Uisce Éireann

Marine environmental surveys for Dundalk WWTP upgrade

Attachment 4.6 Consistency of the Proposed Maritime Usage with the Objectives of the Marine Strategy Framework Directive

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List of Abreviations

Abbreviation	Full Form
MSFD	Marine Strategy Framework Directive
GES	Good Environmental Status
MUL	Maritime Usage Licence
MARA	Maritime Area Regulatory Authority
WFD	Water Framework Directive
ZOI	Zone of Influence
NIS	Natura Impact Statement

1. Introduction

The proposed marine environmental surveys in the Castletown Estuary and Inner Dundalk Bay will provide essential baseline environmental data to inform the design and siting of a new marine outfall associated with required improvement works to wastewater infrastructure in the region. Full details of the Proposed Maritime Usage are described in Attachment 3.1. The assessment below demonstrates how the proposed Maritime Usage is consistent with the objectives and targets of the Marine Strategy Framework Directive (MSFD) and Ireland's Marine Strategy, ensuring no risk to the achievement of Good Environmental Status (GES) within the Zone of Influence.

Before determining a MUL, MARA is required to have regard to Directive 2008/56/EC as amended by Directive (EU) 2017/845, the Marine Strategy Framework Directive, and the associated implementing national legislation, European Communities (Marine Strategy Framework) Regulations, 2011. The Marine Strategy Framework Directive establishes a framework within which Member States must take the measures necessary to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest. The objective of the Directive is to protect and prevent deterioration of the marine environment and, where practical, restore marine ecosystems. Member States must prevent and reduce inputs in the marine environment, with a view to phasing out pollution, to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea. The Directive applies to waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach of the area where a Member State has and/or exercises jurisdictional rights.

There are eleven categories by which good environmental status is measured and monitored. These are:

- D1 Biological diversity
- D2 Non-indigenous species
- D3 Population of commercial fish / shellfish
- D4 Elements of marine food webs
- D5 Eutrophication
- D6 Sea floor integrity
- D7 Alteration of hydrographical conditions
- D8 Concentration of contaminations
- D9 Contaminants in fish / seafood for human consumption

- D10 Marine Litter
- D11 Introduction of energy including underwater noise.

Ireland has developed targets and indicators with respect to measuring and monitoring these 11 descriptors, to ensure good environmental status. These are set out in Ireland's Marine Strategy Framework Directive Marine Strategy.

2. MSFD Assessment methodology

For the Zone of Influence (the area over which the proposed Maritime Usage could have had an ecological or other relevant impact), the current status of the 11 MSFD descriptors was assessed with reference to the indicators and targets set out in Ireland's Marine Strategy. The potential effects of the proposed Maritime Usage on the achievement of these targets were then evaluated for each of the 11 descriptors.

3. Zone of Influence (ZOI)

The Zone of Influence (ZoI) for the proposed marine environmental surveys encompasses three transitional waterbodies; Casteltown Estuary (IE_NB_040_0200), Ballymascanlan Estuary (IE_NB_040_0300) and Inner Dundalk Bay (IE_NB_040_0100). Under Irish MSFD implementation, transitional and coastal waters are assessed using existing WFD monitoring programmes, in line with MSFD Article 11 requirements to build on established monitoring networks. Accordingly, the ecological and chemical status of Liscannor Bay as reported under the WFD provides an important baseline for assessing the achievement of GES under relevant MSFD descriptors (See Attachment 4.5 Consistency with Objectives of the WFD for more information).

4. MSFD Status

The 2025 assessment of Ireland's Marine Strategy Framework Directive (MSFD) status indicated variable progress across the descriptors, with several achieving Good Environmental Status (GES) while others remained only partially achieved or unknown. Biodiversity (D1) and commercial fish and shellfish (D3) continued to present challenges, as biodiversity was constrained by uncertainties in marine mammal status and by the poor condition of many fish populations, while less than half of assessed commercial fish stocks attained GES. In contrast, non-indigenous species (D2), eutrophication (D5), hydrographical conditions (D7), contaminants in the environment (D8), contaminants in seafood (D9), and underwater noise (D11) had

achieved GES, reflecting effective management of these pressures. Seafloor integrity (D6) was found to be largely in good condition, with 74% of the assessed areas achieving GES, although gaps in assessment remained and 11% of the seabed did not meet the required thresholds. Marine litter (D10) represented the most prominent area of concern, as beach litter exceeded acceptable levels and knowledge gaps persisted for seafloor litter and microplastics. The status of food webs (D4) remained unknown, highlighting a significant knowledge gap. Only two MSFD descriptors were deemed relevant to the proposed Maritime Usage (D1 Biological Diversity and D6 Seafloor Integrity) which is described in Table 1 below.

Table 1 MSFD Cycle 3 status of Descriptors and relevance to Proposed Maritime Usage.

MSFD Descriptor	MSFD Status in Ireland (2025)	Relevance to Proposed Maritime Usage
D1 – Biological Diversity	GES partially achieved. Most marine bird species achieved GES. Most marine mammal GES unknown. GES Not Achieved for most fish species. Incidental bycatch remains a major issue.	Relevant — Minor impact anticipated. Proposed maritime usage is temporary, local in scale, non-polluting, and does not generate bycatch or long-term disturbance. No deterioration in ecological status or potential expected.
D2 – Non-Indigenous Species	GES achieved.	Not relevant to the proposed maritime usage. Surveys do not introduce NIS vectors, translocations, or biofouling risk pathways beyond standard, well-managed vessel operations.
D3 – Commercial Fish & Shellfish	GES partially achieved. 29 stocks achieved GES. 46 stocks not at GES. 99 stocks unknown.	Not relevant to the proposed maritime usage. Survey footprint does not overlap with a modelled ZOI for shellfish waters, involves only discrete, short-term seabed interaction, and will not constrain stock-scale status objectives or cause deterioration.
D4 – Food Webs	GES status is unknown.	Not relevant to the proposed maritime usage. No alteration to trophic interactions, productivity, or energy pathways will occur from the survey work.
D5 – Eutrophication	GES achieved.	Not relevant to the proposed maritime usage. Surveys do not introduce nutrients, emissions, or discharges that could alter water chemistry or eutrophication status.
D6 – Seafloor Integrity	74% of seafloor achieved GES. 15% not assessed or unknown. 11% not good status.	Relevant — Minor impact anticipated. 48 x 0.025 m^2 stainless-steel Van Veen grab samples along intertidal transects and 15 grab samples taken at 5 sampling stations will cause highly localised, short-term sediment disturbance. No long-term impact or deterioration of seafloor integrity expected beyond natural variability.
D7 – Hydrographical Conditions	GES achieved.	Not relevant to the proposed maritime usage. Surveys are short-term with no alteration to currents, tidal regime, or hydrographical structure.
D8 – Contaminants in Environment	GES achieved (most contaminants below thresholds).	Not relevant to the proposed maritime usage. No chemical inputs, emissions or discharges arise from the surveys. Vessels will adhere to MARPOL Annex I

		pollution-prevention best practice; no deterioration anticipated.
D9 – Contaminants in Seafood	GES achieved (levels below EU food safety standards).	Not relevant to the proposed maritime usage. No discharges or emissions from survey work; no risk to seafood chemistry status when managed under MARPOL Annex I compliance.
D10 – Marine Litter	GES not achieved (beach litter). Microplastics unassessed.	Not relevant to the proposed maritime usage. No materials are left in situ. Standard vessel waste and spillage controls ensure no contribution to marine litter pressures. Any marine litter encountered will be removed and disposed of appropriately on land.
D11 – Underwater Noise	GES achieved.	Not relevant to the proposed maritime usage. Noise generation limited to routine RIB transit only, short-term and local; no sustained noise pressure or deterioration anticipated.

5. MSFD Indicators

Forty indicators were used for the third cycle of the MSFD assessment to evaluating progress towards Good Environmental Status across all 11 MSFD descriptors. These indicators allow complex ecological processes and pressures to be measured effectively, allowing comparability across regions and reporting cycles, enabling the identification of trends, and helps distinguish between natural variability and human-induced change. Indicators also serve a practical management function, providing policymakers with clear benchmarks against which the effectiveness of measures can be judged (Table 2).

Table 2 Indicators used to assess criteria for each MSFD descriptor for the 3rd MSFD cycle.

Descriptor	Criterion	Indicator(s)
D1 Biodiversity	D1C1 Mortality from incidental bycatch	Bycatch Mortality Indicator (ACS-IE-BycatchMortality2024)
	D1C2 Population abundance	Abundance of Marine Bird Species (ACS-IE-BirdAbundance2024); Seal Abundance Indicator (ACS-IE-SealAbundance2024); Cetacean Abundance Indicator (ACS-IE-CetaceanAbundance2024); Turtle Abundance Indicator (ACS-IE-TurtleAbundance2024); Fish Abundance Indicator (ACS-IE-FishAbundance2024)
	D1C3 Population demographic characteristics	Population Demographics Indicator (ACS-IE-PopDemographics2024)
	D1C4 Distributional range	Distributional Range Indicator (ACS-IE-Distribution2024)
	D1C5 Habitat for species	Habitat Extent and Condition Indicator (ACS-IE-Habitat2024)

D2 Non-indigenous species	D2C1 Newly introduced NIS	Newly Introduced NIS Indicator (ACS-IE-NewNIS2024)
	D2C2 Established NIS	Established NIS Abundance Indicator (ACS-IE-EstablishedNIS2024)
D3 Commercial fish & shellfish	D3C1 Fishing mortality (F)	Fishing Mortality Indicator (ACS-IE-F2024)
	D3C2 Spawning Stock Biomass (SSB)	SSB Indicator (ACS-IE-SSB2024)
	D3C3 Population age/size distribution	Age/Size Distribution Indicator (ACS-IE-AgeSize2024)
D4 Food webs	D4C1 Diversity of trophic guilds	Diversity of the Trophic Guild Indicator (ACS-IE-TrophicGuildDiversity2024)
	D4C2 Balance of abundance among trophic guilds	Abundance Balance Indicator (ACS-IE-TrophicGuildAbundance2024)
	D4C3 Size distribution within trophic guilds	Size Distribution Indicator (ACS-IE-TrophicGuildSize2024)
	D4C4 Productivity of trophic guilds	Productivity Indicator (ACS-IE-TrophicGuildProductivity2024)
D5 Eutrophication	D5C1 Nutrient concentrations	Nutrient Concentrations Indicator (ACS-IE-Nutrients2024)
	D5C2 Chlorophyll-a concentrations	Chlorophyll-a Indicator (ACS-IE-Chlorophyll2024)
	D5C5 Dissolved oxygen	Dissolved Oxygen Indicator (ACS-IE-DO2024)
D6 Sea-floor integrity	D6C1 Physical loss of seabed	Seabed Loss Indicator (ACS-IE-SeabedLoss2024)
	D6C2 Physical disturbance of seabed	Seabed Disturbance Indicator (ACS-IE-SeabedDisturbance2024)
	D6C3 Adverse effects from disturbance	Benthic Community Condition Indicator (ACS-IE-BenthicCondition2024)
	D6C4 Benthic habitat extent	Habitat Extent Indicator (ACS-IE-BenthicExtent2024)
	D6C5 Benthic habitat condition	Habitat Condition Indicator (ACS-IE-BenthicCondition2024)
D7 Hydrographical changes	D7C1 Permanent alteration of hydrographical conditions	Hydrographical Alteration Indicator (ACS-IE-HydroAlteration2024)
	D7C2 Adverse effects from alteration	Hydrographical Effects Indicator (ACS-IE-HydroEffects2024)
D8 Contaminants	D8C1 Concentrations of contaminants	Contaminant Concentrations Indicator (ACS-IE-Contaminants2024)
	D8C2 Adverse effects of contaminants	Biological Effects of Contaminants Indicator (ACS-IE-ContamEffects2024)

	D8C3 Acute pollution events	Acute Pollution Events Indicator (ACS-IE-AcutePollution2024)
D9 Contaminants in seafood	D9C1 Levels of contaminants in seafood	Contaminants in Seafood Indicator (ACS-IE-SeafoodContam2024)
D10 Marine litter	D10C1 Litter on coast & seafloor	Coastal Litter Indicator (ACS-IE-CoastalLitter2024); Seafloor Litter Indicator (ACS-IE-SeafloorLitter2024)
	D10C2 Micro-litter	Micro-litter Indicator (ACS-IE-MicroLitter2024)
D11 Underwater noise	D11C1 Impulsive noise	Impulsive Noise Indicator (ACS-IE-ImpulsiveNoise2024)
	D11C2 Continuous low-frequency sound	Continuous Noise Indicator (ACS-IE-ContinuousNoise2024)

6. Impact of Proposed Maritime Usage on relevant MSFD targets within ZOI

It is clear from Table 3 (below) that the proposed marine environmental surveys are consistent with the objectives of the Marine Strategy Framework Directive and Ireland's Marine Strategy. All survey activities are designed to reduce adverse effects on the marine environment. No measurable effect on Ireland's achievement of Good Environmental Status under any of the 11 MSFD descriptors are anticipated.

Table 3 Assessment of relevant MSFD Targets in the context of the Proposed Maritime Usage.

Descriptor	Target Code	Description	Assessment
D1	D1T1	The mortality rate per species from incidental by-catch is below levels which threaten the species, such that its long-term viability is ensured.	No impact anticipated. Proposed maritime usage does not generate by-catch or interact with fisheries.
D1	D1T1-3	By 2026, ensure that Ireland participates in the establishment of an internationally coordinated risk-based monitoring and assessment regime that is focused on incidental mortality of non-target species in commercial fisheries and informing the development of appropriate management measures.	No impact anticipated. Proposed maritime usage does not generate by-catch or interact with fisheries.
D1	D1T2	The population abundance of the species is not adversely affected due to anthropogenic pressures.	No deterioration anticipated. Sampling footprint is highly localised and temporary; no population-scale pressures, emissions, discharges, or disturbance pathways associated with the surveys. Benthic habitat affected will fully recover.
D1	D1T4	The species distributional range and, where relevant, pattern is in line with prevailing physiographic, geographic and climatic conditions.	No alteration anticipated. Proposed maritime usage does not influence physiographic, geographic, or climatic drivers of species range or distribution.
D1	D1T5	The habitat for the species has the necessary extent and condition to support the different stages in the life history of the species.	No deterioration anticipated. Grab sampling is spatially discrete, short-term, and will not alter habitat extent or condition beyond natural variability.
D1	D1T5-1	By 2030, ensure that Ireland's network of marine protected areas achieves 30% coverage of the maritime area, is ecological coherent and representative and contributes to sustaining ecosystem services, including climate change resilience and mitigation.	No impact anticipated. Proposed maritime usage does not constrain MPA designation, spatial planning, or future achievement of ecological coherence or coverage targets.
D1	D1T5-3	By 2030, ensure that Ireland's marine Natura 2000 sites designated for listed species under the EU Birds and Habitats Directives have a system of management measures developed and in place, in order to ensure that the species' habitat extent and condition at all sites achieve and maintain a favourable status.	No impact anticipated. Survey work does not overlap with pathways affecting habitat management systems, listed species habitat extent, or favourable status objectives (See Attachment 4.3 for Supporting Information for Screening for Appropriate Assessment).

D6	D6T1	The structure and functions of the ecosystems, and benthic ecosystems, in particular, are not adversely affected due to the spatial extent and distribution of physical disturbance or physical loss on the seabed.	No deterioration anticipated. Physical disturbance from grab sampling is minor, temporary, and spatially localised, with no change to ecosystem structure or functions beyond natural variability. Affected habitat will recover fully within 12 months.
D6	D6T1-1	Continue to maintain existing low levels of sealed physical loss at less than 2% of the seabed in each benthic broad habitat type.	No impact anticipated. Extent of seabed removed for sampling is negligible even at a local scale, and will fully recover within 12 months as is typical of benthic infauna after physical disturbance.
D6	D6T2	The extent of adverse effects from anthropogenic pressures on the condition of the habitat type, including alteration to its biotic and abiotic structure and its functions, does not exceed a specified proportion of the natural extent of the habitat type in the assessment area.	No alteration to biotic or abiotic habitat structure or function is anticipated as a result of the Proposed Maritime Usage.
D6	D6T2-1	By 2030, maintain or reduce the extent of adverse effects on the seabed in each benthic broad habitat type to less than 25% of the habitat extent.	No impact anticipated. Disturbance is so small spatially and recovery of habitat at sample locations will happen so quickly that achievement of this target will not be affected.
D6	D6T2-2	By 2040, actively or passively restore two thirds of the benthic broad habitat types that are not in good environmental status.	No impact anticipated. Proposed maritime usage does not constrain future restoration pathways or habitat recovery trajectories.
D6	D6T2-3	By 2030, determine the condition of 50% of benthic broad habitat types based on the best available knowledge and techniques.	Proposed maritime usage improves our collective understanding of the benthic habitat condition and extent in Castletown Estuary and Inner Dundalk Bay.
D6	D6T2-4	By 2030, determine the condition of 50% of other benthic broad habitat types based on the best available knowledge and techniques.	Proposed maritime usage improves our collective understanding of the benthic habitat condition and extent in Castletown Estuary and Inner Dundalk Bay..
D6	D6T2-5	By 2030, actively or passively restore 50% of the other benthic broad habitat types that are not in good environmental status.	No impact anticipated. Proposed maritime usage does not interact with, delay, or constrain future benthic restoration pathways.
D6	D6T2-6	By 2028, commence implementation of nature-based solutions for marine habitats in order to restore biodiversity, reduce eutrophication impacts and support the delivery of ecosystem services, including resilience to climate change and restoration of carbon sinks.	No impact anticipated. Proposed maritime usage does not constrain commencement or implementation of nature-based solutions, carbon sink restoration, or eutrophication reduction pathways.

7. Statement of Authority

This report has been prepared by Dr. A. Long. He is a Principal Marine Consultant with over nine years of experience across consultancy, government, and academia, with a PhD in marine ecology from the University of Galway. His career has focused on the assessment and management of environmental impacts in the marine environment. He has successfully managed and delivered complex multidisciplinary projects for high-profile clients in Ireland, Australia, and Brazil in sectors including fisheries, aquaculture, offshore renewables, ports, and wastewater, authoring over 40 major technical reports. His background includes detailed ecological and environmental impact assessments, monitoring programme design, and statistical analysis, supported by peer-reviewed publications and international research collaborations. Drawing on this expertise and his in-depth knowledge of EU and Irish environmental legislation, Dr. Long is suitably qualified to provide a robust consideration of the project's consistency with the objectives of the Marine Strategy Framework Directive.