Environmental Impact Assessment Report (EIAR) – Volume 2

Chapter 8 – Water

CHAPTER 8

Proposed ORE Capable Terminal on a 250m Wharf Extension & Ancillary Operational Support Infrastructure

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny

MALONE O'REGAN ENVIRONMENTAL

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APPENDICES CHAPTER 8

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8 WATER

8.1 Introduction

This chapter of the EIAR provides a description and assessment of the likely effects of the Proposed Development on the receiving hydrology (surface waters) and hydrogeology (groundwater). The existing surface water and groundwater regimes at the Site are described in terms of flood risk, drainage patterns and water quality.

The Construction and Operational Phases of the Proposed Development will be assessed, including construction sedimentation effects, importing material, dredging, effects from stormwater and effects from ships (if any).

8.2 Methodology

The Institute of Geologists of Ireland ('IGI') Guidelines [1] recommend the minimum study area to encompass a 2km radius around the Site. However, the study area should be extended beyond the 2km radius to reflect the sensitivity of the environmental attributes and the presence of sensitive features which are hydrologically or hydrogeologically connected to the Site and which therefore may be impacted by the Proposed Development. Due to the presence of aquaculture in downstream waterbodies outside the 2km radius, it was considered relevant to expand the study area downstream, as far as the Waterford Harbour coastal waterbody (see Section 8.3.1 below) to account for this.

In order to determine the baseline environment, a desk-based study was undertaken to collect and review background information, a site walkover was carried out and site-specific investigations were undertaken.

8.2.1 Legislation Context

8.2.1.1 Water Framework Directive

The EU Water Framework Directive (2000/60/EC) ('WFD') [2], as amended by Directives 2008/105/EC and 2013/39/EU, established a framework for the protection of both surface water and groundwater. It was given legal status in Ireland via the European Communities (Water Policy) Regulations 2003 (S.I. 722/2003) [3], as amended.

The WFD outlines the water protection and water management measures required in Ireland to achieve and maintain at least a good status / potential of all waterbodies and prevent any deterioration in water status. Water bodies comprise both groundwater bodies and surface waterbodies, which include rivers, lakes, transitional waters, coastal waters, artificial surface waterbodies and heavily modified surface waterbodies. The achievement of a good status for groundwater bodies is dependent on the chemical quality status and the water quantity status. The achievement of good status for surface waterbodies is dependent on the biological quality, the physio-chemical quality and the hydromorphological quality of the waterbody.

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 cycle of the River Basin Management Plan ('RBMP') ran from 2009-2015 and devised plans for all the River Basin Districts ('RBDs') with the objective of achieving at least 'good' status for all waters by 2015. The second cycle RBMP covered the period 2016-2021 and merged multiple RBDs to form one national RBD.

The third cycle and current RBMP covers the period 2022-2027 and was published in September 2024 under the title 'Water Action Plan 2024' following public consultation [4]. The Water Action Plan 2024 sets out the measures that are necessary to protect and restore water

quality in Ireland. The overall aim of the plan is to ensure that natural waters are sustainably managed and that freshwater resources are protected to maintain and improve Ireland's water environment. The third cycle plan focuses on integrated catchment planning, with catchment management work plans to be put in place for each of the 46 hydrometric catchments as sub-plans to the national RBMP.

A WFD assessment report for the Proposed Development has been submitted separately as part of the overall planning application and should be read in conjunction with this chapter.

8.2.1.2 Guidance Documentation

The importance and sensitivity of the water receptors within the study area were assessed on completion of the desk study as set out in Table 3-4 of the EPA's 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports'. The Guidelines are formally adopted and published by the EPA [5].

The assessment was carried out in accordance with the following guidance and tailored accordingly based on professional judgement:

- Institute of Geologists of Ireland ('IGI') Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements [1];
- CIRIA C532 - Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors [6]; and,
- Department of Environment, Heritage and Local Government: Quarries and Ancillary Activities - Guidance for Authorities [7].

8.2.2 Desk-Based Studies

A desk-based study of publicly available water quality and flood risk data was undertaken in order to characterise the receiving environment, using the following data sources:

- EPA Online Mapping [8];
- GSI Spatial Resources Map Viewer [9];
- OPW Flood Risk Mapping [10]; and,
- Government of Ireland "Water Action Plan 2024" [4].

8.2.3 Site Investigations and External Reporting

Intrusive and non-intrusive site investigations were undertaken to characterise the hydrogeological and hydrological environment of the Proposed Development. The investigations included the following:

- A bathymetric survey was carried out by Hydromaster Ltd. on 12th December 2023, by means of a Multibeam echosounder within the Belview berths section of the Proposed Development. Results of the survey indicate the area is between - 1.2 metres Chart Datum ('mCD') and 19.2mCD with depth increasing towards the centre of the Lower Suir Estuary;
- Numerical hydrodynamic modelling was carried out by ABPmer in 2024, with the report attached as Appendix 8-1; and,
- Site-specific flood risk assessment carried out by IE Consulting in 2025, submitted as a standalone report with this planning application.

8.2.4 Impact Assessment Methodology

Following on from the identification of the baseline environment, the available data was utilised to identify and categorise potential effects on the hydrological and hydrogeological environment as a result of the Proposed Development.

The significance of effects due to the Proposed Development has been assessed in accordance with the EPA guidance document '*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*' [5]. These are outlined in Chapter 1 (Introduction) of this EIAR and are dependent on the sensitivity of the environmental attributes and the magnitude of the impact.

8.3 Receiving Environment

8.3.1 Hydrology

8.3.1.1 Surface Waterbodies

According to the EPA Maps [11], 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 or canals within the study area.

The area of planned wharf extension and land reclamation overlaps with the Lower Suir Estuary (Little Island - Cheekpoint) transitional waterbody (henceforth referred to as the Lower Suir Estuary), which flows east to northeast towards the Barrow Suir Nore Estuary transitional waterbody. The Lower Suir Estuary is designated as a heavily modified waterbody by the EPA's catchments.ie database [12], indicating that it is substantially changed in character as a result of physical alterations by human activity. This does not impede its capacity to comply with environmental legislation such as the WFD.

Barrow Suir Nore Estuary flows generally south, with the channel widening gradually after flowing past Arthurstown, located 5.8km southwest of the Proposed Development (See Figure 8-1 below). Downstream of the Barrow Suir Nore Estuary transitional waterbody is the Waterford Harbour coastal waterbody.

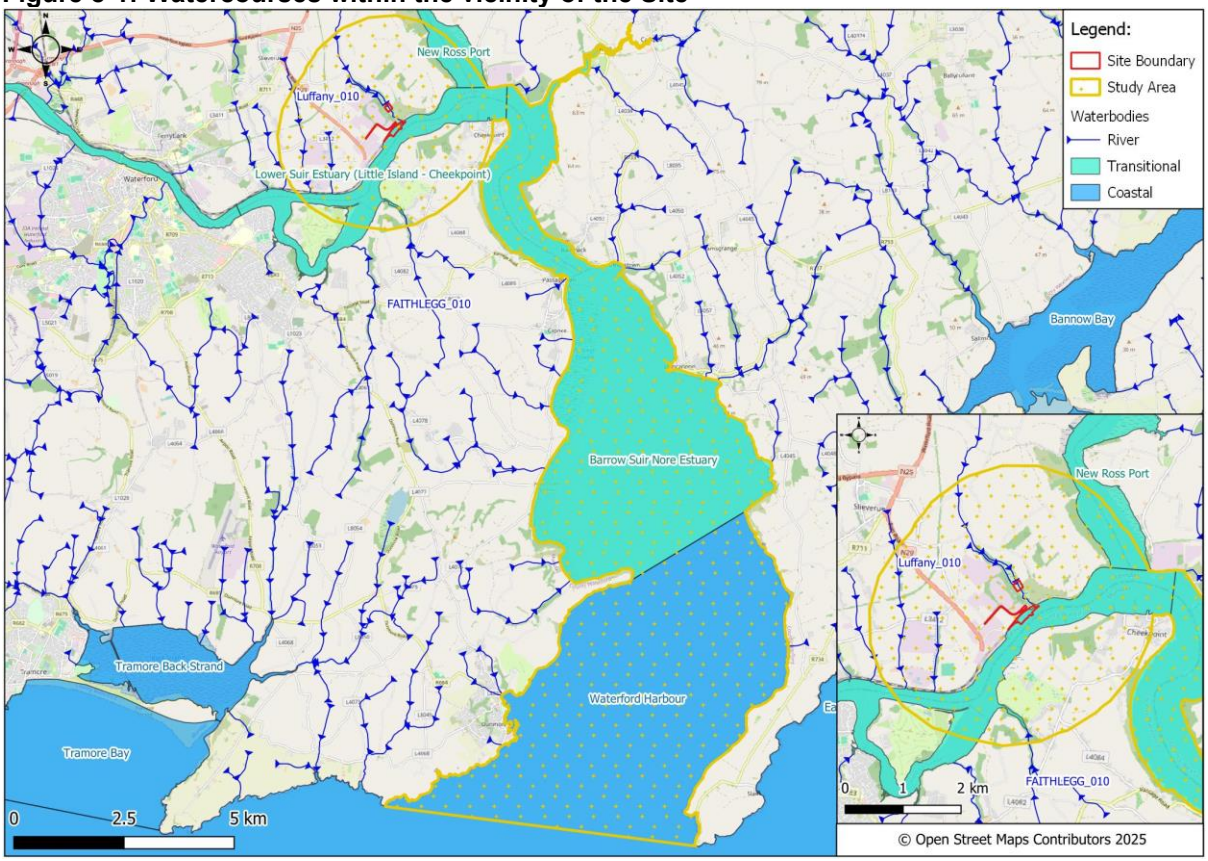
The biodiversity enhancement area, located in the separated northern section of the Site, overlaps with a stream that is part of the Luffany_010 river waterbody. It should be noted that the Luffany_010 river waterbody comprises multiple, disconnected streams and rivers that all flow south into the Lower Suir Estuary. Given the disconnected nature of the waterbody, the Proposed Development will specifically only potentially affect the section of the waterbody it overlaps with and any downstream elements.

In addition to the waterbodies directly downstream of the Site, two other waterbodies are located within 2km of the Site boundary. The FAITHLEGG_010 river waterbody is located on the opposite bank of the Lower Suir Estuary, 1.7km south of the Site, and flows generally north. It merges with the Lower Suir Estuary upstream of the Site.

The northeastern-most section of the study area contains the southernmost section of the New Ross Port transitional waterbody. The waterbody is approximately 16km in length with a general flow to the south across its length. Minimal tidal mixing occurs between this waterbody.

The surface waterbodies within the study area are presented in Figure 8-1 below.

Figure 8-1: Watercourses within the vicinity of the Site



8.3.1.2 Surface Water Quality

The EPA maintains multiple monitoring stations within the Lower Suir Estuary, with 2024 and 2025 data available at both the Glass House Quay station (TW30002102SR4004), adjacent to the current Port of Waterford wharf and the Snowhill House station (TW30002102SR4005), downstream of the current wharf. The results tables presented below (Table 8-1 and Table 8-2) are sourced from these monitoring stations.

Suspended Solids / Turbidity

Due to the nature of the Proposed Development and the associated construction methodologies, suspended solids were identified as the water quality parameter most susceptible to impact during the Construction Phase. This section provides an assessment of baseline conditions with respect to suspended solids. The Lower Suir Estuary is characterised by diurnal tidal cycles, which contribute to substantial natural variability in suspended sediment concentrations. This inherent variability, along with observed baseline levels of suspended solids, is described and analysed herein to inform the impact assessment.

The most recent EPA station samples for suspended solids are from 2016 – over nine years ago. As such, the data is not considered a relevant / current baseline for suspended solids within the estuary. Details of Delft Hydraulics' modelling of suspended solids are available in Section 6.4.1.7. Statistical analysis of turbidity, a proxy for suspended solids, during 2023 maintenance dredging is presented in Section 8.3.1.3 below.

Nutrients – Ammonia / Total Nitrogen

Four grab samples for ammonia and total oxidised nitrogen ('TOxN') were collected by the EPA at their stations so far in 2025. In 2024, 16 No. samples, split between the upper and

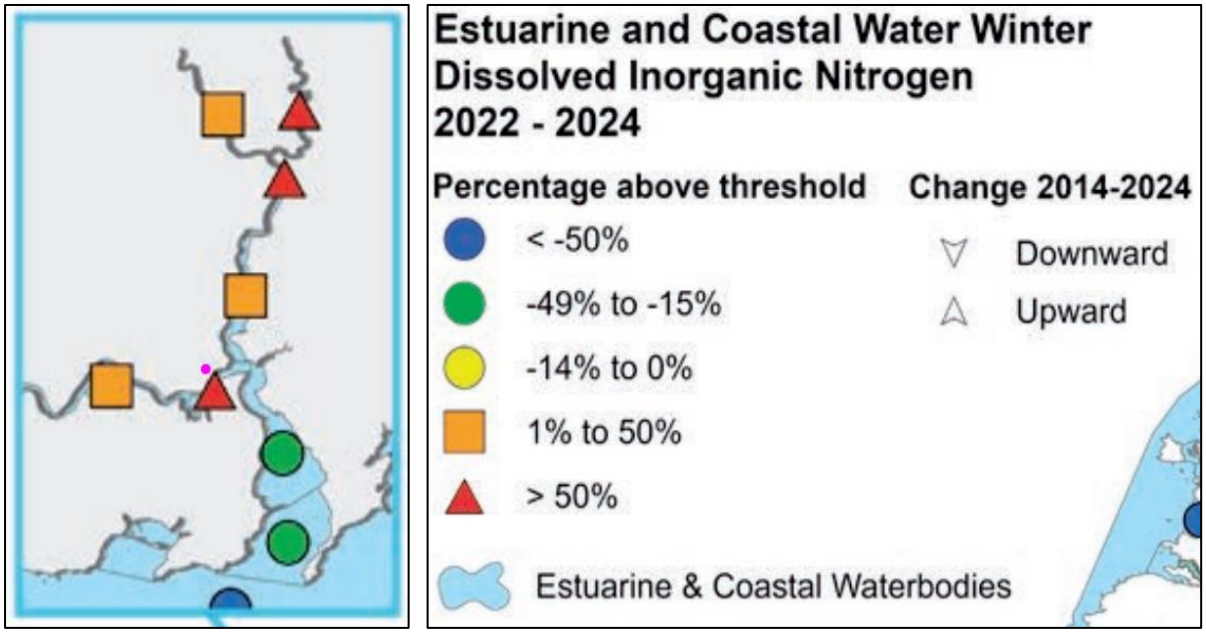
lower water column samples, were collected by the EPA for those parameters. These results are shown in Table 8-1.

Table 8-1: EPA Ammonia and TON monitoring 2024-2025

Station	Sample ID	Date	Total Ammonia (as N) (mg/l)	Total Oxidised Nitrogen (TOxN) (mg/l)
Grab Samples				
Glass House Quay	25-04035	06/03/2025	0.060	2.9
	25-04036	06/03/2025	0.052	2.2
	25-09666	19/06/2025	0.062	1.1
	25-09667	19/06/2025	0.056	1.0
Snowhill House	25-04037	06/03/2025	0.058	2.4
	25-04038	06/03/2025	0.049	1.9
	25-09668	19/06/2025	0.063	1.3
	25-09669	19/06/2025	0.041	0.65
Surface Water Samples				
Glass House Quay	24-02487	15/02/2024	0.050	1.5
	24-07322	10/06/2024	0.034	0.75
	24-10958	25/07/2024	0.064	0.53
	24-11692	14/08/2024	0.067	0.84
Snowhill House	24-02489	15/02/2024	0.049	1.4
	24-07324	10/06/2024	0.028	0.55
	24-10956	25/07/2024	0.070	0.64
	24-11694	14/08/2024	0.083	0.96
Bottom Water Column Samples				
Glass House Quay	24-02488	15/02/2024	0.038	0.90
	24-07321	10/06/2024	0.036	0.66
	24-10959	25/07/2024	0.069	0.41
	24-11693	14/08/2024	0.036	0.21
Snowhill House	24-02490	15/02/2024	0.040	0.95
	24-07323	10/06/2024	0.034	0.43
	24-10957	25/07/2024	0.056	0.60
	24-11695	14/08/2024	0.073	0.56

In 2025, the EPA published the latest report on the quality of Irish waters, including data for 2024 [13]. This report shows that in the Lower Suir estuary, although Dissolved Inorganic Nitrogen ('DIN') was above the threshold that the EPA applies, there was no change in DIN for the period 2014-2024 (there's no upward or downward trend), refer to Figure 8-5 below, with the approximate Site location shown as a pink dot.

Figure 8-2: Estuarine DIN 2022-2024 (Extract from Map 6 from EPA report [13])



Note that the report [13] states: *"Nutrient losses from agriculture are one of the significant drivers for waters not meeting their environmental objectives under the Water Framework Directive (WFD)."*

Nutrients – Phosphorus / Phosphates

Four grab samples for orthophosphate were collected by the EPA at their stations so far in 2025. In 2024, 16 No. samples, split between the upper and lower water column samples, were collected by the EPA for orthophosphate. These results are shown in Table 8-2.

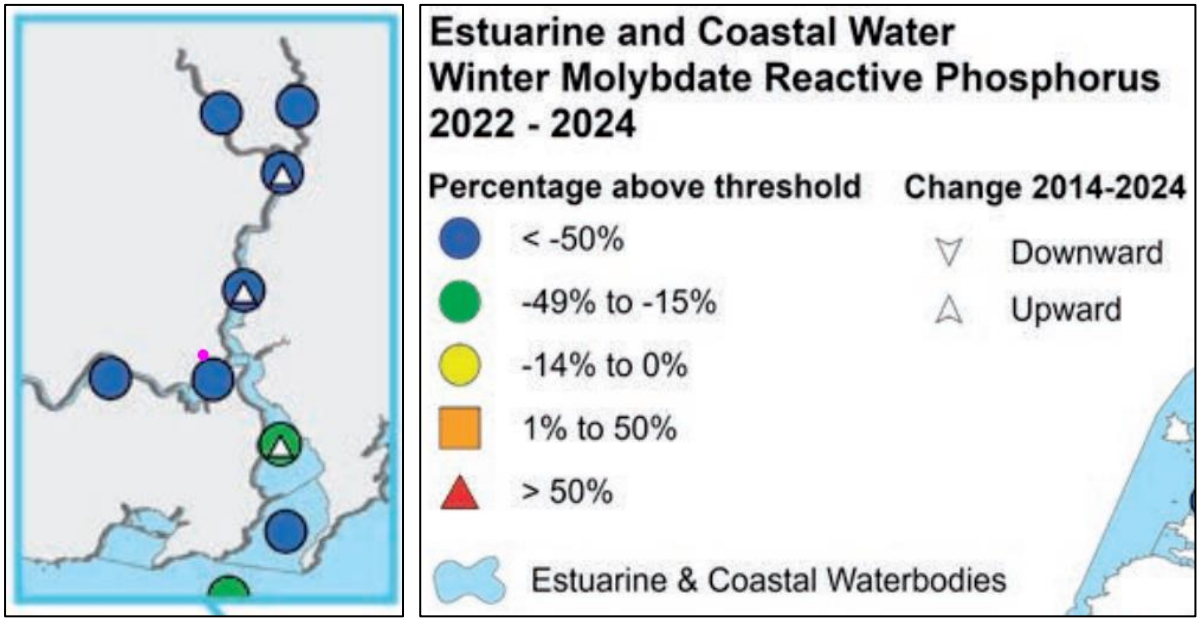
Table 8-2: EPA Orthophosphate monitoring 2024-2025

Station	Sample ID	Date	Orthophosphate (as P) (mg/l)
Grab Samples			
Glass House Quay	25-04035	06/03/2025	0.045
	25-04036	06/03/2025	0.045
	25-09666	19/06/2025	0.018
	25-09667	19/06/2025	0.024
Snowhill House	25-04037	06/03/2025	0.050
	25-04038	06/03/2025	0.046
	25-09668	19/06/2025	0.018
	25-09669	19/06/2025	0.025
Surface Water Samples			
Glass House Quay	24-02487	15/02/2024	0.024
	24-07322	10/06/2024	0.016
	24-10958	25/07/2024	0.020
	24-11692	14/08/2024	0.019
Snowhill House	24-02489	15/02/2024	0.020
	24-07324	10/06/2024	0.013

Station	Sample ID	Date	Orthophosphate (as P) (mg/l)
	24-10956	25/07/2024	0.022
	24-11694	14/08/2024	0.025
Bottom Water Column Samples			
Glass House Quay	24-02488	15/02/2024	0.019
	24-07321	10/06/2024	0.016
	24-10959	25/07/2024	0.023
	24-11693	14/08/2024	0.010
Snowhill House	24-02490	15/02/2024	0.022
	24-07323	10/06/2024	0.012
	24-10957	25/07/2024	0.018
	24-11695	14/08/2024	0.029

Additionally, the 2025 EPA report detailing the quality of Irish waters includes data regarding Molybdate Reactive Phosphorus ('MRP'). This report shows that MRP is significantly below the threshold in the Lower Suir estuary, although a rising trend was noted downstream from the Site. However, other rising trends were identified along the Barrow River, which also flows into the estuary, and so the rise observed in the estuary was likely linked to the rising trends upstream in the River Barrow. Refer to Figure 8-6 below, with the approximate Site location shown as a pink dot.

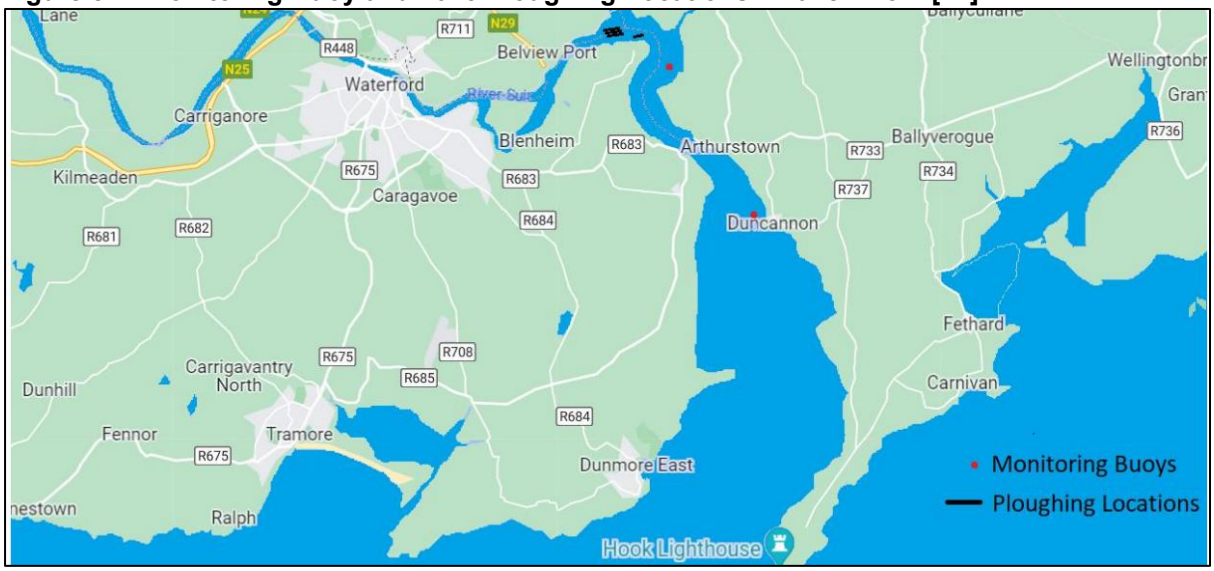
Figure 8-3: Estuarine MRP 2022-2024 (Extract from Map 7 from EPA report [13])



8.3.1.3 Statistical Analysis of Lower Suir Estuary Turbidity during 2023 Maintenance Dredging

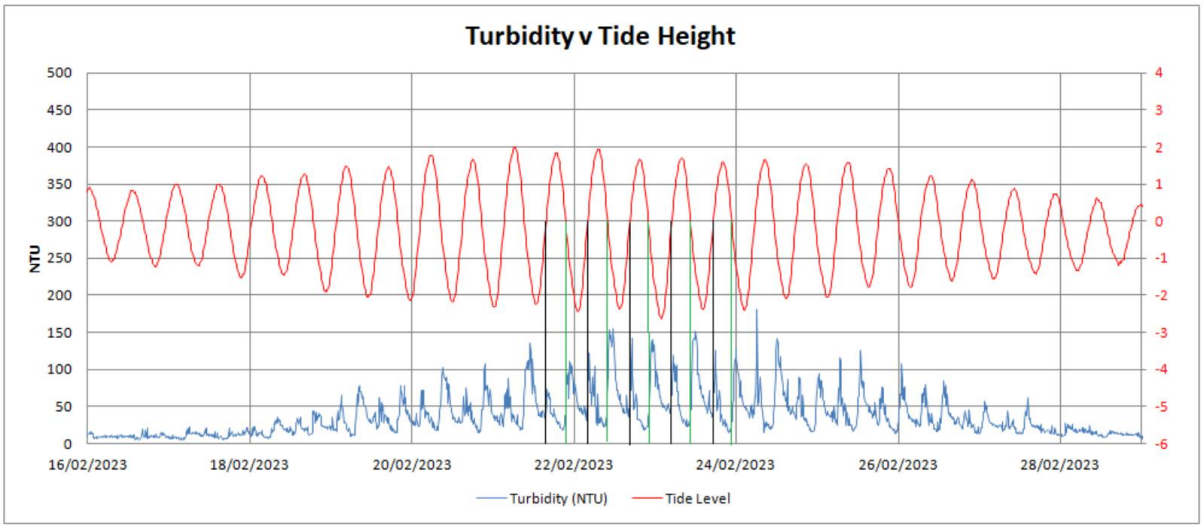
High levels of sediment occur naturally in the estuary, as a natural consequence of the estuary being fed by three major rivers and numerous streams, from a combined catchment area of over 9,000km^2. A report prepared by LFC Marine *"Review and analysis of the turbidity data before & during the plough dredging campaign of early 2023"* [14] discussed turbidity data (a proxy for suspended solids) from continuous monitoring from the Drumroe and Cheekpoint buoys located in Lower Suir estuary - See Figure 8-4 for the buoy locations.

Figure 8-4: Monitoring Buoy and 2023 Ploughing Locations – Taken from [14]



This data was correlated with tidal cycles, shown in Figure 11 of the report and reproduced as Figure 8-5 below. Turbidity for mid ebb tide peaks (shown as green lines) was larger than mid flood tide peaks (shown as black lines). It was determined that there is a net transport of sediment towards the sea, with more sediment transported downstream on ebb tide than transported upstream on a flood tide.

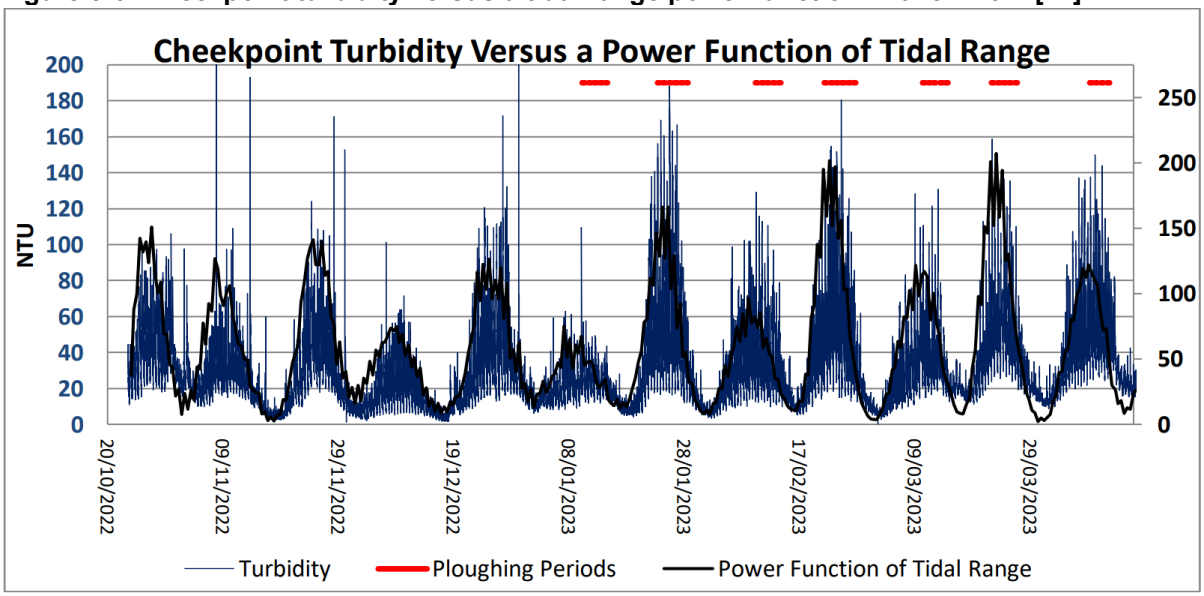
Figure 8-5: Tide data superimposed on turbidity data. Taken from [14]



Note: The black vertical lines indicate mid-flood tide and the green lines indicate mid-ebb tide conditions.

Data was collected overlapping with a period of planned plough dredging, so the effects of the ploughing on turbidity could be compared to the natural tidal-driven background. Figure 15 of the report provided a direct comparison of non-plough dredging and plough dredging period turbidity, with a power function of tidal range added over turbidity data to map tidal data onto turbidity peaks. This figure is reproduced as Figure 8-6 below.

Figure 8-6: Cheekpoint turbidity versus a tidal range power function - Taken from [14]



It was stated from this comparison, *"the vast majority of turbidity is generated by tidal movements; it is difficult to discern any difference in turbidity due to ploughing activity."* Additionally, it was noted that while some elevation in turbidity corresponds to periods of plough dredging, similar elevations occur when no plough dredging occurs and as such, these elevations could not be attributed to dredging with any degree of confidence.

Further statistical analysis was carried out between the plough dredging and non-plough dredging data, with a statistically significant rise in mean turbidity at both buoys. However, the rise in mean turbidity, over the turbidity range, was of no practical significance as it was hidden within the natural variability of the turbidity within the estuarine system, with a rise of only 1.17% in natural, background mean turbidity within the turbidity range.

8.3.2 IE Consulting Flood Risk Assessment

A Site-Specific Flood Risk Assessment ('SSFRA') was carried out for the Proposed Development [15]. This report is supplied separately with this planning application and it made the following determinations:

- The entire Proposed Development will be within a Mid-Range Future Scenario 0.1% AEP Tidal / Coastal flood extent zone;
- The Biodiversity Improvement Area will be entirely within:
    - The present day 0.1% AEP (1-in-1000 year) and 0.5% AEP (1-in-200 year) Tidal / Coastal flood extent zones; and,
    - The Mid-Range Future Scenario 0.1% AEP and 0.5% AEP Tidal / Coastal flood extent zones.
- The Biodiversity Improvement Area will be partially within:
    - The present-day Fluvial Indicative and Mid-Range Future Scenario 1% AEP (1-in-100 years) and 0.1% AEP (1-in-1000 years) flood extent zones; and,
    - An historic surface flood zone.
- The present day tidal / coastal flood depth at the Biodiversity Enhancement Area was predicted to exceed 2m during both 0.5% AEP and 0.1% AEP flood events;
- The wharf expansion will be largely within:

  - A SAR Seasonal Flooding extent zone; and,
  - The Mid-Range Future Climate Scenario 0.1% AEP Tidal / Coastal flood extent zone;
- The wharf expansion will be partly within the present-day 0.1% AEP Tidal / Coastal flood extent zone;
- No part of the wharf expansion will be within the present-day or the Mid-Range Future Scenario Fluvial 1% AEP or 0.1% AEP flood extent zones;
- No part of the Proposed Development will be within:
  - The pluvial Indicative 1% AEP flood extent zone or within a groundwater flood extent zone; or,
  - The Suir Catchment 10% AEP, 1% AEP or 0.1% AEP Fluvial flood extent zones.

There have been no recorded historic instances of flooding within or adjacent to the Site. The primary flood risk to the Proposed Development will be attributable to:

- An extreme fluvial and / or tidal / coastal flood event in the Suir Estuary; or,
- An extreme tidal / fluvial flood event in the Luffany Stream.

The potential flood risk to the Proposed Development, therefore, was considered to be negligible.

The Proposed Development will not result in adverse impacts to the existing hydrological regime and will not increase flood risk elsewhere.

8.3.3 Hydromorphology

Hydromorphology encompasses both the flow dynamics and physical structure of a given waterbody. In the case of rivers, flow is more easily quantified, with flow largely occurring in one direction. In the case of the Luffany_010 section overlapping the Site flow is to the south-southeast. Hydrotool estimates from EPA maps predict a 99%ile flow of 1.34m^3/s to 1.49m^3/s in the Luffany_010.

With regard to transitional waterbodies, flow is more complex, with tidal influences pushing against river flow. As such, no flow estimates, within the last 20 years, are available for the Lower Suir Estuary; however, as stated in Appendix 8-1, there is a net export of sediments out of the estuarine system to the sea, indicating net flow towards the sea. However, net sediment flow would be expected to temporarily reverse, importing / depositing sediment within the estuary environment during extreme weather events, such as storm surges.

Additionally, the Lower Suir Estuary is currently categorised as a “Heavily Modified Waterbody” by the EPA, due to existing port quays and groynes, along with marine vessel traffic. Beyond flow dynamics, channel depth and width also form part of the hydromorphological features of a waterbody. For the Lower Suir Estuary, the channel depth will already be modified from natural conditions, given the vessel traffic in the waterway and the maintenance dredging that occurs to maintain its use as a transit path.

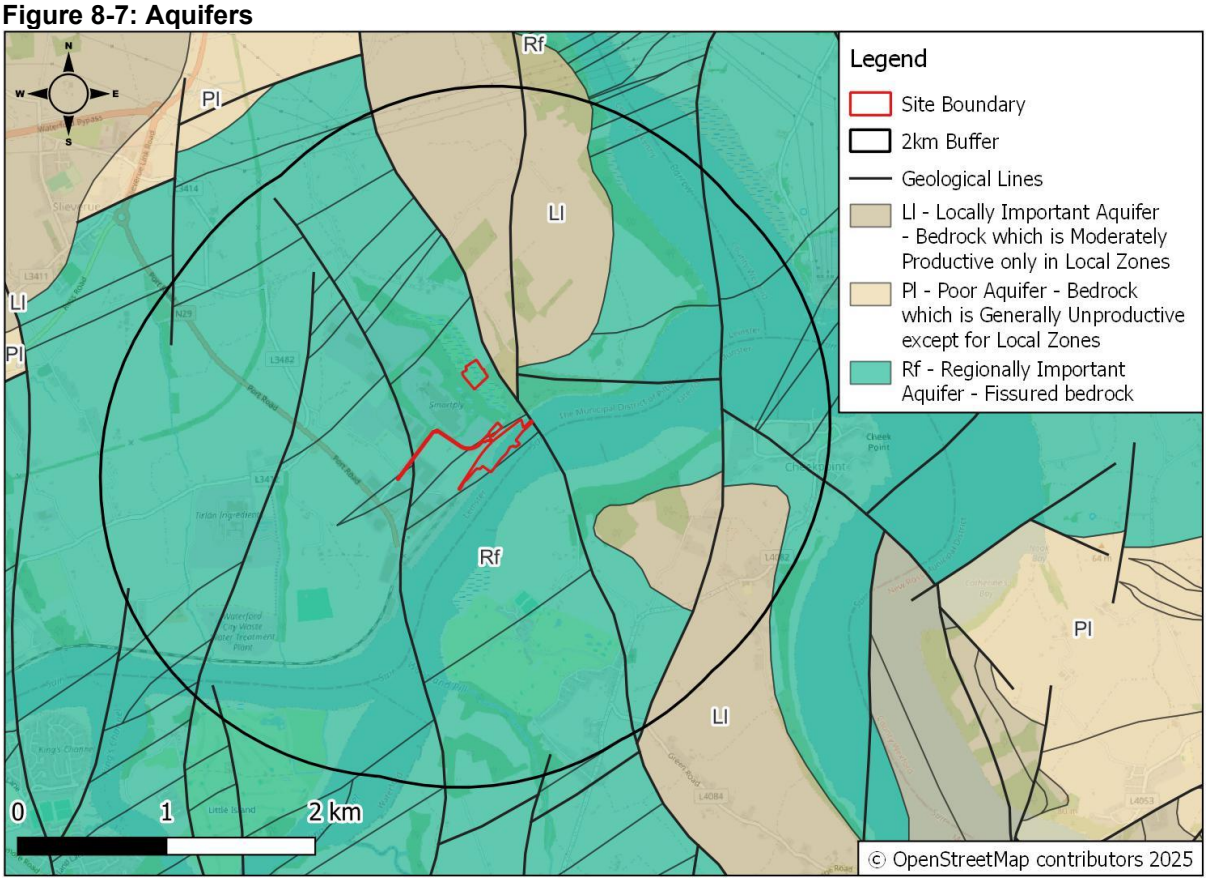
8.3.4 Hydrogeology

8.3.4.1 Bedrock Aquifer Characteristics

The GSI classifies aquifers based on resource value (regionally important, locally important and poor aquifer), referring to the scale and production potential of the aquifer. According to the GSI and EPA maps [11, 9], there is no sand and gravel aquifer present beneath the Site. The entire Site, and much of the surrounding areas, is underlain by a bedrock aquifer classified

as a (Rf) Regionally Important Aquifer – Fissured bedrock. No karst features were identified within the vicinity of the Site. See Figure 8-7 below.

Figure 8-7: Aquifers

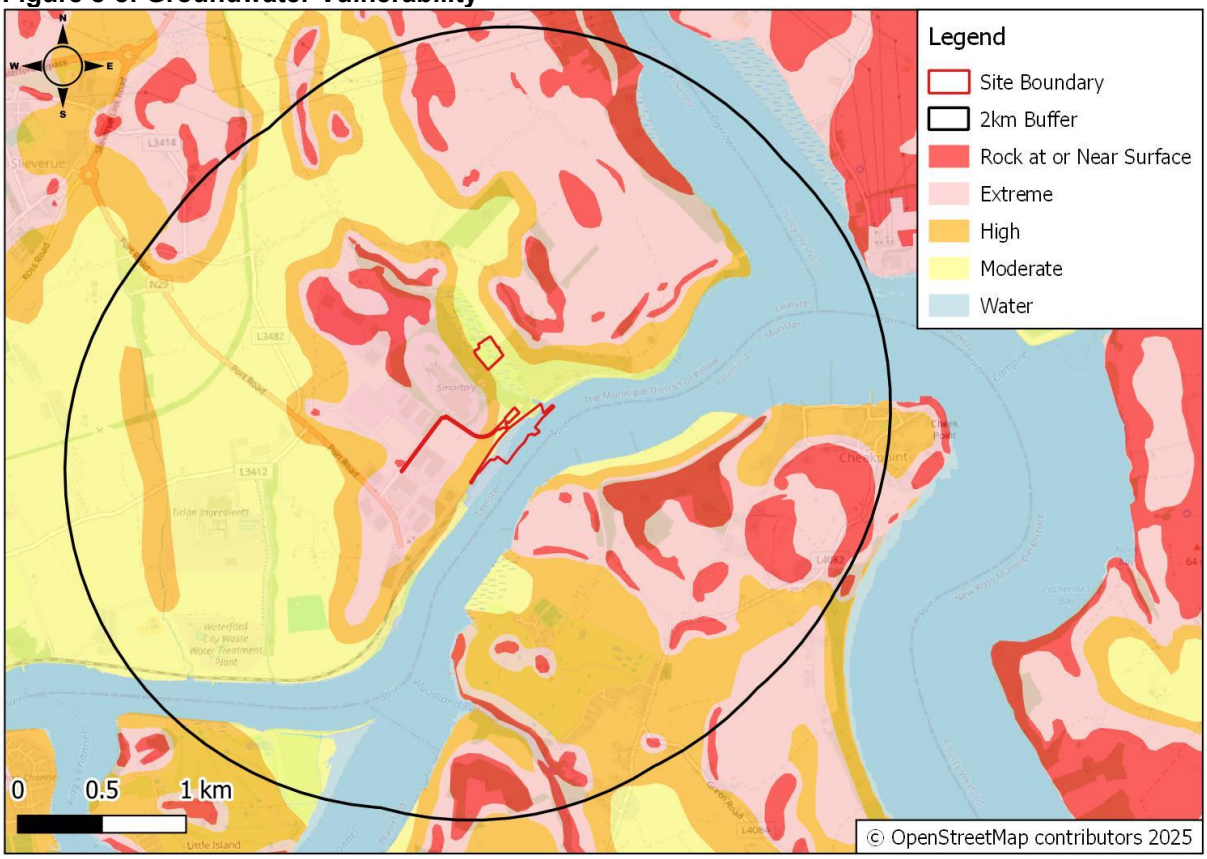


8.3.4.2 Groundwater Vulnerability Rating

The groundwater vulnerability map is based on the type and thicknesses of subsoils (sands, gravels, glacial tills (or boulder clays), peat, lake and alluvial silts and clays) and the presence of karst features. Groundwater that readily and quickly receives water (and contaminants) from the land surface is more vulnerable than groundwater that receives water (and contaminants) more slowly and consequently in lower quantities. Groundwater is most at risk where the subsoils are absent or thin and in areas of karstic limestone. Areas of surface water are not typically considered part of groundwater vulnerability assessment, as the receiving waters are not groundwater.

Based on the GSI maps [9], for the relevant areas of the Site, vulnerability ranges between moderate to extreme. The location of the proposed biodiversity enhancement area in the northern portion of the Site is largely moderate in vulnerability, with its western edge bordering high vulnerability. The majority of the extreme and high vulnerability areas correspond to the access roads used to reach the port. See Figure 8-8 below.

Figure 8-8: Groundwater Vulnerability



8.3.4.3 Groundwater Use and Source Protection

As reported by the EPA and the GSI [11], groundwater sources, particularly public, group scheme and industrial supplies, are of critical importance in many regions. Consequently, the objective of a Source Protection Zone is to provide protection by placing tighter controls on activities within all or part of the source protection area of the supply. Groundwater Source Protection Zones ('SPZs') and Zones of Contribution ('ZOCs') are delineated areas that have been proven to contribute groundwater to a borehole or spring.

The Site is not within a Zone of Contribution / Source Protection Zone for any public or private water supplies, and there are no mapped group water schemes close to the area.

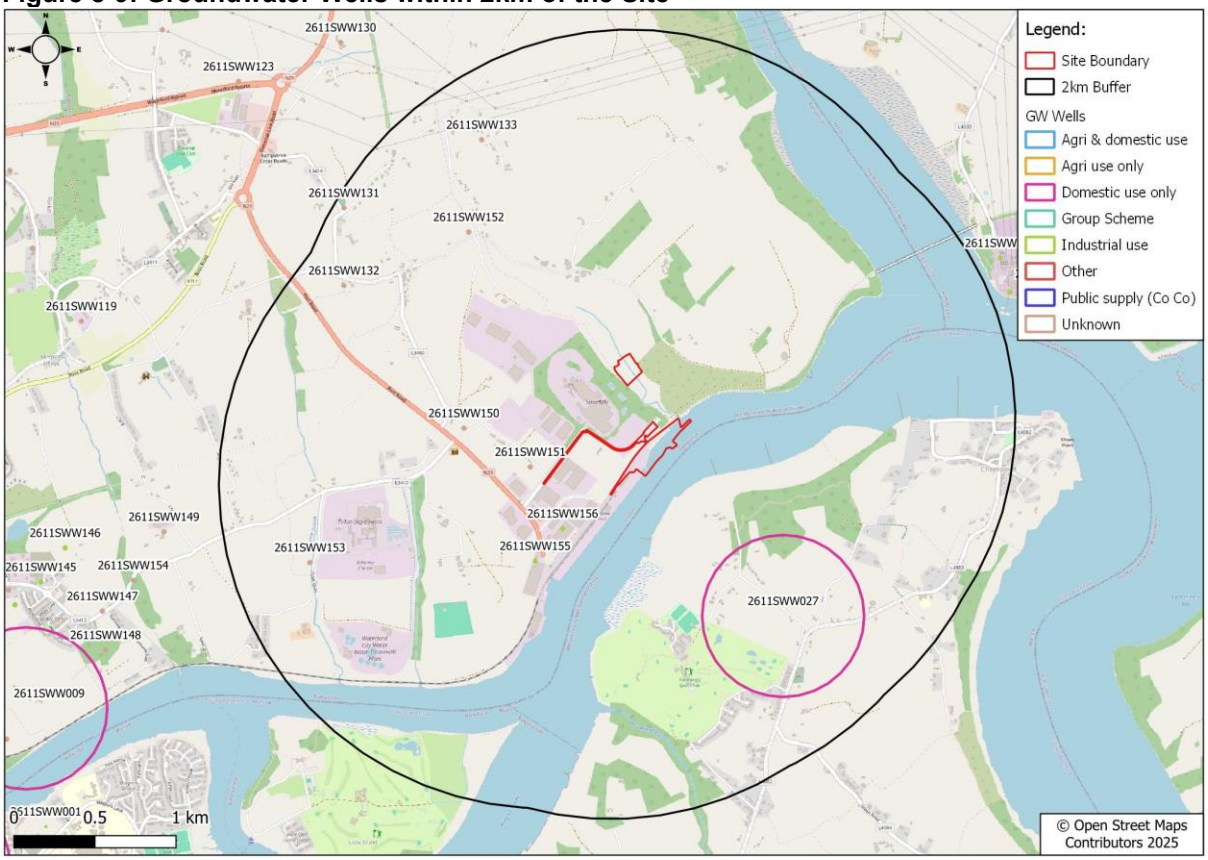
A search of the GSI groundwater well database was conducted to identify registered wells in the surrounding area. There are 10 groundwater monitoring wells recorded within a 2km radius of the Site (refer to Table 8-3 below). The locations of the identified groundwater wells are presented in Figure 8-9 below.

Table 8-3: 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
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

Borehole ID	Distance from Nearest Point of Site	Grid Reference (Irish Grid)		Well Type	Total Depth (m)	Townland	Yield (m^3d)
		Northing	Easting				
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	-
2611SWW027	0.71km S	112550	267270	Domestic Use Only	-	Faithlegg	-

Figure 8-9: Groundwater Wells within 2km of the Site



8.3.5 Existing Discharges

8.3.5.1 Wastewater

Existing foul water from the Port of Waterford Offices at Marine Point, the Terminal Offices and the Port security gatehouse is collected at a pumping station situated near the main Port entrance. From there, it is discharged via a rising main to an Uisce Éireann pumping station adjacent to the Southeast Port Services site. Uisce Eireann own and operate the pumping station at Southeast Port Services and are responsible for the wastewater network upstream

of the pumping station. Currently, foul water from facilities at the existing Port of Waterford is directed to the public Wastewater Treatment Plant ('WWTP'), where foul water is treated and discharged into the Lower Suir Estuary.

The Waterford City Municipal WWTP (Reg. Number D0022-01) is located ca. 0.6km west of the Site. Preliminary, Primary and Secondary treatment of wastewater are conducted within this facility [16]. The WWTP, part of the Waterford Main Drainage Scheme, currently provides treatment capacity for a population equivalent (PE/day) of 190,600 and has been designed to accommodate future growth of Waterford City – see Chapter 18 (Water and Wastewater) [17].

Smartply is an EPA-licensed facility operating under IE Licence P0001-05. Discharges from their facility flow into the Lower Suir Estuary at a location 266532E, 113671N. This location is identified as a licensed emission point. This pipe was extended previously sometime around 1999/2000 when the new Port Road was constructed. Based on published data, the annual flow from Smartply's discharge pipe between 24th January 2023 and 24th January 2024 was 67,803m^3. The daily flow averages 185.76m^3; however, actual daily flows will vary depending on season and weather conditions.

8.3.5.2 Stormwater Runoff

Stormwater discharge from the existing container, bulk terminals and adjoining hard stand areas is channelled through road gullies and surface drains and then collected in an underground gravity piped network. The collected stormwater is discharged through a series of settling tanks and fuel interceptors to the Lower Suir Estuary. Facilities are provided whereby surface water may be sampled, tested and held in an emergency holding tank in the case of an accidental spillage.

8.4 Characteristics & Potential Effects of the Proposed Development

8.4.1 General Screening

Surface water effects related to the Proposed Development will propagate downstream, dispersing / diluting with distance from the Proposed Development. As the FAITHLEGG_010 merges with the Lower Suir Estuary upstream of the Site, it is scoped out of further assessment as it lacks a valid pathway to be affected. The New Ross Port transitional waterbody is also located upstream of the Lower Suir Estuary (though at a different section of the waterbody). However, any mixing will be confined to the boundary between the waterbodies. As such, the overall effects on the whole New Ross Port waterbody will be imperceptible, and any effects near this mixing boundary will be of similar or lower magnitude to effects in the Lower Suir Estuary.

Given that the majority of the Proposed Development occurs in, over or adjacent to the Lower Suir Estuary, with much of the Site being open water or hardstanding, limited pathways to groundwater exist. Additionally, any groundwater affected by the Proposed Development will be under estuarine influence. Given the location of the Site and proposed operational activities, only a minimal amount of groundwater would be affected by the Proposed Development. As such, any negative effects on groundwater were predicted to be imperceptible.

The Proposed Development will also alter the hydromorphology of the Lower Suir Estuary. Dredging works will temporarily deepen the existing navigation channel, while reclamation activities will result in a permanent narrowing of the channel by ca. 60m to facilitate the construction of new port infrastructure. The EPA already categorises the Lower Suir Estuary as a heavily modified waterbody, with maintenance dredging and large vessel transit already occurring within the waterbody. Whilst there will be narrowing of the channel, flood risk assessment indicates that there will be no change to flood risk resulting from the Proposed Development, indicating a limited change in the overall flow of the waterbody. This is

corroborated by the ABPmer report, which concluded that the predicted changes to flow speeds were predicted to be generally small and confined to the area immediately adjacent to and upstream of the Proposed Development. Overall, in terms of hydromorphology, the Proposed Development will be in line with existing trends and activities within the waterbody, with any effects resulting from it being permanent and neutral or imperceptibly negative.

As part of the Proposed Development, biodiversity enhancement measures will occur in a distinct area of the Site to the north (See Chapter 6), which overlaps with parts of the Luffany_010 river waterbody. These works will comprise the creation of pond complexes, planting and surface feature installations aimed at improving biodiversity. These works will also include the installation of fencing to exclude cattle from areas currently accessible to them, which will result in positive effects on the relevant parts of the Luffany_010 through the reduction of nitrogen-rich livestock manure and urine that can adversely impact on water quality. In the long-term, the overall improvement of ecosystems and the exclusion of livestock will result in a moderate positive effect on the water quality of the Luffany_010 and the area surrounding its outflow in the Lower Suir Estuary.

8.4.2 Construction Phase

8.4.2.1 Capital Dredging

In order to achieve the required berth depth, capital dredging of the Lower Suir Estuary will be required to remove ca. 7,000m^3 of fluvial sediment from the riverbed. These works will take place during the initial phase of the Construction Phase (See Table 3-1). Dredging operations have the potential to increase the disturbance and concentration of suspended solids within the Lower Suir Estuary and down gradient surface waterbodies via fluvial pathways. However, analysis on past plough dredging of the channel, as discussed in Section 8.3.1.3 above, concluded that past dredging did not result in turbidity (a proxy for suspended solid concentrations) above natural variability levels within the estuary. Based on this, it was predicated that the capital dredging activities required will result in localised sediment plumes that will have slight, but temporary adverse effects on surface water. These effects will reduce downstream, as the resulting sediment plumes disperse within the high flow of the Estuary.

Additionally, there will be the potential for chemical changes to surface water to arise from the disturbance of fluvial sediments; however, this will be dependent on the composition of the sediments mobilised. Based on Site investigations referred to in Chapter 7, the estuarine sediments to be dredged will have no contaminants beyond chloride, which is naturally elevated within estuarine environments due to the marine influence / seawater mixing into the estuarine waters. This is further supported by more than 30 years' of sediment testing data carried out for the Dumping at Sea licence, issued by the EPA. All of this data was assessed on three previous occasions by the EPA, with the conclusion of no adverse environmental effects. As such, any effects arising from chemical changes to surface water were predicted to be not significant.

8.4.2.2 Land Reclamation

Reclamation works will consist of the deposition of clean imported material sourced from local quarries and demolition material from the ramp, as well as the reuse of the dredged material from the capital dredging. Reclamation activities will occur in the latter half of the 3-month "Capital Dredging & Land Reclamation Works" period of the construction phase (See Table 3-1). Reuse will only occur when material will be deemed suitable for this function, with unsuitable material to be handled as waste and appropriately removed off-site. As the material will be checked and screened, whether imported or reused dredge material, any resulting chemical changes have been predicted to be imperceptible.

Reclamation works will also produce sediment plumes both directly from the reclamation material itself but also from disturbance of any estuarine bed sediments in the reclamation

area. As such, the effects predicted for the reclamation works were greater than those of the dredging works. Given that the estuary is an environment with high concentrations of suspended solids, a slight to moderate adverse temporary effect was predicted to arise from the reclamation activities as a result of suspended solids release / disturbance.

8.4.2.3 Piling Works

For a full description of piling works, please refer to Section 3.3.1.4. The exact piling methodology will be confirmed in due course, but regardless of the methodology employed, it was predicted that the localised pile installations will result in producing localised sediment plumes. Precast concrete will be utilised in most instances, with no concrete pours occurring in the water column, as pouring of concrete will largely be associated with the casting of the in-situ concrete pile heads. As such, the effects from piling works will not likely exceed land reclamation effects in significance; therefore, a slight to moderate adverse temporary effect was predicted to arise.

8.4.2.4 General Construction Activities

The assessment in this chapter includes general construction activities, including demolition works; for description of demolition works please refer to Section 7.4.3.1 and for general construction activities, please refer to Section 7.4.3.5.

These activities will have the potential to cause stormwater run-off into Luffany_010 and/or the Lower Suir Estuary, which may be:

- Sediment / dust-laden;
- Hydrocarbon contaminated; or,
- Contaminated with cementitious materials.

As the Lower Suir Estuary already has a high level of suspended solids and has a very large flow, any adverse effect would be slight to moderate, temporary and localised. However, there will be a potential for the effect on Luffany_010 to be moderate to significant, due to a much lower flow and likely lower suspended sediments in the Luffany_010. Therefore, mitigation measures will be put in place to minimise these effects, as detailed in Section 8.5.1.

8.4.3 Operational Phase

As the Proposed Development will expand the area of hardstanding utilising drainage at the Site, there will be an increase in stormwater drainage during the Operational Phase. There will be no additional discharges into surface waters without mitigation measures. The increases in stormwater discharge could result in slight to moderate adverse effects on receiving waters. However, the proposed drainage includes design measures to manage and mitigate any increase to suspended solids or other contaminants, such as trace hydrocarbons, entering the receiving waters (See Section 8.5 below).

8.4.4 Unplanned Events

The use and storage of fuels and hydrocarbon oils for both construction equipment and ORE operations at the Proposed Development present a potential hazard to surface water bodies, arising from the risk of accidental leaks or spillages from storage tanks, equipment, vessels or vehicles. Hydrocarbon release could potentially result in a significant adverse effect on the Lower Suir Estuary and down gradient surface water bodies. Mitigation will be required to minimise the risk of such incidents occurring, resulting from storage, equipment and ORE vessels onsite during both the Construction and Operational Phases.

Cargo loss or spills both overwater and during cargo handling at the berth presents a hazard to water quality, with the significance of effect, varying depending on the nature of the cargo. Similar to vessel fuel, this risk will be comparable to existing risk for arriving vessels and cargo

handling, with current measures and legislation managing cargo handling active at the port will cover future vessel traffic and mitigate against the risk of such an unplanned incident occurring with the Proposed Development (See Section 8.5.2 below).

8.5 Proposed Mitigation Measures and/or Factors

8.5.1 Construction Phase

The mitigation measures described in Chapter 7 will be consistent with the same measures utilised to protect groundwater and surface water. Please refer to Section 7.6 of this EIAR.

Specifically, with regard to the protection of surface water and groundwater, the measures outlined in the following document will be adhered to:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors [6].

Prior to the commencement of construction, the CEMP submitted with this application will be updated by the Contractor, with detailed construction phase mitigation measures, including those listed in this EIAR and NIS submitted with this application. Consultation will be undertaken with stakeholders, particularly the NPWS and the IFI during the preparation of the CEMP.

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.

8.5.2 Operational Phase

The design of all drainage and bunding will be undertaken in accordance with relevant best practice guidelines. During the Operational Phase of the Proposed Development, the facility will operate under Port of Waterford's environmental management procedures and those of the ORE Operators. The Proposed Development has incorporated design measures / operational procedures 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; and,
    - All contaminated run-off water will be removed offsite for treatment to 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;
- 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 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.

In addition, during the operational phase, the following mitigation measures will be implemented:

- Interceptors will be regularly maintained; and,
- The Port has certified ISO14001 in place, with relevant procedures governing hydrocarbon management and spill containment procedures. The ORE facility operators will be required to implement similar procedures to those of the Port and to enact best available environmental practices relevant to their activities.

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, 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.

8.6 Cumulative and In-Combinations Effects

The effects arising from the Proposed Development will primarily be associated with suspended solids disturbance/release in receiving waters and stormwater discharge from new areas of hardstanding at the Site to receiving waters. Whilst effects of current industrial activities fall within existing background water quality for the Lower Suir Estuary, planning approval has been given to a number of warehouses and a new industrial facility (KCC Planning Ref. No.: 2460103; ACP Ref No.: ABP-321962-25) in the lands west of the Site. As such, for their period of construction, land drainage in their vicinity will likely result in some increase in the suspended solids to the Luffany_010 and Lower Suir Estuary. However, such effects will cease following the completion of construction and potential cumulative effects will only arise should the Proposed Development's Construction Phase co-occur with construction phase of another development.

In addition to cumulative effects from suspended solids arising discussed above, the Port of Waterford has an ongoing maintenance dredging programme, as discussed in Section 7.6. As established in Section 8.3.1.3, past maintenance dredging has 'not significant' negative effects on receiving waters, given that it releases suspended solids comparable to natural variation within the estuary. Maintenance dredging which is essential for the operation of the Port will continue to be undertaken during the construction of the Proposed Development. The maintenance dredging works are strictly regulated by the EPA and based on the implementation of all of the mitigation measures including Adaptive Management (refer to section 7.5.1.1.) during the Construction Phase of the Proposed Development, it was considered that any cumulative effects between the construction of the Proposed Development and maintenance dredging will be not significant and unlikely.

The Smartly outfall pipe will be moved to a new location as part of the construction works. It is proposed that these works would be completed offline so the existing Smartly operations would continue as normal prior to making the connection to the new pipe. These works will be undertaken in close collaboration with Smartply. The emissions arising from the relocated Smartply pipe will continue to be regulated by the EPA under their IE licence and as such will not result in any alteration to the current arrangements, i.e. during the operational phase, there will be no effect.

8.7 Interactions with other Environmental Attributes

Water (Hydrogeology and Hydrology) interacts with other environmental attributes as follows:

- Chapter 5 (Population and Human Health). Potential impacts on human health due to groundwater and/or surface water contamination are unlikely to occur following implementation of mitigation;
- Chapter 6 (Biodiversity). Potential impacts on hydrology can also impact on ecological conditions and ecologically designated sites. The impacts on biodiversity are addressed in Chapter 6;
- Chapter 7 (Land and Soils). Impact on soils/bedrock can result in related impacts on surface water and groundwater. These impacts on the bedrock are discussed in Chapter 7;
- Chapter 9 (Air Quality). Construction dewatering and dust suppression activities may involve minor water use but will not materially affect water availability. Interaction with air quality and water is considered imperceptible;
- Chapter 10 (Climate). Climate Change can have a direct impact on water. Under a changing climate, the frequency of extreme rainfall events is expected to increase. Based on current climate information, the Proposed Development is not vulnerable to flooding;

- Chapter 15 (Natural Resources, Energy and Waste). Improper waste storage and disposal would have a negative impact on groundwater. However, based on the low risk of this occurring with the proposed mitigation measures in place in this chapter and chapter 15, and the design of the Proposed Development this impact will be not significant; and,
- Chapter 18 (Water and Wastewater). Water demand and improper wastewater management can affect water levels and water quality. The effect of the Proposed Development on water supply, wastewater management and infrastructure were assessed in chapter 18, with the conclusion that the effects will be not likely and not significant. Therefore, there will be no likely or significant effect on water arising from the water needs or wastewater produced by the Proposed Development

8.8 Indirect Effects

There have been no significant or likely indirect effects identified outside of those previously assessed throughout this chapter.

8.9 Residual Effects

During the Construction Phase, the adverse effects from capital dredging and reclamation works were predicted to be temporary and, at worst, slight. Upon completion of construction and the implementation of the above mitigation measures, it can be concluded that the Proposed Development will not have any likely or significant effects on the hydrological or hydrogeological environment in and around the Site.

Operationally, the Proposed Development will result in a neutral to imperceptible negative effect on hydromorphology on the Lower Suir Estuary, in-line with existing trends for a heavily modified waterbody. Operational stormwater discharge will have an imperceptible effect, i.e. not likely and not significant effect, on the Luffany_010 and Lower Suir Estuary following mitigation, with multiple procedures and structures in place to prevent hydrocarbon and suspended solid release into receiving waters.

Cumulative and in-combination effects will be not likely and not significant.

8.10 Monitoring

A surface water monitoring programme will be implemented during the Construction Phase. The appointed contractor will submit a detailed monitoring programme to the Planning Authority for agreement prior to the commencement of site works.

8.11 Reinstatement

Not appliable.

8.12 Difficulties Encountered in Compiling this Information

No difficulties were encountered when compiling this information.

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