

Uisce Éireann

# Marine environmental surveys for Dundalk WWTP upgrade

Attachment 4.5 Consistency of the Proposed Maritime Usage  
with the Objectives of the Water Framework Directive

Dr Aidan Long



**AQUAFACT**  
APEM Group

AQUAFACT Ref: (P19597)

February 2026

COMMERCIAL IN CONFIDENCE

**Client:** Uisce Éireann

**Address:** Colvill House,  
24-26 Talbot St,  
Mountjoy,  
Dublin, D01 NP86

**Reference no:** P19597

**Date of issue:** 16/02/2026

---

**AQUAFACt contact:** Aisling Hearty

**Position:** Principal Ecologist

**E-mail:** [aisling@aquafact.ie](mailto:aisling@aquafact.ie)

**Telephone:** +353 (0) 91 756812

**Website:** [www.aquafact.ie](http://www.aquafact.ie)

---

**Address:** AQUAFACt International Services Ltd,  
9A Liosban Business Park,  
Tuam Road,  
Galway,  
Ireland.  
H91 K120

**Registered in Ireland:** No. 493496

**Tax Reference Number:** 97733840

**Tax Clearance Number:** 936172

## Report Approval Sheet

<b>Client</b>	Uisce Éireann
<b>Report Title</b>	Dundalk WWTP MUL_Attachment 4.5 Consistency with WFD
<b>Job Number</b>	P19597
<b>Report Status</b>	Final
<b>Issue Date</b>	20/04/2026

Rev	Status	Issue Date	Document File Name	Author (s)	Edits	Approved by:
1	Draft	16/02/2026	Dundalk WWTP MUL_Attachment 4.5 Consistency with WFD	AL		AH
2	Final	20/04/2026	Dundalk WWTP MUL_Attachment 4.5 Consistency with WFD	AL		AH



## Table of Contents

<b>1. Introduction</b>	<b>1</b>
<b>2. Zone of Influence and Water Framework Directive Status</b>	<b>1</b>
2.1 Castletown Estuary WFD status (2016-2021)	1
2.2 Ballymasclan Estuary WFD Status (2016-2021)	3
2.3 Inner Dundalk Bay WFD Status (2016-2021)	5
<b>3. Impact of Proposed Maritime Usage within Zone of Influence</b>	<b>6</b>
<b>4. Designated Waters</b>	<b>8</b>
<b>5. Other considerations</b>	<b>8</b>
<b>6. Statement of Authority</b>	<b>9</b>

## List of Tables

<b>Table 1 Overall WFD classification for Castletown Estuary, Cycle 2 (2016-2021)</b> .....	<b>2</b>
<b>Table 2 Detailed WFD classification for Castletown Estuary, Cycle 2 (2016-2021)</b> .....	<b>3</b>
<b>Table 3 Overall WFD classification for Ballymasclan Estuary, Cycle 2 (2016-2021)</b> .....	<b>4</b>
<b>Table 4 Detailed WFD classification for Ballymasclan Estuary, Cycle 2 (2016-2021)</b> .....	<b>4</b>
<b>Table 5 Overall WFD classification for Inner Dundalk Bay, Cycle 2 (2016-2021)</b> .....	<b>5</b>
<b>Table 6 Detailed WFD classification for Inner Dundalk Bay, Cycle 2 (2016-2021)</b> .....	<b>6</b>
<b>Table 7 Assessment of interaction with WFD Objectives.</b> ....	<b>7</b>

**List of Acronyms/Glossary**

<b><i>Abbreviation</i></b>	<b><i>Definition</i></b>
<i>MARA</i>	Maritime Area Regulatory Authority
<i>WFD</i>	Water Framework Directive
<i>RBD</i>	River Basin District
<i>GIS</i>	Geographic Information System
<i>SAC</i>	Special Area of Conservation
<i>SPA</i>	Special Protection Area
<i>pNHA</i>	proposed Natural Heritage Area
<i>ZOI</i>	Zone of Influence
<i>RBMP</i>	River Basin Management Plan
<i>SDG 6</i>	Sustainable Development Goal 6

## 1. Introduction

MARA is required to have regard to the Directive 2000/60/EC, the EU Water Framework Directive, and the associated implementing national legislation, the European Communities (Water Policy) Regulations 2003 and further implemented by the European Communities Environmental Objectives (Surface Water) Regulations, 2009. The Water Framework Directive requires all member states to protect and improve water quality in inland surface waters, transitional waters, coastal waters and groundwater so that good ecological status is achieved by 2027. Water bodies in moderate, poor, or bad ecological status require mitigation and restoration to achieve the good status objective. Additional measures apply to protected areas under the Directive. Protected areas which may be relevant to the proposed Maritime Usage, include:

- Areas designated for the protection of economically significant aquatic species under the Habitats Directive.
- Bodies of water designated as recreational waters, including areas designated as bathing waters under the revised Bathing Water Directive (2206/7/EC).
- Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC and areas designated as sensitive areas under Directive 91/271/EEC.
- Areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under the Habitats Directive or Birds Directive.

## 2. Zone of Influence and Water Framework Directive Status

The proposed MUL area overlaps three transitional waterbodies; Castletown Estuary (IE\_NB\_040\_0200), Ballymascanlan Estuary (IE\_NB\_040\_0300) and Inner Dundalk Bay (IE\_NB\_040\_0100). As such, the zone of influence includes these three WFD transitional waterbodies.

### 2.1 Castletown Estuary WFD status (2016-2021)

The Castletown Estuary (IE\_NB\_040\_0200) is classified as a Transitional waterbody within the Neagh Bann River Basin District and falls under the 06 Newry, Fane, Glyde and Dee catchment unit, administered by Louth County Council. For the 2016–2021 assessment period, the waterbody was assigned an overall WFD status of

Poor, determined using probability-based environmental monitoring and the national Monitoring assessment approach, with high confidence in the status classification. The estuary is categorised as “At risk” under the WFD risk framework.

**Table 1 Overall WFD classification for Castletown Estuary, Cycle 2 (2016-2021)**

<b>Attribute</b>	<b>Details</b>
<b>Name</b>	Castletown Estuary
<b>Code</b>	IE_NB_040_0200
<b>WFD Status (2016-2021)</b>	Poor
<b>Catchments</b>	06 Newry, Fane, Glyde, and Dee
<b>Latitude</b>	54.01308
<b>Longitude</b>	-6.36099
<b>Cycle 1 RBD</b>	Neagh Bann
<b>Local Authority</b>	Louth County Council
<b>Waterbody Category</b>	Transitional
<b>WFD Risk</b>	At risk
<b>Protected Area</b>	Yes
<b>High Status Objective</b>	No
<b>Heavily Modified</b>	No
<b>Artificial</b>	No
<b>Area (Km<sup>2</sup>)</b>	1.91
<b>Length (Km)</b>	N/A
<b>Transboundary</b>	No

The ecological sub-indicators contributing to this classification reflect reduced biological condition across multiple trophic and community components (Table 2). Biological status and phytoplankton potential are both rated as Poor, indicating constrained primary-producer performance and impaired ecological function at the base of the food web. Fish status is rated as Moderate, demonstrating measurable community alteration relative to baseline transitional waters. Hydromorphological and general supporting chemistry conditions are Moderate, reflecting pressures on estuarine structure and physicochemical stability. Oxygenation, dissolved oxygen saturation, and nutrient conditions are also Moderate, signalling periodic stress on respiration-

supporting processes and eutrophication sensitivity. Phosphorous conditions are Good, while “Other determinant for oxygenation conditions” is also Good, suggesting that although some specific chemical metrics meet acceptable thresholds, they are insufficient to offset Poor biological and ecological performance in determining overall status.

**Table 2 Detailed WFD classification for Castletown Estuary, Cycle 2 (2016-2021)**

<i>Status</i>	<i>Assessment Technique</i>	<i>Status Confidence</i>	<i>Value</i>
<i>Ecological Status or Potential</i>	Monitoring	high confidence	Poor
<i>Biological Status or Potential</i>			Poor
<i>Phytoplankton Status or Potential</i>			Poor
<i>Fish Status or Potential</i>			Moderate
<i>Hydromorphological Conditions</i>			Moderate
<i>Supporting Chemistry Conditions</i>			Moderate
<i>General Conditions</i>			Moderate
<i>Oxygenation Conditions</i>			Moderate
<i>Dissolved Oxygen (% Sat)</i>			Moderate
<i>Other determinant for oxygenation conditions</i>			Good
<i>Nutrient Conditions</i>			Moderate
<i>Phosphorous Conditions</i>			Good

## 2.2 Ballymasclan Estuary WFD Status (2016-2021)

The Ballymasclan Estuary (IE\_NB\_040\_0300) is classified as a Transitional waterbody within the Neagh Bann River Basin District, and forms part of the 06 Newry, Fane, Glyde and Dee catchment unit, under the administration of Louth County Council. For the 2016–2021 assessment period (Cycle 2), the estuary was assigned an overall WFD status of Moderate (Table 3).

**Table 3 Overall WFD classification for Ballymascanlan Estuary, Cycle 2 (2016-2021)**

<b>Attribute</b>	<b>Details</b>
<b>Name</b>	Ballymascanlan Estuary
<b>Code</b>	IE_NB_040_0300
<b>WFD Status (2016-2021)</b>	Moderate
<b>Catchments</b>	06 Newry, Fane, Glyde, and Dee
<b>Latitude</b>	54.02171
<b>Longitude</b>	-6.36189
<b>Cycle 1 RBD</b>	Neagh Bann
<b>Local Authority</b>	Louth County Council
<b>Waterbody Category</b>	Transitional
<b>WFD Risk</b>	Review
<b>Protected Area</b>	Yes
<b>High Status Objective</b>	No
<b>Heavily Modified</b>	No
<b>Artificial</b>	No
<b>Area (Km<sup>2</sup>)</b>	0.89
<b>Length (Km)</b>	N/A
<b>Transboundary</b>	No

The status classification for 2016–2021 has been derived using national-scale Grouping assessment of ecological status or potential, with medium confidence in the Moderate classification (Table 4).

**Table 4 Detailed WFD classification for Ballymascanlan Estuary, Cycle 2 (2016-2021)**

<b>Status</b>	<b>Assessment Technique</b>	<b>Status Confidence</b>	<b>Value</b>
<i>Ecological Potential</i> <i>Status</i> <i>or</i>	Grouping	medium confidence	Moderate

## 2.3 Inner Dundalk Bay WFD Status (2016-2021)

Inner Dundalk Bay (waterbody code IE\_NB\_040\_0100) is classified as a Transitional waterbody within the Neagh Bann River Basin District, forming part of the 06 Newry, Fane, Glyde and Dee catchment, under the administration of Louth County Council. For the 2016–2021 assessment period (Cycle 2), the waterbody was assigned an overall WFD status of Moderate and is “At risk” under the WFD risk characterisation framework (Table 5).

**Table 5 Overall WFD classification for Inner Dundalk Bay, Cycle 2 (2016-2021)**

<i>Attribute</i>	<i>Details</i>
<b>Name</b>	Inner Dundalk Bay
<b>Code</b>	IE_NB_040_0100
<b>WFD Status (2016-2021)</b>	Moderate
<b>Catchments</b>	06 Newry, Fane, Glyde, and Dee
<b>Latitude</b>	53.97793
<b>Longitude</b>	-6.30814
<b>Cycle 1 RBD</b>	Neagh Bann
<b>Local Authority</b>	Louth County Council
<b>Waterbody Category</b>	Transitional
<b>WFD Risk</b>	At risk
<b>Protected Area</b>	Yes
<b>High Status Objective</b>	No
<b>Heavily Modified</b>	No
<b>Artificial</b>	No
<b>Area (Km<sup>2</sup>)</b>	33.34
<b>Length (Km)</b>	N/A
<b>Transboundary</b>	No
<b>Chemistry Data (Download)</b>	SW 2019-2024

The Moderate classification is underpinned by probability-based monitoring of ecological, biological, and phytoplankton status, all classified as Moderate status, while invertebrate status was Good and specific

invertebrate pollutant conditions pass (Table 6). General, oxygenation, dissolved oxygen saturation, and supporting chemistry conditions are Moderate, indicating sensitivity to episodic oxygen and nutrient-related stressors but not system-scale morphological modification. Nutrient and phosphorous conditions achieve Good potential, meeting the Directive’s expectations for eutrophication control, and Specific Pollutant Conditions are recorded as “Pass”. The waterbody also failed to achieve good Chemical Surface Water Status, attributed specifically to PBDE (PBDE-47/99/100 or related) (Table 6).

**Table 6 Detailed WFD classification for Inner Dundalk Bay, Cycle 2 (2016-2021)**

<i>Status</i>	<i>Assessment Technique</i>	<i>Status Confidence</i>	<i>Value</i>
<i>Ecological Status or Potential</i>	Monitoring	high confidence	Moderate
<i>Biological Status or Potential</i>			Moderate
<i>Phytoplankton Status or Potential</i>			Moderate
<i>Invertebrate Status or Potential</i>			Good
<i>Supporting Chemistry Conditions</i>			Moderate
<i>General Conditions</i>			Moderate
<i>Oxygenation Conditions</i>			Moderate
<i>Dissolved Oxygen (% Sat)</i>			Moderate
<i>Other determinand for oxygenation conditions</i>			High
<i>Nutrient Conditions</i>			Good
<i>Phosphorous Conditions</i>			Good
<i>Specific Pollutant Conditions</i>			Pass
<i>Chemical Surface Water Status</i>			Failing to achieve good*

\*Status Failures Reasons: PBDE - unspecified isomers Failure for Chemical Status IE\_NB\_040\_0100

### 3. Impact of Proposed Maritime Usage within Zone of Influence

Effects to water quality include localised disturbance to the seabed and may cause very minor, localised redistribution of sediment. The proposed survey methods are temporary, short-term and local in scale. They may create negligible, localised disturbance to the benthos with no long-term impacts to the seabed or water quality.

There is minimal risk of introduction of pollutants to the environment or significant seabed disturbance that may impact flora or fauna (e.g., sediment accumulation/transport), and as such no deterioration in ecological or chemical status is anticipated as a result of the proposed marine environmental surveys. All benthic sediment samples for faunal analysis, PSA and TOC will be collected using a 0.025 m<sup>2</sup> stainless-steel Van Veen grab sampler deployed from AQUAFAC<sup>T</sup>'s RIB at designated intertidal (Upper Shore, Mid Shore, Lower Shore) and subtidal sampling stations, as illustrated in Attachment 3.1 Description of the Proposed Maritime Usage.

In terms of spillages/oil leaks and other pollutants, the survey vessels will adhere to relevant requirements under the MARPOL and MARPOL Annex I conventions for storage and treatment of onboard pollutants. Vessels will also adhere to relevance requirements under the MARPOL convention for storage and treatment of onboard pollutants and operate in compliance with MARPOL best practice for pollution prevention.

The method and scale of works are consistent with the WFD's objective to maintain (or aim to achieve) good ecological and chemical status in Transitional and coastal receiving waters of Inner Dundalk Bay, Castletown Estuary and adjacent marine habitats (Table 7). The surveys are also not expected to compromise the integrity of relevant Natura 2000 sites (please see attachment 4.3).

**Table 7 Assessment of interaction with WFD Objectives.**

<i>WFD Quality Element / Objective</i>	<i>Potential Interaction</i>	<i>Assessment Outcome</i>
<i>Ecological Status or Potential (biological elements: benthic invertebrates, fish, phytoplankton)</i>	Temporary, highly localised disturbance of benthic habitats due to benthic grab surveys (Van Veen grab sampling).	Short-term and localised; no long-term status change anticipated
<i>Chemical Status (priority substances under EQSD)</i>	No chemical inputs from project.	No deterioration
<i>Hydromorphology (tidal regime, morphology, sediment dynamics)</i>	No change to hydromorphology.	No alteration beyond natural variability
<i>Supporting Physico-chemical Conditions (nutrients, dissolved oxygen, salinity)</i>	No change to nutrients, dissolved oxygen, etc.	No alteration beyond natural variability
<i>Achievement of Future Status Objectives</i>	Project scale and method compatible with achieving targets. No permanent effects.	No constraint on future improvements

## 4. Designated Waters

A designated Shellfish Area (Dundalk Bay; EU Protected Area Code IEPA2\_0044) overlaps spatially with the Inner Dundalk Bay WFD Transitional waterbody (Code IE\_NB\_040\_0100), but does not overlap with the project's modelled or anticipated zone of influence for the proposed marine site investigation surveys. The Shellfish Area is formally registered as a Shellfish protected area type under the European Union Bathing Water and Shellfish Regulations transposing EU Directive 2006/113/EC and is monitored under the Neagh Bann RBD catchment unit. Given the nature, method, scale, and temporary duration of the proposed maritime usage (0.025 m<sup>2</sup> stainless-steel Van Veen grab sampling at discrete stations), no chemical inputs, emissions, or pollutant discharges are associated with the survey work. Survey vessels will adhere to MARPOL Annex I best practice for storage and treatment of onboard pollutants, and spill prevention protocols, ensuring no deterioration of water quality is anticipated. As the Shellfish Area does not overlap with the project zone of influence, and given the survey programme is short-term, highly localised, and non-polluting, the proposed maritime usage is consistent with the WFD objective to prevent deterioration of designated protected areas and will not compromise the environmental supporting conditions required to maintain or achieve Good ecological or chemical status for shellfish-growing waters within Dundalk Bay.

No bathing waters were identified within the ZOI.

## 5. Other considerations

The core principles of the WFD are to prevent the deterioration of water body status, to protect and enhance existing water bodies, and to promote the long-term sustainable use of water. The Directive also seeks to protect, enhance, and restore aquatic ecosystems through progressive reductions in discharges, emissions, and losses of priority substances, while working towards the cessation or phasing-out of priority hazardous substances. It requires the progressive reduction of groundwater pollution and prevention of further contamination and contributes to the mitigation of floods and droughts. The WFD also addresses hydromorphological pressures, requires the implementation of River Basin Management Plans, and sets out the overarching goal of achieving "good" ecological and chemical status for all waters.

In Ireland, the Directive is implemented through the European Communities (Water Policy) Regulations 2003 (as amended). The current cycle, the Third River Basin Management Plan (2022–2027), establishes national goals including improving the status of water bodies, tackling pressures from urban wastewater, reducing agricultural pollution, and protecting high-status waters. The Dundalk WWTP Capacity Upgrade project directly supports the RBMP objective for continued investment in wastewater infrastructure to address

wastewater pressures on Transitional and coastal water bodies within Inner Dundalk Bay and the Castletown Estuary.

The Water Action Plan 2024 emphasises that protecting and restoring water quality requires enhanced measures to address nutrient losses from land to water, interventions to re-establish natural river conditions, and continued investment in wastewater treatment infrastructure. These efforts are set against the increasing pressures of population and economic growth, all in the context of climate change.

The WFD also aligns with international frameworks, most notably the United Nations Sustainable Development Goals (SDGs). SDG 6 is to “ensure availability and sustainable management of water and sanitation for all”. Targets for 2030 include achieving universal access to safe and affordable drinking water, ensuring adequate sanitation and hygiene for all, improving water quality by reducing pollution, eliminating dumping and hazardous discharges, and halving the proportion of untreated wastewater.

The WFD Directive reinforces and is linked to other EU environmental legislation, including the Birds and Habitats Directives, and directives addressing specific water uses such as the Drinking Water Directive, Bathing Water Directive, and Urban Wastewater Directive. It is also integrated into Irish planning legislation. Section 1(A) of the Planning and Development Act 2000 (as amended) requires development plans to support the protection and enhancement of water quality, particularly in relation to RBMP objectives.

The proposed maritime usage is an essential preparatory step to accompany a future project that would directly support the objectives of the WFD and the RBMP 2022–2027. By informing a robust and resilient design and providing necessary baseline data, the future project will help prevent the deterioration of water body status and contribute to achieving or maintaining good ecological and chemical status, consistent with the WFD’s “no deterioration” principle.

Importantly, the proposed site investigation surveys themselves are temporary, small-scale, and non-polluting. They will be carried out in accordance with best practice, ensuring no adverse effects on water quality, morphology, or ecological features within the ZOI. The proposed Maritime Usage is therefore consistent with the objectives of the WFD.

## 6. Statement of Authority

This report has been prepared by Dr. A. Long who 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, with specialist expertise in Environmental Impact Assessment, Appropriate Assessment, Marine

Usage Licences, and Dumping at Sea permits. 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 quality 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 Water Framework Directive.