficial deposits are screened in for indirect impact from contamination of shallow groundwater by infiltration of contaminated runoff or connection with contaminated surface water.
Bedrock	Out	There will be no proposed construction or activities relevant to geology and groundwater receptors under the Dublin Airport Site.
Groundwater abstraction wells	Out	There will be no proposed construction or activities relevant to geology and groundwater receptors under the Dublin Airport Site.
Dublin GWB (IE_EA_G_008)	Out	There will be no proposed construction or activities relevant to geology and groundwater receptors under the Dublin Airport Site.
Swords GWB (IE_EA_G_011	Out	There will be no proposed construction or activities relevant to geology and groundwater receptors under the Dublin Airport Site.

Receptor	Receptor screened in or out	Justification
The Industrial Facility (P0480-02) (IE_EA_G 086)	Out	There will be no proposed construction or activities relevant to geology and groundwater receptors under the Dublin Airport Site.
GWDTE North Bull Island SPA (Site Code 4006) and North Dublin Bay SAC (Site Code 206)	Out	Given the distance between the Dublin Airport Site and these designated biodiversity sites, any pollutants would likely be diluted down upon reaching either site.

Potential effects

11.6.4 This section provides the assessment of the magnitude of any environmental effects and their significance during the operation of the airport under the Proposed Order.

11.6.5 The Proposed Order will enable / allow for an increase in the number of flights and therefore passenger throughput. The current airport infrastructure has capacity to allow for 40mppa. Therefore, there will be no physical expansion of the airport or changes to the drainage network, runoff characteristics or pollution control infrastructure. Dublin Airport will continue to operate much as it does at present, served by two terminals and two runways.

11.6.6 Given this, the potential impacts due to increased operational activity at the airport associated with the Proposed Order are:

- Pollution of waterbodies by increased mass load of de-icing chemicals in surface run off
- Increased chance of accidental pollution of water bodies by spillages associated with increased refuelling activities

Pollution of Surface Water

11.6.7 The Proposed Order would not result in any change in impermeable area and would therefore not alter the volume or rate of surface water runoff generated within the catchment. However, the increase in aircraft movements and associated aircraft activity facilitated by the Proposed Order has the potential to increase the overall mass of de-icer chemicals applied during periods when de-icing is required, resulting in an increased de-icer load entering the surface water drainage system.

11.6.8 The potential increase in de-icer loading has been assessed in the De-icer Pollution Modelling Report (Gresham Smith, 2026), taking account of the drainage and pollution control measures forming part of the Future Receiving Environment, as described in Section 11.5. The assessment considers the increased operational activity associated with the Proposed Order and the capacity of the drainage system to manage the resulting de-icer loading.

11.6.9 The airport drainage system incorporates pollution monitoring and control infrastructure to identify and manage contaminated surface water runoff. As described in Section 11.4 and the Drainage Report (EIAR Volume 4, Appendix 11-1), contaminated runoff can be intercepted, segregated and directed to pollution control facilities, with provision for storage and controlled discharge to the public sewer. The interim drainage improvements described in Section 11.5, together with operational measures including increased glycol recovery, are intended to improve the management of runoff containing de-icing chemicals.

11.6.10 The de-icer pollution modelling takes account of these measures and concludes that, notwithstanding the potential increase in de-icer loading entering the drainage system associated with the Proposed Order, there would be no corresponding increase in the mass load of de-icer pollution discharged to receiving surface waters. The modelling considers the receiving drainage catchments, including the Cuckoo Stream, Forest Little River, Mayne River and Santry River. On this basis, the increased operational activity facilitated by the Proposed Order is not predicted to result in deterioration of receiving surface water quality attributable to de-icing activities.

11.6.11 Increased aircraft movements and associated airfield activity would also increase the potential for accidental releases of pollutants through events such as spillages, leaks and fires. Such events could affect receiving surface water quality where an appropriate pathway exists. The drainage and pollution control measures described in Section 11.5, together with the operational controls set out in the airport drainage plan provided in Appendix 11-1, provide for the management of this risk.

11.6.12 The separate WFD Compliance Assessment provided in Appendix 11-2 (EIAR Volume 4) concludes that the Proposed Order would not result in deterioration of the status of receiving surface water bodies. This conclusion has been taken into account in the assessment presented in this chapter.

11.6.13 On this basis, the magnitude of impact on the surface water quality of the Mayne, Sluice and Santry sub-basins is assessed as negligible. These receptors are of Medium Importance, resulting in an imperceptible effect, which is not significant.

Pollution of Groundwater

11.6.14 The Proposed Order would not result in changes to land use or the extent of impermeable surfaces within the Dublin Airport Site and would therefore not create new areas through which potentially contaminated runoff could infiltrate to groundwater. Runoff from existing impermeable surfaces is collected by the surface water drainage network and, where contaminated, is managed through the airport's pollution control systems prior to discharge.

11.6.15 As described in Section 11.5, drainage and pollution control measures are being implemented as part of the ongoing operation and management of Dublin Airport. The Proposed Order does not alter or remove daa's commitment to implement these measures, which will continue to be delivered in accordance with applicable regulatory and consenting requirements. These measures reduce the potential for contaminated runoff associated with increased airport activity to provide a pathway to groundwater.

11.6.16 On this basis, the magnitude of impact on the groundwater quality of the Superficial deposits is assessed as negligible. These receptors are of Low Importance, resulting in an imperceptible effect, which is not significant.

11.7 Mitigation and Monitoring

11.7.1 The assessment presented in Section 11.6 concludes that the Proposed Order would not result in likely significant effects on the surface water or groundwater environment when compared with the 2029 Permitted Operation (32 mppa). This conclusion takes account of the existing drainage and pollution control systems, the interim measures forming part of the Future Receiving Environment described in Section 11.5, and the findings of the De-icer Pollution Modelling Report. Although some receiving water bodies are currently classified as having Poor ecological status, the assessment does not predict any significant additional deterioration in water quality attributable to the Proposed Order.

11.7.2 Existing monitoring arrangements and pollution control measures, as described in Section 11.4 and the Drainage Report (EIAR Volume 4, Appendix 11-1), will continue to operate. These include monitoring of surface water quality and the operation of pollution control infrastructure to identify and manage contaminated runoff. In light of the assessment findings and the continuation of these existing arrangements, no additional mitigation, enhancement or monitoring measures are considered necessary specifically as a result of the Proposed Order.

11.8 Residual Effects

11.8.1 No additional mitigation, enhancement or monitoring measures are required, as no significant effects have been identified. Taking account of the drainage and pollution control measures forming part of the Future Receiving Environment, there would be no significant residual effects on the water environment as a result of the Proposed Order.

11.9 Cumulative Effects

11.9.1 Potential interactions between effects on the water environment and effects assessed within other environmental topics have been considered. In particular, interactions may arise with Chapter 10: Land and Soils, due to the relationship between soils, geology and groundwater, and Chapter 12: Biodiversity, which considers effects on water-dependent ecological receptors and designated sites. The assessment of interactions between environmental topics is presented in Chapter 20: In-combination and Cumulative Effects.

11.9.2 The potential for cumulative effects on the water environment to arise from the Proposed Order in combination with other proposed and committed plans and projects has also been assessed. The approach to the identification and assessment of cumulative schemes, and the full list of schemes

considered, is provided in Chapter 20: In-combination and Cumulative Effects. For the water environment, cumulative effects may arise where another scheme has the potential to affect the same surface water or groundwater receptor as the Proposed Order and there is sufficient spatial and temporal overlap for the effects to combine.

11.9.3 The assessment presented in this chapter identifies no significant residual effects on the water environment as a result of the Proposed Order. The potential for these residual effects to combine with effects arising from the cumulative schemes identified in Chapter 20: In-combination and Cumulative Effects has been considered, taking account of the nature, location and timing of each scheme and, where available, the conclusions of their respective environmental assessments.

11.9.4 Of particular relevance to the water environment is the Airfield Drainage Project (ADP), which was granted permission in August 2024 and comprises upgrades to the surface water management infrastructure at Dublin Airport. The ADP has the potential to affect the same surface water and groundwater receptors as the Proposed Order and has therefore been considered for cumulative effects.

11.9.5 The ADP has been subject to a separate EIA and its construction would be undertaken in accordance with the environmental management and pollution prevention measures identified through that assessment and the relevant consent requirements. Although the Proposed Order does not involve construction activities, the potential for cumulative effects has been considered in the event that construction of the ADP overlaps with the increased airport operations facilitated by the Proposed Order. The principal potential interaction would arise where construction-related runoff or accidental pollution events affect the same receiving surface water or groundwater receptors as those considered in this chapter. Taking account of the environmental controls associated with the ADP, the existing airport drainage and pollution control measures, and the negligible additional operational effects identified for the Proposed Order, no likely significant adverse cumulative effects are predicted during construction of the ADP. Once operational, the ADP would improve the collection and management of surface water runoff from the Dublin Airport Site, reducing the potential for contaminated runoff to reach receiving waters. No significant adverse cumulative effects are therefore predicted during operation of the ADP.

11.9.6 The remaining cumulative schemes identified in Chapter 20: In-combination and Cumulative Effects have also been considered in relation to their potential to affect the surface water and groundwater receptors assessed in this chapter. Taking account of the nature and magnitude of the residual effects of the Proposed Order, together with the location, nature and, where known, residual effects of the cumulative schemes, no combination of effects has been identified that would result in a significant cumulative effect on the water environment.

11.10 Indirect, Secondary and Transboundary Effects

11.10.1 Indirect and secondary effects are described in the EPA Guidelines as “effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway”. Transboundary effects are those affecting another state or jurisdiction. The zone of influence of the effects identified does not affect any other state or states. The potential for indirect and secondary environmental effects has been considered in the preparation of this EIAR chapter, and none have been identified. All effects identified in this chapter are direct effects and none have the potential to result in significant indirect or secondary effects.

11.11 Conclusions

11.11.1 The assessment has considered the likely significant effects of the Proposed Order on the surface water and groundwater environment. The Principal Assessment compares the 2029 Permitted Operation (32 mppa) with the 2029 Proposed Operation (40 mppa), taking account of the Future Receiving Environment and, in particular, the drainage and pollution control measures that will be in place by 2029. As the Proposed Order is an operational proposal and does not involve physical development, there would be no construction-related effects or changes to impermeable area and, consequently, no increase in the volume or rate of surface water runoff attributable to the Proposed Order.

11.11.2 The principal potential effect on the water environment arises from the increase in aircraft movements and associated activity facilitated by the Proposed Order. During periods requiring aircraft de-icing, this would increase the overall mass of de-icer chemicals applied and the load entering the airport drainage system. Detailed de-icer pollution modelling, taking account of the drainage and pollution control measures forming part of the Future Receiving Environment, demonstrates that the increased load can

be managed without an increase in de-icer pollution discharged to receiving surface waters. The assessment has also considered the potential for accidental pollution and effects on groundwater. Taking account of the existing drainage systems, operational controls and planned pollution control measures, no significant effects on surface water or groundwater are predicted. The conclusions of the separate WFD Compliance Assessment have also been taken into account and confirm that the Proposed Order would not result in deterioration of the status of receiving water bodies.

11.11.3 No additional mitigation, enhancement or monitoring measures are required as a result of the assessment, and no significant residual effects on the water environment are predicted. The potential for effects to interact with those identified for other environmental topics and to combine with effects from other proposed and committed developments has also been considered, with no significant adverse interaction or cumulative effects identified. Overall, the Principal Assessment concludes that the Proposed Order would not result in likely significant effects on the water environment.