Alexandra Basin Redevelopment 2

Bringing Dublin Port To 2040

Water Framework Directive (WFD) Compliance Assessment



CALAFORT ÁTHA CLIATH
DUBLIN PORT

TETRA TECH

Document status

Document status					
Version	**Purpose of document**	**Authored by**	**Reviewed by**	**Approved by**	**Date**
D01	Initial Draft	AS	MM	MM	01/05/26
D02	Internal comments addressed	AS	MM	MM	08/05/26

Approval for issue		
Mark Magee		08/05/2026

This report was prepared by Tetra Tech within the terms of Tetra Tech engagement with its client and in direct response to a scope of services. This report is supplied for the sole and specific purpose for use by Tetra Tech's client. The report does not account for any changes relating the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report. Tetra Tech does not accept any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report.

Prepared by	Prepared for
Tetra Tech	Dublin Port Company
Dr Alison Scott Project Scientist	
Enterprise Fund Business Centre, Ballyraine, Letterkenny, Co. Donegal, Ireland, F92 AF43	Block P7, Estuary House Eastpoint Business Park, Alfie Byrne Road, North Wall Dublin 3, D03 Y6A2
	T: +353 1 887 6000
E: alison.scott@tetratech.com	

Table of contents

1.0 Introduction 1
1.1 Background 1
1.2 WFD Study Area 2
1.3 Information Sources 3
2.0 Legislation and Guidance 4
2.1 Water Framework Directive 4
2.2 Compliance with the WFD 4
2.3 Steps in the WFD Assessment Process 5
Stage 1 – Screening 6
Stage 2 – Scoping 6
Stage 3 – Impact Assessment 7
Stage 4 - Justification or WFD Exception 7
2.4 Water Body Classification 7
2.5 Water Body Objectives 8
3.0 Baseline Environment 9
3.1 Catchment Physical Setting 10
3.2 WFD Classification 10
3.3 Heavily Modified Water Body Designation 14
Designation 14
GEP 16
Mitigation Measures 16
Biological Quality Elements (BQE) That Are Not Sensitive to The Hydromorphological Modification 19
Physico-Chemical Conditions 19
Biological Quality Elements That Are Sensitive to The Hydromorphological Modification 19
3.4 Register of Protected Areas 20
Bathing Waters 20
Nutrient Sensitive Waters 23
Natura 2000 Protected Areas 24

4.0 Project Description 25
5.0 WFD Assessment 28
5.1 Stage 1: Screening 28
5.2 Stage 2: Scoping 28
Project Design Parameters 28
Scoping Summary 34
5.3 Stage 3: Impact Assessment 38
Measures Included in the Project 38
Deterioration in Water Body Status 51
Protected Area Objectives 59
Achievement of the WFD Objectives 60
6.0 Summary 61
References 63

List of Tables

Table 1-1 Information Sources 3
Table 2-1 Key Steps in the Water Status Impact Assessment Process 5
Table 3-1 WFD Status (2007-2024) 12
Table 3-2 Breakdown of contributing elements to the 2019-2024 WFD water body status 13
Table 3-3 Mitigation Measure Categories 18
Table 3-4 Annual Assessment Criteria for Bathing Waters 21
Table 3-5 Summary Status of Samples during the 2025 Bathing Season 22
Table 5-1 Project design parameters used for the assessment of potential impacts for WFD Assessment 30
Table 5-2 Potential impacts associated with the Project and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies in the WFD WFD Study Area 35
Table 5-3 Measures included in the Project 39
Table 5-4 Emission Limit Values for Emissions to Water in IE Licence P1022-02 44
Table 5-5 Summary of mitigation measures to ensure the surface water body status does not deteriorate 55
Table 5-6 Significant Water Management Issues (SWMI), Source, Programme of measures and assessment of impact of the project on the WFD objectives. 62

List of Figures

Figure 1-1: Location of the ABR2 Project in the surface water environment.....3
Figure 3-1: Elements of the Water Framework Directive Status 11
Figure 3-2: WFD Status 2024 11
Figure 3-3: Bathing water quality in the Dublin Bay Area 2024.....21
Figure 3-4: Nutrient Sensitive Areas 24
Figure 3-5: Natura 2000 Designated Sites – SACs & SPAs 25
Figure 4-1: Extent of works to be completed as part of the ABR2 Project 27

1.0 Introduction

1.1 Background

The completion of a Water Framework Directive (WFD) Compliance Assessment (hereafter referred to as 'WFD Assessment') is a staged process. The proposed works on the ABR2 Project (hereafter referred to as 'the Project') are assessed with respect to the requirements of the WFD. The assessment identifies if the Project, will, or will not, have a detrimental impact on the status of water bodies that are hydrologically linked to the Project. If the assessment concludes, after taking account of the measures included in the Project, that the Project may either result in;

- A deterioration of the status of the water bodies; or
- Prevent them from reaching their environmental objectives.

Then, this represents a failure to achieve the WFD objectives, and the Project should not proceed unless justification for the proposed works is demonstrated under Article 4.7 of the WFD in the context of new modifications.

Whilst Environmental Assessment is an efficient mechanism to gather the relevant information for WFD compliance assessment, it still needs to be interpreted in relation to the WFD objectives and the potential impacts on biology, chemistry and hydromorphology. The WFD objectives and the biology, chemistry and hydromorphology need to be considered in relation to WFD status classes and reported under a specific WFD section in any Environmental Impact Assessment Report (EIAR) or report produced or in a separate WFD compliance report (Environment Agency, 2010).

Therefore, a WFD Assessment has been undertaken to assess the potential impacts of the Project in the context of the environmental objectives of any affected WFD surface water and groundwater bodies.

The WFD Assessment also offers the opportunity to inform the management of the Project to avoid, minimise, mitigate, or compensate for the risks to the environmental objectives of WFD surface water receptors where the risk assessment determines that the activities have the potential to:

- Cause a surface water body to deteriorate from one WFD status class to another or cause significant localised impacts that could contribute to this happening; and
- Prevent or undermine action to get surface water bodies to good status (e.g. compromise the programme of measures put in place to achieve the ultimate water body objective).

1.2 WFD Study Area

For the purposes of this WFD Assessment, water bodies that are within, intersect or are hydrologically connected to the onshore and marine elements of the Project have been identified and considered as relevant water bodies for the different stages of the WFD compliance assessment (i.e., the WFD Assessment WFD Study Area, hereafter referred to as “WFD Study Area”).

For the purposes of monitoring and assessing the quality of surface waters, all rivers, lakes, coastal inter-basins, estuaries, and coastal waters (within one nautical mile of the shoreline) have been divided into management units called “water bodies”. The condition of each water body must be reported to the European Commission in the form of ecological status and chemical status. Groundwater bodies are similarly delineated, with quantitative and qualitative status identified.

Surface water bodies are grouped into sub-catchments for the purposes of water management, of which there are 583 nationally. These are further grouped into catchment management units, of which there are 46, based on the hydrometric areas used by public authorities. As illustrated in Figure 1-1, all components of the ABR2 Project will take place within the Liffey Estuary Lower, upstream of Dublin Bay. The works, therefore, have the potential to impact two surface water bodies: ‘Liffey Estuary Lower’ transitional water body (EA_090_0300) and ‘Dublin Bay’ coastal water body (EA_090_0000). The ‘Liffey Estuary Upper’ (EA_090_04000) and the 'Tolka Estuary' (EA_090_0200) transitional water bodies are situated upstream of the works.

There are also several rivers that discharge into the Liffey Estuary and Dublin Bay; principally the Liffey itself. The Camac River and the Poddle River, which are located in the upstream Liffey sub-catchment (the Dodder_SC_010 sub-catchment), also discharge into the Liffey Estuary and Dublin Bay. The Royal Canal, located within the Tolka_SC_020 sub-catchment to the North of the Liffey, and the Grand Canal, located to the south of the Liffey, also discharge to the Liffey Estuary Lower. In addition, several small streams flow from the surrounding areas directly into Dublin Bay.

The ABR2 Project lies within the ‘Dublin Urban’ groundwater body (EA-G-008). This water body has achieved and maintained ‘good’ status in each WFD Monitoring Cycle from 2007-2012 to 2019-2024. All of these waterbodies are grouped into the ‘Liffey and Dublin Bay Catchment’ (HA09) of the Irish River Basin District. Potential likely significant water quality effects on groundwater are assessed by the hydrogeological assessment presented in Chapter 8 of the EIAR, which addresses Land, Soils, Geology and Hydrogeology.

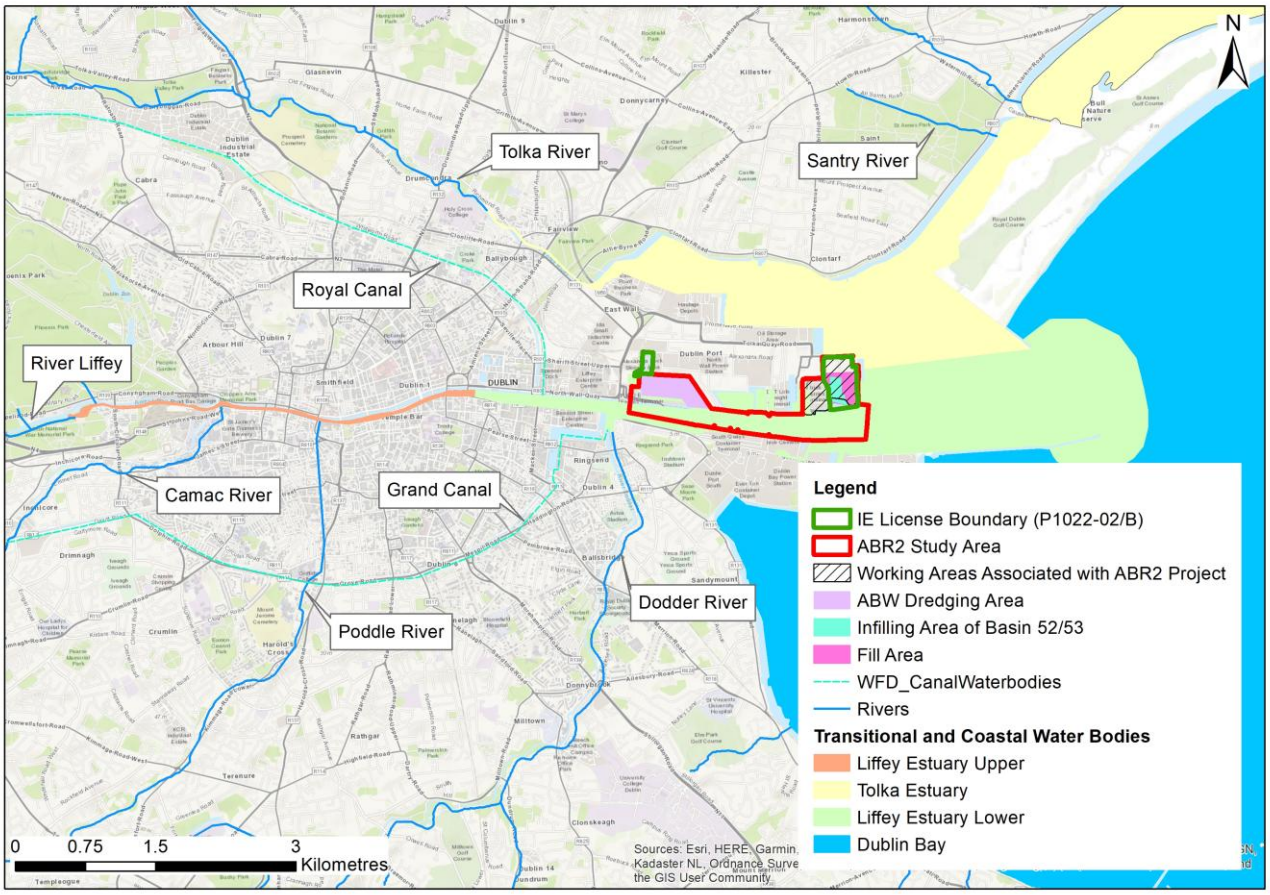


Figure 1-1: Location of the ABR2 Project in the surface water environment

1.3 Information Sources

The information sources used in the preparation of this technical report are set out in Table 1-1.

Table 1-1: Information Sources

Source	Data	Information consulted/provided
EPA	WFD data tables Catchments.ie (accessed February 2026)	*Water body status, objectives, hydro-morphology, protected areas, sensitive habitats*
	Water body data pages on the Eden WFD application Catchments.ie (accessed February 2026)	*Water body classification, overall status, ecological status, biological elements, physico-chemical elements, hydro-morphology, and chemical classification*
		WFD objectives for water bodies
	Interactive maps https://gis.epa.ie/EPAMaps/Water (accessed February 2026)	*Maps of water bodies, habitats, and protected areas.*

2.0 Legislation and Guidance

2.1 Water Framework Directive

The WFD (Council Directive 2000/60/EC establishing a framework for community action in the field of water policy) was adopted by the European Commission in December 2000. The WFD requires that all European Union Member States prevent deterioration and protect, enhance, and restore all bodies of water. This means that Member States must ensure that new schemes do not adversely impact upon the status of aquatic ecosystems, and that they must address historical modifications that are already impacting a water body.

The WFD was transposed into Irish law through the European Communities (Water Policy) Regulations 2003 (S.I. 722/2003) (as amended) in respect of the duties on all public authorities to exercise their functions in a manner consistent with achieving the objectives of the WFD. European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272/2009) (as amended) and the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. 9/2010) (as amended) give further effect to the WFD in Ireland. Article 5 of both these regulations provides that public authorities must not undertake their functions in a manner that knowingly causes or allows deterioration in the status of a water body.

The WFD is given general effect in planning legislation in Section 1A of the Planning and Development Act 2000 (S.I. 30/2000), as amended, and specifically, through amendments made in 2010 which sought to improve how water management and the planning system are integrated.

2.2 Compliance with the WFD

Member states must meet the conditions of the WFD unless they meet the criteria laid out in Article 4.7 of the Directive. The Water Policy Regulations require the assessment of impacts of a project on WFD waterbodies, as proposals for plans or new developments have the potential to prevent compliance with the WFD objectives, i.e., will they cause a deterioration of the status of a water body and/or prevent future attainment of good surface water status/potential and good groundwater status where not already achieved. Development proposals within, or that could affect the water environment, must demonstrate that they will not cause a deterioration of the status of water bodies in their zone of influence, or that they will not inhibit their future achievement of “good” status. In some situations, it will be clear that a development proposal would not compromise the achievement of the WFD objectives and therefore no further assessment will be required. However, in other situations, the potential to compromise the achievement of the objectives may be identified, or there may be uncertainty, and the development proposal will need to undergo a WFD Assessment to inform decision-making by the planning authority. Opportunities to include proactive design measures to avoid and mitigate impacts will become the norm for developers in order to reduce the scope and extent of the WFD

Assessment necessary in any application. These proactive measures will include, for example, the design of structures to reduce the impact on or create intertidal habitat, improvement in flow dynamics, etc.

2.3 Steps in the WFD Assessment Process

Whilst guidance for undertaking a WFD Assessment is being prepared for Planning Authorities in Ireland, it is not yet published, and therefore, the UK Planning Inspectorate Guidance Note 18: The Water Framework Directive (Planning Inspectorate, 2017) has been followed. This requires that a WFD Assessment be undertaken in four stages:

- **Stage 1 Screening** – excludes any activities that do not need to go through the scoping or impact assessment stages;
- **Stage 2 Scoping** – to identify potential risks associated with a development proposal on the relevant water bodies and their water quality elements;
- **Stage 3 Impact assessment** – to undertake a detailed assessment of water bodies, their quality elements and activities carried forward from the scoping stage; and
- **Stage 4 Justification or Exemption** - rigorous assessment of the appropriateness, or otherwise, of particular developments that, for various reasons, are being considered despite failure to comply with the objectives of the WFD, as laid down in Article 4(7).

The key steps in the development stage process are briefly outlined in Table 2-1.

Table 2-1: Key Steps in the Water Status Impact Assessment Process

Step	Development Management
Screening	Screening is required to determine whether a development proposal would screen in/out for more detailed consideration of WFD objectives.
Scoping & Consultation	Once a development proposal is screened in, it will rely on the professional expertise of the applicant's specialist consultants and, if/as required, the Environment Section of the planning authority and other bodies to engage in more specific pre-application consultation in relation to the requirements and to agree the scope of the assessment. The scope of the WFD Assessment must be proportionate to the type/scale of development and the sensitivity of the water body(s).
Assessment & Reporting	Applications for development proposals which have been screened in for detailed consideration of WFD/River Basin Management Plan (RBMP) objectives must clearly demonstrate that the proposal is compliant with the objectives of the WFD, i.e., it will not cause or contribute to deterioration of status or jeopardise the water body achieving good status. Where the competent authority concludes that significant negative impacts on a water body cannot be fully avoided (i.e., with the potential to cause deterioration of its status or jeopardise its attaining good status), or uncertainty remains of the extent of impact, it is required to refuse consent, unless a derogation under article 4 (7) is sought and justified under the strict conditions of the WFD for new modifications. Where water quality is an issue (but not so as to cause the deterioration of the status of any body of water or jeopardise its attaining good status), the competent authority shall consider granting permission subject to conditions to deal with any residual risk and must be guided by the development management objectives set out in the development plan. Where potential for significant effects is identified, a mitigation and monitoring strategy shall be presented. This can align with EIAR requirements if screened in for EIA. Otherwise, a mitigation and monitoring strategy should be agreed with the planning authority and the developer to ensure no unforeseen effects from the construction or operation of the development.
Justification or WFD Exception	Where a development proposal is considered likely to cause deterioration of the status (or potential) of a surface or groundwater body or prevents the achievement of good groundwater status, good ecological status (GES)status/potential for water bodies currently failing to achieve this status/potential, Article 4(7)

Step	Development Management
	of the WFD provides a derogation whereby a Member State will not be in breach of the Directive provided all the conditions set out in Article 4(7) are met.

Stage 1 – Screening

Where a development requires mandatory EIA, or it is screened in for EIA, if it is not mandatory, the water environment is a prescribed environmental factor to be addressed in the EIAR. Therefore, the development would automatically be screened in for WFD Assessment, and a WFD Compliance Report should be prepared by a suitably qualified professional and submitted with the application.

In some situations, it will be clear that a Project could not cause deterioration or compromise the achievement of good status/potential, and it should be screened out for WFD Assessment. For example, where the nature, scale, timing, duration and location of a development is entirely unconnected to a water body or will not contribute to a further deterioration of the water body's current status. These instances will generally be small developments, for example, signage, changes of use or extensions to existing buildings in serviced urban areas.

Other development proposals may require further consideration for screening. In these situations, the source-pathway-receptor (S-P-R) model will be useful in terms of considering the potential risk of a Project causing further deterioration of the water body's current status, for example, if the Project includes a source (e.g. risk of pollution), is there a pathway (i.e. hydrological connectivity (including flood risk) via water body or groundwater) and is there a receptor (i.e. water body at risk).

Stage 2 – Scoping

Scoping considers how a development proposal could affect the different WFD quality elements. Each aspect or activity associated with the development with the potential to impact the achievement of the WFD should be considered and then summarised in table form for each water body.

WFD Scoping should involve:

- Undertaking an initial assessment to identify the risks from the development proposal to receptors (within the zone of influence) based on the relevant water bodies and their water quality elements; and
- Identification of those water bodies where a more detailed impact assessment is required.

This will require that the types of impact be identified, e.g., on what quality element; whether the effects are short, medium or long-term and construction, operational or decommissioning related.

Stage 3 – Impact Assessment

The Stage 3 assessment process is focused on assessing the potential for the Project to impact on the objectives of the WFD and the RBMP. This can be an iterative process, and the objective should be to find an appropriate solution wherever possible – this may include assessment and amending the design and/or including measures to mitigate the particular elements of the development that posed the risk.

The particular elements of the proposed project that have the potential to adversely affect the quality of a water body must be examined with respect to the specific objectives of the WFD and the RBMP. The information collected should facilitate:

1. The identification and description of those aspects of the project that may affect a water body;
2. A description of the characteristics of the relevant water body, including their WFD objectives and an understanding of factors which either maintain or threaten those objectives;
3. An assessment of the impact of the Project on the relevant objectives; and
4. To conclude whether the Project will:
    a. Cause or contribute to deterioration of status; or
    b. Jeopardise the water body achieving good status *(or high status in the case of a water body with a high-status objective).*

Stage 4 - Justification or WFD Exception

Where a development proposal is considered likely to cause deterioration of the status (or potential) of a surface or groundwater body or prevents the achievement of good status/potential for water bodies currently failing to achieve this status/potential, Article 4(7) of the WFD provides a derogation whereby a Member State will not be in breach of the Directive provided all the conditions set out in Article 4(7) are met. In the case of the ABR2 Project, the assessment stage has concluded that there is no risk of deterioration in the WFD status of any water bodies affected, nor will the Project compromise the achievement of the environmental objectives of these water bodies under the WFD. Therefore, for this Project the assessment ends at Stage 3.

2.4 Water Body Classification

The WFD specifies the quality elements that are used to assess the chemical and ecological status of a water body. Quality elements are generally biological (e.g. fish, invertebrates, macrophytes) or chemical (e.g. heavy metals, pesticides, nutrients). Classifications indicate where the quality of the environment is good, where it may need improvement, and what may need to be improved. They can also be used, over the years, to plan improvements, show trends and to monitor the effectiveness of the programme of measures (PoMs) identified. There are two status classifications which are commonly reported: chemical and ecological.

Chemical status is assessed from compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances. These are known as ‘Annex X’ substances as they were originally listed in Annex X of the Water Framework Directive, which has now been superseded by the Environmental Quality Standards Directive (2008/105/EC). Chemical status is recorded as ‘good’ or ‘fail’. Chemical status for a water body is determined by the worst-scoring chemical (one-out-all-out approach).

Ecological status classifications can be composed of up to four different assessments:

- An assessment of status indicated by a biological quality element such as fish, invertebrates or algae. The presence of invasive species is also assessed as a separate test;
- An assessment of compliance with environmental standards for supporting physico-chemical conditions, such as dissolved oxygen, phosphorus or ammonia;
- An assessment of compliance with environmental standards for concentrations of specific pollutants, such as zinc, cypermethrin or arsenic (these are known as ‘Annex VIII’ substances); and
- In determining high status only: A series of tests to make sure that hydromorphology is largely undisturbed.

Ecological status is recorded as high, good, moderate, poor or bad. ‘High’ represents ‘largely undisturbed conditions’. Other classes show increasing deviation from undisturbed or reference conditions. This deviation must be expressed as an ecological quality ratio (EQR), which ranges from zero for bad status to one for high status. As with chemical status, ecological status is determined by the worst-scoring component (one-out-all-out approach). Biological status is a subset of ecological status where the results of the biological quality elements are assessed (and so ignore physico-chemical and Annex VIII substances and hydromorphology). The one-out-all-out rule is applied again here to give a biological status classification.

Overall status is a composite measure that looks at both ecological status and chemical status. It considers all four assessment types under ecological status (biology, physico-chemical, Annex VIII substances and hydromorphology), as well as incorporating the results of the chemical status assessment. The one-out-all-out rule is applied again here, so a water body must have a good or better ecological status, and a good (pass) chemical status assessment to be given a good overall status.

2.5 Water Body Objectives

The completion of a WFD Assessment is a staged process where data on the potentially impacted WFD water bodies and work proposals are assessed with respect to the requirements of the WFD to ascertain if the proposals will, or will not, have a detrimental impact on the status of water bodies associated with that site. If the assessment concludes, after taking account of the mitigation proposed, that the proposal may either reduce the

status of the water bodies or prevent them from reaching the required status, then this represents a failure to achieve the WFD objectives, and it should not go ahead unless justification for the new modification can be justified under Article 4.7 of the Directive.

The four objectives of the WFD Assessment are:

- **Objective 1:** To prevent deterioration in the status of the water body;
- **Objective 2:** To prevent the introduction of impediments to the attainment of Good WFD status for the water body;
- **Objective 3:** To ensure that the attainment of the WFD objectives for the water body is not compromised; and
- **Objective 4:** To ensure the achievement of WFD objectives in other water bodies within the same catchment is not permanently excluded or compromised.

3.0 Baseline Environment

The fundamental objectives of the WFD are to maintain “high status” of surface waters where it exists, prevent deterioration in the existing status of waters, and achieve at least “good status” in relation to all waters by the end of the current river basin management cycle unless a water body is subject to an extended deadline under Article 4(7) of the Directive. A water body must achieve both good ‘ecological status’ and good ‘chemical status’ before it can be considered to be at good overall status. An assessment of the risks to the achievement of these objectives for water bodies has been undertaken by the EPA through the extensive characterisation of water bodies and the key pressures acting upon them. This characterisation process allows the development of a PoMs to aid the achievement of the WFD objectives.

A PoMs outlines the steps that will be taken to meet WFD objectives applicable to each water body. This Programme is contained within an overarching River Basin Management Plan (RBMP). These measures will require implementation at the strategic level, but also at the regional and local levels through the establishment of Regional Integrated Catchment Management Programmes. Areas for Action are areas where focused action will be carried out in the river basin management cycle. The Areas for Action were selected based on the priorities in the rRBMP, the evidence from the WFD characterisation process, and the expertise, data and knowledge of public body staff with responsibilities for water and the different pressure types.

Environmental Quality Standards (EQSs) for classifying surface water status are established in the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (SI No. 272 of 2009), as amended. These regulations set standards for biological quality elements, physico-chemical conditions supporting biological elements (including general conditions and specific pollutants), priority substances and priority hazardous substances.

As shown in Figure 3-1, the ‘ecological status’ of a water body is established according to compliance with the EQSs for biological quality elements, physico-chemical conditions supporting biological elements and relevant pollutants and hydromorphological quality elements. The ‘chemical status’ of a water body is established according to compliance with the EQSs for priority substances and priority hazardous substances. In addition to achieving good ecological and chemical status, a water body must achieve compliance with standards and objectives specified for protected areas, which include areas designated by the Bathing Water Directive; the Urban Waste Water Treatment Directive; the Shellfish Waters Directive; the Habitats Directive and the Birds Directive. Waters bodies that are compliant with WFD standards, but that contain protected areas that are non-compliant with protected area standards, are downgraded to ‘less than good’ status.

3.1 Catchment Physical Setting

Liffey and Dublin Bay catchment, within which the Project is located, comprises the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point, Co. Dublin, draining a total area of 1,616km². The largest urban centre in the catchment is Dublin City. The other main urban centres are Dun Laoghaire, Lucan, Clonee, Dunboyne, Leixlip, Maynooth, Kilcock, Celbridge, Newcastle, Rathcoole, Clane, Kill, Sallins, Johnstown, Naas, Newbridge, Athgarvan, Kilcullen and Blessington. The total population of the catchment is approximately 1,255,000. The Liffey catchment contains the largest population of any catchment in Ireland and is characterised by a sparsely populated, upland south eastern area underlain by granites and a densely populated, flat, low-lying limestone area over the remainder of the catchment basin.

3.2 WFD Classification

As outlined in Section 1.0, the ABR2 Project is located within the Liffey Estuary Lower Heavily modified water body and is upstream of the Dublin Bay coastal water body. There is also upstream hydrological connectivity to the Liffey Estuary Upper and Tolka Estuary transitional water bodies.

Based on monitoring information and data from 2019 to 2024, the current WFD status classification of transitional and coastal water bodies potentially affected by the ABR2 Project is illustrated in Figure 3-2.

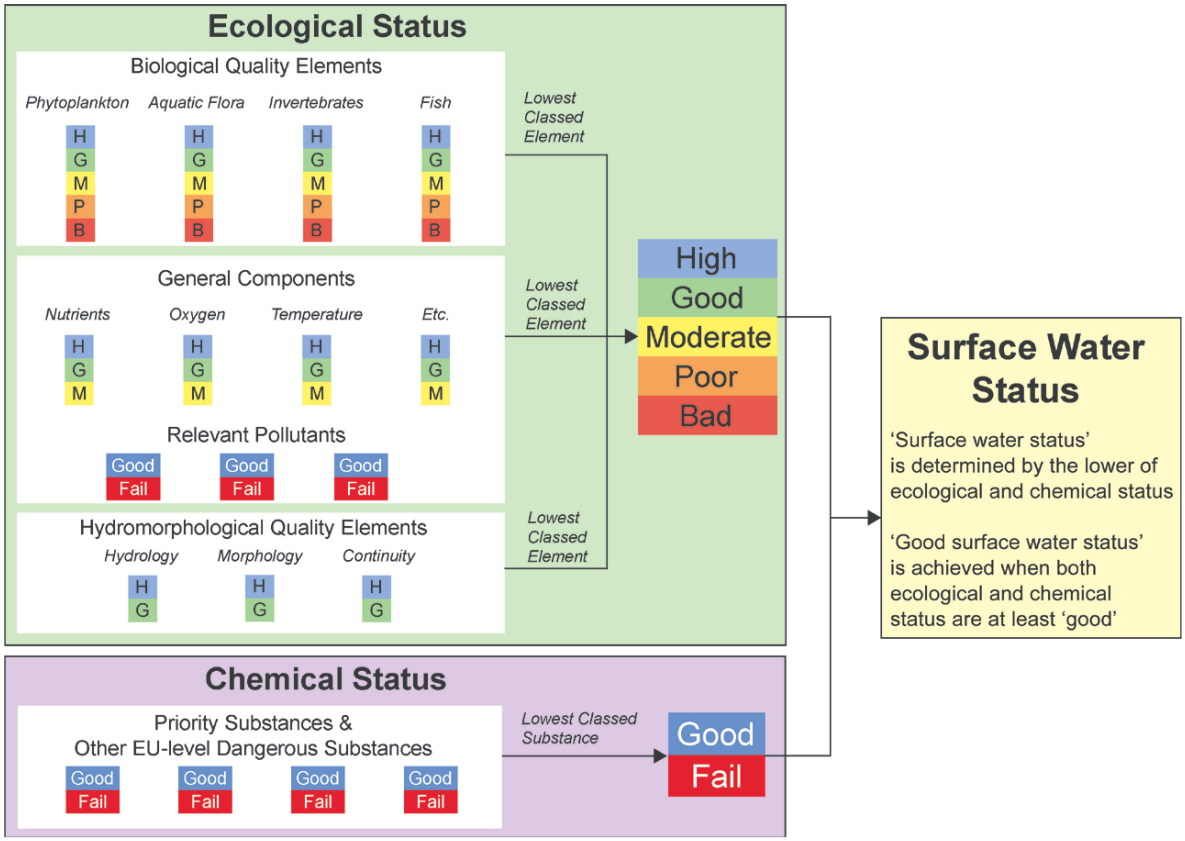


Figure 3-1: Elements of the Water Framework Directive Status

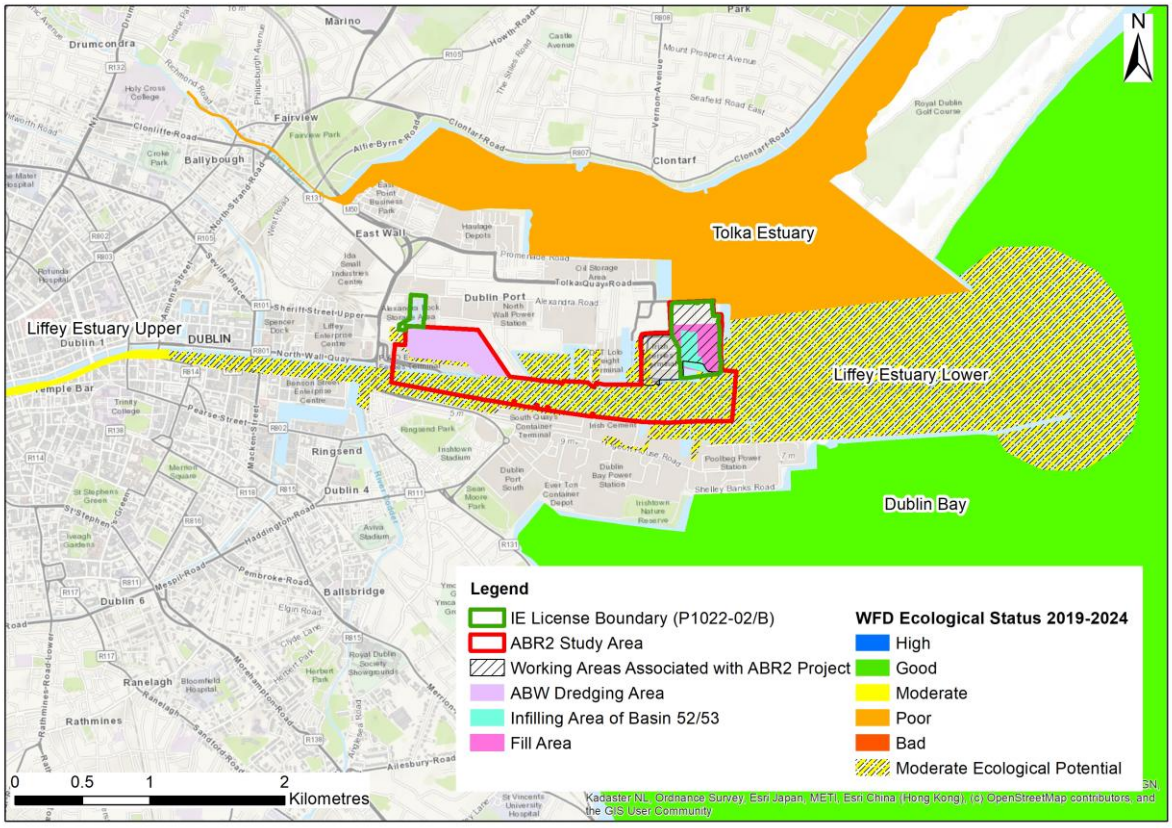


Figure 3-2: WFD Status 2024

The WFD status classification between 2007 and 2024 is shown in Table 3-1 for each of these water bodies. In summary, the Liffey Estuary Lower transitional water body has most recently been reported as “moderate ecological potential (MEP)” in 2024, and no change in status since the previous monitoring cycle. The Tolka Estuary transitional water body has most recently been reported as “poor” in 2024, and no change in status since the previous monitoring cycle. The Dublin Bay coastal water body was reported as “good” in the 2019-2024 WFD monitoring cycle, a status which it has maintained since 2009. The Liffey Estuary Upper was reported as “moderate” in the 2019-2024 cycle, a drop in status from the previous WFD cycle (2016-2021).

Table 3-1: WFD Status (2007-2024)

WFD Status 2007-2024	Liffey Estuary Lower EA_090_0300	Liffey Estuary Upper EA_090_0400	Tolka Estuary EA_090_0200	Dublin Bay EA_090_0000
Overall WFD Status (2007-2009)	Moderate Ecological Potential	Poor	Moderate	Moderate
Overall WFD Status (2010-2012–interim)	Good Ecological Potential (GEP)	Moderate	Moderate	Good
Overall WFD Status (2010-2015)	Moderate Ecological Potential	Moderate	Moderate	Good
Overall WFD Status (2013-2018–interim)	GEP	Good	Moderate	Good
Overall WFD Status (2016-2021)	Moderate Ecological Potential	Good	Poor	Good
Overall WFD Status (2019-2024)	Moderate Ecological Potential	Moderate	Poor	Good

A further breakdown of the ecological and chemical elements used to determine status for the 2016-2021 WFD cycles is shown in Table 3-2.

Biological elements measured in the Liffey Estuary Lower water body are all at "moderate" status with the exception of phytoplankton and invertebrates, which are “good”. Although the supporting oxygenation and nutrient conditions are “good”, and the relevant pollutants “pass” their environmental quality standards, the overall Ecological Status is therefore “moderate.”

Biological and supporting chemistry elements monitored in the Dublin Bay coastal water body range from “good“ to “high” status. Overall Ecological Status is therefore “good” and unchanged from the previous monitoring cycle.

Table 3-2: Breakdown of contributing elements to the 2019-2024 WFD water body status

WFD Status 2019-2024 Contributing Elements	Liffey Estuary Lower EA_090_0300	Liffey Estuary Upper EA_090_0400	Tolka Estuary EA_090_0200	Dublin Bay EA_090_0000
Ecological Status or Potential	Moderate	Moderate	Poor	Good
Biological Status or Potential	Moderate	Moderate	Poor	Good
Phytoplankton Status or Potential	Good	Good	Good	High
Other Aquatic Flora Status or Potential	N/A	N/A	Poor	Good
Macroalgae Status or Potential	N/A	N/A	Poor	Good
Angiosperm Status or Potential	N/A	N/A	N/A	Good
Invertebrate Status or Potential	Good	N/A	Moderate	Good
Fish Status or Potential	Moderate	Moderate	Moderate	N/A
Hydromorphological Conditions	Moderate (HMWB)	Poor	Good	Good
Supporting Chemistry Conditions	Good	Moderate	Moderate	High
General Conditions	Good	Moderate	Moderate	High
Oxygenation Conditions	Good	Moderate	Moderate	High
Dissolved Oxygen (% Sat)	High	Moderate	Moderate	High
Other determinand for oxygenation conditions	Good	High	High	High
Nutrient Conditions	Good	Moderate	Moderate	High
Other determinand for nutrient conditions	Good	Moderate	Moderate	High

WFD Status 2019-2024 Contributing Elements	Liffey Estuary Lower EA_090_0300	Liffey Estuary Upper EA_090_0400	Tolka Estuary EA_090_0200	Dublin Bay EA_090_0000
Phosphorous Conditions	Good	High	Good	High
Orthophosphate	Good	High	Good	High
Specific Pollutant Conditions	Good	N/A	N/A	Pass

3.3 Heavily Modified Water Body Designation

Designation

Heavily modified waterbodies, which are bodies of surface water which have been substantially changed in their hydromorphological character for the purposes of a specified use. The hydromorphological condition of water bodies has commonly been significantly modified by human intervention for various specified uses, such as for navigation, land drainage, hydroelectric power generation and water supply. The environmental objectives for HMWBs recognise that the extent of the modifications means that the conditions are not consistent with those required for GES, and that the impacts cannot be fully mitigated without impacting on the specified use.

The specified uses and the criteria for designation are set out in Article 4(3) of the Directive. A waterbody can be designated as a HMWB if:

a. the changes to the hydromorphological characteristics of that body which would be necessary for achieving GES would have significant adverse effects on:
    i. *the wider environment;*
    ii. *navigation, including port facilities, or recreation;*
    iii. *activities for the purposes of which water is stored, such as drinking-water supply, power generation or irrigation;*
    iv. *water regulation, flood protection, land drainage, or*
    v. *other equally important sustainable human development activities;*
b. the beneficial objectives served by the artificial or modified characteristics of the water body cannot, for reasons of technical feasibility or disproportionate costs, reasonably be achieved by other means, which are a significantly better environmental option. Such designation and the reasons for it shall be specifically mentioned in the RBMPs required under Article 13 and reviewed every six years.

The structures and changes to channel and bed morphology required for a water body to be used for Navigation and Ports are typical of the type of modifications that result in the designation of a water body as heavily modified. The Lower Liffey Estuary has been designated a HMWB since the first river basin management cycle due to navigation for the purposes of Dublin Port, with the key hydromorphological/ physical change driven by the specified use identified as dredging and shoreline alterations.

The River Basin management Plan 2022-2027[1] acknowledged that "Initial evidence indicates that there are more waterbodies that have been heavily modified than have previously been designated to date, both within the specified use categories included in the first cycle, and in some of the other specified use categories not previously considered.

The RBMP also states:

"It is important to reiterate, that waterbodies with a heavily modified designation are still expected to meet the required standards for all the other water quality elements, with measures to mitigate to the greatest extent possible the hydromorphological impacts also required."

As highlighted in the Review of Ireland's Heavily Modified Water Body Designations for the Third Cycle River Basin Management Plan (EPA, 2024):

"Waterbodies that are designated as heavily modified have a WFD environmental objective of GEP rather than GES. The designation means that a realistic objective is set that acknowledges that the water body has been physically altered for a specified use that society needs to be continued. The physical modifications caused by the use need to be mitigated against as far as possible, whilst acknowledging that the specified use needs to be retained. For example, a fish pass designed to best practice standards might be required on an instream barrier to ensure fish passage".

In the EPA review, the designation tests required for the designation of Transitional and Coastal Water bodies as heavily modified, as required under Article 4(3), were applied. The Lower Liffey Estuary retains its designation as a HMWB for the third cycle of the RBMP, as it remains substantially changed in terms of its hydromorphology and will not achieve GES due to these changes. The EPA concluded that there are no restoration measures available that would not impact on the specified use, i.e., navigation and ports, and there are no alternative options which are a significantly better environmental option, technically feasible and not disproportionately costly (EPA, 2024).

The Lower Liffey Estuary is therefore one of 13 transitional and coastal water bodies that have been recommended as a HMWB under the "navigation and urban uses" specified use category.

[1] River Basin Management Plan 2022 - 2027

In addition, the RBMP also includes the Upper Liffey Estuary transitional water body as a candidate HMWB due to navigation and urban specified uses, again due to dredging and shoreline alterations. The Dodder_50 and Tolka_060 river water bodies are also designated as candidate HMWBs with a specified use of flood protection and urban, with the significant changes in hydromorphology due to urban pressures (Longitudinal connectivity (Sediment); Lateral connectivity (River corridor); Lateral connectivity (Bank protection); Lateral connectivity (Floodplain)) and Flood Protection pressures (Lateral connectivity (Bank protection)).

GEP

Waterbodies that are designated as heavily modified have a WFD environmental objective of GEP rather than GES. The designation means that a realistic objective is set that acknowledges that the water body has been physically altered for a specified use that society needs to be continued. The physical modifications caused by the use need to be mitigated against as far as possible, whilst acknowledging that the specified use needs to be retained.

Therefore, the designation of the Liffey Estuary Lower as a HMWB means that mitigation measures will need to be applied to address hydromorphological pressures as far as practical whilst still retaining the specified use of the water body, i.e. navigation and ports.

What GEP will represent in the HWMB designations will be a decision for the EPA, and whilst hydromorphological supporting conditions will be mitigated to the greatest extent possible through the application of mitigation measures, HMWBs will still be expected to meet the required standards for other water quality elements.

Ireland intends to undertake the "*Mitigation (Prague) Approach*" in the establishment of GEP, i.e. a mitigation measures-based approach used by many Member States. Under this system, a heavily modified waterbody is considered to be at GEP (GEP) when it has:

1. The relevant mitigation measures in place? The recommendation here is to use the EU mitigation measures library for surface waters;
2. Achieved Good (or better) condition for the monitored biological quality elements (BQE) that are not sensitive to the hydromorphological modification.
3. Achieved the physico-chemical conditions equivalent to GES, except where parameters are impacted by the hydromorphological alteration caused by the specified use; and
4. Achieved the best state previously achieved since the modification for the monitored biological quality elements that are sensitive to the hydromorphological modification, where those data are available

Mitigation Measures

A review of the European Commission's Joint Research Centre's report on a common understanding of using mitigation measures for reaching GEP for heavily modified water bodies was undertaken (Halleraker et al., 2016).

The WFD definition of maximum ecological potential for a HMWB is "*The hydromorphological conditions are consistent with the only impacts on the surface water body being those resulting from the artificial or heavily modified characteristics of the water body once all mitigation measures have been taken to ensure the best approximation to ecological continuum, in particular with respect to migration of fauna and appropriate spawning and breeding grounds*"

This approach is initially less reliant on an ecology-hydromorphology link, which is currently poorly defined due to the lack of scientific knowledge linking the responses of biological quality elements to specific hydromorphology pressures, and GEP is defined based on the implementation of mitigation measures.

Firstly, all appropriate mitigation measures that do not have a significant adverse effect on the specified use are identified, and the Maximum Ecological Potential (MEP) is defined by estimating, using expert judgment, what biological values are to be expected following the implementation of the measures.

Next, the measures that are deemed to lead to only slight improvements in values of the Biological Quality Elements (BQEs) are removed.

The remaining measures are then seen as the possible mitigation measures for GEP.

Ideally, the biological values for GEP are then defined once these measures have been put in place. The true biological values for GEP can only be derived, however, when links between hydromorphology and biology are known; in the absence of this knowledge, GEP is solely defined on the basis of the mitigation measures defined using this approach.

To this end the review of the Mitigation Measures Library from the CIS Guidance Document 37 *Steps for defining and assessing ecological potential for improving comparability of Heavily Modified Water Bodies (EC, 2019)* revealed that there are 12 mitigation measure categories that are relevant across EU Member States, including Ireland and for which a tool box of measures have been developed to address hydromorphological pressures as far is practical whilst still retaining the specified use of the water body. These mitigation measures categories, and some examples of measures within each category, are provided in Table 3-3.

These measures, which are included in the mitigation libraries of many Member States and measures being implemented in Ireland, are consistent with the approaches being adopted throughout Europe to mitigate hydromorphological impacts as best as possible. Whilst this mitigation may not result in the achievement of good supporting hydromorphological conditions, the Lower Liffey Estuary is currently at moderate hydromorphological supporting conditions, which will ensure that measures are being undertaken to ensure the achievement of GEP.

The WFD Assessment will assess how the ABR2 Project will contribute to the implementation of these mitigation measures and to the environmental objective of the Liffey Estuary Lower, which is to achieve GEP by 2027.

Table 3-3: Mitigation Measure Categories

Key groups of measures	Examples of specific measures to reach GEP
Improve morphological and/or habitat diversity of seabed	- Placement of rocks, artificial reefs, etc., to form reefs and/or other types of habitats for BQEs - Use breakwaters or groynes or shore parallel islands to create local variations in depth, exposure/shelter, etc. - Local deepening by dredging or excavation, where sustainable
Intertidal habitat restoration, enhancement or creation	- Habitat rehabilitation - Managed realignment to the new line - Re-open polders; setback (to higher ground; to existing secondary defence line) - Step back (create an intertidal shelf against a vertical wall) - Planter baskets; other planting initiatives - Improve creek or backwater habitats - Use breakwaters, shore parallel islands or similar to create sheltered conditions promoting intertidal enhancement - Offsetting measures, e.g., spawning habitat for fish
Beach or foreshore replenishment	- Replenish with natural materials to allow the restoration or enhancement of degraded intertidal or shallow subtidal substrates/habitats; to raise elevation to provide a buffer against wave energy
Sediment management	- Sediment bypassing, move sediment from behind breakwater, dam, jetty, terminal groyne, etc. and (re)place in natural system to address downstream/downdrift erosion (habitat loss or degradation) - Sever root of groyne, breakwater, etc., to reinstate longshore sediment transport
Beneficial use of dredged material	- Where dredging for navigation or flood conveyance purposes results in a waste to be disposed of, seek opportunities to use material beneficially, for sediment supplementation, habitat enhancement, etc., directly through placement (e.g., rainbowing) or indirectly via a feeder berm or water column recharge - Also: can use other waste products, e.g. oyster shells, to create berms or banks as habitat/buffer
Modification or management of operations or structures e.g., sluices, vessel traffic	- Remove redundant infrastructure - Modify the operation of a lock, sluice or other structure to facilitate fish passage or to maintain desired salinity levels - Retrofit if necessary to enable the above - Use fluid mud navigation / dynamic underkeel clearance where safe to do so - Explore the use of SMART technology for vessel traffic management - Speed limits to reduce wash-induced erosion
Soft engineering solutions; use of vegetation	- Seeding, planting, transplanting, e.g., dune or marsh vegetation, reedbeds - Protective structure such as brushwood groynes, sediment-filled geotubes - Rip rap or eco-blocks rather than concrete or steel
Realign to mitigate effects on flow	- Construct structures to normalise flow; realign breakwater, frontage, etc. - Lower or sever root of groyne or breakwater - Reduce wave reflection; increase wave absorption - Build culverts in breakwaters, groynes, etc. - Introduce e-flow
Reprofile embankments, structures	- Naturalise profile to support habitat development or enhancement - Step back
Fish pass	- Install fish or eel pass, ladder or similar at sluices or water level control structures
Seasonal or tidal constraints on activity	- Constraints on maintenance activities or other works during breeding/spawning season or fish migration periods; low oxygen - Working on flood or ebb tide to avoid impacts on sensitive adjacent habitats or species - Programme vegetation cutting or clearance

Key groups of measures	Examples of specific measures to reach GEP
Selection of methods or equipment	- Select a dredging method to retain sediment in the system or to avoid raising suspended sediment levels - Use a silt curtain - Manage overspill - Selective cutting or clearance, e.g., only along one bank - Use a long-arm excavator to avoid disturbing or damaging sensitive habitats; to retain riparian vegetation - Strip dredging (for aggregate) to facilitate recolonisation

Biological Quality Elements (BQE) That Are Not Sensitive to The Hydromorphological Modification

In the case of the Liffey Estuary Lower, the most recent biological monitoring has revealed that the monitoring undertaken as part of the WFD monitoring programme includes biological elements that are predominantly sensitive to organic and nutrient enrichment, but not hydromorphology, which are largely achieving conditions which are consistent with GES for these BQEs. It will be important to ensure that the additional alterations proposed under the ABR2 Project and the mitigations that will be required to address hydromorphological pressures and achieve GEP do not cause a deterioration in these biological elements.

Physico-Chemical Conditions

Alteration of general physico-chemical conditions downstream of major hydromorphological alterations can occur (e.g. temperature, dissolved oxygen supersaturation). Based on the current WFD monitoring programme and the latest monitoring for general physico-chemical conditions, this type of impact is not evident within the Liffey Estuary Lower and therefore the specified use for this HMWB, navigation, is not having a significant impact on physico-chemical conditions.

Biological Quality Elements That Are Sensitive to The Hydromorphological Modification

The Mitigation Measures Library (EU CIS Guidance No. 37) was consulted for TraC water bodies to determine the likely effects of a particular pressure on the ecological conditions of a water body. The key biological elements that are sensitive to hydromorphological alterations associated with the ABR2 Project, i.e. dredging of Alexandra Basin West (ABW) and infilling of Berth 52/53.

Angiosperms and macroalgae are not typically part of the habitat types in the vicinity of the Project, nor is there monitoring information available. However, fish and benthic invertebrates have the potential to be affected by these morphological alterations. The latest monitoring information available for fish in the Lower Liffey Estuary was for the 2010-2015 WFD monitoring period, when the status was considered to be moderate. However, prior to this, in the 2007-2009 and the 2010-2012 monitoring period, the status was considered to be good even though the hydromorphological supporting conditions were considered to be moderate over these same monitoring periods. This suggests that more

recent deterioration in fish status is as a result of other types of pressures rather than the morphological pressures associated with navigation. Notwithstanding this, the ABR2 Project must ensure that there is no potential to prevent fish from achieving the best state previously achieved since the modification. The same is applicable for benthic invertebrates which achieved a good status classification in the 2019-2024 monitoring period, an improvement from the previous classification of moderate status in the 2016-2021.

3.4 Register of Protected Areas

A significant proportion of the area of Dublin Bay and the adjacent coastline is protected under existing EU legislation requiring special protection due to its sensitivity to pollution or particular environmental importance. All of the areas requiring special protection in the Irish River Basin District have been identified by EPA, mapped and listed in a national register of protected areas (required under Article 6 of the WFD). The register of protected areas includes:

- Areas designated for the abstraction of water for human consumption (Drinking Water Protected Areas);
- Areas designated for the protection of economically significant aquatic species, i.e. Freshwater Fish and Shellfish;
- Bodies of water designated as recreational waters, including areas designated as bathing waters;
- Nutrient-sensitive areas, including areas identified as Nitrate Vulnerable Zones under the Nitrates Directive or areas designated as sensitive under Urban Waste Water Treatment Directive; as well as
- 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 (Special Protection Areas (SPAs); and Special Areas of Conservation (SACs)).

These protected areas have their own monitoring and assessment requirements to determine their condition. They are often assessed for additional pollutants or requirements relevant to their designation. Protected areas within the Dublin Port and Dublin Bay area include areas of Bathing Water, Nutrient Sensitive Waters and Natura 2000 sites.

Bathing Waters

The Bathing Water Directive (2006/7/EC) came into force in March 2006 and was transposed into Irish law by the Bathing Water Quality Regulations, 2008, as amended. The previous 1976 Directive was repealed with effect from 31 December 2014. Since 2014, the annual water quality classification (rating) of a beach or lake has been based on water quality results covering a four-year period rather than a single previous season's data. Water quality at beaches and lakes is classified as Excellent, Good, Sufficient or Poor

(Table 3-4). This approach is common across all EU Member States, and there is a requirement to ensure that bathing waters are of 'Sufficient' standard or better. Any 'Poor' bathing water requires a programme of adequate management measures to be implemented. A minimum of 16 samples is required for a formal annual assessment.

Table 3-4: Annual Assessment Criteria for Bathing Waters

Parameter	Excellent	Good	Sufficient
E. coli (Freshwater)	500*	1000*	900**
E. coli (Coastal)	250*	500*	500**
Intestinal enterococci (freshwater)	200*	400*	330**
Intestinal enterococci (Coastal)	100*	200*	185**

*based on 95-percentile value **based on 90-percentile value

The regulated bathing areas identified in the immediate vicinity of the ABR2 Project are Dollymount Strand, Sandymount Strand, and Seapoint. The most recent bathing water classification is for 2024, and Dollymount Strand has been classified as Good; Sandymount Strand has been classified as Poor; and Seapoint has been classified as Excellent (Figure 3-3).

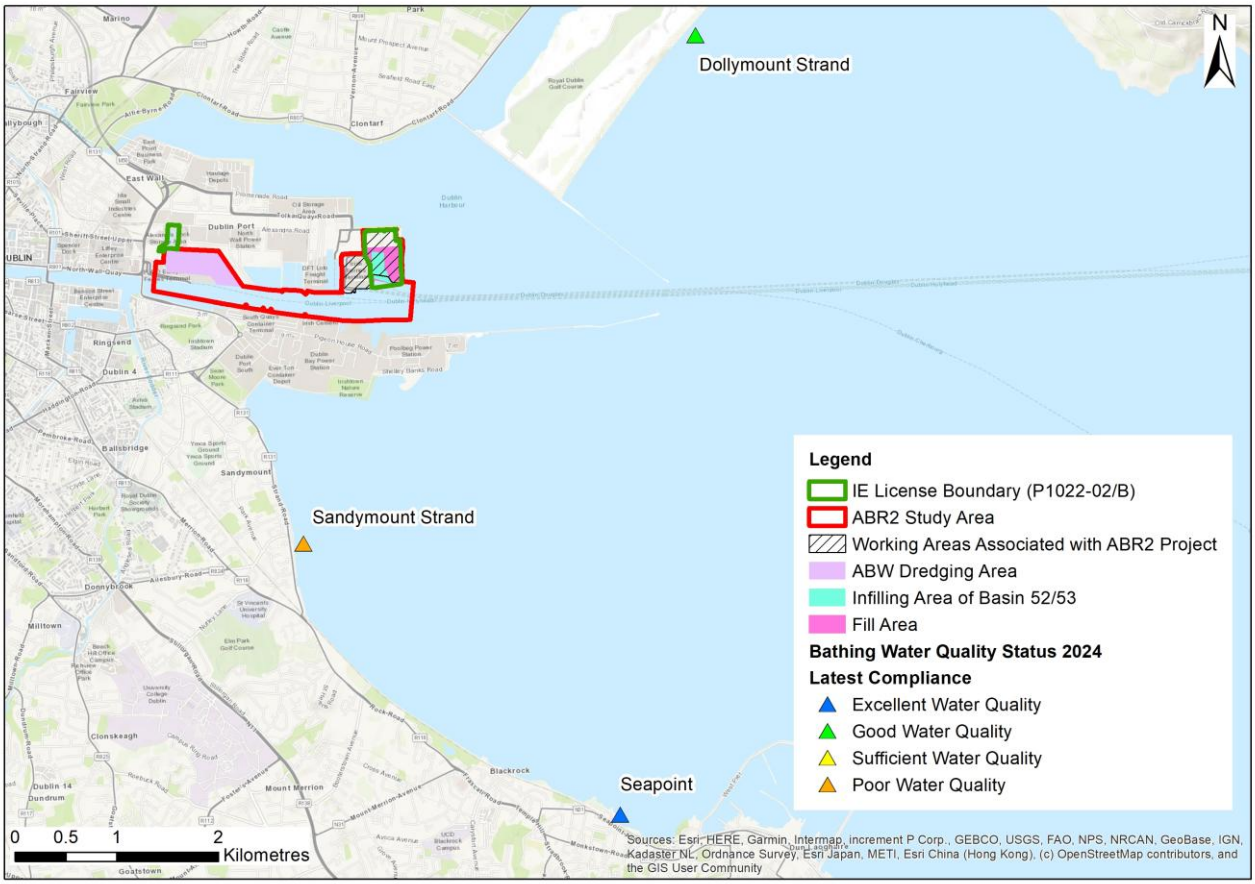


Figure 3-3: Bathing water quality in the Dublin Bay Area 2024

The main sources of pollution resulting in the Poor classification in Sandymount Strand are misconnections and sewage overflows, which contaminate streams flowing to the bathing water, dog fouling left on the beach, and birds. The Dublin Bay Bathing Water Taskforce (chaired by Dublin City Council) was established in 2019 to help identify and fix pollution sources impacting on bathing water quality in Dublin Bay, including Sandymount Strand. Programs to identify and fix misconnections are ongoing by the local authority. Uisce Éireann has made significant improvements to the wastewater network, and work is ongoing to address urban wastewater pressures.

While there is no published status for 2025 at the time of writing, the results for individual samples at all sites in the vicinity of the ABR2 Project monitored during the 2025 bathing season are shown in Table 3-5. They show that the great majority of sample results indicated Excellent quality.

Table 3-5: Summary Status of Samples during the 2025 Bathing Season

Sample	Dollymount Strand	Sandymount Strand	Seapoint
03/06/2025	N/A	N/A	Good
09/06/2025	Excellent	Excellent	Excellent
10/06/2025	Excellent	Sufficient	N/A
15/06/2025	Excellent	Excellent	N/A
16/06/2025	N/A	N/A	Excellent
23/06/2025	Excellent	Excellent	Excellent
24/06/2025	Excellent	Good	N/A
30/06/2025	N/A	N/A	Excellent
07/07/2025	Excellent	Excellent	Excellent
08/07/2025	Excellent	Excellent	N/A
14/07/2025	Excellent	Good	Excellent
21/07/2025	N/A	Poor	Poor
22/07/2025	Good	Excellent	N/A
28/07/2025	Excellent	Good	Excellent
05/08/2025	Excellent	Excellent	Excellent

Sample	Dollymount Strand	Sandymount Strand	Seapoint
11/08/2025	Excellent	Excellent	Excellent
18/08/2025	Excellent	Sufficient	N/A
19/08/2025	Good	Excellent	N/A
21/08/2025	N/A	N/A	Excellent
25/08/2025	Sufficient	Excellent	Excellent
02/09/2025	Good	Good	Excellent
08/09/2025	Excellent	Excellent	Excellent
09/09/2025	Excellent	Sufficient	N/A

Nutrient Sensitive Waters

The Urban Waste Water Treatment Regulations 2001, as amended, which transpose the Urban Wastewater Treatment Directive (91/271/EEC) into Irish law and update the Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations 1994, as amended, list nutrient sensitive waters in the Third Schedule.

The Liffey Estuary from Islandbridge Weir to Poolbeg Lighthouse, including the River Tolka basin and South Bull Lagoon, has been designated as a nutrient sensitive area (Figure 3-4). Ringsend WWTP currently discharges in the Lower Liffey Estuary and is in the List of Priority Urban Areas (Uisce Éireann, 2024), where treatment must improve to resolve national environmental priorities. Upgrade of the treatment plant was proposed for completion by 2025.

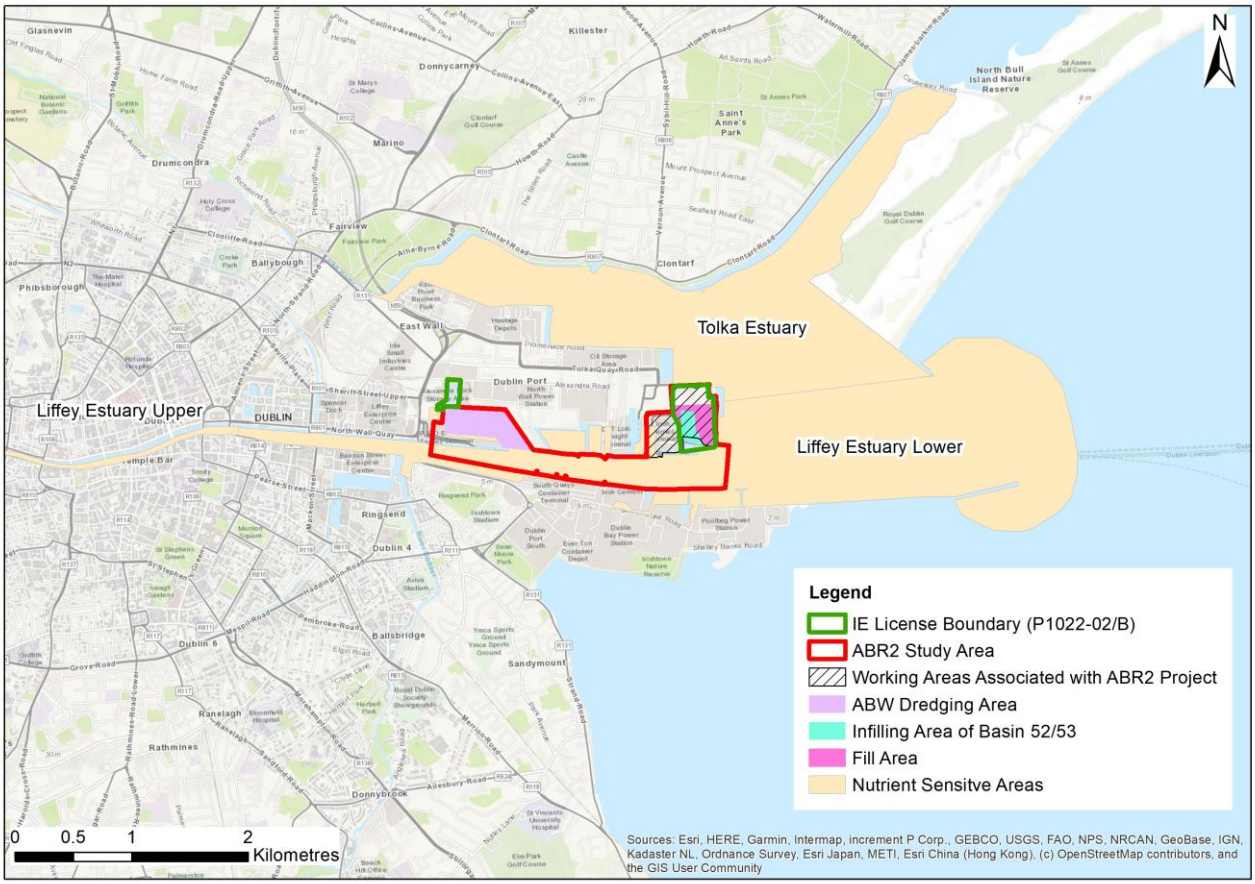


Figure 3-4: Nutrient Sensitive Areas

Natura 2000 Protected Areas

Natura 2000 is a European network of important ecological sites. The EU Habitats Directive (92/43/EEC) places an obligation on Member States of the EU to establish the Natura 2000 network. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC), and SACs, established under the Habitats Directive itself.

As illustrated in Figure 3-5, the majority of the ABR2 Project does not fall within any Natura 2000 site (i.e. SPA or SAC).

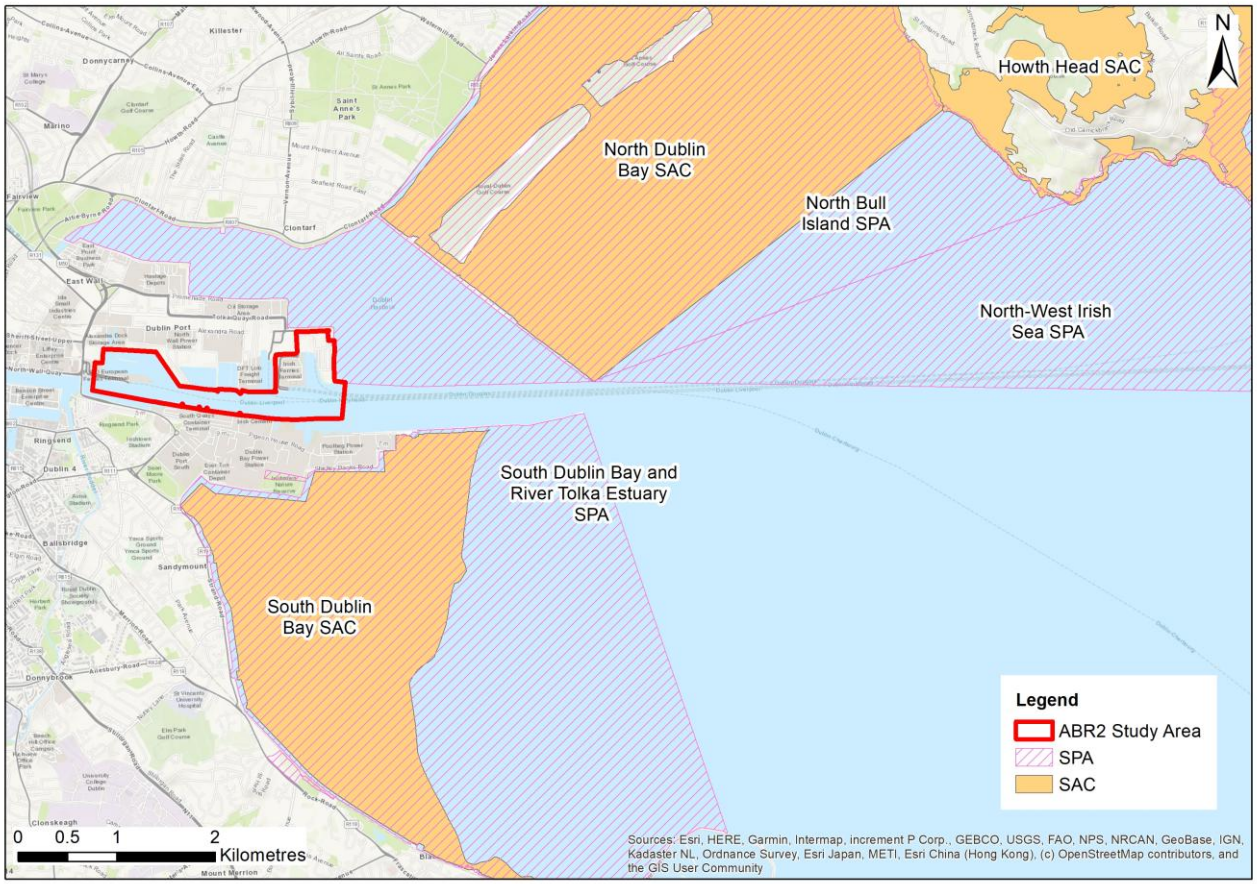


Figure 3-5: Natura 2000 Designated Sites – SACs & SPAs

4.0 Project Description

A detailed description of each element of the ABR2 Project is presented in Chapter 5 of the EIAR and on the Planning Drawings. A General Arrangement Drawing illustrating the main elements of the ABR2 Project is presented in Figure 4-1. There are two primary work areas which were previously consented under the parent ABR Project and are required to be completed in order to facilitate delivery of the Unified Ferry Terminal permitted under the MP2 Project.

A proportion of these works have been completed to date as outlined below, these are:

1. **ABW** - Dredging of 470,000m^3 of contaminated material to a depth of -10.0m CD (chart datum) over an area of 194,000m^2 within the redeveloped ABW and its subsequent remediation.
2. **Berth 52/53** - Infilling of the Terminal 5 Ro-Ro basin (45,650m^2) and raising of existing levels by 1.4m over an area of 95,000m^2.

The remaining works are required to complete the previously consented works the subject of this planning submission and EIAR. These works include:

1. **ABW** - Dredging of c. 334,000m^3 of contaminated material to a depth of -10.0m CD (chart datum) over an area of 194,000m^2 within the redeveloped ABW and its subsequent remediation.
2. **Berth 52/53** - Infilling of the Terminal 5 Ro-Ro basin (45,650m^2) and raising of existing levels by 1.4m over an area of 95,000m^2.

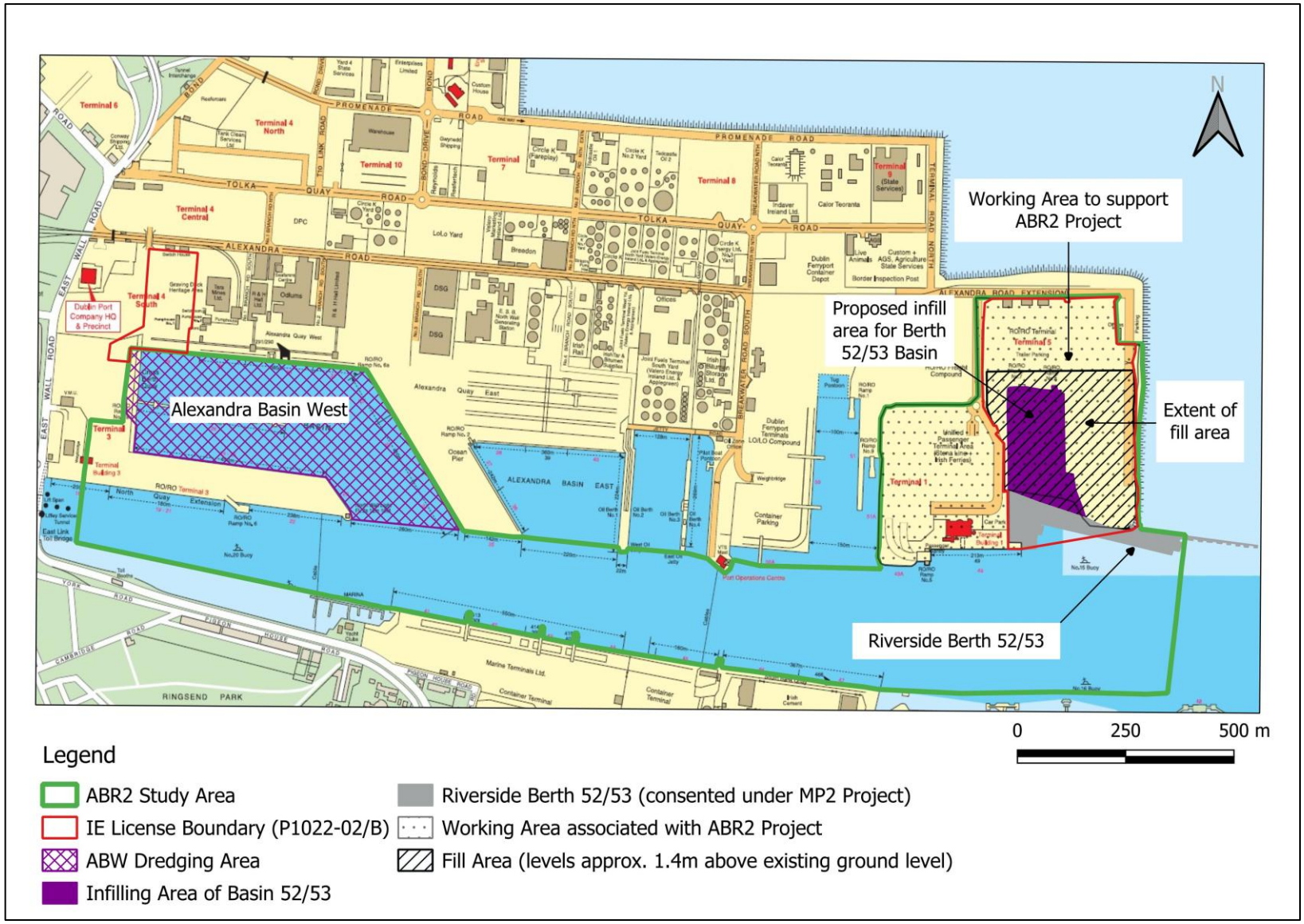


Figure 4-1: Extent of works to be completed as part of the ABR2 Project

5.0 WFD Assessment

5.1 Stage 1: Screening

In line with the Planning Inspectorate guidance, the Project has been screened for WFD Assessment on the basis of the source-pathway-receptor (S-P-R) model.

Source – The nature of the works will result in a direct impact on the Liffey Estuary Lower transitional water body, and indirect impacts on the Dublin Bay coastal water body. The types of activities proposed could potentially have an impact on the environmental objectives of these water bodies.

Pathway – As the activities are proposed near or within these waterbodies, there is a direct pathway to the receptor.

Receptor – There are a number of contributing elements of WFD status that could be impacted, particularly the chemical status, the physico-chemical and hydro-morphological supporting conditions, and the biological elements.

Based on the S-P-R model, the ABR2 Project has been **screened in** for WFD Assessment.

5.2 Stage 2: Scoping

This section summarises the potential impacts associated with the Project. The potential risks to each of the key receptor groups are considered.

Project Design Parameters

The project description is provided in Chapter 5 of the EIAR and on the Planning Drawings. Table 5-1 outlines the project design parameters that have been used to inform the assessment of potential impacts of the construction, operation and decommissioning phases of the Project on the environmental objectives of the WFD water bodies within the WFD WFD Study Area.

Construction Phase

Temporary impacts on water quality have the potential to occur during the construction phase of the works. Mobilised contaminated dredge material and discharges from the treatment plant(s) to remediate this dredge material for use as infill are the principal potential sources of water quality impact. The following have been considered in this assessment:

- Increased suspended sediment levels containing heavy metals due to the accidental release of contaminated sediment to the water column during dredging operations and discharges from the treatment of contaminated dredge material – suspended sediment and contamination has the potential to effect the physico-chemical, biological and chemical status of water bodies, and also has the potential to impact

on the physical features of water bodies due to construction, operational and maintenance and/or decommissioning related activities;

- Accidental release of highly alkaline contaminants from concrete and cement during the demolition of existing structures and the landside ancillary works to serve the marine operations; and
- Water quality impacts associated with works machinery, infrastructure and on-land operations, including the temporary storage of construction materials, oils, fuels and chemicals – pollution of water bodies caused by accidental spills/contaminant release has the potential to affect the physico-chemical, biological and chemical status of water bodies during the construction, operation and decommissioning of the Project.

Operational Phase

The operational phase impacts associated with the ABR2 Project represent an increase in the current normal day-to-day port activities. These associated impacts are currently well understood and managed within the Port's operational and maintenance procedures. The principal potential sources of water quality impact are:

- Increased suspended sediment levels due to port operations, including the ongoing maintenance dredging;
- Surface water drainage; and
- In addition to normal day-to-day port activities and potential impact on water quality, any hydromorphological impacts associated with the dredging of ABW and infilling of Berth 52/53 have been assessed based on the coastal process modelling in Chapter 14 of this EIAR and are assessed further in the context of the designation of the Liffey Estuary Lower as a body HMWB with a specified use of Port Operations.

Table 5-1: Project design parameters used for the assessment of potential impacts for WFD Assessment

Potential impact	Project Design Parameters	Justification
	Construction Phase	
Mobilisation of contaminated sediment containing heavy metals during dredging of ABW	Dredging of ABW Capital dredging to a standard depth of -10m CD at ABW is required to allow it to handle deeper draughted ships in the years ahead. In addition, undertaking the works in ABW will allow DPC to take steps to address a legacy contamination issue in the basin, which restricts DPC's ability to carry out routine and essential maintenance dredging operations. The berths in ABW will become increasingly busy in the future, and it is important (both operationally and financially) that DPC is able to include these berths within routine maintenance dredging campaigns. Contaminated dredge spoil will be transported by barge from ABW to Berth 52/53 for treatment prior to use as infill.	Environmental sampling of sediment within ABW has demonstrated that the bed of the basin contains sandy and silty clays that are contaminated with several heavy metals such as Arsenic, Copper, Chromium, Cadmium, Nickel, Lead, Mercury, and Zinc and organotins (Dibutyltin (DBT) and Tributyltin (TBT)), as a result of past ship building, maintenance, and repair activities, handling of ores, and other shipping activities. Dredging operations will cause temporary suspension and release of contaminated sediments at the loading sites. Dredging loading operations have been designed to minimise the disturbance and escape of material at the seabed and during removal through the water column.
Accidental Spillages of Dredge Spoil	Transport of dredge material from ABW to treatment facilities In order to facilitate the use of contaminated dredge spoil as infill material for Berth 52/53, dredged sediments from ABW will be treated through the stabilisation/solidification or soil washing methods, depending on the level of contamination. The dredged spoil will be transported to alternative treatment facilities proposed to be located at North Wall Quay Extension and/or at Berth 49, and/or Berth 52 West. However, due to operational constraints within the Port, neither Berth 49 nor Berth 52 West may be used concurrently. This may result in several handling and treatment scenarios occurring during the construction phase, as follows: treatment may occur at either one of the three possible locations individually or a combination of two alternative scenarios (excluding Berth 49 and Berth 52 West occurring concurrently).	The use of a barge to transport dredge spoil for treatment can increase the risk of accidental release of potentially hazardous material into the water environment. Spill plates will be in place on the barge, and overtopping will not be permitted to prevent spillages during transport and offloading operations
Discharge from the treatment of dredged material	Discharge from the treatment of dredged material In order to facilitate the use of contaminated dredge spoil as infill material for Berth 52/53, dredged sediments from ABW will be treated through the stabilisation/solidification or soil washing methods, depending on the level of	Surface water quality could be impacted during the treatment works through the generation of plumes of sediment and/or heavy metals if emission limit values are exceeded.

Potential impact	Project Design Parameters	Justification
	contamination. Discharges from this treatment will be subject to emission limit values set within the IE licence and associated mitigation measures.	
Release of contaminated surface water drainage from the treatment areas	<u>Contaminated surface water drainage from the dredge material treatment area</u> Through appropriate site layout and design of surface water collection systems, uncontaminated water will be kept separate from contaminated water, and good housekeeping measures will be put into place to minimise the potential for cross-contamination. All contaminated water will be managed and directed through the wastewater treatment system prior to discharge under the requirements of the IE Licence. Precipitation falling on the stockpiled dredge material within the three treatment areas will be collected within a bund surrounding the contaminated material and then subsequently pumped to the wastewater treatment works for treatment. Therefore, the surface water generated in the stockpiled contaminated dredge areas will be contained within the bund and then treated in the wastewater treatment plant. Clean surface water generated in the treatment areas will drain to the existing drainage network.	Surface water quality could be impacted through the generation of plumes of sediment and/or heavy metals if emission limit values are exceeded.
Infilling of Berth 52/53	The treated dredged material will be recovered for use as infill for the basin at Berth 52/53. Prior to the filling of Berth 52/53 basin, the replacement Berth 52 West quay wall will be constructed (under a separate planning consent) to close off Berth 52/53 from the main navigation channel. This will eliminate direct surface water exchange between the basin and the Liffey estuary channel. Water quality will be measured in Berth 52/53 during the filling operation to ensure that measured parameters are within agreed limits. A controlled outlet from the Berth 52/53 basin will be constructed to control water level/flow. Infilling with treated sediments will continue to a level of c. 1.6m OD. Previously treated dredge material (currently stored in a bunded and capped stockpile adjacent to Berth 52/53) will then be excavated and infilled to continue to raise levels to the rim of the basin, with further minor filling to provide final levels (post settlement) of the infill. The resulting temporary surface will be capped with High Density Polythene (HDPE) liner and geotextile protection layer to facilitate	Displacement of water within Berth 52/53 as it is infilled may impact surface water quality through the generation of plumes of sediment.

Potential impact	Project Design Parameters	Justification
	drainage and shedding of incident rainfall and surface water from the infilled material without coming into contact with the treated infilled material.	
Disposal of excess spoil	Disposal of excess dredge spoil Where calculations indicate that the available void space cannot accommodate dredging ABW to -10m CD, dredging will be reviewed with a variable dredging depth used instead across ABW to minimise the generation of dredge sediments as far as practicable. Where variable dredging depth cannot be used, excess dredge material will be recovered at a soil recovery or soil treatment facility in Ireland, Great Britain or Northern Europe. Alternatively, in the event that excess dredge material cannot be treated at a soil recovery or soil treatment facility in Ireland, Great Britain or Northern Europe, a suitable licenced landfill facility in Ireland will be selected to dispose of the material.	It is unlikely that this would cause any significant impacts to the receiving environment, on the condition that the selected facility can accommodate and treat this additional dredge material under its current licence.
General Construction Works	The construction works will involve the use of plant and machinery, as well as the associated temporary storage of construction materials, oils, fuels and chemicals.	During the construction phase, there is the potential for accidental spillage or release of construction materials (e.g. diesel, oil, chemicals), and although the potential site compounds will not be sited immediately adjacent to the water body, there is the potential for contaminants to drain into the estuary in the absence of mitigation.
Demolition waste	Demolition of existing marine infrastructure at Basin 52/53 Marine infrastructure will be removed prior to infilling of the basin between Berths 52 and 53 at Terminal 5. Demolition waste will be collected onsite for disposal by a licensed waste contractor. Demolition works proposed at Berth 52/53 prior to the infilling of the Berth 52/53 basin include: • Open pile jetty at Berth 52 (approx. area 500m^2) • Ro-Ro ramp No.7 - to be decommissioned A Management Asbestos Survey was undertaken on the structures at Berths 52 and 53 to be demolished as part of the scheme. No suspected asbestos-containing materials were identified in the marine structures. Limited access was available to the underside of these structures; therefore, they should be subject	This has the potential to create highly alkaline dust in the absence of mitigation, which in turn could find its way into the water column in the Liffey Estuary Lower and pose a threat of pollution. High alkaline contaminants for concrete and cement can have a lethal (direct mortality through toxicity) and sub-lethal (reduced respiration, growth, reproduction) effects on fish, invertebrates, and their habitats.

Potential impact	Project Design Parameters	Justification
	to a detailed asbestos survey prior to demolition. Rock armour proposed to be recovered for reuse in maintenance activities within the Port will be removed at this stage.	
Abstraction of water for use in the treatment of dredged sediments	It is proposed that water will be abstracted from Berth 52/53 at a rate of 200m^3/day for use in the treatment of contaminated dredge material from ABW. As Berth 52/53 is infilled to the point where there is not enough water to abstract, material that does not require treatment will be used as infill. Therefore, this abstraction is temporary for a time period in the construction phase.	Abstractions have the potential to impact water levels, salinity and temperature in coastal water bodies which can have indirect ecological effects.
Operational Phase		
Mobilisation of contaminated sediment containing heavy metals	The aim of dredging the ABW Alexandra Basin West to -10.0m CDM is to remove the legacy contamination issue in the basin, which will allow DPC to undertake routine maintenance dredging within this area. Therefore, following completion of the ABR2 Project, there will be no contaminated sediments remaining within the basin to disturb.	This will result in long termlong-term, positive impacts for the biological, physico-chemical and chemical quality elements of the Liffey Estuary Lower and downstream Dublin Bay water bodies. No mitigation is required
Routine maintenance dredging	The new facilities will increase the number of larger vessels that use Dublin Port. Dredging is required to maintain the established charted depth of navigation channels, manoeuvring areas, and the operational depths of the berthing pockets.	Additional maintenance dredging requirements will be carried out as part of DPC's regular maintenance dredging programme. The material generated would likely be disposed of at sea at a licensed disposal site (subject to further chemical testing), as agreed in accordance with DPC's maintenance dredging licence.
Changes in hydromorphological supporting conditions within the Lower Liffey Estuary	The designation of the Lower Liffey Estuary as a HMWB means that a realistic objective (GEP) is set, which acknowledges that the water body has been physically altered for a specified use that society needs to be continued. The physical modifications caused by the use need to be mitigated as far as possible, whilst acknowledging that the specified use needs to be retained.	The algal, fish and benthic invertebrate communities (biological elements of Ecological status) have the potential to be affected by hydromorphological alterations associated with the ABR2 Project.
Surface water drainage	Surface water drainage has previously been approved under the parent ABR Project. However, if appropriate mitigation measures are not adhered to, there is potential for surface water to become contaminated by sediments, hydrocarbons and other pollutants.	Surface water quality could be impacted through the generation of plumes of sediment and other contaminants.

Scoping Summary

The scoping assessment has been applied to the proposed works identified in Chapter 5: Project Description of the EIAR. The potential impacts for each activity have informed the selection of the activities which are scoped into the assessment.

It is necessary to identify links between the Project and every WFD Status quality element that could be affected. For all activities, the scoping phase involves considering each WFD quality element to identify where a possible causal link between the quality element and the activity exists. That is, where water body status or objectives could be affected at the water body level by the proposed activities. Table 5-2 provides a summary of the scoping assessment undertaken for the Project.

Table 5-2: Potential impacts associated with the Project and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies in the WFD Study Area

Potential impact	Biological supporting elements			Hydromorphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
Construction Phase								
Mobilisation of contaminated sediment containing heavy metals during dredging of ABW	Scoped in (see Table 5-1) Suspended sediment and sedimentation can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Overall, the resident estuarine and marine migrant fish population will experience some degree of sub-lethal stress and temporary and localised community disruption associated with elevated turbidity levels during the dredging process.			Scoped in (see Table 5-1) Sedimentation can impact the morphology of the channel, impacting the supporting hydromorphological conditions.		Scoped in (see Table 5-1) Suspended sediment and sedimentation can impact the oxygenation conditions, nutrients and temperature of a water body	Scoped in (see Table 5-1) There is the potential for the heavy metal contaminants bound to suspended solids to drain into the Liffey Estuary Lower.	
Accidental spillages of dredge spoil	Scoped in (see Table 5-1) As above			Scoped in (see Table 5-1) As above		Scoped in (see Table 5-1) As above	Scoped in (see Table 5-1) As above	
Discharge from the treatment of dredged material	Scoped in (see Table 5-1) Discharge from the treatment plants may contain levels of contaminated and unconatminated sediments. Suspended sediment and sedimentation can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Overall, the resident estuarine and marine migrant fish population will experience some degree of sub-lethal stress and temporary and localised community disruption associated with elevated turbidity levels during the dredging process.			Scoped in (see Table 5-1) Sedimentation can impact the morphology of the channel, impacting the supporting hydromorphological conditions.		Scoped in (see Table 5-1) Suspended sediment and sedimentation can impact on the oxygenation conditions, nutrients and temperature of a water body	Scoped in (see Table 5-1) There is the potential for residual heavy metal contaminants bound to suspended solids to drain into the Liffey Estuary Lower.	
Release of contaminated surface water drainage from the treatment areas	Scoped in (see Table 5-1) Surface water drainage from the treatment area will contain levels of contaminated sediment. Suspended sediment and sedimentation can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Overall, the resident estuarine and marine migrant fish population will experience some degree of sub-lethal stress and temporary and localised community disruption associated with elevated turbidity levels during the dredging process.			Scoped in (see Table 5-1) Sedimentation can impact the morphology of the channel, impacting the supporting hydromorphological conditions.		Scoped in (see Table 5-1) Suspended sediment and sedimentation can impact the oxygenation conditions, nutrients and temperature of a water body.	Scoped in (see Table 5-1) There is the potential for the heavy metal contaminants bound to suspended solids to drain into the Liffey Estuary Lower.	
Infilling of Berth 52/53	Scoped in (see Table 5-1) Displacement of water during the infilling of Berth 52/53 could potentially result in suspended sediment and sedimentation impacts on substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish.			Scoped in (see Table 5-1) Sedimentation can impact the morphology of the channel, impacting the supporting hydromorphological conditions.		Scoped in (see Table 5-1) Suspended sediment and sedimentation can impact the oxygenation conditions, nutrients and temperature of a water body	Scoped in (see Table 5-1) There is the potential for the heavy metal contaminants bound to suspended solids to drain into the Liffey Estuary Lower.	
Disposal of excess spoil	Scoped out Excess spoil will not be disposed of within the Port estate or at sea in Dublin Bay due to the levels of contamination found within the sediments. Disposal at an alternative, licenced treatment plant in Ireland, Great Britain or Northern Europe, or a licenced landfill site in Ireland will not have an impact on the Biological Supporting elements of Liffey Estuary Lower or Dublin Bay. The alternative facilities will not accept the excess spoil unless they have adequate capacity and will not breach the conditions of their respective emissions licences.			Scoped out Excess spoil will not be disposed of within the Port estate or at sea in Dublin Bay due to the levels of contamination found within the sediments. Disposal at an alternative, licenced treatment plant in Ireland, Great Britain or Northern Europe, or a licenced landfill site in Ireland will therefore result in no further impact on hydromorphological supporting condition, physico-chemical supporting conditions and the chemical status of the Liffey Estuary Lower or Dublin Bay. The alternative facilities will not accept the excess spoil unless they have adequate capacity and will not breach the conditions of their respective emissions licences.				

Potential impact	Biological supporting elements			Hydromorphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
General Construction Works	Scoped in (see Table 5-1) During the construction phase, there is the potential for accidental spillage or release of construction materials (e.g. diesel, oil, chemicals), resulting in a localised deterioration in water quality within the port area.			Scoped out There will not be any impact on the physical attributes of the water bodies		Scoped in (see Table 5-1) As per the biological elements	Scoped in (see Table 5-1) During the construction phase, there is the potential for accidental spillage or release of construction materials (e.g. diesel, oil, chemicals), resulting in a localised deterioration in water quality within the port area.	
Demolition waste	Scoped in (see Table 5-1) High alkaline contaminants for concrete and cement can have a lethal (direct mortality through toxicity) and sub-lethal (reduced respiration, growth, reproduction) effects on fish, invertebrates, and their habitats			Scoped out There will not be any impact on the physical attributes of the water bodies		Scoped in Concrete and cement are highly alkaline and therefore will affect water quality (particularly in terms of pH) if washed into the water body	Scoped Out There is no significant potential for priority or priority hazardous substances from the release of alkaline contaminants.	
Abstraction of water for use in the treatment of dredged sediments	Scoped Out This abstraction, if implemented, will be temporary and only for a time period in the construction phase. The Principles of Water Abstractions and Associated Impoundments Authorisation guidance document (EPA, 2025) outlines the requirements of the Water Environment (Abstractions and Associated Impoundments) Act 2022 and its associated Regulations (2024). All abstractions of greater than 25m^3/day must be registered, and those greater than 2000m^3/day require a licence. However, temporary abstractions to facilitate carrying out of works and abstractions from coastal waters are exempt from these requirements. Therefore, no significant effects are anticipated, and no further mitigation is required.							
Operational Phase								
Mobilisation of contaminated sediment containing heavy metals	Scoped Out Once the ABR2 capital dredging is complete to -10 CD, there will no longer be contaminated sediments to be mobilised within ABW. This will result in long-term, positive impacts for the biological, physico-chemical and chemical quality elements of the Liffey Estuary Lower and downstream Dublin Bay water bodies.							
Routine maintenance dredging	Scoped Out Maintenance dredging requirements should not differ substantially from the current operational conditions following the completion of the ABR2 Project. Any increase in suspended sediments and sedimentation due to maintenance dredging as a result of the ABR2 Project is likely to be low and is assessed to have a localised, minor adverse impact on water quality. Maintenance dredging is an ongoing requirement in the port, and maintenance dredging activities will implement the comprehensive mitigation measures, which are part of every maintenance dredging campaign, as detailed in Section 9.2.4.2.2 of the EIAR.			Scoped Out The current maintenance dredging regime will not change substantially, and therefore, there will be no further impact on hydromorphological supporting condition, physico-chemical supporting conditions and the chemical status of the Liffey Estuary Lower or Dublin Bay from the ABR2 Project from Dublin Port maintenance dredging. Maintenance dredging is an ongoing requirement in the port, and maintenance dredging activities will implement the comprehensive mitigation measures, which are part of every maintenance dredging campaign, as detailed in Section 9.5.2 of the EIAR.				
Changes in hydromorphological supporting conditions within the Lower Liffey Estuary	Scoped in (see Table 5-1) The Liffey Estuary Lower is a designated HMWB however there is still a requirement to achieve GEP which, as outlined in Section 3.3.2, requires the biological elements which are not sensitive to hydromorphological impacts to achieve good status and those that are sensitive must achieve at least the best condition since the modifications were put in place (which in the case of the Liffey Estuary Lower is GES).			Scoped in (see Table 5-1) Even though the Liffey Estuary Lower is a HMWB, it still needs to achieve GEP, and based on the approach that Ireland is adopting as outlined in Section 3.3, measures to mitigate the impacts from hydromorphology should be considered in these water bodies, including the potential impacts on		Scoped in (see Table 5-1) Changes in hydromorphology can impact the physico-chemical supporting conditions of a water body, including the temperature and dissolved oxygen levels.	Scoped out Changes in the hydromorphological supporting conditions through habitat alterations should not impact the chemical status of the Liffey Estuary Lower water body or Dublin Bay.	

Potential impact	Biological supporting elements			Hydromorphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
				coastal processes and how these could impact the supporting hydromorphology conditions.				
Surface Water Drainage	Scoped Out The ABR2 Project will result in an additional 45,650m^2 of drained area due to infilling of the Berth 52/53 basin. The previously consented stormwater drainage proposals in the parent ABR Project outlined the extensions of existing outfalls within the existing basin to relocated outfalls at the new Berth 52.							

5.3 Stage 3: Impact Assessment

Based on the outcomes of the Stage 2 Scoping Assessment, this impact assessment establishes whether the activities associated with the proposed works will:

1. Cause deterioration in water body status;
2. Impinge upon protected areas designated under the European Directives listed in Article 5 of the WFD; and/or
3. Prevent the achievement of WFD status objectives.

This is the stage of the assessment where evidence is provided to demonstrate that the proposed works are compliant. Specifically, for each quality element, it must be shown that the activities scoped into the assessment will not cause a deterioration in the status of any of the contributing quality elements nor prevent the achievement of WFD status objectives. Where appropriate, it is also the stage where design mitigation, aimed at reducing the effect of an activity, is discussed. The assessment looks at each individual water body that could potentially be affected by the Project in the context of its status, the main contributing elements to the status classification, the objective of the water body and scoped in activities.

Measures Included in the Project

For the purposes of the WFD Assessment process, the term 'measures included in the project' is used to include the following measures (adapted from IEMA, 2016):

- Measures included as part of the project design. These include modifications to the location or design of the Project, which are integrated into the application for consent. These measures are secured through the consent itself through the description of the development and the parameters secured in the consent and/or marine licences (referred to as primary mitigation in IEMA, 2016); and
- Measures required to meet legislative requirements, or actions that are generally standard practice used to manage commonly occurring environmental effects and are secured through the planning condition requirements and/or the conditions of the marine licences (referred to as tertiary mitigation in IEMA, 2016).

Measures included as part of the project design

As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on the environmental objectives of the water bodies within the WFD Study Area, particularly the ecological and chemical impacts associated with dredging and treatment of contaminated sediments from ABW within the Liffey Estuary Lower, to use as infill for Berth 52/53. Also, the associated hydromorphological impacts of the works required for the completion of the ABR2 Project. These measures include designed-in and management measures (controls). Table 5-3 outlines the groups of measures that are included in the EU toolbox of measures to achieve GEP in HMWBs such as the Liffey Estuary Lower and examples of best practice specific measures that will

contribute to the achievement of GEP in HMWBs and the mitigation measures proposed as part of the ABR2 Project under each measure category.

Table 5-3: Measures included in the Project

Key groups of measures from EU toolbox	Examples of Specific measures to reach GEP	Mitigation incorporated into ABR2 Design
Realign to mitigate effects on flow	• Construct structures to normalise flow; realign breakwater, frontage, etc. • Lower or sever root of groyne or breakwater Reduce wave reflection; increase wave absorption • Build culverts in breakwaters, groynes, etc. Introduce e-flow	• Berth 52/53 basin Infill
Sediment management	• Sediment bypassing, move sediment from behind breakwater, dam, jetty, terminal groyne, etc. and (re)place in natural system to address downstream/downdrift erosion (habitat loss or degradation) • Sever root of groyne, breakwater, etc. to reinstate longshore sediment transport	• Berth 52/53 basin closure structure, i.e. new riverside berth 52 consented under MP2.
Modification or management of operations or structures, e.g. sluices, vessel traffic	• Remove redundant infrastructure • Modify the operation of a lock, sluice or other structure to facilitate fish passage or to maintain desired salinity levels • Retrofit if necessary to enable the above • Use fluid mud navigation / dynamic underkeel clearance where safe to do so • Explore use of SMART technology for vessel traffic management • Speed limits to reduce wash-induced erosion	• Removal of open pile jetty at Berth 52. • Removal of Ro-Ro ramp No.7.
Intertidal habitat restoration, enhancement or creation	• Habitat rehabilitation • Managed realignment to the new line • Re-open polders; setback (to higher ground; to existing secondary defence line) • Step back (create an intertidal shelf against a vertical wall) • Planter baskets; other planting initiatives • Improve creek or backwater habitats • Use breakwaters, shore parallel islands or similar to create sheltered conditions promoting intertidal enhancement	• Removal of rock armour in Berth 52/53 • New hard surfaces represented by the new riverside Berth 52 consented under MP2. • Habitat enhancement measures being trialled using eco-structures

Key groups of measures from EU toolbox	Examples of Specific measures to reach GEP	Mitigation incorporated into ABR2 Design
	• Offsetting measures, e.g. spawning habitat for fish	
Seasonal or tidal constraints on activity	• Constraints on maintenance activities or other works during breeding/spawning season or fish migration periods; low oxygen • Working on flood or ebb tide to avoid impacts on sensitive adjacent habitats or species • Programme vegetation cutting or clearance	• Dredging in Dublin Port is seasonally constrained so as to avoid impacting on sensitive species and habitats. • Implementation of Dublin Port's Tern and Black Guillemot Management Plans
Selection of methods or equipment	• Select a dredging method to retain sediment in the system or to avoid raising suspended sediment levels • Use a silt curtain • Manage overspill • Selective cutting or clearance, e.g. only along one bank • Use a long-arm excavator to avoid disturbing or damaging sensitive habitats; to retain riparian vegetation • Strip dredging (for aggregate) to facilitate recolonisation	• Dredging will be undertaken using methods to minimise suspended sediment levels (see best practice measures below). • Use of a silt curtain around the dredger. • Contingency bubble curtain installed across the entrance to ABW in the event of a breach of the silt curtain around the dredger. • Sediment traps and oil interceptors at stormwater outfalls (flap valves). • Use of an excavator-mounted environmental bucket adapted for environmental dredging. • No overspill.

Measures Required to Meet Legislative Requirements, Or Actions That Are Generally Standard Practice

Construction Phase

Best Practice Measures

Mitigation measures will be implemented by the contractor and will include the requirements for best practice and adherence to the following relevant Irish guidelines and recognised international guidelines:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA, 2001);
- NetRegs Guidance for Pollution Prevention series (GPP) in relation to a variety of activities developed by the Scottish Environmental Protection Agency (SEPA), Natural Resources Wales (NRW) and the Northern Ireland Environment Agency (NIEA);
    - GPP2: Above-ground oil storage tanks;
    - GPP3: Use and design of oil separators in surface water drainage;
    - GPP5: Works and maintenance in or near water;
    - GPP6: Working at construction and demolition sites;
    - GPP8: Safe Storage and disposal of used oils;
    - GPP13: Vehicle washing and cleaning;
    - GPP20: Dewatering underground ducts and chambers;
    - GPP21: Pollution incident response planning; and
    - GPP22: Dealing with spills.
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016);
- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL) for domestic waste discharges to the environment;
- International Marine Organisation guidelines; and
- Control of Substances Hazardous to Health (COSHH) Handling of Hazardous Materials.

Mobilisation Of Contaminated Sediment Containing Heavy Metals During The Dredging Of ABW

Suspended sediment, including all soils, sands and rubble, is the single main pollutant to the aquatic environment generated at construction sites and largely arises from the erosion of exposed soils and sediments by surface water runoff. Contamination of these sediments with heavy metals further adds to the water quality impacts.

Alexandra Basin West (ABW) contains sandy and silty clays that are contaminated with several heavy metals such as Arsenic, Copper, Chromium, Cadmium, Nickel, Lead, Mercury, and Zinc. In addition, elevated levels of TBT are known to be present in ABW.

These heavy metals may be released into the water column through the completion of dredging within ABW, which will comprise dredging of the remaining 334,000m^3 of

contaminated material to a depth of -10.0m CD over an area of 194,000m^2. Environmental assessments have demonstrated that dredging may be undertaken at a rate of up to 4,000m^3/day as described in Chapter 5 Project Description. It is anticipated, however, that maximum potential dredging rates will be achieved infrequently due to operational constraints associated with vessel movements within ABW and will be restricted by treatment capacity and stockpile capacity at the proposed treatment areas.

Dredging operations will cause temporary suspension and release of sediments at the loading sites. Dredging loading operations have been designed to minimise the disturbance and escape of material at the seabed and during removal through the water column. Individual loading operations are of relatively short duration and intermittent in nature, and the works area is limited and within a substantially enclosed basin. All dredged sediment will be recovered and treated, and no sediment will be disposed of in the marine environment.

Sediment dispersion modelling in Chapter 14 Coastal Processes provided a worst-case scenario in terms of suspended sediment concentration. It was assumed that a significant portion of the material was comprised of the most easily mobilised material encountered in the area during spring tides, with the highest expected dredge rate. In reality, sediment survey information has shown sediment characteristics to vary within the basin, with areas of sand and gravel present throughout. During the course of the dredging operations in ABW, temporary increases in significant suspended sediment concentrations do not extend to the designated areas of Dublin Bay. Sediment plumes instead remain within Dublin Port (Liffey Estuary Lower waterbody). This may have localised, short-term adverse impacts upon water quality and aquatic ecology. The confinement of the sediment plumes is due to the location of dredging, defined dredge rates, and embedded mitigation measures within the ABR2 Project Design. However, heavy metals may become detached from sediments during the dredging process and enter the water column.

The methodology for the ABR2 dredging will be the same as that undertaken during the parent ABR Project, which will comprise the use of a floating pontoon with an excavator-mounted environmental clamshell bucket adapted for environmental dredging. The purpose of this is to minimise the disturbance and escape of material at the seabed and during removal through the water column. A silt curtain will be utilised around the dredger whilst the dredging of contaminated material is ongoing. In addition to the mitigation measures proposed within the original Environmental Impact Statement (EIS) from 2014, the use of a contingency bubble curtain installed across the entrance to ABW was included in the CEMP, following submission. The bubble curtain is to be utilised as part of ABR2 in the event of a breach of the silt curtain around the dredger.

In circumstances where the above mitigation measures are employed during dredging operations, the potential impact on the receiving water environment will be negligible, thus reducing the significance of environmental effect to **Imperceptible** on the very high sensitivity of the receiving environment.

Accidental Spillages of Dredge Spoil

The dredged material will be loaded onto barges to be transported to two of three alternative treatment facilities proposed to be located at North Wall Quay Extension and/or at Berth 49, and/or Berth 52 West. No overtopping of barges is permitted, and spill plates are to be utilised to prevent spillage during offloading operations. In order to minimise the stockpiling of dredged material, the rate of dredging is determined by the rate of treatment of the dredged material.

In circumstances where the above mitigation measures are employed during dredging operations, the potential impact on the receiving water environment will be negligible, thus reducing the significance of environmental effect to **Imperceptible** on the very high sensitivity of the receiving environment.

Discharge From the Treatment of Dredged Material

Best practice industry techniques (Stabilisation/solidification (S/S) or soil washing) will be used to treat the contaminated material yielded from the dredging of the ABW, depending on contamination levels. Stabilisation/solidification (S/S) is a remediation technology that reduces the mobility of contaminants. Immobilisation is achieved by reaction of contaminants with reagents to promote sorption, precipitation, or incorporation into crystal lattices, and/or by physically encapsulating the contaminants. The process produces a high-strength monolith-like product that physically reduces the mobility of the material and chemically binds contaminants to the produced matrix. This treated material would be suitable for infill, and it is expected that this form of treatment will be applied to c. 120,000m^3 of dredge sediment arising from ABW.

Treatment and recovery operations may take place at either North Wall Quay Extension, Berth 49 or Berth 52 West, subject to operational activities being undertaken at the time of the proposed works. It is feasible that this may result in various elements of treatment works being undertaken at one or two of the three locations concurrently. The following operations will occur within the treatment area(s):

Separation - If required, the contaminated dredged material will be screened to remove extraneous material unsuitable for treatment (e.g. debris). Dredged material will be screened potentially either within the barge or in a storage lagoon, if required, following unloading as part of the pre-treatment process. Separation (soil washing) techniques may be applied, should the material be suitable for this technique, to separate dredge material into fines, sand and gravel in order to separate contaminated fine particles from uncontaminated sediments.

Dewatering - Reducing the moisture content reduces the volume to be treated and the volume of additives that may be required for the S/S process. If deemed necessary to facilitate management and recovery for re-use onsite, further dewatering methods may be applied to the fines to return the dredged sediments' moisture content to a minimum to that of the in-situ material.

Waste Water Treatment - The proposed process for the treatment of wastewater will be designed by the appointed contractor of the works to achieve the emission limit values in the IE licence.

During the construction phase of works, the contractor will be required to manage any contaminated water arising from the sediment handling process. A water treatment plant will comprise a single lane treatment process to remove suspended solids, product and contaminants (if present) from the wastewater produced from the dredging, dewatering, stockpiling and treatment processes. The volume of water to be treated will be determined by the amount of water to be removed prior to the treatment process.

Flocculants may be required as part of the dewatering and wastewater treatment processes. Water arising from the dewatering process will be removed by pumping and treated in a water treatment plant before being discharged via the designated discharge point in accordance with appropriate consents. Sampling points will be included within the pipe work system to allow for the collection of water samples from the emission point as per the IE Licence. The sampling and testing schedule will be in accordance with Schedule C of the IE Licence.

Sediment Handling - The sediment handling process will be undertaken in a batching plant in one of the proposed treatment areas. The soil washing and S/S treatment plants will be brought to the treatment area by road on low-loaders or by sea aboard barges and set up. Plant and equipment will be installed on concrete hardstanding areas. If necessary, temporary buildings will be erected to cover the material while it is being stored and treated.

The conditions of the IE licence (P1022-02) allow for 6.9 liters/second to be discharged from one or more discharges cumulatively to the Liffey Estuary Lower in any one day at the below emission limit values (ELVs) (Table 5-4).

Table 5-4: Emission Limit Values for Emissions to Water in IE Licence P1022-02

Parameter	Emission Limit Values (mg/l)
Suspended Solids	35
Total Organic Carbon (TOC)**	60
Hydrocarbon Oil Index (HOI)**	10
Metals	
TBT	0.000014
Nickel	0.318
Mercury	0.00065
Arsenic	0.05***
Cadmium	0.004

Parameter	Emission Limit Values (mg/l)
Chromium*	0.15
Hexavalent Chromium VI	0.299
Copper	0.047
Lead	0.1***
Zinc	0.374

*Note 3: The monitoring only applies when the substance concerned is identified as relevant in the waste gas stream based on the inventory mentioned in BAT 3.

**Note 4: The monitoring only applies when the water washing of excavated contaminated soil is occurring on site.

*** Reduced ELVs amended by BAT in Technical Amendment B

The existing IE Licence (P1022-02) accounts for the provision of two wastewater treatment works within the licensed boundary. Previous environmental assessments have assumed that dredging would be undertaken at a rate of up to 1,000m^3/day. For this assessment, pending review of the potential environmental impact and feasibility of a higher rate of dredge, treatment capacity of up to 2,500m^3/day has been assumed. Where daily dredging rates exceed this treatment capacity on a given day, surplus sediments generated over and above the installed treatment capacity will be stockpiled locally to the relevant treatment plant for treatment on subsequent days where dredging rates do not exceed treatment capacity. Therefore, for the purposes of this assessment, it is assumed that the combined discharge from these works does not exceed either:

- the prescribed limits outlined in Schedule B2 of the IE Licence (6.9 l/s at ELVs outlined in the licence (Table 5-4)); or
- combined discharge at a rate of up to 69l/s with a corresponding reduction in contaminant concentrations to retain the equivalent loading, subject to amendment of the IE Licence.

The mass balance calculations, completed for the parent ABR Project application, have been updated to account for the proposed increase in flows from the treatment facilities and corresponding reduction in the contaminant concentration. The assessment has determined that an increase in flows to the levels proposed can occur without increasing the contaminant load to the Liffey Estuary Lower, provided the equivalent reduction in the concentration of the contaminant of concern in the discharge is achieved. This will ensure that the impact of the discharge from the wastewater treatment works on the Liffey Estuary Lower does not change and remains insignificant (see Appendices 9-2 and 9-3 of the EIAR). A review of the existing IE Licence and a revision to the ELVs and maximum flow from the wastewater treatment works will be sought from the EPA.

- A proposal for Specified Engineering Works will be submitted to the EPA for agreement in accordance with Condition 3.16 of the IE Licence and will contain the following:

- Installation of waste handling and processing infrastructure;
- Installation of wastewater treatment plant;
- Relocation of plant and equipment as the phases of the licensable activity progress;
- Capping of infill areas; and
- Any other works notified in writing by the EPA.

Wastewater from this process will be pumped from the treatment area into a settlement holding tank/lagoon. From the tank/lagoon, water will be directed through a separator (Class 1 Full Retention) to prevent suspended solids and oil from entering the treatment process. From the separator, the remaining water will be directed through a sand filter to remove further suspended solids, and an activated carbon vessel to remove any organic contaminants before discharge via a designated discharge point to ABW or Berth 52/53 basin, as applicable. Sampling points will be included within the pipe work system to allow for the collection of water samples.

No works will be undertaken without the prior agreement of the EPA.

Despite the Very High sensitivity of the receiving water environment, the magnitude of the potential impact is deemed to be Negligible on the condition that discharges from the treatment facilities do not exceed the ELVs permitted by the revision to the IE Licence (P1022-02). Therefore, the significance of environmental effect is reduced to **Minor**. No further mitigation measures are required.

Release of Contaminated Surface Water Drainage

Given the proposed reuse of recovered materials from ABW above the basin at Berth 52/53 there is an expectation that up to 25,000m^3 of recovered sediments may be stored in designated stockpiles at North Wall Quay Extension, Berth 49 and Berth 52 West from the time of dredging until filling of the existing basin at Terminal 5 is completed (up to 2 years). These stockpiles will be located as indicated in Figures 5-5 to 5-7 in Chapter 5 Project Description of the EIAR and will not exceed 2.5m in height at North Wall Quay Extension or exceed 4m in height at Berth 49 or Berth 52 West. To minimise the stockpiling of dredged material, the rate of dredging is determined by the rate of treatment of the dredged material and available stockpile capacity.

Through appropriate site layout and design of surface water collection systems, uncontaminated water will be kept separate from contaminated water, and good housekeeping measures will be put into place to minimise the potential for cross-contamination. All contaminated water will be managed and directed through the wastewater treatment system prior to discharge under the requirements of the IE Licence.

Precipitation falling on the stockpiled dredge material within the three treatment areas will be collected within a bund surrounding the contaminated material and then subsequently pumped to the wastewater treatment works for treatment. Therefore, the surface water generated in the stockpiled contaminated dredge areas will be contained within the bund

and then treated in the wastewater treatment plant. Clean surface water generated in the treatment areas will drain to the existing drainage network.

In circumstances where the above mitigation measures are employed during the spoil treatment operations, the potential impact on the receiving water environment will be negligible, thus reducing the significance of environmental effect to **Imperceptible** on the very high sensitivity of the receiving environment.

Infilling of Berth 52/53

The treated dredged material will be recovered for use as infill for the basin at Berth 52/53. Prior to the filling of Berth 52/53 basin, the replacement Berth 52 West quay wall will be constructed (under a separate planning consent) to close off Berth 52/53 from the main navigation channel. This will eliminate direct surface water exchange between the basin and the Liffey estuary channel. Water quality will be measured in Berth 52/53 during the filling operation to ensure that measured parameters are within agreed limits. A controlled outlet from the Berth 52/53 basin will be constructed to control water level/flow.

Infilling with treated sediments will continue to a level of c. 1.6m OD. Previously treated dredge material (currently stored in a bunded and capped stockpile adjacent to Berth 52/53) will then be excavated and infilled to continue to raise levels to the rim of the basin, with further minor filling to provide final levels (post settlement) of the infill. The resulting temporary surface will be capped with a High Density Polythene (HDPE) liner and a geotextile protection layer to facilitate drainage and shedding of incident rainfall and surface water from the infilled material without coming into contact with the treated infilled material.

To promote consolidation and settlement of the infill material and underlying soft basin sediments, surcharge materials will be imported (crushed rock and stone) and placed to a depth of c. 2m. The consolidation process will be accelerated through the provision of vertical band drains into the underlying sediments to relieve pore water pressures generated from the loading imposed by the infill of recovered sediments. Porewater will be collected from the vertical band drains installed, and surface water shed from the impermeable barrier/capping layer will be collected from the perimeter of the capped area for discharge via the Wastewater Treatment Works if required, subject to water quality.

In circumstances where the above mitigation measures are employed, the potential impact to receiving water environment will be negligible, thus reducing the significance of environmental effect to **Imperceptible** on the Very High sensitivity of the receiving environment.

Disposal of Excess Spoil

Levels of contamination of existing materials to be dredged within ABW result in this material being unsuitable for disposal at sea. It is estimated that there will be an excess of c. 60,085m^3 of spoil which cannot be accommodated as infill for Berth 52/53 and will be required to be disposed of off-site. This material to be exported will consist of sands, silts and clays:

- Given the probable condition of sands extracted from dredged sediments from ABW following soil washing activities, this volume of material will be considered for export to a recovery facility in Ireland (26,235m^3); and
- Further materials required to be removed from the site should be considered to consist of the remaining fractions of the source dredge (i.e. in the region of 33,850m^3 of silts and clays), to be removed to a suitable soil recovery or soil treatment facility in Ireland, subject to testing of the sediments in line with the selected facility's licence at the time of the works.

In the event that a soil recovery or soil treatment facility is not available in Ireland, the material will be recovered at a soil recovery or soil treatment facility in Great Britain or northern Europe, subject to the testing of the sediments in line with the selected facility's licence at the time of the works.

In circumstances where the selected facilities have the capacity to accept the excess spoil without breaching the terms of their respective licences, the potential impact on the receiving water environment will be negligible, thus reducing the significance of environmental effect to **Imperceptible** on the very high sensitivity of the receiving environment.

General Construction Works

The risk of water quality impacts associated with works machinery, infrastructure and on-land operations (for example, leakages/spillages of fuels, oils, other chemicals and wastewater) will be controlled through good site management and the adherence to codes and practices which limit the risk to within acceptable levels. The following measures will be implemented during construction:

- A detailed works-specific Construction Environmental Management Plan (CEMP) will be prepared by the contractor, which will meet the minimum requirements of the draft CEMP (under separate cover) and will include details in respect of every aspect of the works in order to minimise potential impacts and maximise potential benefits associated with the works;
- Management and auditing procedures, including toolbox talks to personnel, will be put in place to ensure that any works which have the potential to impact on the aquatic environment are being carried out in accordance with required permits, licences, certificates and planning permissions;
- Existing and proposed surface water drainage and discharge points will be mapped on the Drainage layout. These will be noted on construction site plans and protected accordingly to ensure water bodies are not impacted by sediment and other pollutants using measures to intercept the pathway for such pollutants;

- The use of oils and chemicals on-site requires significant care and attention. The following procedures will be followed to reduce the potential risk from oils and chemicals:
  - Fuel, oil and chemical storage will be sited on an impervious base within a bund and secured. The base and bund walls must be impermeable to the material stored and of adequate capacity. The control measures in GPP2: Above Ground Oil Storage Tanks and GPP 26 “Safe storage – drums and intermediate bulk containers” will be implemented to ensure safe storage of oils and chemicals.
  - The safe operation of refuelling activities shall be in accordance with GPP 7 “Safe Storage – The safe operation of refuelling facilities”.
- Contingency Planning: A project-specific Pollution Incident Response Plan will be prepared by the contractor consistent with DPC's Environmental Emergency Plan and will be in accordance with GPP 21 Pollution Incident Response Planning. Whilst a major incident is highly unlikely to occur in circumstances where the mitigation measures are implemented, the finalisation of the draft CEMP is considered to be best practice. The contractor's Environmental Manager and DPC will be notified in a timely manner of all incidents where there has been a breach in agreed environmental management procedures. Suitable training will be provided by the contractor to relevant personnel, as detailed within the Pollution Incident Response Plan, to ensure that appropriate and timely actions are taken.

In circumstances where the above mitigation measures are employed during construction, the significance of environmental effect to the receiving water environment will be reduced to **Imperceptible** on the very high sensitivity of the receiving environment.

Demolition Waste

Removal of existing marine infrastructure at Berth 52/53 could potentially lead to the release of highly alkaline cement and concrete pollution which may impact the biological, physico-chemical and supporting chemical conditions of receiving water bodies. The demolition of marine infrastructure is to be carried out prior to the infilling of the Berth 52/53 basin at Terminal 5. However, as amended by the MP2 Project, the basin will be closed off once the new river Berth has been constructed, prior to infilling. Therefore, there will be no hydrological connection between the Berth 52/53 basin and the River Liffey. In addition, detailed asbestos surveys within the marine structures will be carried out prior to demolition to ensure there are no sources of asbestos in the structure.

Therefore, the potential impact on the receiving water environment will be reduced to negligible, thus reducing the significance of the environmental effect to **Imperceptible** on the very high sensitivity of the receiving environment.

Operational Phase

Routine Maintenance Dredging

Maintenance dredging is an ongoing requirement in the port, and a new licence will be required to cover maintenance of ABW following the removal of contaminated sediments during the capital dredging works under the ABR2 Project. Conditions set in any Marine Area Consent (MAC) and Dumping at Sea Permit will prescribe strict environmental protection measures.

Any maintenance dredging which may be required in the longer term will likely be carried out as part of DPC's regular maintenance dredging programme. The material generated would likely be disposed of at sea at a licensed disposal site (subject to further chemical testing), as agreed in accordance with DPC's maintenance dredging licence. This has been standard practice in the Port for decades. Maintenance dredging will implement comprehensive mitigation measures as set out below:

- Loading will be carried out by a backhoe dredger or trailing suction hopper dredger (TSHD).
- No over-spilling from the vessel will be permitted while the dredging activity is being carried out within the inner Liffey Channel.
- The TSHD pumps will be switched off while the drag head is being lifted and returned to the bottom as the dredger turns between successive lines of dredging to minimise the risk of fish entrainment.
- The dredger's hopper will be filled to a maximum of 4,100m^3 (including entrained water) to control suspended solids released at the dumping site. This is equivalent to a maximum quantity per trip of 2,030 tonnes (wet weight).
- Full-time monitoring of Marine Mammals within 500m of loading and dumping operations will be undertaken in accordance with the measures contained in the Guidance to Manage the Risk to Marine Mammals from Man-Made Sound Sources in Irish Waters (NPWS, 2014).
- A documented Accident Prevention Procedure will be put in place prior to commencement.
- A documented Emergency Response Procedure will be put in place prior to commencement.
- A full record of loading and dumping tracks and a record of the material being dumped will be maintained for each trip.
- Dumping will be carried out through the vessel's hull.
- The dredger will work on one half of the channel at a time within the inner Liffey channel to prevent the formation of a silt curtain across the River Liffey.

- When any dredging is scheduled to take place within a 500m radius of power station intakes, the relevant stakeholders will be notified so that precautionary measures can be taken if deemed necessary.

Assuming the above mitigation measures are employed during maintenance dredging and disposal operations, the potential impact on the receiving water environment will be reduced to negligible, thus reducing the significance of the environmental effect to **Imperceptible** on the very high sensitivity of the receiving environment.

Changes in hydromorphological supporting conditions within the Lower Liffey Estuary

Changes to the hydromorphology of the Lower Liffey Estuary include the dredging of ABW to -10m CD and the infilling of Berth 52/53.

The impact of the operational stage of the ABR2 Project on hydromorphology and the WFD ecological potential for the Liffey Estuary Lower is assessed as negligible due to the mitigation by design already incorporated into the project. The significance of the effect is therefore **Imperceptible**, and no further mitigation is required.

Surface Water Drainage

The previously consented drainage proposals in the parent ABR Project outlined the extensions of existing outfalls within the existing basin to relocated outfalls at the new Berth 52.

The ABR2 Project, when complete, will be subject to the Port's existing Environmental Management System (EMS), which is accredited to the Port Environmental Review System (PERS), which has gained Dublin Port designation as an 'Ecoport' at the European level.

The EMS comprehensively identifies environmental aspects and impacts relating to Dublin Port, including Tenant operations. Regular review of environmental aspects is required and will facilitate incorporation of any ABR2 Project-specific issues that may arise with implementation of mitigation, as necessary. The EMS is supported by a comprehensive suite of Standard Operating Procedures (SOPs) providing mitigation of all environmental aspects identified and mechanisms to ensure effective implementation. SOPs have been prepared for oil and chemical spill responses, mineral oil handling, waste handling, monitoring and maintenance of surface water interceptors and handling of drain cleaning waste. Controls are in place for transport, handling and storage of hazardous materials, ship cargo, dry bulk material, surface water runoff, fuelling and bunkering of vessels and ship discharges. Site audits promote best practices and ensure compliance with the EMS requirements.

In circumstances where the mitigation measures listed above are employed, the potential impact on the receiving water environment will be reduced to *negligible,* thus reducing the significance of the environmental effect to **Minor**.

Deterioration in Water Body Status

The latest status reporting period is based on data from 2019-2024 and was published in 2025. This water body classification is the baseline from which deterioration is not permitted, and therefore, this is the status classification that must not deteriorate when considering the impact of the Project on the 'no deterioration of water body status objective.

The detailed assessment demonstrates that taking into consideration the mitigation measures committed to through the various management plans outlined above will ensure that there will be no deterioration in the individual elements of ecological and chemical status and therefore, no deterioration in the overall WFD status classification outlined in Section 3.2 of this report.

Ecological Status

Supporting Hydromorphological Conditions - Mitigation Measures for Hydromorphological Impacts

The Mitigation Measures Library detailed in CIS Guidance Document No. 37 (Steps for defining and assessing ecological potential for improving comparability of Heavily Modified Water Bodies) lists 12 mitigation measure categories that are relevant across EU Member States, including Ireland, and for which a toolbox of measures has been developed to address hydromorphological pressures as far as practical whilst still retaining the specified use of the water body. The design of the ABR2 Project has considered these mitigation measures and has adopted measures where relevant. Key groups of measures listed in the EU toolbox of mitigation measures that are applicable to the ABR2 Project are summarised in Table 5-5. Incorporation of relevant measures during the design and development of the ABR2 Project will ensure that the project will contribute to the achievement of GEP during the operational phase. This is supported by the analysis undertaken in Chapter 14 Coastal Processes, which has concluded that the changes to the tidal currents are insignificant in terms of the hydrodynamic regime and will not significantly impact the supporting hydromorphological conditions in the coastal water bodies.

Biological Quality Elements (BQE) That Are Not Sensitive To The Hydromorphological Modification.

In the case of the Liffey Estuary Lower, the most recent WFD biological monitoring (2019-2024), as reported by the EPA, indicates that biological elements not achieving GES are predominantly sensitive to organic and nutrient enrichment. The significant pressures in the Liffey Estuary Lower have been identified as urban wastewater pressures. Implementation of the ABR2 Project will not significantly increase urban wastewater pressures, nor will it introduce new impediments to the achievement of GEP when the mitigation measures are implemented.

The ABR2 Project will not increase the urban wastewater pressures as it is not proposed to discharge to the public sewer as a result of the development. Diffuse urban run-off from the development areas, including the spoil treatment areas, will all have adequate surface water drainage controls as outlined in Section 5.3.

Furthermore, the mitigation measures as proposed through the design and best practice measures outlined in Section 5.3 will ensure that the construction activities and operation of the ABR2 Project will not prevent the achievement of GES/potential in all water bodies within the WFD Study Area and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.

Biological Quality Elements That Are Sensitive To The Hydromorphological Modification

The Mitigation Measures Library (EU CIS Guidance No. 37) was consulted for Transitional and Coastal water bodies to determine the likely effects of a particular pressure on the ecological conditions of a water body. The key biological elements that are sensitive to hydromorphological alterations associated with the ABR2 Project are fish, benthic invertebrates, angiosperms and macroalgae.

As identified during the 3FM consenting process, the supralittoral along rock revetments/rock rubble shores supports a sparse flora dominated by ruderal angiosperms, many of which are non-native species. Angiosperms are otherwise limited to building and artificial surface habitats that dominate the supralittoral shoreline in this area. Within the Lower Liffey, the intertidal habitat is relatively sheltered from direct wave action and is therefore dominated by fucoid (brown) algae and the typical associated intertidal mobile and attached invertebrate fauna. This shore community is typical of sheltered rocky intertidal shores but with reduced diversity, probably due to a lack of microhabitats, and the influence of several local freshwater inputs. Floating gangways and berths at the Poolbeg Marina support a mixed epibiotic flora and fauna, providing a microhabitat for small mobile crustaceans.

A number of migratory fish species pass through the Liffey estuary, including salmon, eel and lamprey. These are unlikely to be impacted by any of the hydromorphological issues considered here. The WFD Fish Monitoring Programme conducted by Inland Fisheries Ireland has recorded a range of common marine/estuarine species in the Liffey estuary.

The algal, fish and benthic invertebrate communities outlined above have the potential to be affected by hydromorphological alterations associated with the ABR2 Project.

Chapter 14 Coastal Processes of the EIAR has concluded that it would be of slight adverse significance at worst, in reference to the dredging works at ABW and the infilling works at Berth 52/53, which is not significant in EIA terms. Therefore, based on the above analysis and the design of the ABR2 Project, there are no perceptible changes in the hydromorphological conditions and the ability of the Liffey Estuary Lower to achieve GEP. The Project has incorporated mitigation measures as required under the WFD and will not impact the other elements of ecological status that are not sensitive to hydromorphological changes. The impact of the operational stage of the ABR2 Project is therefore negligible. Accordingly, the significance of the effect is imperceptible, due mainly to the mitigation by design, based on the very high sensitivity of the receiving environment.

Physico-Chemical Conditions

Alteration of general physico-chemical conditions downstream of major hydromorphological alterations can occur (e.g. temperature, dissolved oxygen supersaturation). Current WFD monitoring for general physico-chemical conditions indicates that such impacts are not evident within the Liffey Estuary Lower, and therefore the specified use for this HMWB, port navigation, is not having a significant impact on ambient physico-chemical conditions. The design of the ABR2 development and the best practice mitigation measures proposed will ensure its construction and operation will not impact coastal processes, i.e. wave climate, tidal regime and flow conditions and thermal plume and therefore will not affect the physico-chemical supporting conditions. This is supported by the ongoing monitoring regime being implemented for the MP2 and 3FM projects (EIAR, Chapter 9, Section 9.2.3.6).

Chemical Status

Sediment quality sampling and analysis within the ABW area have shown that the sediments to be dredged as part of the ABR2 Project are not suitable for conventional dumping at sea due to the presence of heavy metals and organotin compounds (TBT and DBT).

Contaminated dredge spoil will be treated using the solidification/stabilisation process or soil washing depending on the levels of contamination for use as infill at berth 52/53 under the conditions of IE licence (P1022-02). The options for disposal of excess dredge spoil (anticipated to be c. 60,085m^3) in order of preference are:

1. Recovered at a soil recovery or soil treatment facility in Ireland, subject to testing of the sediments in line with the selected facility licence at the time of the works;
2. Recovered at a soil treatment facility in Great Britain or northern Europe;
3. Disposed of at a licenced landfill facility in Ireland.

Therefore, there is no potential to impact the supporting physico-chemical conditions or the chemical status of the Liffey Estuary Lower or Dublin Bay coastal water body.

During the construction phase, there is the potential for accidental spillage or release of construction materials (e.g. diesel, oil, chemicals). However, the suite of mitigation measures proposed, as detailed in Section 5.3, will ensure the risk of this occurrence is very low and the ABR2 Project will not result in a deterioration in the chemical status of the Liffey Estuary Lower or Dublin Bay water bodies.

Summary

Table 5-5 provides the justification for this assessment for surface water bodies based on the different quality elements, the potential impacts scoped into the WFD Assessment (Table 5-2) and mitigation measures for the Project (Section 5.3).

Table 5-5: Summary of mitigation measures to ensure the surface water body status does not deteriorate

Potential Impact	Biological Supporting Element			Hydromorphological Supporting Element		Physico-chemical Supporting Elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological Regime	Morphology		Priority Hazardous Substances	Priority Substances
Construction Phase								
Mobilisation of contaminated sediment containing heavy metals during the dredging of ABW	Suspended sediment and sedimentation can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Overall, the resident estuarine and marine migrant fish population will experience some degree of sub-lethal stress and temporary and localised community disruption associated with elevated turbidity levels during the dredging process. The heavy metals within these sediments can also be toxic to marine species. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in significant suspended solids or sedimentation above the current baseline and therefore will not impact significantly on the biological elements or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.			Sedimentation can impact the morphology of the channel, impacting the supporting hydromorphological conditions. The footprint of the development is within the Liffey Estuary Lower, which is designated as a heavily modified water body and is subject to significant sediment loading from the upstream catchment. The measures proposed under Section 5.3.1 will ensure there will not be significant additional sediment loading from the construction activities associated with the ABR2 Project, which will impact on the hydromorphological supporting conditions and therefore prevent the achievement of GES/potential in all water bodies within the WFD Study Area. The measures will also ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.		Suspended sediment and sedimentation can impact on the oxygenation conditions, nutrients and temperature of a water body. The heavy metals within these sediments can also be toxic to marine species. As with the biological elements and supporting hydromorphological conditions the measures proposed in Section 5.3.1 will ensure that the supporting physico-chemical conditions will not be impacted by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all potentially impacted water bodies.	There is the potential for contaminants bound to suspended solids to drain into the harbour and estuary. As per physico-chemical supporting elements the measures proposed in Section 5.3.1 will ensure that the supporting chemical conditions will not be impacted by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all water bodies within the WFD Study Area.
Accidental spillages of dredge spoil	As above			As above		As above	As above	
Discharge from the treatment of dredged material	Release of suspended sediments and contaminants into the water column can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Release of contaminants, if above their respective ELVs, can also be toxic to marine species. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in the release of suspended sediments or contaminants above the ELVs set out in the treatment facility's IE Licence and therefore, concentrations will not rise above the current baseline and will not impact significantly on the biological elements or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.			Sedimentation can impact the morphology of the channel, impacting on the supporting hydromorphological conditions. The footprint of the development is within the Liffey Estuary Lower, which is designated as a heavily modified water body and is subject to significant sediment loading from the upstream catchment. The measures proposed under Section 5.3.1 will ensure there will not be significant additional sediment loading from the construction activities associated with the ABR2 Project, which will not impact on the hydromorphological supporting conditions and therefore prevent the achievement of GES/potential in all water bodies within the WFD Study Area. The measures will also ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.		Suspended sediment and sedimentation can impact the oxygenation conditions, nutrients and temperature of a water body. Release of contaminants, if above their respective ELVs, can also be toxic to marine species. As with the biological elements and supporting hydromorphological conditions, the measures proposed in Section 5.3.1 will ensure that the supporting physico-chemical conditions will not be impacted by the proposed ABR2 Project, and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all water bodies within the WFD WFD Study Area.	There is the potential for contaminants bound to suspended solids to drain into the harbour and estuary. As per physico-chemical supporting elements, the measures proposed in Section 5.3.1 will ensure that the supporting chemical conditions will not be impacted by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all water bodies within the WFD Study Area.
Release of contaminated surface water drainage from the treatment areas	Release of suspended sediments and contaminants into the water column can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Release of contaminants, if above their respective ELVs, can also be toxic to marine species. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in the release of suspended sediments or contaminants above through contaminated surface waters and therefore will not impact significantly on the biological			Sedimentation can impact on the morphology of the channel, impacting the supporting hydromorphological conditions. The footprint of the development is within the Liffey Estuary Lower, which is designated as a heavily modified water body and is subject to significant sediment loading from the upstream catchment. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in the release of suspended sediments or contaminants above		Suspended sediment and sedimentation can impact on the oxygenation conditions, nutrients and temperature of a water body. The heavy metals within these sediments can also be toxic to marine species. As with the biological elements and supporting hydromorphological conditions the measures proposed in Section 5.3.1 will ensure that the supporting physico-chemical conditions will not be impacted	There is the potential for contaminants bound to suspended solids to drain into the harbour and estuary. As per physico-chemical supporting elements the measures proposed in Section 5.3.1 will ensure that the supporting chemical conditions will not be impacted by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its

Potential Impact	Biological Supporting Element			Hydromorphological Supporting Element		Physico-chemical Supporting Elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological Regime	Morphology		Priority Hazardous Substances	Priority Substances
	elements or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.			through contaminated surface waters and therefore will not impact significantly on the hydromorphological supporting conditions or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.		by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all water bodies within the WFD Study Area.	environmental objectives in all water bodies within the WFD Study Area.	
Infilling of Berth 52/53	As above			As above		As above	As above	
Disposal of excess spoil	Chemical analysis of sediments within ABW has found that these will not be suitable for disposal at sea. Once Berth 52/53 has been filled, there are three options available for disposal of excess spoil. These include: Recovered at a soil recovery or soil treatment facility in Ireland, subject to testing of the sediments in line with the selected facility licence at the time of the works; Recovered at a soil treatment facility in Great Britain or northern Europe; or Disposed of at a licenced landfill facility in Ireland. Therefore, there is no potential to impact on the biological elements or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.					As per biological elements	As per biological elements	
General Construction Works	During the construction phase, there is the potential for accidental spillage or release of construction materials (e.g. diesel, oil, chemicals). The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in accidental release of contaminants and therefore will not impact significantly on the biological elements or prevent the achievement of GEP of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.					As per biological elements	As per biological elements	
Demolition waste	High alkaline contaminants for concrete and cement can have a lethal (direct mortality through toxicity) and sub-lethal (reduced respiration, growth, reproduction) effects on fish, invertebrates, and their habitats. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in accidental release of highly alkaline contaminants from concrete and cement and therefore will not impact significantly on the biological elements or prevent the achievement of GEP of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.					Concrete and cement are highly alkaline and therefore will affect water quality (particularly in terms of pH) if washed into the water body. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in accidental release of highly alkaline contaminants from concrete and cement and therefore will not significantly impact the supporting physico-chemical conditions.		

Potential Impact	Biological Supporting Element			Hydromorphological Supporting Element		Physico-chemical Supporting Elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological Regime	Morphology		Priority Hazardous Substances	Priority Substances
Abstraction of water for use in the treatment of dredged sediments	This abstraction, if implemented, will be temporary and only for a time period in the construction phase. The Principles of Water Abstractions and Associated Impoundments Authorisation guidance document (EPA, 2025) outlines the requirements of the Water Environment (Abstractions and Associated Impoundments) Act 2022 and its associated Regulations (2024). All abstractions of greater than 25m^3/day must be registered, and those greater than 2000m^3/day require a licence. However, temporary abstractions to facilitate carrying out of works and abstractions from coastal waters are exempt from these requirements. Therefore, no significant effects are anticipated, and no further mitigation is required.			As Biological Supporting Elements		As Biological Supporting Elements		
Operational Phase								
Routine maintenance dredging	Routine maintenance dredging requirements to maintain the ABW should not differ substantially from the current operational conditions. Any increase in suspended sediments and sedimentation due to maintenance dredging as a result of the ABR2 Project is likely to be low and is assessed to have a localised, minor adverse impact on water quality. Maintenance dredging is an ongoing requirement in the port, and a new licence will be required to cover maintenance of the ABW, which has been deepened due to the removal of contaminated sediments as part of the ABR2 Project. Maintenance dredging will implement the comprehensive mitigation measures, which are part of every maintenance dredging campaign as detailed in Section 9.2.6.2.1 of the EIAR. Based on this assessment, there is no potential to cause a deterioration in the ecological or chemical status or to prevent the achievement of the environmental objectives of the water bodies within the WFD Study Area.							
Changes in hydromorphological supporting conditions within the Lower Liffey Estuary	The Liffey Estuary Lower is a designated HMWB however there is still a requirement to achieve GEP which, as outlined in Section 3.3.2, requires the biological elements which are not sensitive to hydromorphological impacts to achieve good status and those that are sensitive must achieve at least the best condition since the modifications were put in place (which in the case of the Liffey Estuary Lower is GES). The mitigation measures proposed as part of the ABR2 Project and detailed in Section 5.3.1 will ensure that the works within the Lower Liffey Estuary will not compromise the achievement of GES for those biological elements that are not sensitive to hydromorphological pressures. Furthermore, the Project will not prevent the biological elements that are sensitive to hydromorphological pressures, e.g. fish, from achieving the best conditions since the modifications to the Liffey Lower Estuary were established.			Even though the Liffey Estuary Lower is a heavily modified water body, it still needs to achieve GEP, and based on the approach that Ireland is adopting as outlined in Section 3.3, measures to mitigate the impacts from hydromorphology should be considered in these water bodies, including the potential impacts on coastal processes and how these could impact the supporting hydromorphology conditions. The mitigation measures that have been included in the design of the ABR2 Project (Table 5-3) ensure that appropriate mitigation from the EU toolbox of mitigation measures has been applied to the design of the ABR2 Project, and it will therefore not compromise the achievement of GEP in the Lower Liffey Estuary transitional water body or in any of the other water bodies in the WFD Study Area.	Changes in hydromorphology can impact the physico-chemical supporting conditions of a water body, including the temperature and dissolved oxygen levels; however, the measures included within the ABR2 Project design will ensure that changes to the supporting physico-chemical conditions of the water bodies in the WFD Study Area will not be affected.		
Surface Water Drainage	Release of suspended sediments and contaminants into the water column can impact the substrate and biological elements that rely on this habitat. Suspended solids in the water column can also have an impact on mobile species, particularly fish. Release of contaminants can also be toxic to marine species. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in the release of suspended sediments or contaminants above through contaminated surface waters and therefore will not impact significantly on the biological elements or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is currently achieving its environmental objective of GES, will not deteriorate in status.			Sedimentation can impact the morphology of the channel, impacting the supporting hydromorphological conditions. The footprint of the development is within the Liffey Estuary Lower, which is designated as a heavily modified water body and is subject to significant sediment loading from the upstream catchment. The mitigation measures as proposed through the design and best practice measures outlined in Section 5.3.1 will ensure that the construction activities associated with the ABR2 Project will not result in the release of suspended sediments or contaminants above through contaminated surface waters and therefore will not impact significantly on the hydromorphological supporting conditions or prevent the achievement of GEP of the biological elements of the Liffey Estuary Lower and will ensure that Dublin Bay coastal water body, which is	Suspended sediment and sedimentation can impact on the oxygenation conditions, nutrients and temperature of a water body. The heavy metals within these sediments can also be toxic to marine species. As with the biological elements and supporting hydromorphological conditions the measures proposed in Section 5.3.1 will ensure that the supporting physico-chemical conditions will not be impacted by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all water bodies within the WFD Study Area.	There is the potential for contaminants bound to suspended solids to drain into the harbour and estuary. As per physico-chemical supporting elements the measures proposed in Section 5.3.1 will ensure that the supporting chemical conditions will not be impacted by the proposed ABR2 Project and therefore the ecological status will not deteriorate or be prevented from achieving its environmental objectives in all water bodies within the WFD Study Area.

Potential Impact	Biological Supporting Element			Hydromorphological Supporting Element		Physico-chemical Supporting Elements	Chemical	
	Fish	Invertebrates	Macrophytes	Hydrological Regime	Morphology		Priority Hazardous Substances	Priority Substances
				currently achieving its environmental objective of GES, will not deteriorate in status.				

Protected Area Objectives

A number of protected areas, listed on the register, are located within the WFD Assessment Study Area of the Project. These protected areas have their own monitoring and assessment requirements to determine their condition. They are often assessed for additional pollutants or requirements relevant to their designation. For example, faecal coliform levels are assessed within shellfish and bathing waters. Therefore, it is important that the standards required for these protected areas are also met. If they are not met, a water body which would otherwise meet the requirements of the WFD may have the status reduced to 'less than good' as it is not meeting the protected area objectives. The water bodies within the Project Study Area that contain protected areas listed in the register of protected areas are detailed in Section 3.4. The protected areas linked to the water bodies within the WFD Assessment Study Area for the Project area include bathing waters in the Dublin Bay coastal water body, Nutrient Sensitive Area in the Liffey Estuary and European sites in the Liffey Estuary Lower, Tolka Estuary transitional water bodies and Dublin Bay coastal water body.

Recreational Waters (Bathing Waters)

The closest bathing waters are Sandymount Strand (1km to the boundary of the Project), Dollymount Strand (1.7km to the boundary of the Project) and Seapoint (5km to the boundary of the Project), which currently have poor, good and excellent bathing water quality, respectively as presented in Section 3.4.1. As reported by the EPA in the Bathing Water Quality Report for 2024 (EPA, 2025), the main sources of pollution resulting in the poor classification at Sandymount Strand are pathogens from misconnections and sewage overflows, which contaminate streams flowing to the bathing water, dog fouling left on the beach, and birds. The Dublin Bay Bathing Water Taskforce (chaired by Dublin City Council) was established in 2019 to help identify and fix pollution sources impacting on bathing water quality in Dublin Bay, including Sandymount Strand. Uisce Éireann has made significant improvements to the wastewater network, and work is ongoing to address urban wastewater pressures. The PoMs in the RBMP and the work currently being undertaken by the Dublin Bay Bathing Water task force will not be compromised by the development of the ABR2 Project.

During the operational phase, there will be no additional organic loading from the ABR2 Project to the Ringsend agglomeration, and therefore, the Project will not increase the risk to the bathing waters in the vicinity of the Port. Nutrient and organic loads from the Project during construction will be limited, with welfare facilities at the main compound and secondary compounds will be appropriately managed through the CEMP.

Nutrient Sensitive Areas

The Urban Waste Water Treatment Regulations 2001, as amended (which transpose the Urban Wastewater Treatment Directive (91/271/EEC) into Irish law and update the Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations

1994, as amended) list nutrient sensitive waters in the Third Schedule. The Liffey Estuary from Islandbridge weir to Poolbeg Lighthouse, including the River Tolka basin and South Bull Lagoon, has been designated as a nutrient sensitive area (Figure 3-4). Ringsend WWTP currently discharges in the Lower Liffey Estuary and is in the List of Priority Urban Areas (Uisce Éireann, 2024) where treatment must improve to resolve national environmental priorities. Upgrade of the treatment plant was proposed for completion by 2025.

During the operational phase, there will be no additional organic loading from the ABR2 Project to the Ringsend agglomeration and therefore the Project will not compromise the achievement of the standards required for the Liffey Estuary nutrient sensitive area. Nutrient and organic loads from the Project during construction will be limited with welfare facilities at the main compound and secondary compounds will be appropriately managed through the CEMP.

Natura 2000 Protected Areas

Natura 2000 is a European network of important ecological sites. The EU Habitats Directive (92/43/EEC) places an obligation on Member States of the EU to establish the Natura 2000 network. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC), and Special Areas of Conservation (SACs), established under the Habitats Directive itself. As illustrated in Figure 3-5, the ABR2 Project does not fall within any Natura 2000 site (i.e. SPA or SAC).

The potential of likely significant effects from the ABR2 Project Natura 2000 or “European” sites has been considered extensively in the Screening for Appropriate Assessment and Natura Impact Statement submitted with the application for development consent in respect of the ABR2 Project. For the reasons set out in the Appropriate Assessment Screening Report and Natura Impact Statement, the ABR2 Project will not have any adverse effects on the qualifying interests of any European site.

Achievement of the WFD Objectives

During the latest River Basin Management cycle, characterisation of the water bodies to establish the key pressures and associated pathways that are resulting in a status classification of less than good status was determined. A PoMs is then put in place to assist in the achievement of the WFD objectives. The key objective of the WFD was to achieve GES or potential by 2015; however, extended timelines can apply where there are justifiable reasons (e.g. due to issues with disproportionate cost, affordability, technical difficulties). In these instances, the objective for the achievement of good status may be to end the third river basin management cycle in 2027. Table 5-6 outlines the objectives for each water body within the WFD Study Area of the ABR2 Project and the key quality elements driving the status. The significant pressures, where known, resulting in a status of less than good, are summarised, and the measures that are recommended in the draft RBMP to achieve the WFD objectives are identified. Currently, there are several of the

water bodies that are not achieving good status, but the current environmental objectives are to achieve good status by the end of the third river basin management cycle (i.e., 2027). The final column of Table 5-6 assesses the potential impact on the achievement of the WFD objectives and concludes for all water bodies that the Project will not prevent the achievement of the WFD objectives.

6.0 Summary

A WFD Assessment has been undertaken for the ABR2 Project. The assessment is based on guidance developed by the Environment Agency and Planning Inspectorate and is undertaken in a staged approach to ensure that those components of the project and the associated activities are assessed in the context of the quality elements that contribute to the overall WFD status.

The key focus of the assessment was to ensure that the construction and operation of the ABR2 Project does not result in a deterioration in the current WFD status of the water bodies within the WFD Study Area, based on the 2024 baseline as reported by the EPA based on the 2019-2024 WFD monitoring programme, and also to ensure that the Project does not compromise the achievement of the WFD objectives for the improvement in the overall status of these water bodies. The assessment also considers the protected areas linked to the water bodies in question and ensures that the protected area objectives are also unaffected.

The scoping stage of the WFD compliance assessment has concluded that there were a number of components and activities associated with the Project that represented a risk to the WFD status and objectives, and therefore were scoped into the assessment. The relevant quality elements contributing to the overall status were considered, and how each potential impact could affect these.

The potential impact of the different components of the ABR2 Project was assessed in the context of the environmental objectives for the water bodies affected. Mitigation measures included within the Project design and the application of a comprehensive suite of mitigation measures will ensure that there will be no significant effects on the WFD status of the water bodies within the WFD Study Area.

The overall conclusion of the WFD compliance assessment is that there will be *no risk of deterioration* in status from the Project nor will it prevent the achievement of the objectives for the relevant water bodies, including the protected area objectives.

Table 6-1 Significant Water Management Issues (SWMI), Source, Programme of measures and assessment of impact of the project on the WFD objectives.

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
Liffey Estuary Upper	Transitional	Moderate	Fish and supporting oxygen and nutrient conditions, and hydromorphological conditions	Urban Waste Water	Ringsend Agglomeration	• Continue investment in wastewater infrastructure with Irish Water investing €1.022bn, over the period 2020-2024; • DHLGH to ensure ongoing engagement with Irish Water on the requirements for the next investment period (2025-2029); • EPA to carry out a review of Wastewater Discharge Licences; • Irish Water's RBMP – Enhanced Ambition Programme to advance priority WWTP projects whose discharges have been identified as being significant pressures on water bodies and impacting on WFD objectives.	Good by 2027	Extended	Article4(4) - Technical feasibility	The significant pressures in the Liffey Estuary Upper relate to urban wastewater pressures from the Ringsend agglomeration, including the WTP and Combined Sewer Overflows. The ABR2 Project will not add additional load to the agglomeration, and therefore, the ABR2 Project will not compromise the achievement of the environmental objectives for this water body.
				Urban Waste Water	Combined Sewer Overflows (CSO)	• Ensure development of any new standards for Combined Storm Overflows emerging from an update to the Urban Wastewater Treatment Directive; • Continue to develop and update the Gap Analysis as a tool to deliver environmental benefits for infrastructural planning.				
Liffey Estuary Lower	Transitional	Moderate	Fish status and hydromorphological conditions	Urban Waste Water	Ringsend Agglomeration	As per Liffey Estuary Upper	Good by 2027	Extended	Article4(4) - Technical feasibility	The significant pressures in the Liffey Estuary Lower relate to urban wastewater pressures from the Ringsend agglomeration, including the WTP and Combined Sewer Overflows. The ABR2 Project will not add additional load to the agglomeration, and therefore, the ABR2 Project will not compromise the achievement of the environmental objectives for this water body. As outlined above, the ABR2 Project design also incorporates a number of mitigation measures for the hydromorphological pressures introduced by the Project into the Liffey Estuary Lower HMWB and therefore the design and the application of the best practice mitigation measures as outlined in Section 5.3.1 will ensure that the achievement of the WFD objectives is not compromised by the development.
				Urban Waste Water	Combined Sewer Overflows (CSO)	As per Liffey Estuary Upper				
Dublin Bay	Coastal	Good	Not at risk	n/a	n/a	Protect	Good by 2027	Extended	Article4(4) - Technical feasibility	This water body is currently achieving its environmental objective, so the focus will be on ensuring it does not deteriorate in status. The construction and operation of the ABR2 Project will not increase the risk of deterioration in the water body status, given the design mitigation measures as outlined in Table 5-3 and the best practice mitigation measures as outlined in Section 5.3.1.
Tolka Estuary	Transitional	Poor	Macroalgae, invertebrates and physico-chemical supporting conditions (Dissolved oxygen and nutrients)	Urban Waste Water	Combined Sewer Overflows (CSO)	• Ensure development of any new standards for Combined Storm Overflows emerging from an update to the Urban Wastewater Treatment Directive; • Continue to develop and update the Gap Analysis as a tool to deliver environmental benefits for infrastructural planning.	Good by 2027	Extended	Article4(4) - Technical feasibility	The significant pressures in the Tolka Estuary relate to Combined Sewer Overflows from the Ringsend agglomeration. The ABR2 Project will not add additional load to the agglomeration, and therefore, the ABR2 Project will not compromise the achievement of the environmental objectives for this water body.

References

CIRIA (2001). Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors.

Environmental Protection Agency (2022). Designation of heavily modified waterbodies for the third River Basin Management Plan. Available at https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/designation-of-heavily-modified-waterbodies-for-the-third-river-basin-management-plan.php

European Commission (2019). Guidance Document No. 37 Steps for defining and assessing ecological potential for improving comparability of Heavily Modified Water Bodies. Available at https://circabc.europa.eu/sd/a/d1d6c347-b528-4819-aa10-6819e6b80876/Guidance%20No%2037%20-%20Steps%20for%20defining%20and%20assessing%20ecological%20potential%20for%20improving%20comparability%20of%20Heavily%20Modified%20Water%20Bodies.pdf.

Halleraker JH, van de Bund W, Bussettini M, Gosling R, Döbbelt-Grüne S, Hensman J, Kling J, Koller-Kreimel V, Pollard P. (2016), Working Group ECOSTAT report on common understanding of using mitigation measures for reaching GEP for heavily modified water bodies; EUR 28413; doi:10.2760/649695

IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development. Available at: https://www.iema.net/download-document/328273.

Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Available at: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf.

Molnar, M., Buehler, D.P.E., Oestman, R., Reyff, J., Pommerenck, K., Mitchell, B. (2020) Technical Guidance for the Assessment of Effects of Pile Driving on Fish. Report No. CTHWANP-RT-20-365.01.04. Prepared for: California Department of Transportation 1120 N Street Sacramento, CA 94274

NPWS (2014). Guidance to Manage the Risk to Marine Mammals from Man-Made Sound Sources in Irish Waters. Available at https://www.npws.ie/sites/default/files/general/Underwater%20sound%20guidance_Jan%202014.pdf.

Planning Inspectorate (UK), (2017). Planning Inspectorate. Advice Note 18: The Water Framework Directive. Available at https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-eighteen-the-water-framework-directive.