August 2025

Water Framework Directive Assessment Report

Proposed Offshore Renewable Energy ('ORE') Capable Terminal on a 250m Wharf Extension & Ancillary Operational Support Infrastructure

Calafort Phort Láirge
Port of Waterford

On behalf of

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny

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Water Framework Directive Assessment Report

Proposed ORE Capable Terminal on a Wharf Extension & Ancillary Operational Support Infrastructure

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny

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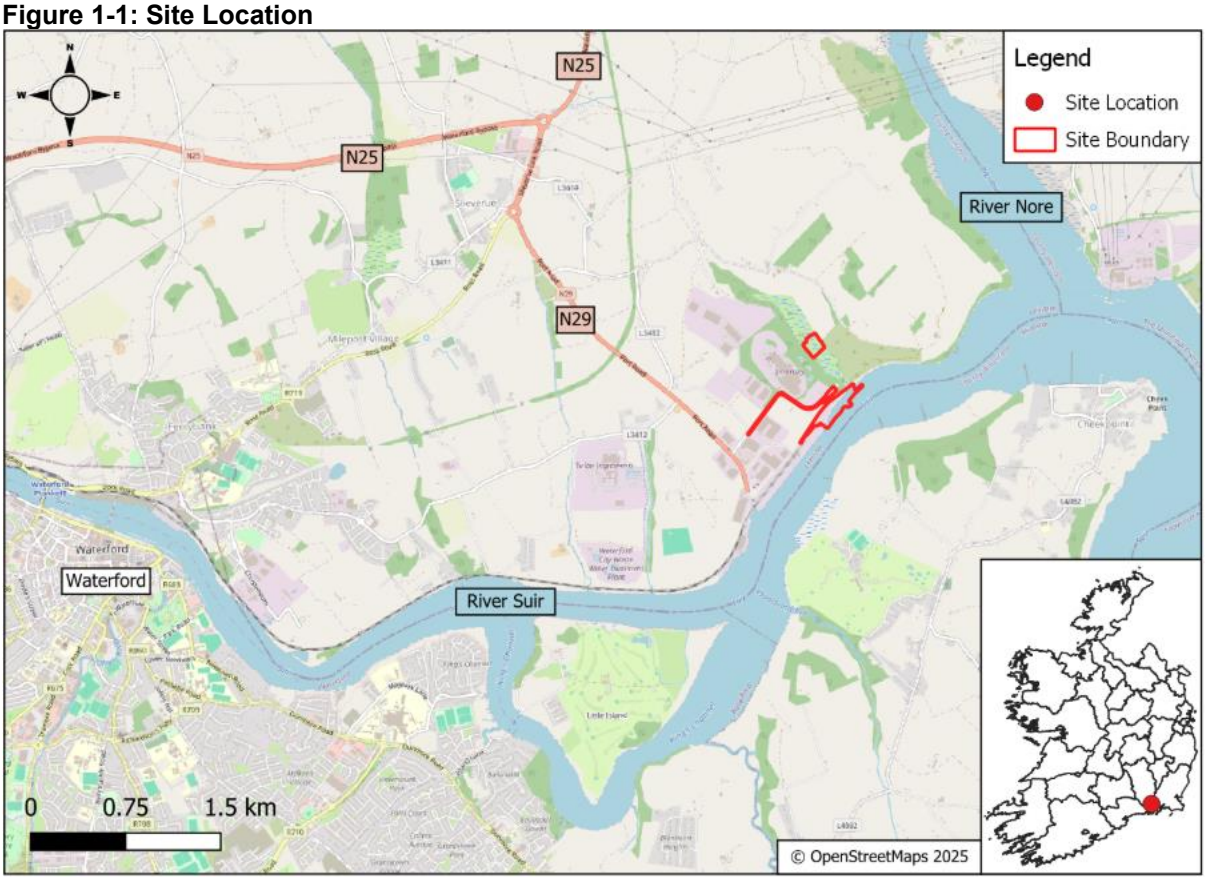
1 INTRODUCTION

1.1 Background

Malone O'Regan Environmental ('MOR Environmental') was commissioned by Port of Waterford Company ('the Applicant') to undertake a Water Framework Directive ('WFD') Assessment in support of a planning application for proposed port facilities comprising of a circa ('ca.') 250-metre ('m') wharf extension to support proposed Offshore Renewable Energy ('ORE') development and general port development, land reclamation, ancillary works and a biodiversity enhancement area ('the Proposed Development'). The Proposed Development will be located partly on land and partly in the near shore area of the coastal planning authority (Kilkenny County Council) at the Port of Waterford, Belview, Co. Kilkenny ('the Site') (ITM OS Reference: 666422; 613637).

Figure 1-1 shows the location of the Site, located partly within the townland of Gorteens, Co. Kilkenny, ca. 5.6km northeast of Waterford City.

Figure 1-1: Site Location



The aim of this assessment was to ascertain whether the Proposed Development has the potential to effect waterbodies in such a way as to result in a deterioration in that waterbody's ecological status / potential under the WFD or a deterioration in its risk status. If such effects are found to be possible, then mitigation must be put in place to ensure that any deterioration is avoided.

As part of this assessment, construction and operational effects will be assessed. Due to the minor amount of demolition required, demolition and construction effects will be assessed as one single phase.

1.2 Regulatory Context Overview

1.2.1 EU Legislation - Water Framework Directive

The Water Framework Directive ('WFD') (2000/60/EC) [1], as amended by Directives 2008/105/EC and 2013/39/EU, requires EU Member States to protect and improve water quality. It applies to all surface waters (defined as inland waters, both standing and flowing and includes rivers, lakes, reservoirs, streams and canals), groundwater, transitional (estuarine) and coastal waters. This includes both natural and "artificial and heavily modified bodies of water" ('artificial' is defined in Article 2(8) as 'a body of surface water created by human activity' and 'heavily modified' is defined in Article 2(9) as 'a body of surface water which as a result of physical alternations by human activity is substantially changed in character').

The long-term aim of the Directive is for all ground and surface waters within the EU to achieve 'good' status (see section 1.4 below). The WFD was given legal status in Ireland via the European Communities (Water Policy) Regulations 2003 (S.I. 722/2003), as amended.

Article 1 of the Directive sets out that the purpose of the Directive is to establish a framework which *"prevents further deterioration and protects and enhances the status of aquatic ecosystems"*, *"promotes sustainable water use"* and *"aims at enhanced protection and improvement of the aquatic environment* inter alia *through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of priority hazardous substances"*.

Article 4 of the Directive sets out environmental objectives. In relation to surface water, Article 4(1)(a) states that:

> *"(i) Member States shall implement the necessary measures to prevent the deterioration of the status of all bodies of surface water…*
>
> *(ii) Member States shall protect, enhance and restore all bodies of surface water, subject to the application of subparagraph (iii) for artificial and heavily modified bodies of water, with the aim of achieving good surface water status at the latest 15 years after the date of entry into force of this Directive…*
>
> *(iii) Member States shall protect, enhance and restore all artificial and heavily modified bodies of water with the aim of achieving good ecological potential and good surface water chemical status at the latest 15 years after the date of entry into force of this Directive…"*

Article 4(1)(b) places the same obligation to prevent deterioration in relation to groundwater and, in addition, places an obligation to:

> *"protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status at the latest 15 years after the date of entry into force of this Directive…"*

Article 4(7) states that Member States will not be in breach of the Directive when failure to achieve good groundwater/ecological status / ecological potential is the result of new modifications to the physical characteristics of a surface water body / alterations to the level of a groundwater body, or failure to prevent deterioration from 'high' to 'good' status is the result of new sustainable human development activities and:

- All practicable steps are taken to mitigate the adverse impact;
- The reasons for the modifications / alterations are set out in the river basin management plan;

- The reasons for the modifications / alterations are of overriding public interest / the benefits of achieving good status are outweighed by the benefits of the modifications / alterations; and,
- The benefits of the medications / alternations cannot, for reasons of technical feasibility or disproportionate cost, be achieved by other means which are a significantly better environmental option.

Article 7(1) requires Member States to identify within each river basin:

> *"all bodies of water used for the abstraction of water intended for human consumption providing more than 10m^3 a day as an average or serving more than 50 persons and those bodies of water intended for such future use.*
>
> *Member States shall monitor, in accordance with Annex V, those bodies of water which according to Annex V provide more than 100m^3 a day as an average."*

Annex IV lists the relevant protected areas as:

i. "Areas designated for the abstraction of water intended for human consumption under Article 7;
ii. areas designated for the protection of economically significant aquatic species;
iii. bodies of water designated as recreational waters, including areas designated as bathing waters under Directive 76/160/EEC1;
iv. nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC2 and areas designated as sensitive areas under Directive 91/271/EEC3 and
v. areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC4 and Directive 79/409/EEC5."

Article 11 requires each Member State to establish a "programme of measures" to achieve the objectives set out in Article 4.

1.2.2 National Policy

Since 2010, the Government of Ireland has created River Basin Management Plans ('RBMPs') which operate on a renewing six-year cycle. The purpose of these RBMPs is to set targets to address water quality issues, including the protection, improvement and sustainable management of the water environment, in line with the WFD. The first WFD cycle ran from 2009-2015, and the second cycle operated from 2016-2021. The current (third) cycle runs from 2022-2027, and the associated RBMP was named "Water Action Plan 2024" and published in September 2024, following public consultation [2].

[1] The Bathing Water Directive
[2] The Nitrates Directive
[3] The Urban Wastewater Treatment Directive
[4] The Habitats Directive
[5] The Birds Directive

2 METHODOLOGY, SCOPE AND POLICY CONTEXT

2.1 Common Implementation Strategy

In order to assist in the implementation of the WFD, EU member states, alongside Norway and the European Commission, developed a "Common Implementation Strategy" ('CIS') in May 2001. This CIS was designed to provide coherent and comprehensible guidelines aimed at achieving the aims of WFD.

2.1.1 Exemptions to the Environmental Objectives according to Article 4(7)

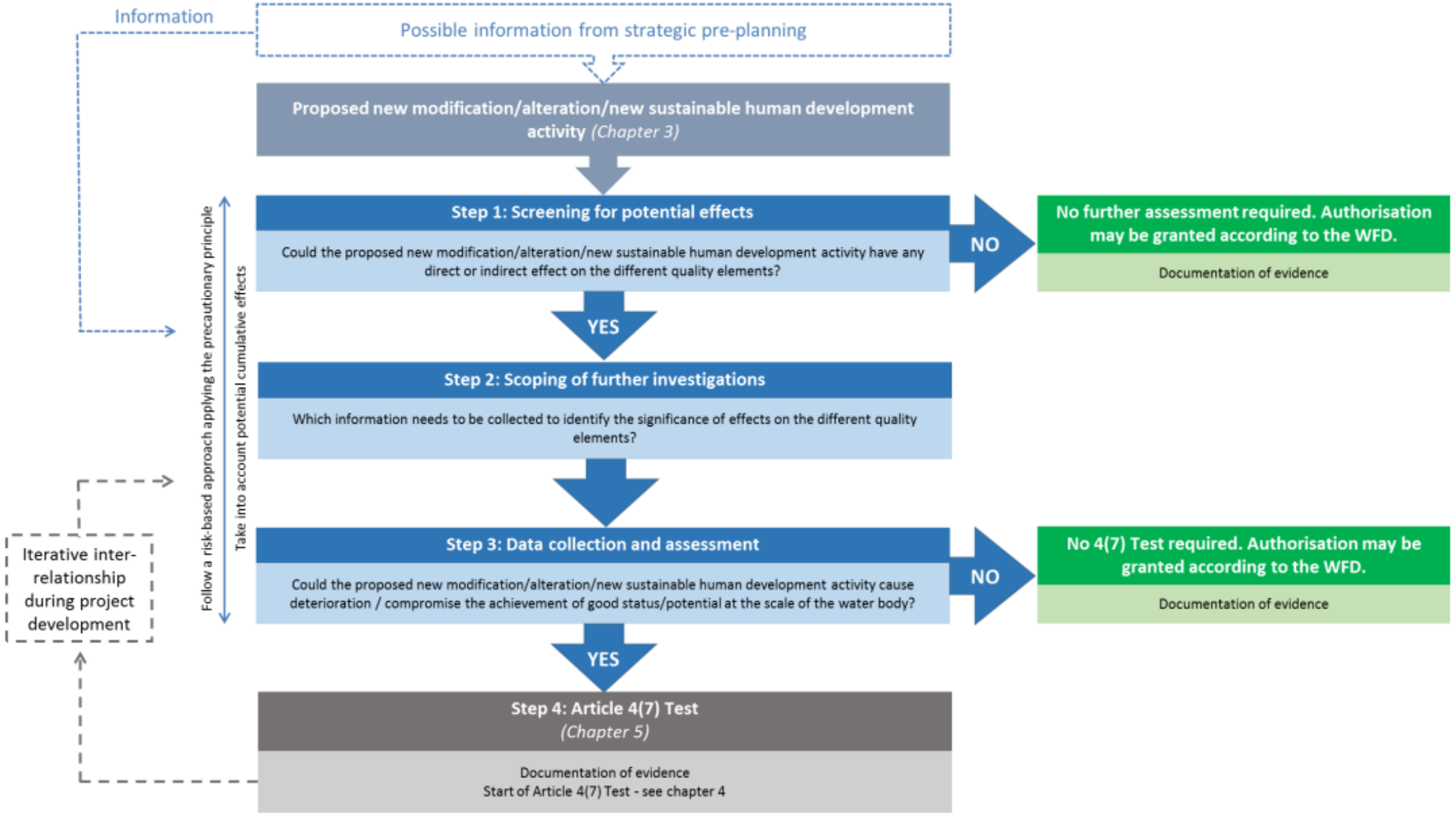
Figure 4 of the CIS Guidance Document 36 – "Exemptions to the Environmental Objectives according to Article 4(7)" [3] provides an outline of an approach to WFD Assessments. This figure, reproduced in Figure 2-1 below, breaks the assessment down into the following sequential steps:

- Screening for Potential Effects - Determine whether the Project could have any direct or indirect effects on the different quality elements relevant to the WFD;
- Scoping of Further Investigations - Outline the information required to determine the significance of any effects on the relevant quality elements; and,
- Data Collection and Assessment - Assess whether any effect could cause deterioration or compromise the status / potential status of a water body.

If the project is determined to compromise or deteriorate the status / potential status of a waterbody then a "Article 4(7) Test" is required. Assessment under Article 4(7) is summarised in CIS Guidance Document 36 [4].

If no effects are identified, then no Article 4(7) assessment is required, and the project may be authorised according to the WFD.

Figure 2-1: WFD Screening Assessment



2.2 Assessment Criteria

For the purposes of this assessment, a hydrological connection exists between a receptor (e.g. waterbody) and the Proposed Development when a pathway (e.g. drainage discharging to surface water, downstream flow or groundwater flow) that connects the Proposed Development and/or discharges to a receptor. This connection is considered "direct" when the discharge point is directly discharging to the waterbody in question. Should the discharged water require further transport (downflow transit in other waterbodies, flow through land drains, etc.), it is considered "indirect".

2.3 Surface Water Quality Assessment

Surface water bodies are defined as either:

- Rivers;
- Lakes;
- Transitional waters;
- Coastal waters;
- Artificial surface water bodies; and,
- Heavily modified surface water bodies.

Under the WFD [1];

- Article 2(17):

  "Surface water status" is the general expression of the status of a body of surface water, determined by the poorer of the ecological status and the chemical status.

- Article 2(21):

  "Ecological status" is an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters, classified in accordance with Annex V.

- Article 2(23):

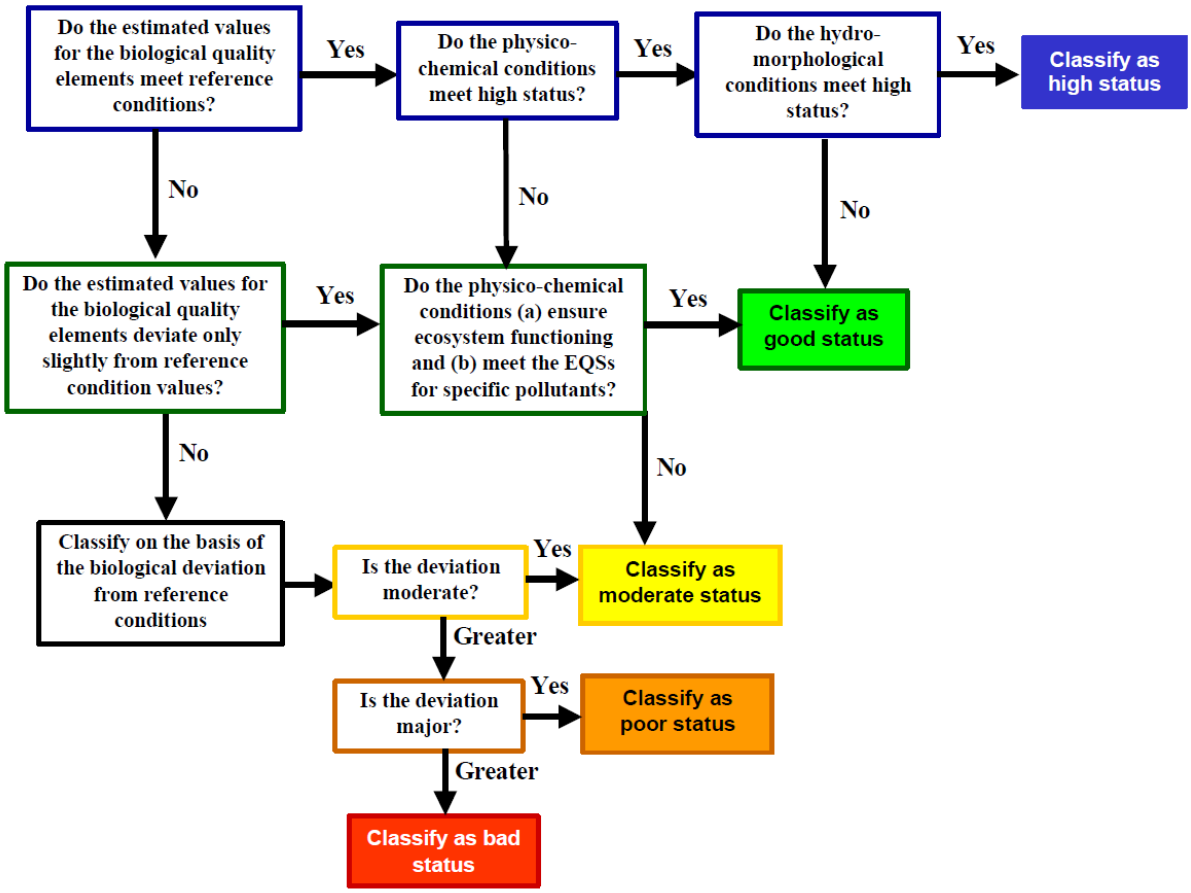
  "Good ecological potential" is the status of a heavily modified or an artificial body of water, so classified in accordance with the relevant provisions of Annex V.

Each natural surface water body is assessed on its ecological status and its chemical status. Ecological status is assessed based on the following categories, with each category receiving a rating of "High," "Good," "Moderate," "Poor" or "Bad":

- Biological potential (aquatic flora and fauna);
- Physico-chemical potential (temperature, oxygenation, nutrient conditions); and,
- Hydromorphological potential (waterflow, sediment composition and movement, riverbank structure, etc).

The relationships between the biological, hydromorphological and physico-chemical quality elements in status classification are presented in Figure 2-2 below, reproduced from CIS documentation (5, 10 and 13).

Figure 2-2: Ecological Status Classification from definitions in WFD Annex V:1.2.



The hydromorphology of a waterbody describes its physical characteristics in terms of the movement of water flows and levels ('hydro'), the structure and form of the bed, banks and riparian zones and how they function within the surrounding landscape ('morphology'). Good hydromorphological conditions are required to create and maintain diverse aquatic habitat for invertebrates, fish and plants, which in turn support healthy aquatic ecosystems and good ecological status. If a waterbody is modified by anthropogenic activity, e.g. channelisation and straightening of rivers, installation of weirs or other instream barriers, culverting or otherwise installing hard engineering works and removal of natural features such as sand and gravel banks and riparian vegetation, the waterbody may experience hydromorphology pressures and a decrease in overall quality. This element of assessment is relevant only to the assessment of "High" ecological status, as shown in Figure 2-2 above. As such, it is screened out of assessment unless a waterbody already has "High" ecological status or a "High" status objective / target.

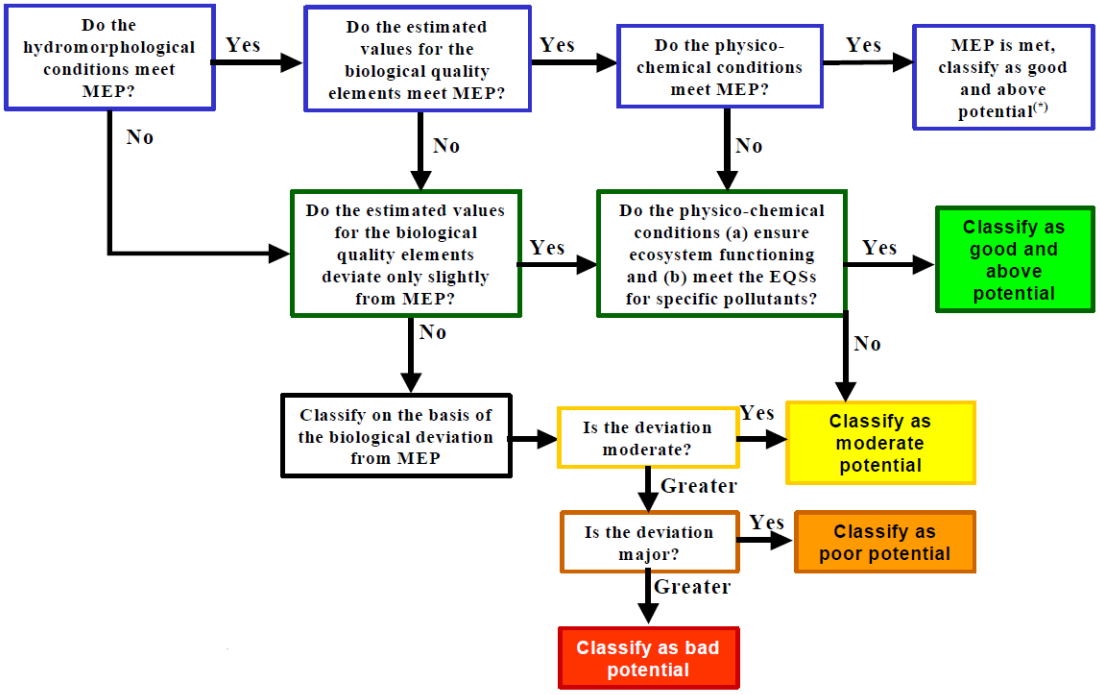
The biological quality of the water body is dependent on the variety of flora and fauna (e.g. invertebrates, aquatic plants, algae and fish) and corresponds with a biotic index or "Q Value". These values are as follows:

- Q5, Q4-5 – High WFD Status;
- Q4 – Good WFD Status;
- Q3 – Q4 – Moderate WFD Status;
- Q3, Q2-3 – Poor WFD Status; and,
- Q2, Q1-2, Q1 – Bad WFD Status.

The physio-chemical quality of the water body is representative of several physical parameters, including temperature and pH, and several chemical parameters, including dissolved oxygen, nutrients and specific chemical pollutants.

In the case of artificial and heavily modified waters, ecological potential status is utilised instead. It is assessed similarly to the ecological status above but is rated as "Maximum" or "Good and Above," "Good," "Moderate," "Poor" or "Bad" ecological potential instead. In general terms, "maximum ecological potential" means that the water body is as close as possible to a comparable surface water body, with the only differences being those directly attributed to the artificial or modified nature of the water body. See Figure 2-3 below, taken from CIS guidance, wherein MEP stands for Maximum Ecological Potential.

Figure 2-3: Ecological Potential classification from definitions in WFD Annex V:1.2.



Note that, similar to ecological status, hydromorphological characteristics are only relevant to the assessment of the highest classification of ecological potential. As such, hydromorphological is scoped out of further assessment unless the modified waterbody achieves the highest classification.

Chemical status is given one of two ratings: 'Good' or 'Failing to Achieve Good.' For an assessment of 'Good,' no substance listed in the S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 (as amended) ('SWAC') [5] may be found in concentrations above the relevant EQS limits.

The overall chemical status of a waterbody is determined by the lowest status found to apply.

2.4 Groundwater Quality Assessment

Groundwater is awarded either "Good" or "Poor" status. Groundwater is assessed based on its chemical and quantitative status.

Water quality for groundwater is classified into two quality classes, i.e. 'good' and 'poor', based on the status of its chemical and quantitative attributes. Similar to surface water, the chemical status of a groundwater body is dependent on its physio-chemical parameters, whereas the quantitative status is based on the availability and sustainability of the groundwater resource.

The overall quality status of any waterbody is based on the quality score of the lowest-scoring attribute.

Good chemical status of a groundwater body requires the entry of hazardous substances and saline intrusion into the groundwater to be prevented and the presence of other pollutants to be below the limits within S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 (as amended) [6]. Concentrations of pollutants must also not be of such a concentration as to effect the ecological or chemical status of associated surface waters or to damage linked terrestrial ecosystems.

Quantitative status is assessed based on whether or not the available groundwater resource is being reduced by the long-term rate of annual abstraction and is rated as “Good” or “Poor.”

3 SITE CONTEXT AND PROPOSED DEVELOPMENT

3.1 Site Context and Description

The Port of Waterford currently comprises ca. 960m of quays on the northern bank of the Lower Suir Estuary (Little Island - Cheekpoint) and has open and closed storage areas and warehousing within the ca. 256ha area designated as the Belview Port Zone. The Site covers an area of ca. 8ha and is located partly on land and partly in the Lower Suir Estuary (Little Island - Cheekpoint) within the industrial landscape of Belview, Co. Kilkenny. The Site is accessed via local road L7852 off the N29 national road. The Site is bordered to the north and west by a primarily industrial landscape, within the wider area are the sites of SmartPly Europe, Southeast Port Services Ltd., Target Fertilisers, the wider Belview Port and more. Across the Lower Suir Estuary (Little Island - Cheekpoint) is Faithlegg, Co. Waterford, an area of one-off residential housing, agricultural lands, forestry and marshlands. The Site can be defined as three separate portions:

- The terrestrial portion of the Site covers the downstream end of the existing Belview Quay, the existing weighbridge, the existing substation, an area along the local road to the downstream access to Belview Quay and existing areas of hardstanding;
- The portion of the Site located within the Lower Suir Estuary (Little Island - Cheekpoint) is considered to be located in the 'Nearshore' as defined in the Marine Area Planning Act 2021 (‘MAPA’); and,
- The Site also includes an area identified as a proposed biodiversity enhancement area, located north of the proposed wharf extension. This area is currently comprised of a mosaic of agricultural wet grassland and areas of rushes. Cattle regularly utilise this area from the adjacent fields due to the lack of fencing within this area.

3.2 Proposed Development

The Proposed Development will comprise a proposed ORE Capable Terminal located on a ca. 250m wharf extension, land reclamation, ancillary works and a biodiversity enhancement area (gross area ca. 8ha), partly on land and partly in the near shore area of the coastal planning authority (Kilkenny County Council) at Port of Waterford, Belview, Co. Kilkenny (the Site).

A summary of the proposed construction and demolition is below:

- A ca. 250m extension to the existing wharves at the container / bulk handling terminal at Belview port, as a continuation of the existing wharves, comprising a reinforced concrete suspended deck supported on reinforced concrete beams and steel piles socketed into bedrock below the Lower River Suir Special Area of Conservation (‘SAC’) and partly on land with a retaining structure to the rear;
- Land reclamation, covering an area of ca. 1.3ha primarily using imported quarried rock and, if suitable, treated dredged material, retained by the wharf structure and a rock-armoured embankment beneath the wharf and to the downstream end of the development;
- Two separate quayside ORE Operator support facilities (annotated Operator 1 and Operator 2 on drawings) located at the downstream area of the Port, supported on piled foundations, with associated support and warehousing / workshop buildings, berthing pontoons, yard areas and crane installations;
- A three-storey administrative office and staff facilities building for Operator 1 located in the downstream area of the Port and supported on piled foundations, and associated car parking to the east of the railway bridge crossing;

- A three-storey administrative office and staff facilities building for Operator 2 located on the north side of the Rosslare-Limerick railway line and supported on piled foundations, and associated car parking for staff;
- Associated underground services, water supply and drainage to include a pumped rising main to discharge foul water from the development to the Uisce Eireann network
- An Electricity Substation to replace existing Substation;
- Additional lighting and lighting pylons;
- Relocation of existing weighbridges and security cabin;
- Partial demolition of both the existing downstream ramp and the existing dolphin to facilitate the development;
- Minor works to the existing quay to facilitate structural interfacing between existing and proposed structures;
- Roof-mounted solar photovoltaic ('PV') arrays;
- Biodiversity Enhancement Area (ca. 1.8ha) located to the northeast of the wharf extension in existing agricultural wet grassland that is bisected by the Luffany Stream;
- Diversion, extension and relocation of the outfall to the existing drainage pipe serving the SmartPly facility; and,
- All associated Site development works.

Further details on the above elements of the Proposed Development relevant to the WFD assessment are provided below. Full details on the Construction and Operational Phases of the Proposed Development are available in Section 3 of the EIAR report that has been submitted in support of this planning application.

3.2.1 Construction of Wharf

The sequence of the wharf construction will consist of the following:

- Removal of the existing rock armour in the area of the wharf extension using floating plant and retention onsite for re-use, if suitable;
- Removal of material from the footprint of the development and from the proposed berth via capital dredging and disposal off-site to a suitably licenced facility;
- Placement of fill material from the shore to the reclaimed areas within the estuary, commencing at the upstream end. Placement of fill to be undertaken in layers;
- Setting out and installation of the steel piles using floating plant, and/or other appropriate methodology, to socket the piles into the bedrock to support the wharf and the pontoons;
- Infilling of material to the profile of the revetment, placement of geogrid geotextile membrane and placement of rock armouring;
- Placement of reinforced concrete precast beam sections on the piles and casting of the reinforced concrete in-situ concrete pile heads;
- Placement of the precast prestressed deck slab units and casting of the reinforced concrete in-situ slab;
- Installation of the tie rods and precast in-situ anchor walls and completion of the filling;
- Installation of the cone fender units, fender panels and mooring bollards; and,

- Installation of underground services and underground tanks will be progressed during the filling works.

3.2.2 Land Reclamation Works

Capital dredging will be required to be carried out locally at the downstream end of the wharf extension to achieve the proposed berth depth of -10mOD Poolbeg. There will be a need to remove ca. 7,000m^3 of material from the estuary bed to facilitate the construction of the wharf extension. The dredging works will be carried out using appropriate dredging methods and equipment to loosen the compacted material. Loading will take place under controlled conditions, with material removed from the bed transferred by a suction pipe directly to the vessels' holding tanks.

Approximately 160,000 tonnes of rock will be imported from a local quarry to the Site. This rock will infill the area behind the open wharf and will be brought up to the same level as the wharf. A subbase layer will be placed on top of the infill material. Concrete paving will be finished at the surface, and therefore, there will be no pouring of concrete within this portion of the Proposed Development.

Dredged material suitable for treatment and reuse will remain on-site to be treated and reused as fill material. Unsuitable material will be loaded onto tipper trucks and transported to a suitably permitted / licensed facility for recovery and/or disposal.

3.2.3 Water Supply

Potable water will be supplied to the ORE facilities on the quayside and for bunkering vessels berthed alongside the ca. 250m wharf extension by extending the existing potable supply network as shown on the drawings. Uisce Éireann have confirmed feasibility for the ORE operator facilities, which will be subject to a connection agreement with Uisce Éireann.

Fire water supply will be provided to the Proposed Development by extending the existing port area fire main, which is connected to the existing large capacity static firefighting water tank located adjacent to the Port offices at the upstream entrance to the Port.

3.3 Ecological Enhancements

As part of the Proposed Development, an area of ca. 1.8ha, overlapping with the Luffany_010 waterbody to the north, will be utilised for biodiversity enhancement. The proposed biodiversity enhancement measures will include:

- Installation of stock-proof fencing around the Biodiversity Enhancement Area to exclude cattle but allow the free movement of other species, including otter, badger, deer, etc.;
- The creation of pond complexes within the Biodiversity Enhancement Area with natural regeneration of wetland species;
- Enhancement of existing hedgerows with additional species-rich riparian woodland planting along the eastern and western boundaries;
- Allowing for the natural regeneration of wet grassland habitat and reed and large sedge swamp habitat following the removal of livestock from the area; and,
- The provision of wildlife shelters providing nesting opportunities for protected and locally important species, including sand martin, nest bank, kingfisher nest bank, bat boxes, habitat piles / hibernaculum, deadwood habitat and artificial otter holts.

3.4 Stormwater Drainage

3.4.1 Quayside Stormwater Drainage

Stormwater runoff from the wharf extension and reclaimed area will be collected via longitudinal heavy-duty channels and gullies to discharge to an underground drainage network, which will be routed to a proposed settling tank (ca. 2.5m wide x ca. 12m long x 3.5m depth) on the quay before draining through a hydrocarbon bypass interceptor before discharging to the Lower Suir Estuary (Little Island - Cheekpoint) through the proposed new outfall pipe. The works will include modifications to the existing storm drainage to facilitate the extended wharf structure and associated work areas.

The settling tank will have a V-notch weir fitting, composite sampling equipment and continuous pH and conductivity probes. In the unlikely event of a major spill or a fire occurring at the Port, contaminated run-off will be diverted to an Emergency Holding Tank (capacity of 636m^3) where the liquid will be contained for further testing. All contaminated run-off water will be removed off-site for treatment at an appropriate waste facility in strict accordance with the requirements of the Waste Management Regulations.

Additionally, as part of the Proposed Development, the existing 600mm diameter outfall discharging existing stormwater runoff from the port will be extended to an outfall within the proposed new revetment.

3.4.2 ORE Operators Quayside Stormwater Drainage

Stormwater from the roofs of the new ORE buildings will be collected via rainwater downpipes and discharged to the proposed stormwater piped network. Stormwater from the proposed ORE yards will be directed into the new network through road gullies and channels that will link into the quayside stormwater drainage.

3.4.3 ORE Operator 2 Office Building Surface Water Drainage

It is proposed to provide permeable paving to allow stormwater generated in the proposed parking areas to discharge to the ground.

Stormwater runoff from the roof of Operator 2's office building, located to the north of the railway line, will be collected via rainwater downpipes and will be discharged into the proposed surface water drainage network. This stormwater runoff will then be discharged into the existing surface water network to the east of the Site, which discharges to the Luffany_010 downstream of the existing tidal flap along this waterbody.

3.4.4 Quayside Fuel Tank Loading and Unloading Area

Each ORE Operator will have a 90,000L dedicated bunded fuel tank. A dedicated containment area will be provided immediately adjacent to the two fuel tank bunds to mitigate any impact from potential spillages or leakages during the filling of the fuel tanks by fuel delivery tankers.

The stormwater generated in the re-fuelling zone and bunded areas will flow through an automated shut-off valve, activated on detection of hydrocarbons, and will discharge through a forecourt interceptor to the surface water network. The fuel delivery tankers will be subdivided into four compartments, each with a 7,600-litre capacity. The retention interceptor will therefore have the capacity to retain the entirety of one of the 7,600 litre delivery compartments.

In addition, each ORE Operator will have a separate underground pipeline that will connect the fuel tank to a manifold on the wharf that will be used for refuelling of the CTVs and SOVs.

3.4.5 SmartPly Discharge Pipe

As part of the Proposed Development, the existing 600mm diameter outfall discharge pipe from the SmartPly site located to the northwest will be diverted and extended to the outfall within the proposed new revetment. There will be no changes to the current discharge rates / capacity to the discharge pipe as a result of the Proposed Development. As this discharge is regulated by the EPA under IE Licence P0001-05, Smartply Europe DAC, the licence holder, will need to obtain the Agency's consent for these works.

3.5 Foul Water Management

A new foul water drainage system is proposed to collect foul water from the ORE Operator facilities and to discharge via a gravity and pumped system to the Uisce Éireann network, subject to a connection agreement with Uisce Éireann and in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure. Uisce Éireann provided a Confirmation of Feasibility.

The existing drainage system for the Port of Waterford Marine Point Offices and Terminal Building will have the capacity to accept the 30 additional staff associated with the Proposed Development and no additional works will be required.

Wastewater from the land-side element of the Proposed Development will be discharged into the public foul water system via a new purpose-built sewer system.

3.6 Ship Drainage

Bilge water from the ORE vessels will be discharged at sea via on-board interceptors as permitted under the MARPOL Convention Annex I, which was integrated into Irish law via the Sea Pollution (Prevention of Oil Pollution) (Amendment) Regulations 2010 (S.I. No. 664/2010).

Foul wastewater from ORE vessels will be treated via on-board WWTPs, with treated effluent discharged at sea as permitted under the MARPOL Convention Annex IV, which was integrated into Irish law via the Sea Pollution (Prevention of Pollution by Sewage from Ships) Regulations 2006 (S.I. No. 269/2006). The sludge from the WWTPs will be retained until the vessel returns to port when it will be pumped from the vessel into tankers for removal and treatment.

4 STUDY AREA SCREENING

For the purposes of screening, information available on or through the EPA maps [7] was utilised throughout. Specific data on the quality status of waterbodies was gathered from datasets available on catchments.ie [8]. A baseline study area was assessed in line with the Institute of Geologists of Ireland ('IGI') guidelines for the preparation of soils, geology and hydrogeology chapters of Environmental Impact Statements [9]. The minimum 2km diameter study area was expanded, based on the type of development, the receiving environment and receptors, as well as professional judgement, to include surface waterbodies downstream, up to the Waterford Harbour coastal waterbody (See Section 4.1 for further details). Protected sites within the same study area were assessed.

The aim of the WFD is for all waterbodies (surface water and groundwater) to achieve at least 'good' water quality status by 2027 and to ensure that water quality is maintained, i.e. no decline in water quality should be allowed to occur. If a decline in water quality is identified, then the associated water body must be restored where necessary to achieve the environmental objectives of the WFD.

Under the WFD, the EPA classifies the status and the risk of not achieving good water quality for all waterbodies in Ireland [7]. The most up-to-date data for waterbody status and risk status, according to the WFD 2016 - 2021 monitoring events, was utilised at the time of writing this report.

4.1 Surface Water

According to the EPA Maps [10], the Site is located within the Suir Catchment (Catchment ID: 16), subcatchment Blackwater [Kilmacow]_SC_010 (subcatchment ID: 16_29). There are no lake waterbodies within the study area.

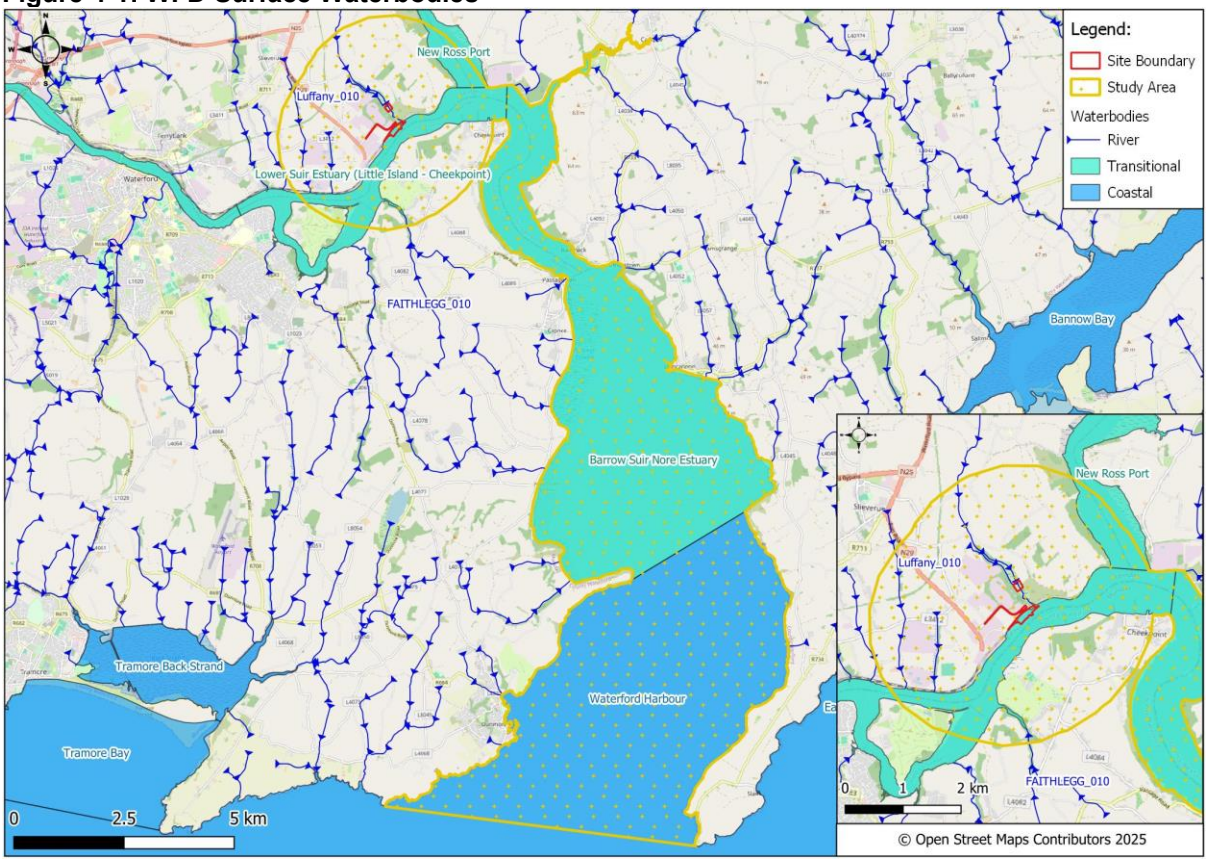
The area of planned wharf extension and land reclamation overlaps with the Lower Suir Estuary (Little Island - Cheekpoint) transitional waterbody. The waterbody is categorised as "heavily modified". It is categorised under the WFD [10] as having "moderate" ecological potential and is "failing to achieve good" chemical status, due to Benzo(b)fluoranthene concentrations, in the most recent 2016-2021 assessment window. It is considered "at risk" of not achieving the quality objectives under the WFD.

The biodiversity enhancement area, located in the separated northern section of the Site, overlaps with a stream that is part of the Luffany_010 river waterbody. It should be noted that the Luffany_010 river waterbody comprises multiple, disconnected streams and rivers that flow into Lower Suir Estuary (Little Island - Cheekpoint) transitional waterbody. The Luffany_010 is categorised under the WFD [10] as having "moderate" ecological status in the most recent 2016-2021 assessment window. It's at risk of not achieving the quality objectives under the WFD and is currently under review. No breakdown of the quality elements comprising this status was available for this assessment.

Downstream of the Lower Suir Estuary (Little Island - Cheekpoint), the Barrow Suir Nore Estuary is a transitional waterbody. This waterbody is categorised under the WFD [10] as having "moderate" ecological status, but "good" chemical status in the most recent 2016-2021 assessment window. It is considered "at risk" of not achieving the quality objectives under the WFD.

Downstream of the Barrow Suir Nore Estuary transitional waterbody is the Wexford Harbour coastal waterbody. This waterbody is categorised under the WFD [10] as having "moderate" ecological status, but "good" chemical status in the most recent 2016-2021 assessment window. It is considered "at risk" of not achieving the quality objectives under the WFD.

Figure 4-1: WFD Surface Waterbodies



Details of waterbodies in the vicinity of the Site, obtained from catchments.ie [7] datasets are presented in Table 4-1 below. Waterbodies upstream of the discharge or located within a separate sub-catchment are screened out of the assessment as they will not experience any effect from the proposed activities.

Table 4-1: Surface Waterbodies within the Study Area

Name	EPA Code	Ecological Status (2016-2021)	Chemical Status	Risk	Heavily Modified Waterbody?
River Waterbody					
Luffany_010	IE_SE_16L680750	Moderate	-	Review	Unknown
Transitional Waterbody					
Lower Suir Estuary (Little Island - Cheekpoint)	IE_SE_100_0500	Moderate	Failing to achieve good *Benzo(b)fluoranthene concentrations*	At Risk	Yes
Barrow Suir Nore Estuary	IE_SE_100_0100	Moderate	Good	At Risk	No
Coastal Waterbody					
Waterford Harbour	IE_SE_100_0000	Moderate	Good	At Risk	N.A.

4.2 Groundwater

Groundwater bodies ('GWB') were screened to a radius of 2km from the Site boundary. The Site is underlain by the Waterford GWB (IE_ SE_G_149). It is classified by the EPA as having 'good' water quality status and is considered to be 'not at risk' of not meeting the WFD objectives. See Figure 4-2 and Table 4-2 below.

Figure 4-2: Groundwater Bodies

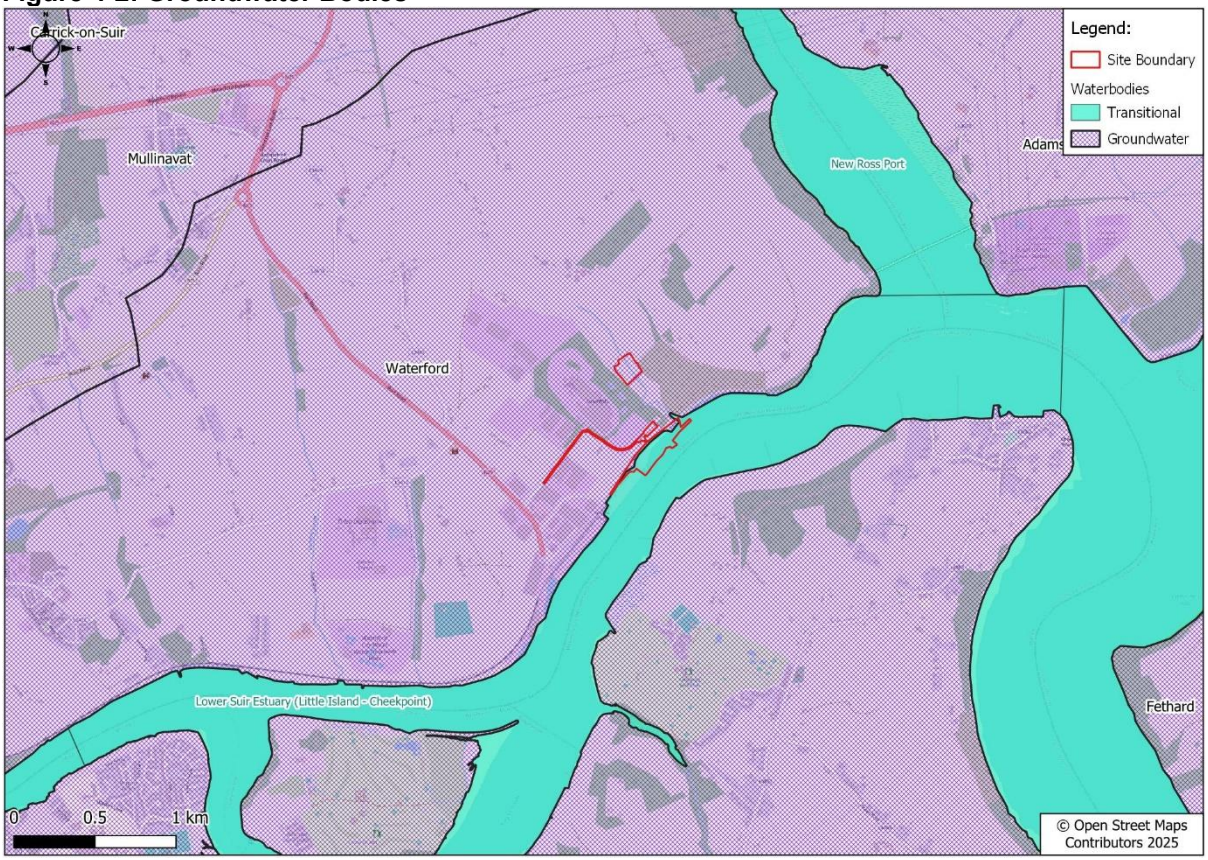


Table 4-2: Groundwater Waterbodies within 2km of Site

Name	EPA Code	Type	Status		Risk
			Quantitative	Chemical	
Waterford	IE_SE_G_149	Productive fissured bedrock	Good	Good	Not At Risk

4.3 Groundwater Usage

From the GIS database, there are nine groundwater boreholes within a 2km vicinity of the Site, excluding wells on the opposite side of the surface water bodies, as shown in Table 4-3 below. There are no source protection areas identified within 2km.

Table 4-3: Available Groundwater Well Information

Borehole ID	Distance from Nearest Point of Site	Grid Reference (Irish Grid)		Well Type	Total Depth (m)	Townland	Yield (m^3d)
		Northing	Easting				
2611SWW131	1.94km NW	115070	264560	Unknown	24.1	Rathpatrick	54.6

Borehole ID	Distance from Nearest Point of Site	Grid Reference (Irish Grid)		Well Type	Total Depth (m)	Townland	Yield (m^3d)
		Northing	Easting				
2611SWW132	1.72km NW	114590	264560	Agricultural & Domestic Use	45.7	Drumdowney Lower	76.4
2611SWW133	1.60km N	115490	265410	Unknown	45.7	Drumdowney Upper	32.7
2611SWW150	0.60km NW	113710	265300	Unknown	22.9	Gorteens	43.6
2611SWW151	0.12km W	113470	265710	Agricultural & Domestic Use	22.6	Gorteens	-
2611SWW152	1.21km NW	114920	265330	Public supply	100	Drumdowney Lower	1206
2611SWW153	1.52km W	112880	264350	Public supply	95	Gorteens	1402
2611SWW155	0.48km SW	112890	265740	Industrial Use	5.5	Gorteens	341.5
2611SWW156	0.30km SW	113090	265910	Industrial Use	5.5	Gorteens	-

4.4 Water Pressures

The EPA has identified significant pressures for waterbodies that are “At Risk” of not meeting their water quality objectives under the WFD. Significant pressures are those pressures which need to be addressed in order to improve water quality. From the data presented on the EPA maps, there are water pressures for surface waters which are summarised in Table 4-4 below.

There are no significant groundwater pressures or river waterbody pressures identified.

Table 4-4: EPA Water Pressures on Surface Waterbodies within the study area

Waterbody Name	Waterbody Type	Water Pressure
Lower Suir Estuary (Little Island - Cheekpoint)	Transitional Waterbody	Agriculture
Barrow Suir Nore Estuary	Transitional Waterbody	Agriculture
Waterford Harbour	Coastal Waterbody	Agriculture, Urban Run-off

4.5 Protected Sites

4.5.1 European Designated Sites

Within the identified study area, there are two European Designated Sites – the Lower River Suir Special Area of Conservation (‘SAC’) and the River Barrow and River Nore SAC. The Lower River Suir SAC directly overlaps with the Proposed Development - see Figure 4-3 and Table 4-5. No other European Designated Sites are located within the study area.

Figure 4-3: European Sites within Study Area

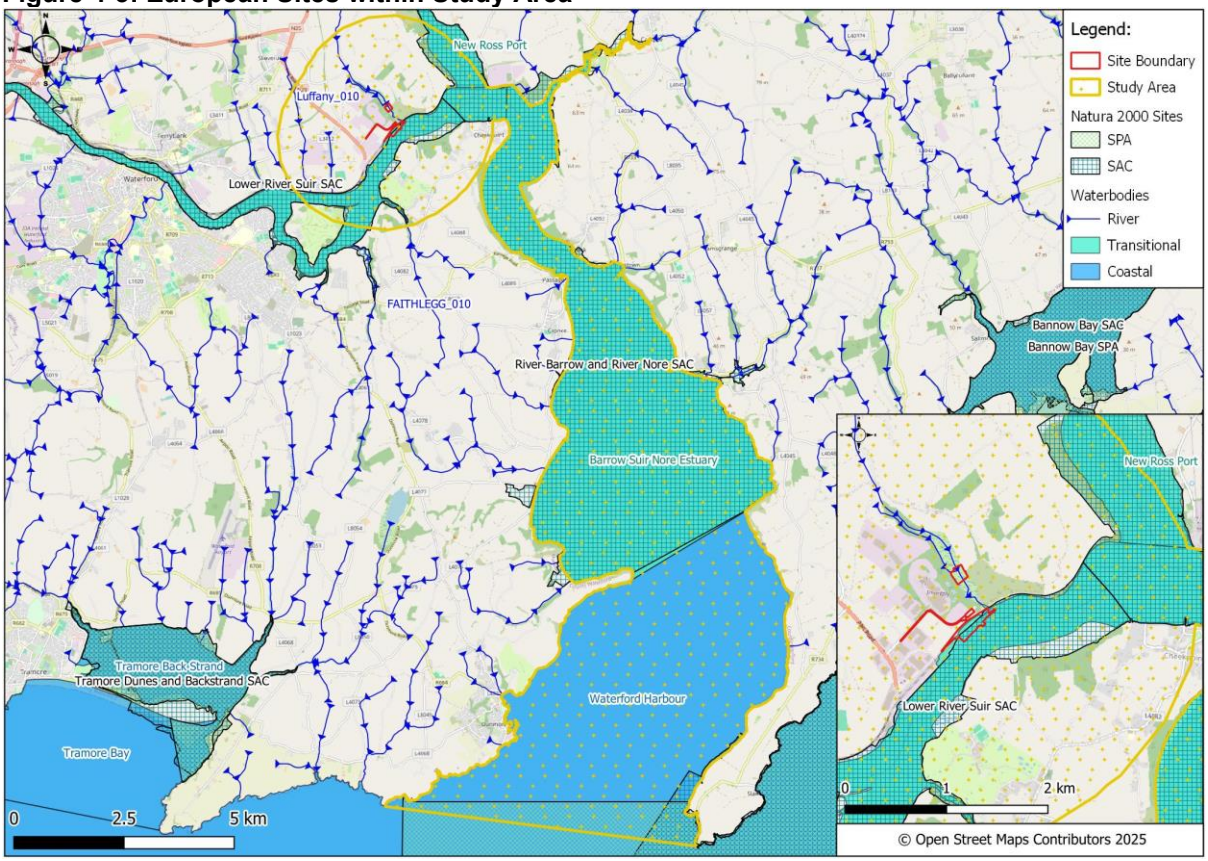


Table 4-5: Hydrologically Connected European Sites within Study Area

Name	Code	Direct Distance	Direction from Site	Nature of Hydrological Connection
Special Areas of Conservation ('SAC')				
Lower River Suir SAC	002137	-	-	Direct connection through overlap with Proposed Development boundary/area of work
River Barrow and River Nore SAC	002162	0.99km	NE	Indirect connection through flow from Site into Barrow Suir Noir Estuary waterbody

4.5.2 Nationally Designated Sites - Register of Protected Areas

There are no Nutrient Sensitive Areas or Salmonoid Rivers within the study area.

Six proposed Natural Heritage Areas ('pNHAs'), three Bathing Water Areas ('BWAs') and one Economically Significant Shellfish Area ('ESSA') are located within the study area. Any National site lacking a hydrological connection to the Proposed Development will be screened out, as without a clear pathway, the Proposed Development cannot cause effects on National sites. See Figure 4-4 and Table 4-6 below.

Figure 4-4: Nationally Designated Conservation Sites within the Study Area

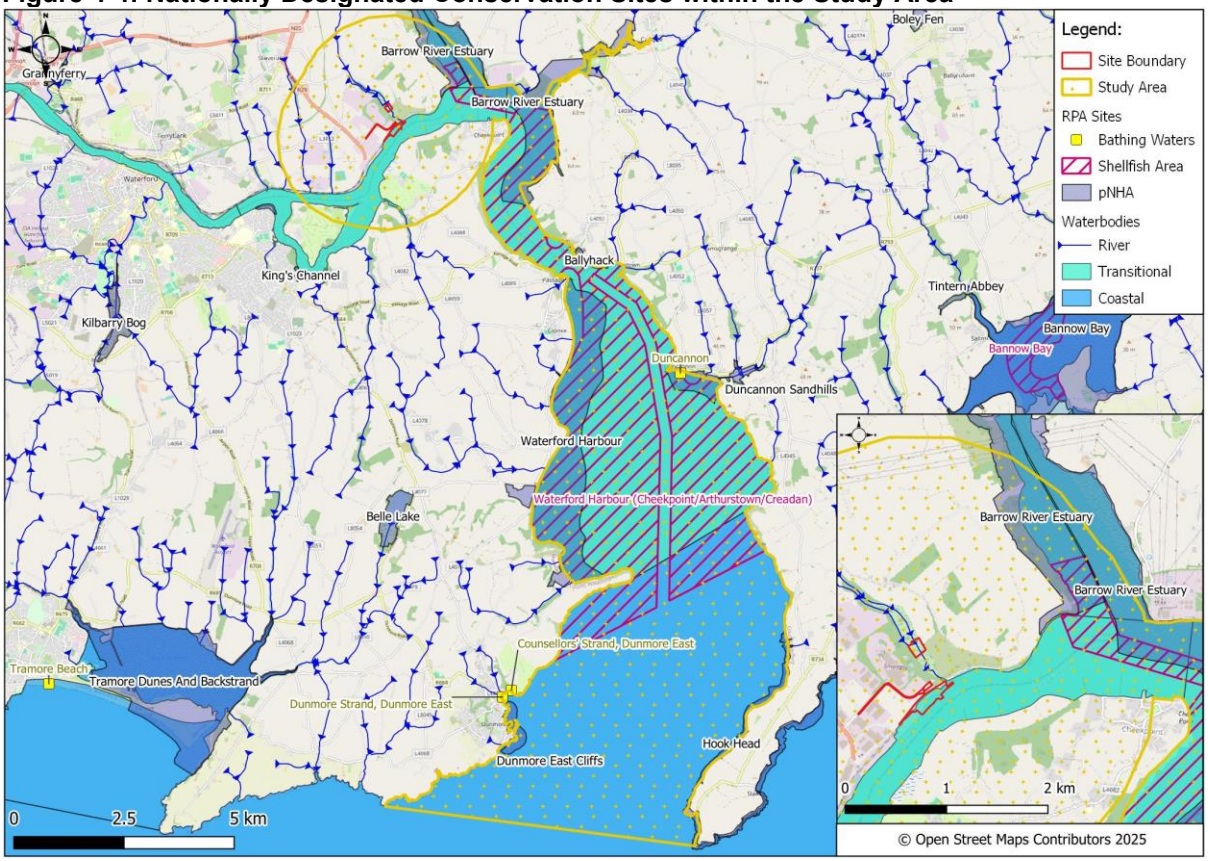


Table 4-6: Hydrologically Connected National Protected Sites within the Study Area

Name	Code	Direct Distance	Direction from Site	Nature of Hydrological Connection
Proposed National Heritage Areas				
Barrow River Estuary	000698	0.98km	NE	Indirect connection through flow from Site into downstream Lower Suir Estuary (Little Island - Cheekpoint) waterbody
Ballyhack	000695	4.9km	SE	Indirect connection through flow from Site into Barrow Suir Noir Estuary waterbody
Waterford Harbour	000787	5.1km	SE	Indirect connection through flow from Site into Barrow Suir Noir Estuary waterbody
Duncannon Sandhills	001738	8.1km	SE	Indirect connection through flow from Site into Barrow Suir Noir Estuary waterbody
Dunmore East Cliffs	000664	13.1km	S	Indirect connection through flow from Site into Waterford Harbour waterbody

Name	Code	Direct Distance	Direction from Site	Nature of Hydrological Connection
Hook Head	000764	14.3km	SE	Indirect connection through flow from Site into Waterford Harbour waterbody
Bathing Water Areas				
Duncannon	IESEBWT100_0100_0100	8.5km	SE	Indirect connection through flow from Site into Barrow Suir Noir Estuary waterbody
Counsellors' Strand, Dunmore East	IESEBWC100_0000_0100	13.0km	S	Indirect connection through flow from Site into Waterford Harbour waterbody
Dunmore Strand, Dunmore East	IESEBWC100_0000_0200	13.0km	S	Indirect connection through flow from Site into Waterford Harbour waterbody
Economically Significant Shellfish Areas				
Waterford Harbour (Cheekpoint/Arthurstown/ Creadan)	IE_SE_100_0100	1.2km	NE	Indirect connection through flow from Site into downstream Lower Suir Estuary (Little Island - Cheekpoint) waterbody

4.6 Licensed Facilities / Developments

Based on EPA maps, there are four facilities within 2km of the Proposed Development which hold active EPA-issued licenses or other types of permits. See Table 4-7 below.

Table 4-7: Licensed Facilities / Developments within 2km of the Proposed Development

ID	Licensee	Distance from Site	Activity Class	Relevant Emissions / Controls
Industrial Emissions Licence				
P0001-05	Smartply Europe Designated Activity Company	0.34km N	8.7: Wood, Paper, Textiles and Leather	Two regulated discharge locations – SW1A and STP. Emissions mix before discharge into receiving waters - Lower Suir Estuary (Little Island - Cheekpoint). SW1A – settlement pond discharge. STP – sanitary effluent for onsite staff treatment plant discharge. Monitoring set out for emission points and groundwater.
P1015-03	Glanway Ltd.	0.29km W	11.4 (b)(ii): Waste	No emissions to water of environmental significance. No water monitoring set.
P0963-02	Tirlán Ltd.	0.89km W	7.2.1: Food and Drink	Regulated emission to sewer - Receiving water of Lower Suir Estuary (Little Island - Cheekpoint). Emission limits and monitoring set for sewer discharge. Monitoring set out for stormwater discharging to Lower Suir Estuary (Little Island - Cheekpoint) and groundwater.

ID	Licensee	Distance from Site	Activity Class	Relevant Emissions / Controls
P1180-01	Kilkenny Cheese Ltd.	1.1km W	7.2.1: Food and Drink	Regulated emission to sewer - Receiving water of Lower Suir Estuary (Little Island - Cheekpoint). Emission limits, Wastewater Treatment measures set for sewer discharge. Monitoring set for both treatment and discharge point. Stormwater monitoring for drainage to Gorteens Stream.

4.7 Screening

Given the pressures and hydrological connectivity of the waterbodies discussed above, waterbodies can be categorised into either requiring further assessment or not requiring further assessment; see Table 4-8 below.

Four surface waterbodies within the study area were identified as having connectivity with the Proposed Development. The two surface waterbodies identified within 2km of the Site are not screened in due to being upstream of the Proposed Development:

- FAITHLEGG_010 transitional waterbody is located upstream from the Proposed Development and, as such, is screened out; and,
- New Ross Port transitional waterbody is located upstream of the Lower Suir Estuary (Little Island - Cheekpoint) transitional waterbody, and some tidal mixing between the two transitional waterbodies will occur. However, the New Ross Port transitional waterbody is approximately 16km in length, and any mixing will be confined to close to the boundary between the waterbodies. As such, the overall effects on the whole New Ross Port waterbody are likely imperceptible and as such, it is screened out.

All European and Nationally Designated Conservation Sites identified are considered to be connected to the Proposed Development. As such, they are all screened in and discussed in relation to the relevant waterbody in Section 5 below, with the exception of the three Bathing Water Areas. Bathing Water Areas are sensitive to faecal and microbial pollution, and the Proposed Development does not seek to discharge wastewater into connected waterbodies to these sites. Therefore, they have been screened out of further assessment.

Table 4-8: Waterbody Screening Table

Name	Ecological Status/Potential	Risk	Further Assessment	Justification
River Waterbody				
Luffany_010	Moderate	Review	Yes	There is a direct overlap between the Site boundary and part of the waterbody.
Transitional Waterbody				
Lower Suir Estuary (Little Island - Cheekpoint)	Moderate	At Risk	Yes	There is direct overlap between the Site boundary and part of the waterbody.
Barrow Suir Nore Estuary	Moderate	At Risk	Yes	The waterbody is downstream of the Site and contains protected sites not present in the Lower Suir Estuary (Little Island - Cheekpoint)

Name	Ecological Status/Potential	Risk	Further Assessment	Justification
Coastal Waterbody				
Waterford Harbour	Moderate	At Risk	Yes	The waterbody is downstream of the Site and contains protected sites not present in the upstream transitional waterbodies
Groundwater Body				
Waterford	Good	Not at Risk	No	The Site is located on the edge of the GWB and the majority of proposed works do not interact with groundwater.

5 IMPACT ASSESSMENT

5.1 River Waterbodies - Luffany_010

Table 5-1: Luffany_010

Receptor	Potential Effect from Site	Potential Effect of Proposed Development	Mitigation Required?
Biological quality	Yes	Planned biodiversity enhancement works are proposed in part of this waterbody, which may result in temporary short term negative effects, resulting from the disturbance caused by the works. However, the overall result will be medium - long term positive effects on biological quality.	No
Physico-Chemical quality	Yes	The Proposed Development will expand the area of hardstanding utilising drainage in a specific area of the Site (Operator 2 Office Building), increasing stormwater drainage from the Site during the operational phase. However, this increase in stormwater will derive from rooftop drainage connecting to existing networks that discharge into the waterbody. This rooftop drainage will be low in contaminants, as stormwater is directed from the rooftop to drains into the network, limiting potential pathways to contamination. The remainder of the hardstanding area in this designed with permeable paving to stormwater and as such will not be directed to the waterbody. In addition, there will be a potential improvement to physio-chemical quality via a reduction in nutrients such as nitrogen, through the exclusion of livestock from the biodiversity enhancement area of the Proposed Development. Such nutrients are sourced from livestock excrement entering waterbodies.	No

5.2 Transitional Waterbodies

5.2.1 Lower Suir Estuary (Little Island - Cheekpoint)

Table 5-2: Lower Suir Estuary (Little Island - Cheekpoint)

Receptor	Potential Effect from Site	Potential Effect of Proposed Development	Mitigation Required?
Biological quality	Yes	Works are proposed in the transitional waterbody; therefore, there will be direct risk to habitats or species within, with an area of the waterbody being reclaimed as part of the proposed activities. This waterbody is already classified as “heavily modified” by human activities and as such this reclamation will be consistent with existing trends for the waterbody, however, mitigation will be required during direct works in the waterbody to prevent degrading biological quality.	Yes

Receptor	Potential Effect from Site	Potential Effect of Proposed Development	Mitigation Required?
Physico-Chemical quality	Yes	Due to the dredging and reclamation works, it is predicted that the construction of the Proposed Development will release suspended solids into the waterbody. These suspended solids will be released into any already suspended solids-rich environment, which could result in slight effects on the physio-chemical quality of the waterbody. Mitigation has been proposed regarding suspending solids release for the construction phase to manage these emissions during the construction phase. The stormwater runoff from the Site poses a potential hazard to physico-chemical quality by the accidental release of pollutants such as hydrocarbons, sourced from regular works or through unplanned incidents or spills, into the water body. Mitigation measures will be required to prevent a potentially significant adverse effect.	Yes
Lower River Suir SAC	Yes	As noted, the Construction Phase will result in a reduction and alteration of ca. 1.3ha to the size of the waterbody and as such, will change the area of the SAC. In order to offset this change, a biodiversity enhancement area was included within the proposed plans, providing an area of improved biodiversity for local biodiversity. Beyond this, the impairment of water quality may negatively affect the SAC. As such, the requirement for mitigation measures identified for both biological and physio-chemical quality above will also be applicable to maintaining the objectives of the SAC.	Yes
Barrow River Estuary pNHA	Yes	The impairment of water quality may negatively affect the pNHA. As such, the requirement for mitigation measures identified for both biological and physio-chemical quality above will also be applicable to maintaining the objectives of the pNHA. Note that the pNHA is located downstream of the Proposed Development, and as such, any effects identified will be significantly diluted with distance downstream.	Yes
Waterford Harbour (Cheekpoint/Arthurstown/ Creadan) Economically Significant Shellfish Area	Yes	The protected site has the potential to be affected by the release of suspended solids and contaminants such as hydrocarbons during the construction of the Proposed Development. Mitigation measures to address these specific hazards are detailed below to effectively manage or reduce the risk of effects arising on waterbodies and the connected protected Site.	Yes

5.2.2 Barrow Suir Nore Estuary

Table 5-3: Barrow Suir Nore Estuary

Receptor	Potential Effect from Site	Potential Effect of Proposed Development	Mitigation Required?
Biological quality	No	No works are proposed in or adjacent to the transitional waterbody. Therefore, there will be no direct risk to habitats or species within the waterbody arising from in-water works.	No
Physico-Chemical quality	Yes	Though the up-gradient Lower Suir Estuary (Little Island - Cheekpoint) was considered to potentially experience slight effects from suspended solid emissions during the dredging and reclamation works, any effects arising from this input were predicted to be not significant. This is because effects from suspended solids will decrease down-gradient from the Site as they disperse and settle out of the water column. The up-gradient Lower Suir Estuary (Little Island - Cheekpoint) could potentially experience adverse effects from stormwater discharges. Given the proximity of the two estuaries, moderate to significant effects were predicted, should any hydrocarbon be released. Therefore, mitigation will be put in place to control and manage the accidental release of hydrocarbons onsite.	Yes
River Barrow and River Nore SAC	Yes	The impairment of water quality may negatively affect the SAC. As such, the requirement for mitigation measures identified for both biological and physio-chemical quality above will also be applicable to maintaining the objectives of the SAC. Note that the SAC is located downstream of the Proposed Development and as such, any effects identified will be diluted with distance downstream.	Yes
Proposed NHAs: Ballyhack Waterford Harbour Duncannon Sandhills	Yes	The impairment of water quality may negatively affect these pNHAs. As such, the requirement for mitigation measures identified for both biological and physio-chemical quality above will also be applicable to maintaining the objectives of these pNHA. Note that these pNHA are located further downstream of the Proposed Development than the Barrow River Estuary pNHA and as such, any effects identified will be significantly diluted with distance downstream in comparison.	Yes
Barrow River Estuary pNHA	Yes	See discussion of the up-gradient section of the Barrow River Estuary pNHA above.	Yes
Waterford Harbour (Cheekpoint / Arthurstown / Creadan) Economically Significant Shellfish Area	Yes	See discussion of the up-gradient section of the Waterford Harbour (Cheekpoint / Arthurstown / Creadan) Economically Significant Shellfish Area above.	Yes

5.3 Coastal Waterbodies - Waterford Harbour

Table 5-4: Waterford Harbour

Receptor	Potential Effect from Site	Potential Effect of Proposed Development	Mitigation Required?
Biological quality	No	No works are proposed in or adjacent to the transitional waterbody, therefore, there will be no direct risk to habitats or species within this waterbody. As the up-flow Barrow Suir Nore Estuary was predicted to experience no effect, no effect was predicted for down-gradient waterbodies.	No
Physico-Chemical quality	Yes	The up-gradient Barrow Suir Nore Estuary was considered to potentially experience effects from suspended solid emissions, assessed as 'not significant'. As such, effects assessed as 'not significant' were predicted for Waterford Harbour. The up-gradient Barrow Suir Nore Estuary was considered to potentially experience moderate-significant effects from stormwater discharges. Given the proximity of the two waterbodies, should any hydrocarbon be released, without mitigation, moderate to significant effect was predicted. Therefore, mitigation measures will be implemented to control and manage the accidental release of hydrocarbons onsite.	Yes
Dunmore East Cliffs pNHA	No	The effects from the Proposed Development on the connected waterbody (Waterford Harbour) were assessed as not significant. Given the dilution of effects with increasing downstream distance from the Proposed Development, no significant effects were predicted at this protected site due to the distance from the Proposed Development.	No
Hook Head pNHA	No	The effects from the Proposed Development on the connected waterbody (Waterford Harbour) were assessed as not significant. Given the dilution of effects with increasing downstream distance from the Proposed Development, no significant effects were predicted at this protected site due to the distance from the Proposed Development.	No
Waterford Harbour (Cheekpoint / Arthurstown / Creadan) Economically Significant Shellfish Area	Yes	See discussion of the up-gradient section of the Waterford Harbour (Cheekpoint / Arthurstown / Creadan) Economically Significant Shellfish Area above.	Yes

5.4 Mitigation Measures

In addition to the mitigation measures outlined below, the creation of the biodiversity enhancement area as part of the Proposed Development will offset the loss of area from the Lower River Suir SAC, by providing a new area of enriched biodiversity, close to the estuary.

5.4.1 Construction Phase

5.4.1.1 Land Reclamation

In order to minimise the effects during the land reclamation works, the following measures will be implemented:

- The imported engineering fill will be processed on-site at the source quarry, where it will be crushed and graded to achieve uniform size and washed to remove fine particles that could otherwise contribute to increased turbidity or sediment dispersion during placement;
- Analytical testing will also be conducted to confirm that the engineering fill materials will not introduce harmful elements;
- Engineering fill materials will be unloaded using controlled methods to avoid accidental spillage into the marine environment;
- Placement of the engineering fill materials will occur gradually, with continuous up- and downstream monitoring of water quality parameters, such as suspended solids (or a turbidity as its proxy) and pH, to ensure compliance with environmental thresholds; and,
- Adaptive Management [8] of these reclamation works will be implemented. This approach will be based on modelling-monitoring-adaptation. In practice, this means that if any environmental thresholds are significantly exceeded, additional mitigation measures will be considered.

5.4.1.2 Oil Storage / Refuelling

In order to minimise the effects from potential spillages during the Construction Phase, the following measures will be implemented:

- All plant and machinery will be serviced before being mobilised to the Site;
- All plant, machinery and construction vehicles will be inspected regularly for oil leaks, in accordance with the measures listed in the final CEMP prepared by the Contractor;
- All oil stored on-site for construction vehicles will be kept in a locked and bund-protected area;
- Preventative maintenance and relevant maintenance logs will be kept for all on-site plant and equipment;
- Drip trays will be used for fixed or mobile plant, such as pumps and generators in order to retain oil leaks and spills;
- Refuelling of plant and machinery will be completed in a controlled manner using drip trays (bunded container trays). Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile containers. Bunds for the storage of hydrocarbons and chemicals will have a holding capacity of 110% of the volume to be stored. In addition, an emergency spill kit with oil boom, absorbers, etc., will be kept onsite in close proximity to any fuel storage tanks or bowsers for use in the event of an accidental spill;

- Fuel and oil stores, including tanks and drums, will be regularly inspected for leaks and signs of damage;
- All deliveries to onsite oil storage tanks will be supervised. Records will be kept of delivery dates and volumes;
- Only designated trained operators will be authorised to refuel plant on-site;
- The Site manager shall ensure that all personnel working on-site are trained and aware of the mitigation measures detailed within the EIAR;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills;
- A procedure will be drawn up, which will be adhered to during the refuelling of on-site vehicles. This will include the following:
    - Fuel will be delivered to plant on-site by a dedicated tanker or in a delivery bowser dedicated to that purpose;
    - In the case of a bowser, the driver or supervising foreman will check the delivery bowser daily for leakage;
    - The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur;
    - Where the nozzle of a fuel pump cannot be placed fully into the tank of a machine, then a funnel will be used; and,
    - Each area of work will have a designated fuelling area. Section foremen shall identify these areas to their plant operatives;
- All equipment associated with the storage of fuel on-site will be designed and installed to relevant standards; and,
- All valves will be of steel construction, and the open and close positions, will be clearly marked.

Mitigation measures for the prevention of contamination during all stages of the Proposed Development are stated below. Specifically, the following should be adhered to:

- Items of plant unsuitable for travelling to the refuelling area (dry screening plant) will be refuelled utilising adequately sized and positioned drip trays;
- Spill kits will be available adjacent to all refuelling and fuel storage operations;
- Spill kits will be available on the barge during the piling works – if applicable;
- Fuel, chemical and oil storage areas on-site will be bunded in compliance with EPA guidance (2004);
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best practice codes;
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling;
- Any spillage of fuels, lubricants, hydraulic oils, explosives or other chemicals will be contained as soon as practicable; and,

- The proposed design incorporates multiple protective measures, including overfill protection on tanks, full bunding of storage areas, a forecourt interceptor, continuous monitoring, and provision of an emergency holding tank.

5.4.1.3 Cement Handling

The measures detailed below will be employed when poured concrete is being used in the construction process. Concrete will be used for various elements of the piling and foundation structures. The production, transport and placement of all cementitious materials will be strictly planned and supervised. Measures related to the use of poured concrete will include:

- All concrete pours will be planned with risk assessment to avoid any impacts;
- Full washing out of trucks and other equipment will occur at the dedicated contained area;
- Water supply points, if required, will be agreed with the appointed Contractor in advance of the works;
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
- Chemicals used will be biodegradable where possible;
- Any spillages will be cleaned up immediately and disposed of correctly;
- Where concrete will be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening; and,
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete.

5.4.2 Specific Measures for the Protection of Water

Additional mitigation measures, specific to the protection of surface water, will include:

- Silt fences will be installed at strategically selected onshore locations during the construction phase to safeguard the receiving surface waters from elevated levels of suspended solids in stormwater runoff. These locations will be defined in the final CEMP, to be prepared by the appointed contractor, with the objective of minimising siltation into the Luffany_010 and the Lower Suir Estuary;
- During the Construction Phase, continuous water quality monitoring will be conducted in the Lower Suir Estuary. Real-time sensors measuring pH and suspended solids—or a suitable proxy such as turbidity—will be deployed both upstream and downstream of the in-water works, using buoy-mounted or otherwise appropriate monitoring platforms. This system will enable immediate detection of elevated turbidity levels or anomalously high pH values, which may indicate a release of suspended solids or a potential concrete-related contamination event;
- In addition, the Contractor will provide method statements for weather and tide / storm surge forecasting and continuous monitoring of water levels in the Lower Suir Estuary. If a flood event is forecasted, the Contractor's method statements will include the removal of site materials, fuels, tools, vehicles and persons from flood zones in order to minimise the risk of input of sediment or construction materials into the Lower Suir Estuary; and,
- The proposed measures will remove the risk from potential contamination and emergency procedures will be implemented in the event of an accidental release or

spill of potentially contaminating substances. These procedures will be communicated to all relevant Site staff. The contractor's emergency procedures will take into account the Port of Waterford's Pollution Plan.

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5.4.3 Operational Phase

5.4.3.1 Environmental Management Procedures

During the Operational Phases of the Proposed Development, the ORE Operator Facilities will operate under environmental management procedures that are in line with the current Port of Waterford procedures. The ORE Operators will prepare and provide these to the Port of Waterford in advance of operations. In addition, the extension area for port-related activities will operate under the Port of Waterford environmental management procedures, under their ISO14001 certified Environmental Management Systems ('EMS'). In addition, the following mitigation measures will be employed;

- The integrity and water-tightness of underground pipes, tanks, bunds and containers will be checked at regular intervals in accordance with relevant guidelines;
- Suitable absorbent materials will be kept on-site to deal with any spills; and,
- Loading and unloading of fuels will be carried out in an area protected against spills and runoff in accordance with relevant EMS procedures.

5.4.3.2 Design Elements

The design of all drainage and bunding will be undertaken in accordance with relevant best practice guidelines. During the Operational Phases of the Proposed Development, the facility will operate under POW environmental management procedures and those of the ORE operators. The Proposed Development has incorporated design measures / operational procedures in order to mitigate potential effects, which include:

- The fuel tanks dedicated to the ORE facilities will be located within bunded areas designed to hold 110% of the tank volume;
- Fuel loading / unloading to occur within a contained area;
- Stormwater runoff from the wharf extension and reclaimed area will be routed to a proposed settling tank on the quay before draining through a hydrocarbon bypass interceptor before discharging to the Lower Suir Estuary through the proposed new outfall pipe:
- The settling tank will have a V-notch weir fitting, composite sampling equipment and continuous pH and conductivity probes. In the event of a major spill or a fire occurring at the Port, contaminated run-off will be diverted to an Emergency Holding Tank where the liquid will be contained for further testing;
- All contaminated run-off water will be removed offsite for treatment at an appropriate waste facility in strict accordance with the requirements of the Waste Management Regulations;
- The stormwater generated in the re-fuelling zone and bunded areas will flow through an automated shut-off valve, activated on detection of hydrocarbons, and will discharge through a forecourt interceptor to the stormwater network; and,

- It is proposed to provide permeable paving to allow stormwater generated in the proposed parking areas to discharge to the ground. Stormwater runoff from the roof of the ORE office building will be collected and will be discharged into the proposed surface water drainage network. It will pass through an interceptor before being discharged under controlled flow into the existing surface water network.

5.4.3.3 Marine Vessels and Cargo Handling Controls

The existing legislation and measures in place to reduce and manage the risks associated with incoming vessels and cargo handling include:

- EU Directive on Ship-Source Pollution (2024 Revision): Aligns EU law with MARPOL standards and imposes penalties for illegal discharges;
- EU Port State Control Directive (Directive 2009/16/EC): Empowers member states to inspect and refuse access to unsafe vessels; and,
- Irish Legislation:
    - Maritime Safety Act 2005: Allows seizure and detention of unseaworthy vessels by authorities; and,
    - Sea Pollution Act 1991: Implements MARPOL provisions in Irish law for pollution control.

Moreover, Ports can refuse entry to vessels that pose safety or pollution risks, as allowed through S.I. No. 656/2010 (Port State Control Regulations). Inspectors are allowed to board, inspect, detain, and refuse access to non-compliant ships.

6 CONCLUSIONS

The Proposed Development has the potential to effect four waterbodies:

- The Luffany_010 river waterbody;
- The Lower Suir Estuary (Little Island - Cheekpoint) (Little Island – Cheekpoint) transitional waterbody;
- The Barrow Suir Nore Estuary transitional waterbody; and,
- The Waterford Harbour coastal waterbody.

In the most recent assessment of ecological status / potential, the above waterbodies are all classified as “Moderate”. The Luffany_010 river waterbody’s risk of not achieving WFD objectives is currently under review. The other waterbodies are considered ‘at risk’ of not achieving WFD objectives of achieving ‘Good’ status.

Without mitigation, it was predicted that the Proposed Development will have slight negative effects on the above waterbodies. Unplanned events, such as a hydrocarbon spill, could result in moderate to significant negative effects. However, such effects can be prevented firstly by avoidance through the design measures and secondly by the implementation of mitigation measures during both the Construction and Operational Phases of the Proposed Development. Therefore, no change in residual quality status was predicted for those waterbodies.

Three Bathing Water Areas were identified to be connected to the Proposed Development; however, they were all screened out of assessment as the proposed activities had no predicted effects. Below is a list of the other protected sites which are hydrologically connected to the Site and screened into the impact assessment were:

- Special Area of Conservation (‘SAC’);
- Lower River Suir SAC;
- River Barrow and River Nore SAC;
- Proposed Natural Heritage Area (‘pNHA’);
- Barrow River Estuary pNHA;
- Ballyhack pNHA;
- Waterford Harbour pNHA;
- Duncannon Sandhills pNHA;
- Dunmore East Cliffs pNHA;
- Hook Head pNHA; and,
- Waterford Harbour (Cheekpoint / Arthurstown / Creadan) Economically Significant Shellfish Area.

No effects were predicted for Dunmore East Cliffs pNHA and Hook Head pNHA due to their distance from the Proposed Development and the lower magnitude of the negative effects predicted on the Waterford Harbour waterbody. The Lower River Suir SAC will potentially be significantly affected by the Proposed Development due to the alteration / loss of SAC area, however, through the implementation of mitigation measures and the creation of a biodiversity enhancement area to offset the loss, it was considered that residual negative effects would be minimal. Potential negative effects predicted for the remaining protected sites were associated

with effects on the water quality of associated waterbodies, were all deemed not significant following the implementation of the mitigation measures.

As such, it can be concluded that the Construction and Operational Phases of the Proposed Development will not:

- Jeopardise the achievement of:
    - good quality status;
    - good chemical status; or,
    - good ecological potential

  for any directly or indirectly connected groundwater or surface waterbody;
- Contribute to the risk of any directly or indirectly connected waterbody from failing to achieve “Good” status / potential within the next cycle of the Water Framework Directive monitoring; and,
- Degrade the ecological quality of the protected sites associated with connected waterbodies, nor jeopardise the goals and/or targets set out for these protected sites.

Therefore, the Proposed Development will not compromise the objectives and requirements of the WFD within the local area and within the river basin district or the ability of any waters to meet the objectives of the WFD and transposing legislation.

7 REFERENCES

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