



WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT

Maintenance Dredging at Sarsfield Lock, Limerick City

Waterways Ireland

June 2026

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MWP, Engineering and Environmental Consultants

Address: Park House, Bessboro Road, Blackrock, Cork, T12 X251, Ireland

www.mwp.ie



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1. Introduction

Malachy Walsh and Partners (MWP) have been commissioned by Waterways Ireland, to undertake a Water Framework Directive (WFD) Compliance Assessment in respect of the proposed maintenance dredging ('The Proposed Project') and the Maritime Usage Licence (MUL) application at Sarsfield Lock, Limerick City. A DaS (S0040-01) has previously been submitted in relation to this project.

In accordance with the WFD, proposals that have the potential to impact 'water bodies' as designated by the WFD are required to demonstrate that any actions would not cause a deterioration of the current status of any water body, and that the development does not prevent the achievement of the future status environmental objectives of any water body. The WFD considers both the environmental status of surface water and groundwater.

This report considers water bodies within proximity to the proposed project that have the potential to be impacted on by the development.

The purpose of this WFD Compliance Assessment report is to assist developers and regulators to understand the impact that the development may have on the immediate water body and any linked water bodies and to ensure that the development will not prevent compliance with the WFD Objectives.

1.1 Competency of Assessor and Reviewer

This assessment was undertaken by Emma Phelan. This assessment was reviewed by William Murphy and Maura Talbot.

Emma has a BSc. (Hons) in Geology and MSc. in Applied Environmental Geoscience and is a graduate Environmental Scientist at MWP. Emma has worked on assisting with the preparation of EIAR chapters, Environmental Impact Assessment Screenings, Construction and Environmental Management Plans (CEMPs), Resource Waste Management Plans (RWMPs) and Water Framework Directive Assessments (WFDs) since joining MWP in May 2025.

William MSc., BA (Hons), HDip, is an Environmental Consultant at MWP. William has 5 years' experience in environmental consulting, and in this time contributed to various EIAR chapters, including Water. William has also been involved in the preparation of numerous WFD Assessments for a variety of projects, as well as CEMPs, RWMPs, which also take consideration of the effects and impacts on water. This experience makes William an appropriately qualified, trained and competent professional, having experience gained through a variety of onshore wind, solar, marine, and large-scale strategic infrastructure development.

Maura Talbot is a chartered principal environmental consultant with MWP. She has a BA (Honours in Geography and Economics) and a MA in Geography. She joined MWP in April 2022 when she moved to Cork from South Africa where she has had 25 years of experience working as a Senior Environmental and Socio-Economic Specialist Consultant on a full time and freelance basis. In Africa she managed and contributed to environmental and social impact assessments (ESIAs and EIAs) of roads, powerlines, mines, biofuel estates, wind farms, golf courses, conservation, tourism, and residential developments in various African countries. Since joining MWP she has continued to manage and contribute to EIARs and environmental assessments and management plans for a wide range of projects including wind farms, substations, BESS facilities, grid routes, solar farms, manufacturing plants, harbour and dredging developments, housing developments, peatland restoration, and tourism developments in Ireland. Besides her role in managing environmental assessments of proposed developments, she has also gained experience in substitute consent applications, SEA Screenings, due diligence assessments, pre-feasibility

assessments, responding to submissions from statutory consultees and members of the public, decommissioning management plans (DMP) and environmental liability risk assessments (ELRA).

2. Legislative Context

2.1 Water Framework Directive (WFD) (2000/60/EC)

The EU Water Framework Directive (2000/60/EC), as amended by Directives 2008/32/EC, 2008/105/EC, 2009/31/EC, 2013/39/EU, 2013/64/EU and 2014/101/EU ("WFD"), was established to ensure the protection of the water environment. The WFD requires that all member states protect and improve water quality in all waters, with the aim of achieving good status by 2027 at the latest. Any new development must ensure that this fundamental requirement of the WFD is not compromised.

The Directive was transposed in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) as amended. The Regulations provide for the implementation of the WFD in Ireland, providing for the designation of all waters (rivers, lakes, estuarine waters, transitional coastal waters and groundwaters) as 'water bodies' and setting objectives for the achievement of Good Ecological Status (GES) or Good Ecological Potential (GEP) and Good Chemical Status (GCS). European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272/2009), as amended and the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9/2010) as amended give further effect to the WFD in Ireland.

2.2 WFD Objectives

There are two principal objectives of the WFD:

- The first objective requires that all water bodies must reach at least 'good' overall status by 2027, at the latest. For surface waters, good status is a combination of good ecological status (or potential) and good chemical status; and
- The second objective requires that the status of each water body, including all the quality elements which make up overall status, must not deteriorate relative to the baseline reported in the relevant River Basin Management Plan (RBMP).

The WFD is implemented through the River Basin Management Plans (RBMP) which comprises a six-yearly cycle of planning, action and review. RBMPs include identifying river basin districts, water bodies, protected areas and any pressures or risks, monitoring and setting environmental objectives. In Ireland, the first RBMP covered the period from 2010 to 2015 with the second cycle plan covering the period from 2018 to 2021 and the third cycle from 2022 to 2027. The River Basin Management Plan 2022-2027, programme of measures to protect and restore our waters was published in September 2024.

The plan sets out key actions required to effectively implement mitigation measures to significantly improve water quality and identify where these measures should be deployed. In addition, the potential impacts of climate change on water resources, the planning for droughts and water scarcity is increasingly crucial.

2.3 WFD Classifications

The information used in classification of the status of water bodies is collected in the national WFD monitoring programme. Information on a range of different elements is provided at <https://gis.epa.ie/EPAMaps/Water>:

- Biology (plants and animals living in and around water bodies);
- Water quality (concentrations of nutrients such as nitrogen and phosphorus and harmful chemicals such as pesticides);
- Water quantity (flows and levels of surface waters and groundwaters); and
- Hydromorphology (the physical habitat conditions of water bodies).

Rivers, lakes estuaries and coastal waters can be awarded one of five statuses and groundwater can be awarded two statuses (**Figure 2-1**) (Catchments.ie, 2023).

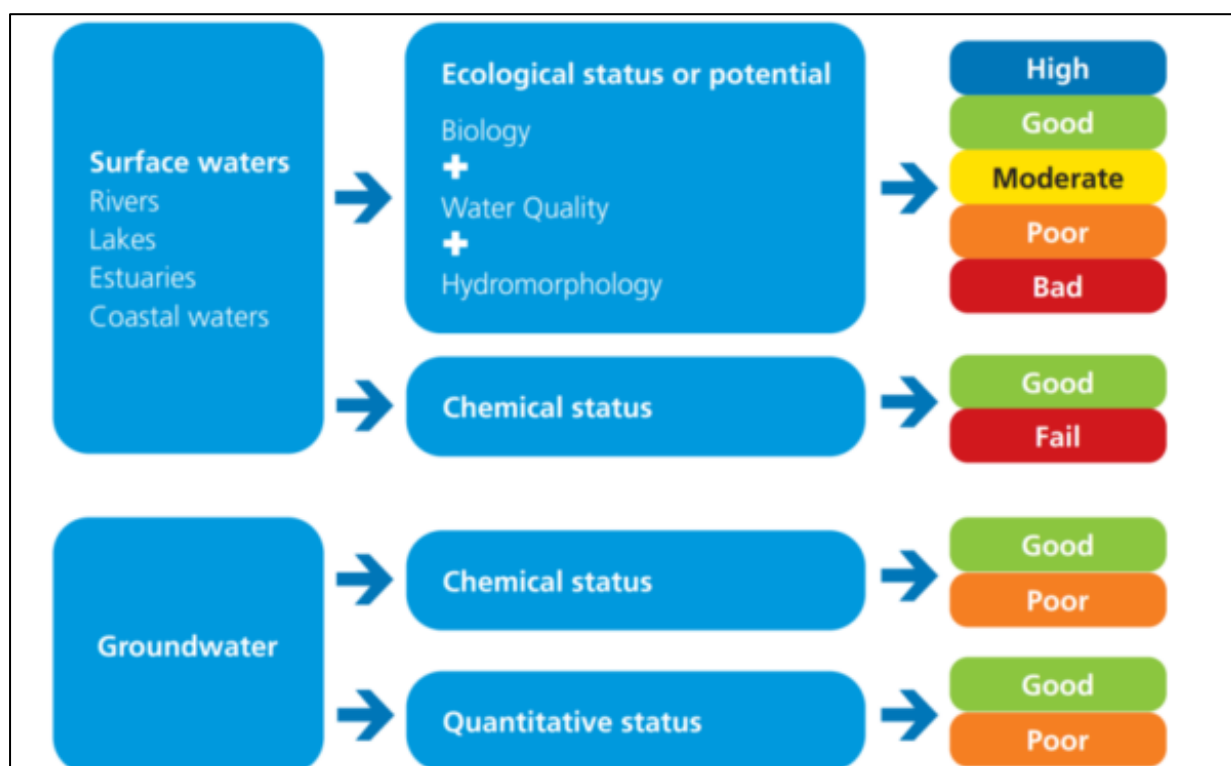


Figure 2-1: WFD Classification

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

2.3.1 Ecological Status

Ecological status is recorded as high, good, moderate, poor or bad. 'High' represents 'largely undisturbed conditions'. Eighteen different biological assessment methods have been developed to assess the condition of biological communities across the four surface water categories (EPA, Ireland's National Water Quality Monitoring Programme 2022-2027). See **Table 2-1**.

Table 2-1: Biological Assessment Methods used to assess Ecological Status

Quality Element	Rivers	Lakes	Transitional Waters	Coastal Waters
Macro Invertebrates	Quality Rating System (Q-value)	Lake Acidification Macroinvertebrate Metric (LAMM)	Infaunal Quality Index (IQI)	Infaunal Quality Index (IQI)
	Acid Water Indicator Community Score (AWICs)			
Aquatic Plants	Mean Trophic Rank (MTR)	Free Macrophyte Index	Intertidal Seagrass Tool	Intertidal Seagrass Tool
	LEAFPACS		Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE)	Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE)
Macroalgae	Mean Trophic Rank (MTR)	Not Applicable	Opportunistic Green Macroalgal Abundance (OGA tool)	Opportunistic Green Macroalgal Abundance (OGA tool)
	LEAFPACS			RSL – Rocky Shore reduced species list
Phytoplankton	Not Applicable	IE Lake Phytoplankton Index	Phytoplankton Biomass & Composition	Phytoplankton Biomass & Composition
Phytobenthos	Revised Form of Trophic Diatom Index (TDI)	Lake Trophic Diatom Index (IE)	Not Applicable	Not Applicable
Fish	Fish Classification Scheme (FCS2)	Fish in Lakes 2 (FIL2)	Transitional Fish Classification Index (TFCI)	Not Applicable
			Estuarine Multi-metric Fish Index (EMFI)	

2.3.2 Physico-Chemical Quality Status

Physico-chemical elements such as nutrients, dissolved oxygen, salinity, pH, etc., are measured to provide an indication of how these elements support the achievement of good or better ecological status. The

physicochemical quality elements and parameters that will be monitored in the 2022-2027 programme are shown in **Table 2-2**. Transparency in rivers is not measured due to the shallow nature of most Irish rivers.

Table 2-2: Physico-Chemical Quality Elements and Parameters of Water

Quality Element	Rivers	Lakes	Transitional Waters	Coastal Waters
Transparency	Not Measured	Secchi Depth, Colour	Secchi Depth	Secchi Depth
Thermal Conditions	Temperature	Temperature	Temperature	Temperature
Oxygenation Conditions	DO, BOD	DO	DO, BOD	DO, BOD
Acidification	pH, Alkalinity, Cations and Anions, DOC	pH, Alkalinity, Cations and Anions, DOC	pH	pH
Salinity	Conductivity	Conductivity	Salinity	Salinity
Nutrient Conditions	MRP, TA, TON	MRP, TA, TON, TP, Si	DIN, MRP, Si	DIN, MRP, Si

DO = dissolved oxygen; BOD = biochemical oxygen demand; MRP = molybdate reactive phosphorus; TA = total ammonia; TON = total oxidised nitrogen; TP = total phosphorus; DIN = dissolved inorganic nitrogen; Si = silica

2.3.3 Hydro-Morphological Status

The WFD requires the assessment of the ecological status, which includes hydro morphological quality elements. Hydromorphology is the study of physical form, condition and processes within a surface water body, which create and maintain habitat. Where the Hydromorphology of a surface water body has been significantly altered for anthropogenic purposes, such as water supply, flood protection or navigation, it can be designated as an Artificial or Heavily Modified Water Body (HMWB).

An alternative environmental objective, Good Ecological Potential (GEP) applies in these cases. In practice, this means that ecology must be as close as possible to that of a similar natural water body, but without compromising its human use. Some of the water bodies of relevance to this project are classified as HMWB, and this classification is discussed further in **Section 5**.

2.4 WFD Protected Areas

The WFD requires a register of protected areas. These are protected for their use (such as fisheries or drinking water) or because they have important habitat and/or species that directly depend on water. The register includes areas identified by the WFD itself or other European Directives. These may include the following:

- Areas used for water abstraction – Act No. 48/2022 – Water Environment (Abstractions and Associated Impoundments) Act 2022;
- Areas designated for the protection of economically significant aquatic species (Directive 2000/60/EC establishing a framework for Community action in the field of water policy);
- Recreational waters (Bathing Waters Directive 76/160/EEC);

- Nutrient Sensitive Areas (Nitrates Directive 91/676/EEC; Wastewater Treatment Directive 91/271/EEC);
- Areas of protected species or habitats where water quality is an important factor in their protection (Natura 2000 sites under Birds Directive 2009/147/EC and Habitats Directive 92/43/EEC).

3. Assessment Methodology

3.1 Appraisal Method

Any activity that is part of the proposed project and that could have the potential to lower the status of any quality elements of a water body or preclude the measures necessary to achieve good status must be assessed to determine its compliance with the WFD.

Published methodologies for the assessment of plans or projects in relation to undertaking WFD assessments across all types of water bodies that are specific to Ireland are not currently available. There is however an EU level guidance document of relevance titled “Water Framework Directive Project assessment checklist tool” (2024), published by the Joint Assistance to Support Projects in European Regions (JASPERS). In addition, the UK Planning Inspectorate Advice Note 18: The WFD (PINS, 2017) provides guidance on the WFD process, and the information required.

There are also several guidance documents from the UK that have been developed in relation to undertaking such assessments for the different water body types, predominantly written by the UK’s Environment Agency. These have been used as far as possible in the compilation of this assessment report.

The WFD compliance assessment process used for this assessment consists of various assessment stages as follows:

- Stage One: Screening. (This excludes any activities that do not need to go through the scoping or impact assessment stages);
- Stage Two: Scoping; (This identifies the receptors that are potentially at risk from an activity and need impact assessment); and
- Stage Three: Detailed Impact assessment. (This considers the potential impacts of an activity, identifies ways to avoid or minimise impacts, and indicates if an activity may cause deterioration or jeopardise the water body achieving Good Status).

3.2 Data Resources

A desk-based study was undertaken including a review of relevant information from the following publicly available sources and information provided by the Applicant:

- Geological Survey of Ireland Online Mapping (GSI, 2026).
- Environmental Protection Agency Online Mapping (EPA, 2026).
- National Parks and Wildlife Service Web Viewer (NPWS, 2026).

4. Proposed Project

4.1 Site Location and Description

The proposed project is located within the River Shannon at and in the vicinity of Sarsfield Lock, Limerick City, Co. Limerick. The works area extends both upstream and downstream of the Lock and includes five discrete dredging locations adjacent to Sarsfield Lock, Wellsley Pier and a jetty at Honan's Quay. The River Shannon at this location is a tidal waterbody and forms part of a busy urban waterfront environment comprising navigation infrastructure, quays, piers and adjoining city centre land uses.

The site location is illustrated in **Figure 4-1** and **Figure 4-2**.

The project comprises maintenance dredging works to support safe navigation at Sarsfield Lock, Wellsley Pier and Honan's Quay. The requirement for the works arises from the ongoing accumulation of sediment within the river channel which restricts vessel access to the Lock and associated berthing facilities. The proposed dredging will restore and maintain appropriate navigational depths and ensure the continued safe operation of navigation infrastructure within Limerick City.

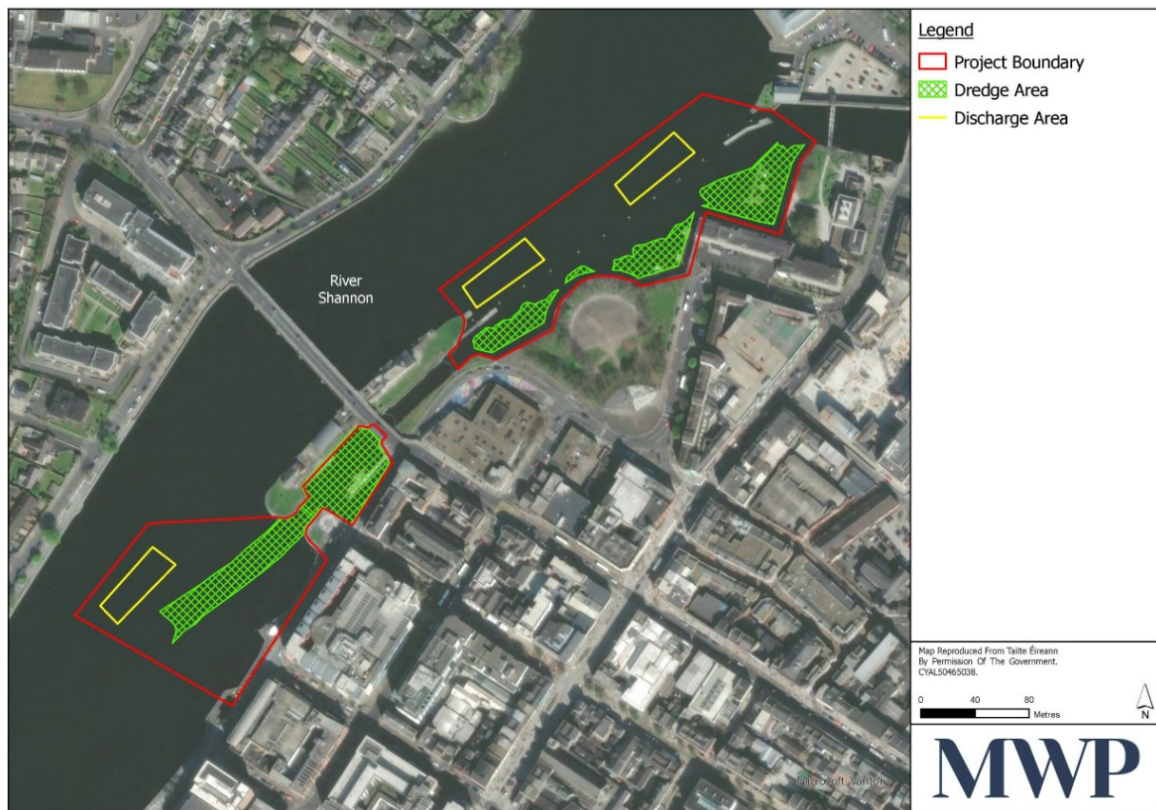


Figure 4-1: Site Location Map showing Dredging and Discharge areas

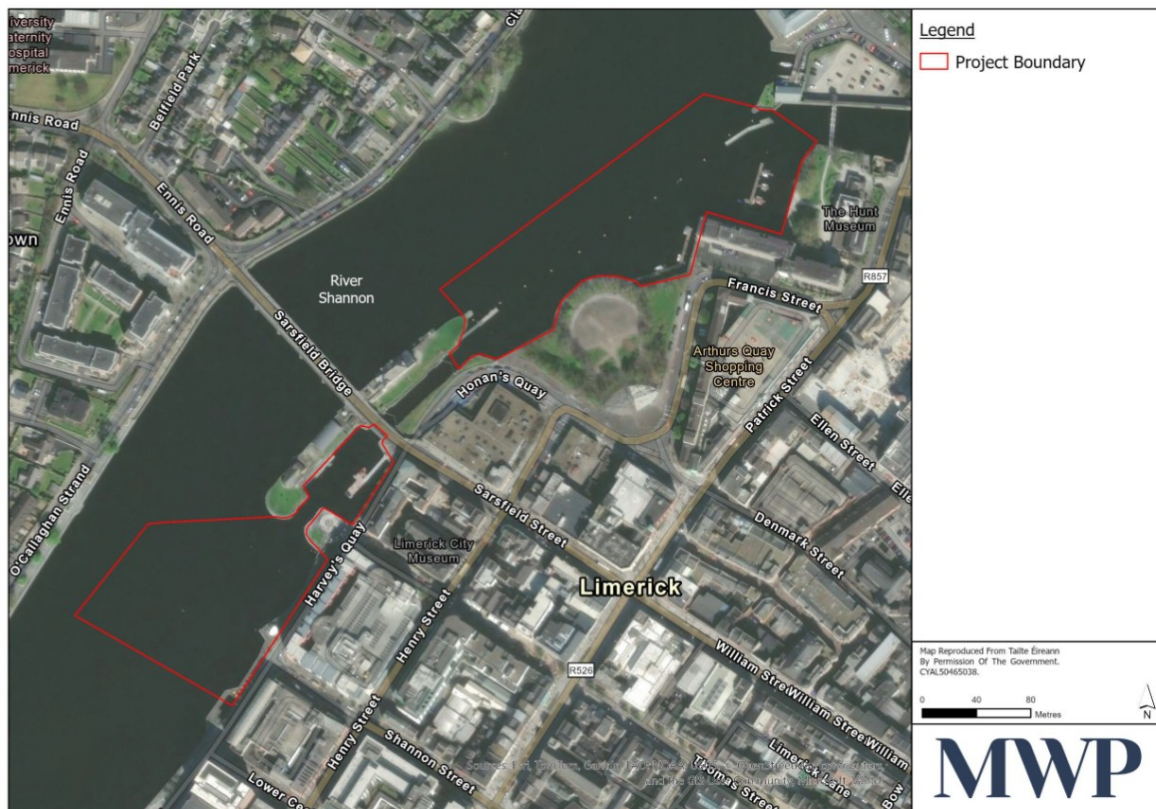


Figure 4-2: Aerial View of Site Location showing MUL Project Boundary

4.2 Characteristics of the Proposed Project

The proposed project will occur within the River Shannon at and in the vicinity of Sarsfield Lock, Limerick City, Co. Limerick and will comprise maintenance dredging works within discrete areas adjacent to Sarsfield Lock, Wellsley Pier and Honan's Quay, together with all associated and ancillary activities necessary to facilitate the works.

The proposed project includes the following:

- Mobilisation of plant, equipment and materials to the works area, including temporary mooring of dredging plant and barges;
- Maintenance dredging of accumulated sediments from designated sections of the river channel and berthing areas using appropriate mechanical and suction dredging methods to restore navigational depths;
- Management of dredged material including temporary handling, segregation of coarse material where required, and transfer and discharge in accordance with permitted disposal arrangements;
- Associated operational activities including navigation management, safety exclusion zones, and environmental protection measures during dredging operations;
- Demobilisation of plant and reinstatement of the works area following completion of dredging activities.

The works will be undertaken on a periodic maintenance basis and will not involve permanent structures, land reclamation, or alteration of the existing navigation infrastructure.

4.3 Temporary Construction Compound

No dedicated land-based construction compound is anticipated. Works will be undertaken from floating plant and existing quay infrastructure.

4.4 Dredging Procedures

During the dredging phase, the methods of working will comply with all relevant legislation, consent conditions and best practice guidelines. The key dredging elements for the proposed project are outlined as follows:

- Pre-mobilisation planning and site preparation activities, including establishment of navigation management measures and environmental protection controls;
- Mobilisation of dredging plant, barges and support vessels to the works area using existing navigation infrastructure;
- Temporary mooring of plant within designated dredging locations;
- Undertaking maintenance dredging within specified areas using appropriate mechanical and suction dredging techniques to remove accumulated sediments and restore navigational depths;
- Transfer, handling and management of dredged material in accordance with permitted disposal arrangements, including pumping of fine sediments into the main channel flow or removal of coarse material where required;
- Implementation of environmental control measures throughout the works, including pollution prevention and monitoring where required;
- Demobilisation of plant and removal of temporary equipment following completion of works.

4.5 Waste Management

During the dredging phase, wastes arising will be managed in accordance with relevant waste legislation and best practice guidelines. Any materials requiring removal from the works area will be temporarily stored in appropriately sealed steel skips prior to transport by authorised contractors to suitably licensed or permitted facilities. This approach will minimise the risk of materials entering the surrounding water environment.

The dredging phase wastes may consist of:

- Dredged sediments unsuitable for in-channel management or reuse;
- Approximately 70m³ of hard materials being removed during dredging (i.e. gravels);
- Waste oils, fuels or lubricants arising from plant maintenance; and
- Domestic wastes generated by site personnel.

Apart from the granular material, no other significant operational waste will arise following completion of the maintenance dredging works as the proposed project does not introduce permanent infrastructure or ongoing operational activities. Accordingly, no operational wastewater generation is associated with the proposed project.

4.6 Controls and Monitoring Works

During the dredging phase, standard best practice control measures will be implemented to minimise the potential for environmental impacts. These will include the following:

- Dredging activities will be undertaken in a controlled and phased manner to minimise sediment disturbance and limit the release of suspended solids;
- Discharge of dredged material will be carried out in accordance with DaS permit conditions and tidal windows to promote appropriate dispersion and avoid sensitive periods where applicable;
- Plant and machinery will be maintained in good working order and inspected regularly to prevent leaks of fuel, oil or hydraulic fluids;
- All fuels, oils and chemicals associated with the works will be stored in secure, bunded containers in accordance with relevant guidelines, with bund capacity not less than 110% of the largest container stored therein;
- Refuelling of plant and machinery will be undertaken in designated controlled areas, with spill kits available at all times;
- Spill response procedures will be implemented, and appropriate absorbent materials will be retained on site to enable immediate containment and clean-up of any accidental releases;
- Navigation management measures and exclusion zones will be implemented where required to ensure safety and minimise disturbance to river users;
- The c. 70m³ of granular material removed from the site will be stored in sealed steel skips and transported by authorised contractors to appropriately licensed facilities.

Routine inspections of dredging operations and environmental control measures will be undertaken by the appointed contractor to ensure compliance with any relevant planning or permit conditions.

5. Receiving Environment

5.1 Catchment Description

The proposed project is located within Hydrometric Area 25D (Lower Shannon catchment), also known as Lower Shannon and Mulkear catchment, shown in **Figure 5-1**.

The Lower Shannon catchment covers an area of 1,041km² and includes the lower reaches of the River Shannon to Limerick City and the catchment of the Mulkear River. The main urban centre and largest city within this catchment is Limerick City. Other significant urban, residential, and service centres within this catchment include Castleconnell (Co. Limerick), Newport (Co. Tipperary) and Annacotty (Co. Limerick). Limerick City has a population of 102,287, and the receiving environment is situated within a densely populated urban waterfront comprising quays, navigation infrastructure, commercial/recreational uses and transport links. The catchment is characterised by a large lowland river system dominated by limestone geology of Carboniferous age, transitioning downstream into a tidally influenced estuarine environment.

The Lower Shannon catchment is divided into 9 No. sub catchments and has 52 No. surface water bodies and 29 No. groundwater bodies.

The proposed development site lies within the Shannon [Lower]_SC_090 Water Framework Directive (WFD) sub catchment (Code: 25D_9), which forms part of the Lower Shannon WFD Catchment (Hydrometric Area 25D), as shown in **Figure 5-2**.

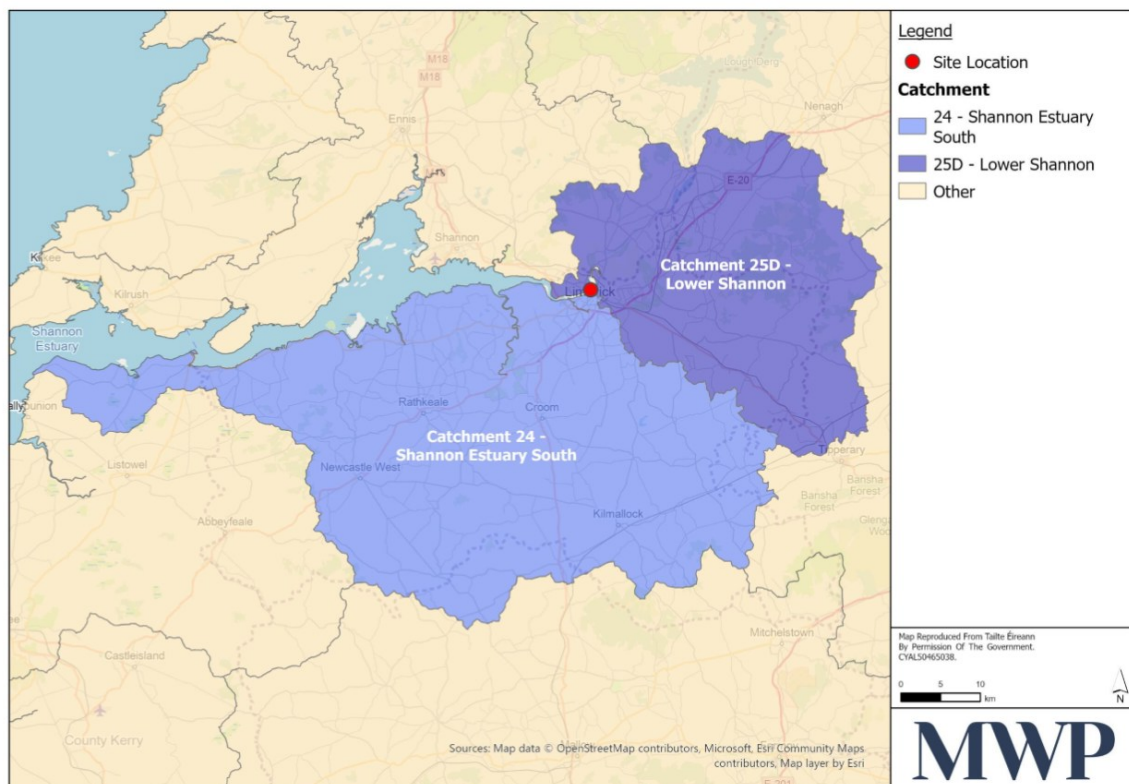


Figure 5-1: Lower Shannon Catchment Map

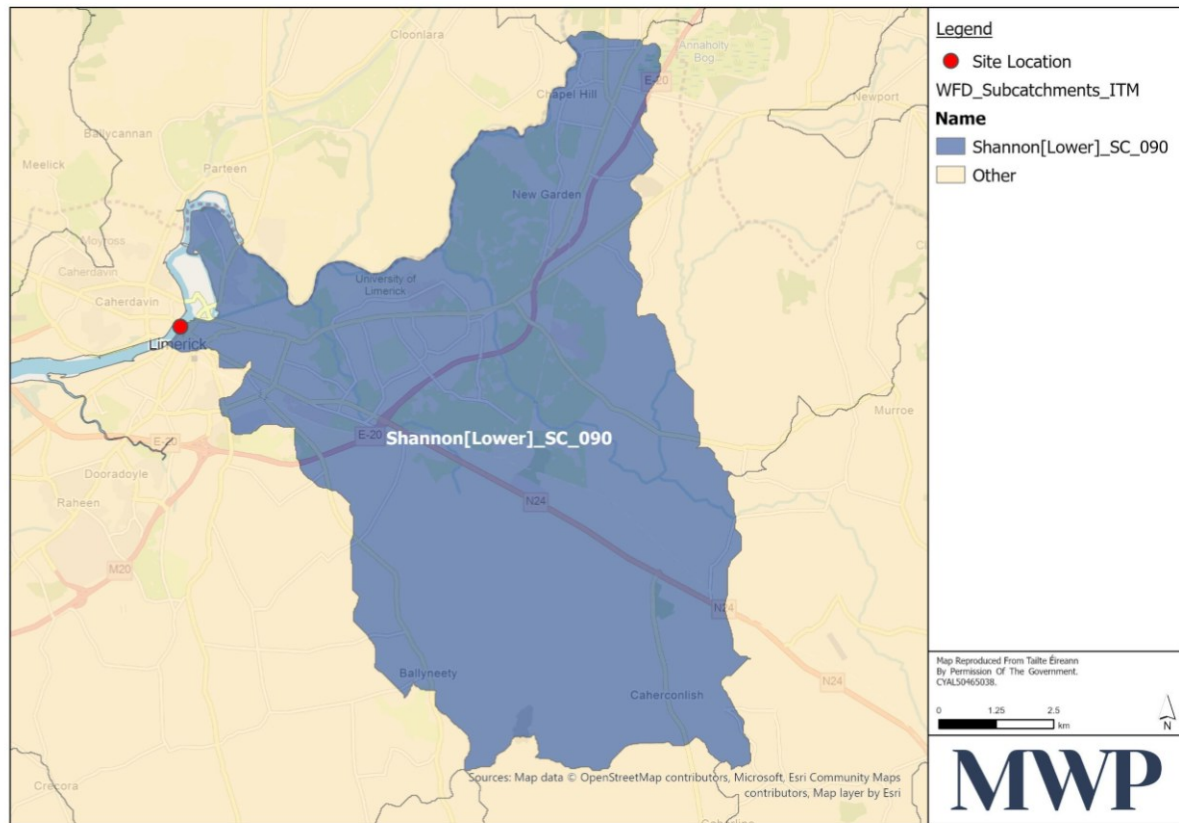


Figure 5-2: Shannon [Lower]_SC_090 Water Framework Directive (WFD) Sub-Catchment Map

5.2 Relevant Surface Water Body and Status

5.2.1 WFD River Sub Basin

The proposed project site falls within the Water Framework Development River sub basin called the Shannon (Lower)_060 (Code: IE_SH_25S012600) and North Ballycannon_010 (Code: IE_SH_25N170970). See Figure 5-3.

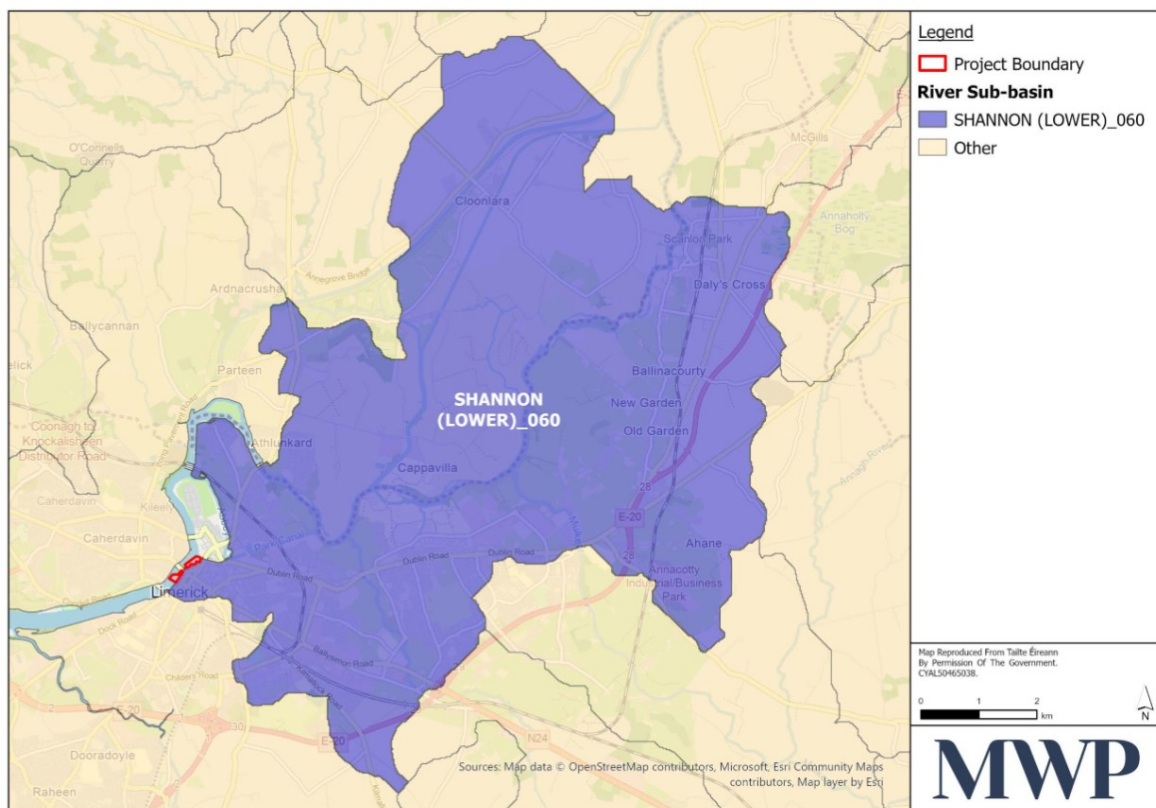


Figure 5-3: River Sub Basin Map

5.2.2 WFD Surface Waterbodies

The nearest surface water features in the vicinity of the proposed development site are:

- Limerick Dock (IE_SH_060_0900): This transitional waterbody is the site of the proposed works within the River Shannon in Limerick City. The waterbody forms part of a tidally influenced section of the Shannon, flows in a south-westerly direction, and discharges into the Upper Shannon Estuary (IE_SH_060_0800).
- Upper Shannon Estuary (IE_SH_060_0800): This transitional waterbody is located approximately 4.5 km downstream of the proposed project site. It receives flow from Limerick Dock and flows water south-westwards before discharging into the Mague Estuary (IE_SH_060_0800), Fergus Estuary (IE_SH_060_1100) and the Lower Shannon Estuary (IE_SH_060_0300).
- Mague Estuary (IE_SH_060_0800): This transitional waterbody is located approximately 11.79 km downstream within the Shannon Estuary system. It flows south-westwards and discharges into the Lower Shannon Estuary (IE_SH_060_0300).
- Fergus Estuary (IE_SH_060_1100): This transitional waterbody forms part of the wider Shannon Estuary system. It is located approximately 23.3 km downstream from the proposed project site and flows south-westwards into the Lower Shannon Estuary (IE_SH_060_0300).
- Deel Estuary (IE_SH_060_0600): This transitional waterbody is located approximately 25 km southwest of the proposed project site. It flows in a north-westerly direction and discharges into the Lower Shannon Estuary (IE_SH_060_0300).

- Lower Shannon Estuary (IE_SH_060_0300): This transitional waterbody represents the downstream continuation of the Shannon Estuary. It is located approximately 23 km southwest of the proposed project site and flows in a south-westerly direction, discharging into Foynes Harbour (IE_SH_060_0350) before ultimately connecting to the outer estuary and the Mouth of the Shannon (IE_SH_060_0000).
- Foynes Harbour (IE_SH_060_0350): This transitional waterbody is located within the mid-estuary region, approximately 32 km downstream of the project site. It flows in a south-westerly direction and forms part of the transition between the Lower Shannon Estuary and the outer/other estuarine waters.
- Clonderalaw Bay (IE_SH_060_1200): This transitional waterbody forms part of the outer Shannon Estuary. It is located approximately 43 km downstream of the proposed project site and flows in a westerly direction towards the open estuary.

See **Figure 5-4** for the location of the waterbody in the immediate vicinity of the proposed development site and **Figure 5-5** for a full picture of all of the waterbodies that the Limerick Dock (IE_SH_060_0900) discharges into.



Figure 5-4: Limerick Dock (IE_SH_060_0900) Map

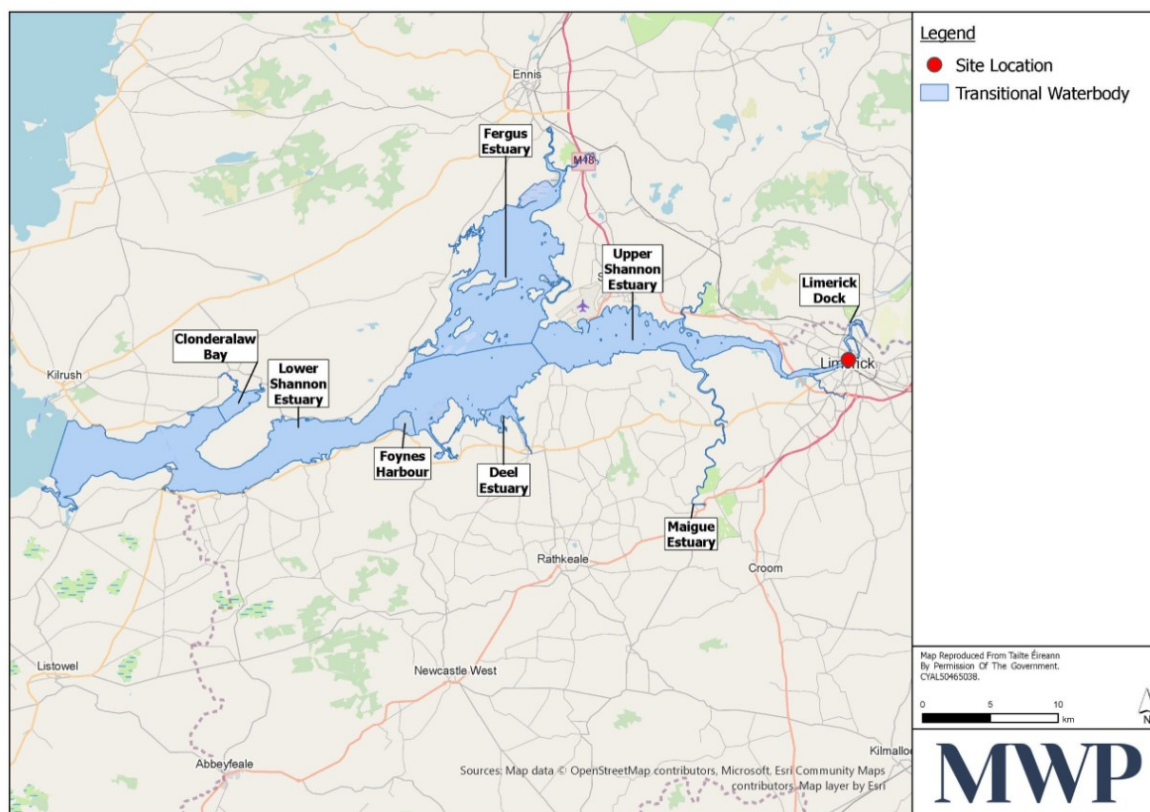


Figure 5-5: Full Surface Waterbodies Map in relation to the Proposed Project

Table 5-1 provides a summary of the WFD status for the identified surface waterbodies, and the pressures they are experiencing.

5.2.3 Water Quality and Waterbodies Risk Status

There is a national water monitoring station within the vicinity of the proposed project (Code: RS25S012800). This station measures only transitional waterbodies with no Q values available. The closest station with Q values is named Athlunkard Br (d/s LHS), which is approximately 2.2 km to the northeast of the site and has a 'Moderate' Q value. This station monitors Shannon (Lower)_060 which enters the Limerick Dock (Code: IE_SH_060_0900) and is operated by Clare County Council. See **Figure 5-6** for details.

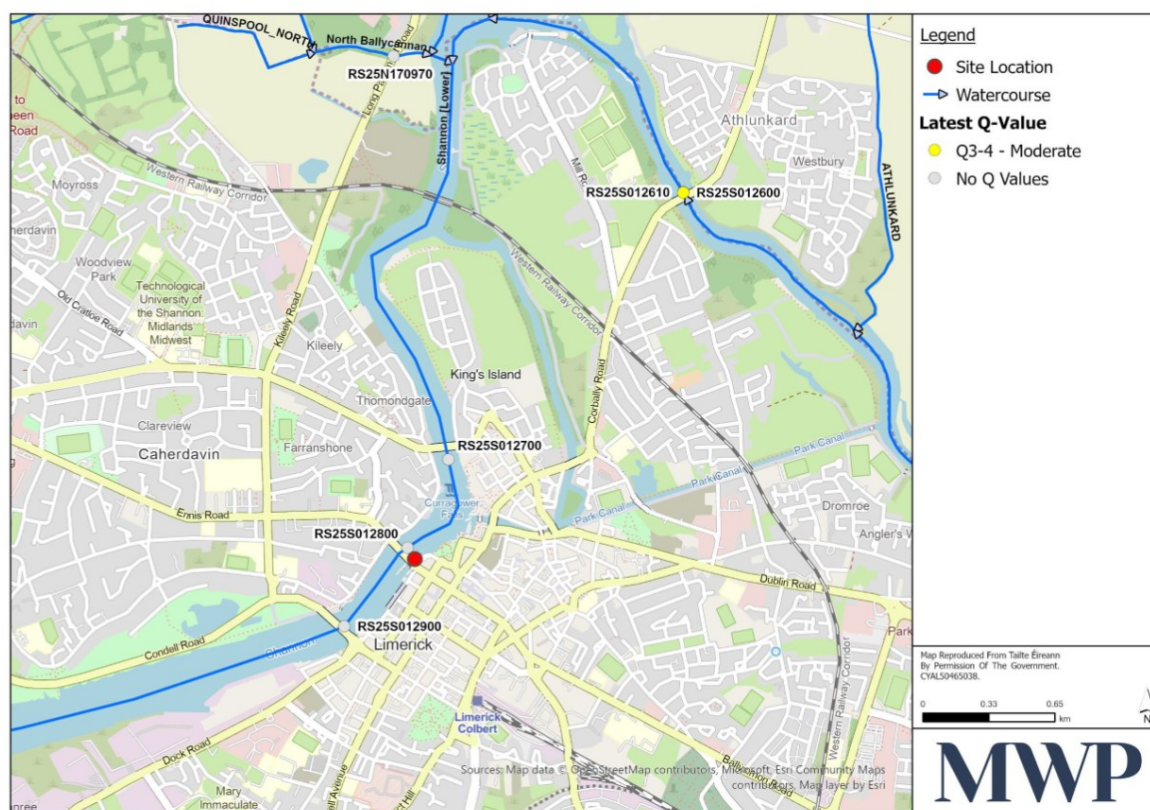


Figure 5-6: Q Value Monitoring Station

The WFD River Waterbodies Risk Status represents the risk of each waterbody failing to meet their WFD objectives by 2027.

Table 5-1 provides a summary of the WFD status for the identified surface waterbodies, and the pressures they are experiencing.

All data relating to water features was obtained from Environmental Protection Agency (EPA) interactive map viewer.

Table 5-1: Relevant Water Bodies

Waterbody Name (Code)	Type	Status 2013-2018	Status 2016-2021	Status 2019-2024	At Risk of Not Achieving Good Status	Pressures
Limerick Dock (IE_SH_060_0900)	Transitional	Good	Poor	Poor	At risk	Hydromorphological
Upper Shannon Estuary (IE_SH_060_0800)	Transitional	Poor	Poor	Poor	At risk	Agricultural
Maigue Estuary (IE_SH_060_0800)	Transitional	Moderate	Moderate	Moderate	At risk	Agriculture
Fergus Estuary (IE_SH_060_1100)	Transitional	Moderate	Moderate	Moderate	At risk	Agriculture
Deel Estuary (IE_SH_060_0600)	Transitional	Moderate	Moderate	Moderate	At risk	Agriculture
Lower Shannon Estuary (IE_SH_060_0300)	Transitional	Good	Good	Good	At risk	None indicated
Foynes Harbour (IE_SH_060_0350)	Transitional	Good	Unassigned	Unassigned	Under review	None indicated
Clonderalaw Bay (IE_SH_060_1200)	Transitional	Good	Unassigned	Unassigned	Under review	None indicated

5.3 Relevant Groundwater Body and Status

5.3.1 WFD Groundwater Body

The groundwater waterbodies underlying the site are the Limerick City North (Code: IE_SH_G_139), Limerick City East (Code: IE_SH_G_138) and Limerick City Southwest (code: IE_SH_G_141).

Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Groundwater vulnerability maps are based on the types and thickness of subsoils (sands, gravels, glacial tills (or boulder clays), peat, lake and alluvial silts and clays), and the presence of karst features. There is no quaternary sediment underlying the proposed project work area, but the area surrounding the proposed project is classified

as 'Made', which small scatterings of 'Rck', indicating that there are a lot of hardstanding and artificial surfaces around the development.

The Geological Survey of Ireland (GSI) have mapped groundwater vulnerability as ranging from 'Moderate' to 'Extreme' on either side of the area surrounding the proposed project. 'Rock at or Near Surface' is also present at the docks and in the city near the waterfront. See **Figure 5-6**.

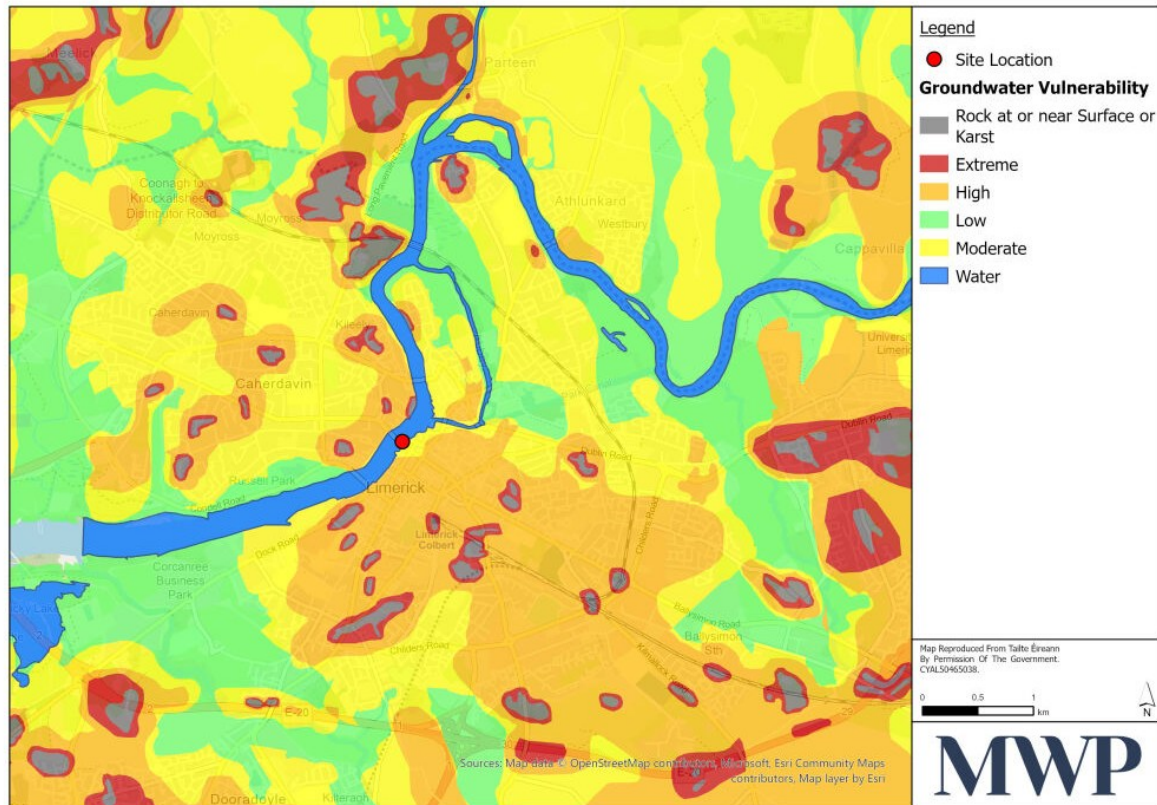


Figure 5-7: Groundwater Vulnerability Map

The aquifer underlying the site, according to the GSI (www.gsi.ie/mapping), is a Lm – Locally Important Aquifer – Bedrock which is Generally Moderately Productive (**Figure 5-7**).

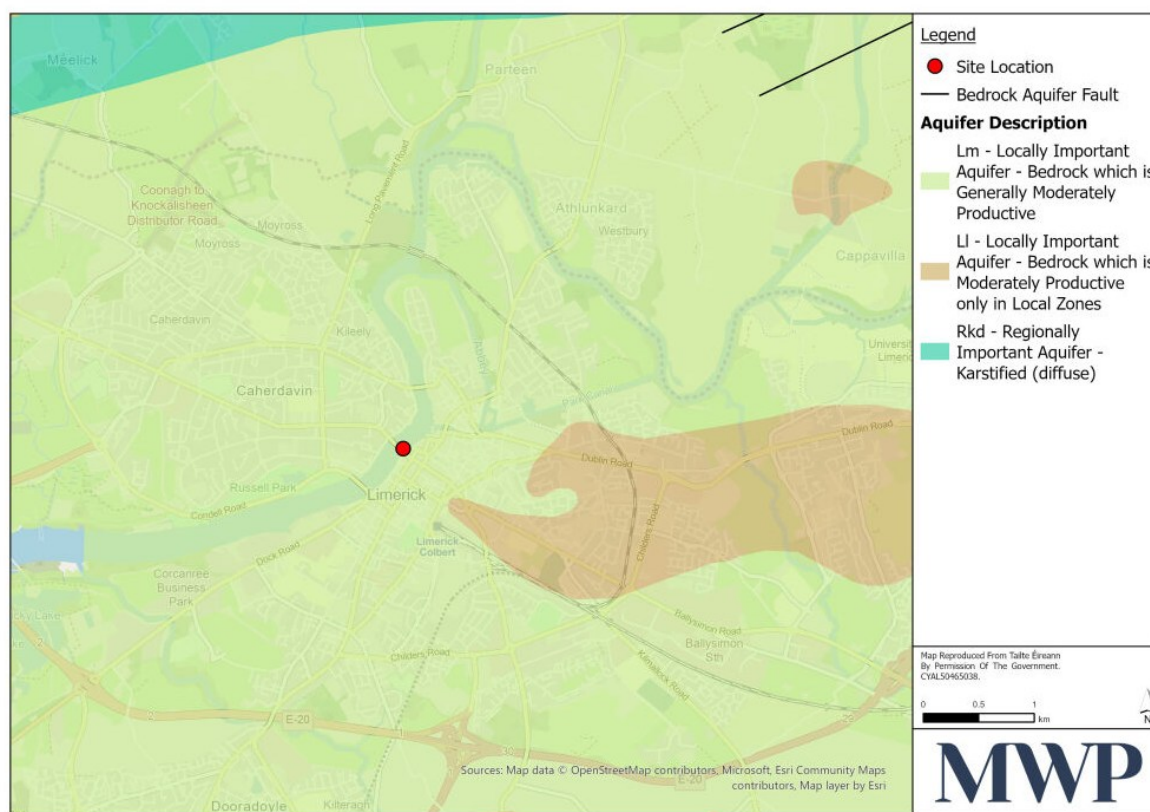


Figure 5-8: Groundwater Aquifer Classification Map

5.3.2 Groundwater Quality and Risk Status

Currently, the EPA classifies the Limerick City North GWB as having a WFD status (2019-2024) of 'Good' with a current WFD score of 'Not at risk', Limerick City East GWB as having a WFD status (2019-2024) of 'Good' with a current WFD risk score of 'At risk' of not achieving good status under the WFD, and Limerick City Southwest GWB as having a WFD status of 'Good' with a current WFD risk score of 'At risk' of not achieving good status under the WFD, as shown in **Figure 5-9**.

Error! Reference source not found. provides a summary of the WFD status for each groundwater body, and the pressures they are experiencing.

All data relating to water features was obtained from the Environmental Protection Agency (EPA) interactive map viewer.

Table 5-2: Groundwater Status

Waterbody Name (Code)	Type	Status 2007- 2012	Status 2010- 2015	Status 2013- 2018	Status 2016- 2021	Status 2019- 2024	At Risk of Not Achieving Good Status	Pressures
Limerick City North (IE_SH_G_139)	Groundwater	Good	Good	Good	Good	Good	Not at risk	None indicated
Limerick City East (IE_SH_G_138)	Groundwater	Good	Poor	Good	Good	Good	At risk	Nutrient Pollution
Limerick City Southwest (IE_SH_G_141)	Groundwater	Good	Poor	Good	Good	Good	At risk	Nutrient Pollution

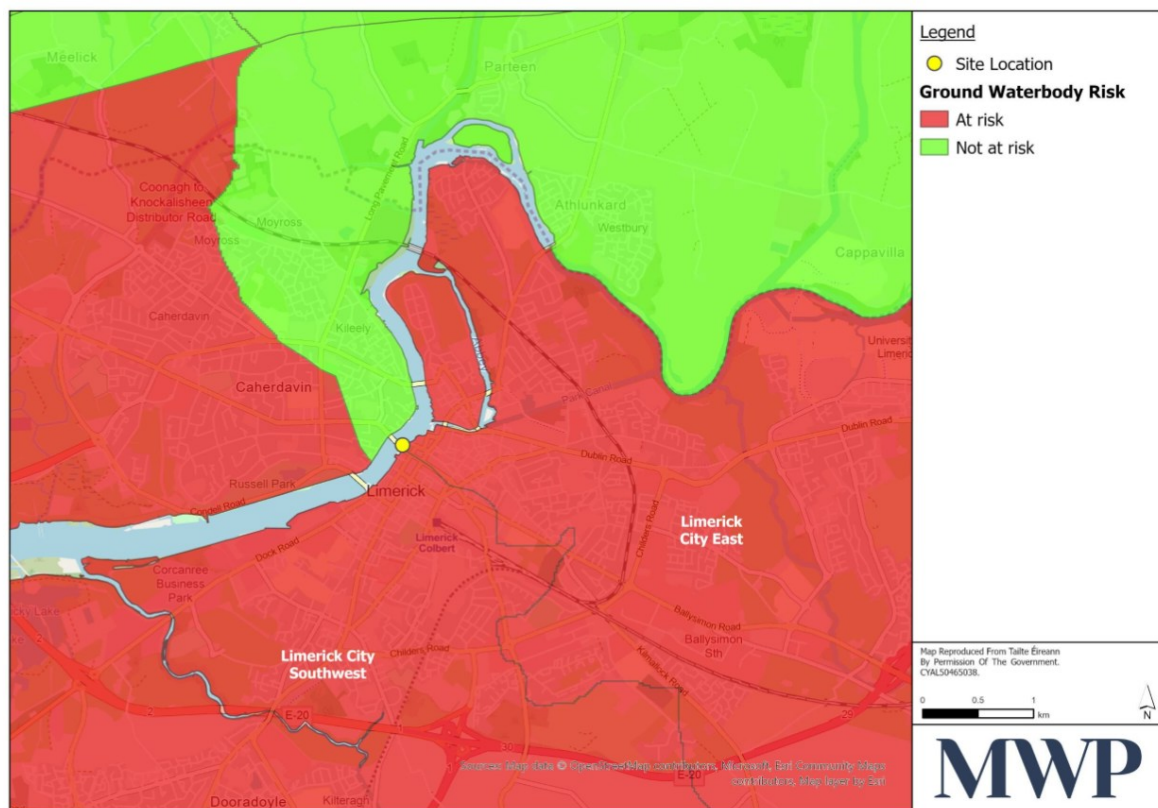


Figure 5-9: Groundwater Body Risk Map

5.4 Drinking Water/Abstractions

There are several waterbodies designated for Abstraction for Drinking Water under Article 7 of the WFD. These are designated as 'All bodies of water used for the abstraction of water intended for human consumption providing more than 10m³ a day as an average or serving more than 50 persons, and those bodies of water intended for such future use'. According to the EPA maps (Article 7 Abstraction for Drinking Water) there are no surface water drinking water sources at the Proposed Development or within 2km of the Proposed Development.

The Limerick City North, East and Southwest GWBs which underly the site of the proposed project are designated under Article 7 for Drinking Water.

The Geological Society of Ireland delineates Public Supply Source Protection Areas for drinking water to protect these public water supplies. These are split into inner and outer protection areas, with the inner area designed to prevent immediate threats to the water source. The outer area encompasses the Zone of Contribution (ZoC) that contributes to the inner areas water supply. There are no public water supply (PWS) sources located in the vicinity of the proposed development. The closest PWSs are to the south, which is the Fedamore PWS, approximately 12.8 km to the east which is the Murroe PWS approximately 15.6 km to the east.

According to the GSI database the closest working well with a known yield is in on the outskirts of Limerick City [Ballinacurra (Weston)], which is approximately 2.29 km to the south of the proposed project. The well has a 'Good' yield (source yield 109.00 m³/day) and its source use is unknown. It is possible that dwellings with private wells may be in the vicinity of the proposed development site that are not included on the GSI well database.

5.5 Bathing Waters

Bathing waters are designated under Regulation 5 of Directive 2006/7/EC. Designated Bathing Waters exist under S.I. No. 79/2008 and S.I. No. 351/2011 Bathing Water Quality (Amendment) Regulations 2011. EC Bathing Water Profiles - Best Practice and Guidance 2009. The closest designated Bathing Water location is Ballycuggeran (BWID: IESHBWL25_191a_0300) located approximately 22 km to the north of the site. This site has a bathing water quality status of 'Excellent Water Quality'.

5.6 Nutrient Sensitive Waters

Nutrient sensitive areas are identified in the Lower Shannon and Mulkear Cycle 3 Report from May 2024. The proposed project is located within the transitional waterbody Limerick Dock (IE_SH_060_0900), which forms part of the wider Lower River Shannon estuarine system (see **Figure 5-10**). The Lough Derg on the River Shannon (Code: IE_SH_25_191a) nutrient sensitive area is the closest separately recognised area to the proposed project site. It is located approximately 15 km upstream and is described as a 'Urban Waste Water Treatment Directive Sensitive Area'. There are no salmonoid rivers designated in the vicinity of the proposed development, the closest being the Fergus (Code: IE_SH_27F010780) river approximately 30 km to the northwest.

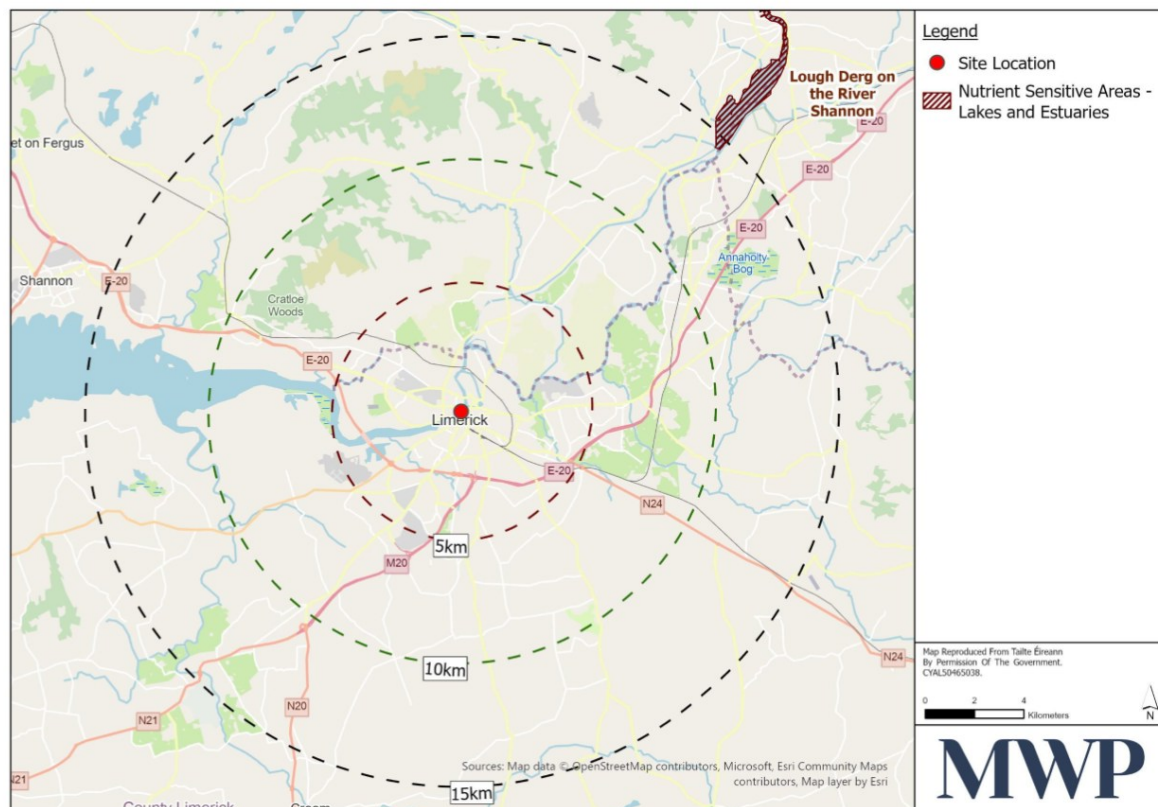


Figure 5-10: Nutrient Sensitive Areas Map

The Sea Fisheries Protection Agency (SFPA) monitors and publishes classified bivalve production areas in Ireland as required by Directive 2006/113/EC on the quality required of shellfish waters and brought into Irish legislation under S.I. No. 268 of 2006. This classification is graded against *E. coli* thresholds, with gradings of A, B and C available. Areas graded 'A' are suitable for sale for direct human consumption, requiring no treatment. Grade 'B' requires purification and treatment before being suitable for human consumption, while grade 'C' areas require bivalves to under a least 2 months relaying in cleaner waters or an approved heat treatment before being suitable for human consumption.

The proposed project is located approximately 58 km east of the West Shannon Ballylongford Designated Shellfish Area, which is classified as Class B for Pacific Oyster (*Crassostrea gigas*). These shellfish waters were designated in 2009 under the European Communities (Quality of Shellfish Waters) (Amendment) Regulations 2009 (S.I. No. 55 of 2009). The designated area covers 8.61 km² of the Shannon Estuary.

There are several active aquaculture licences within the wider estuary. Within the West Shannon/Ballylongford area, aquaculture operations are listed by the Department of Agriculture, Food and the Marine (DAFM) for County Kerry, including sites operated by the Ballylongford Shellfish Producers Group (Licence: T06-331A). Downstream of the project site, two licensed aquaculture sites are located approximately 34 km and 28 km away, respectively.

- The larger site (Licence: T08-004AOFO) is operated by Atlantic Shellfish Ltd, covers 3,527.87 ha, and is licensed for European Flat Oyster.
- The smaller site (Licence: T07-007) covers 5.59 ha and is operated by Shannon Shellfish Ltd, licensed for Pacific Oyster, Blue Mussel, and European Flat Oyster.

Upstream of the project area, there is one licensed aquaculture site approximately 15 km from the project, operated by ESB Fisheries Conservation. This site covers 0.69 ha, is licensed for Atlantic Salmon, and has the Aquaculture Site ID: T26-017. A map showing the ESB Fisheries aquaculture site is provided in **Figure 5-11**.

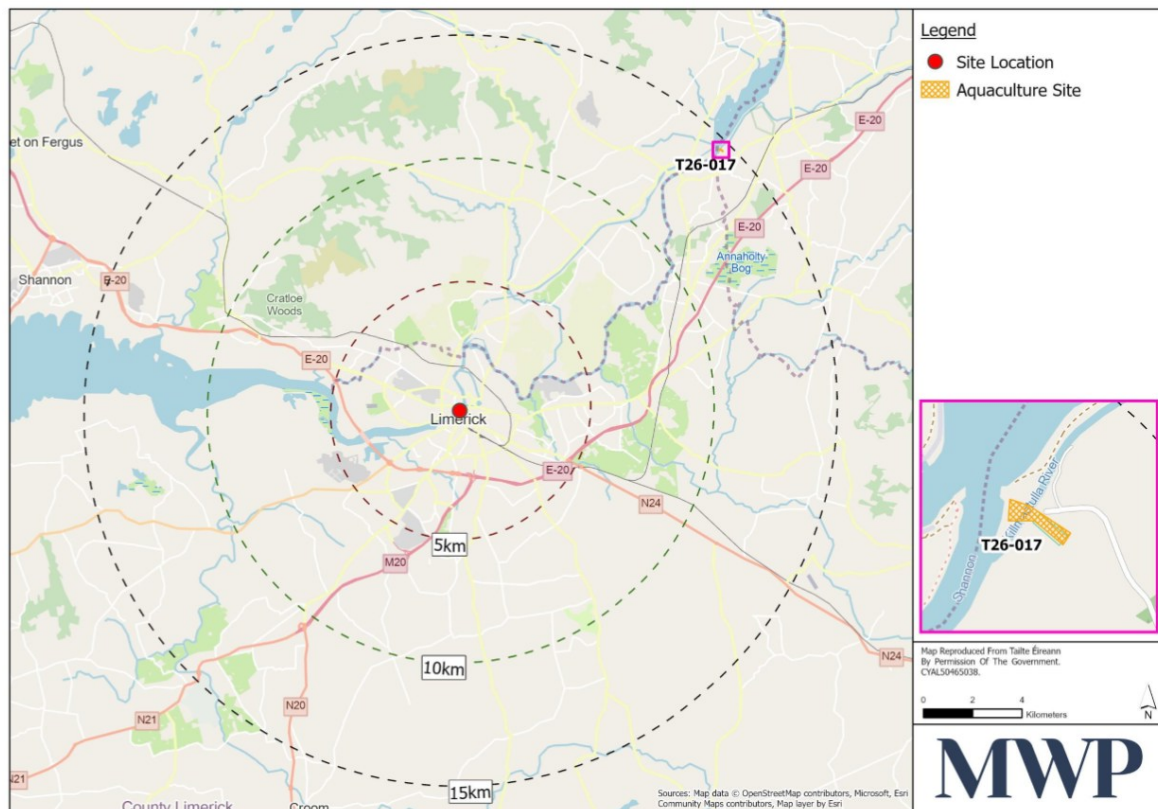


Figure 5-11: Designated Shellfish Areas and Aquaculture Sites Map

5.7 Flood Risk

The proposed project comprises of maintenance dredging within an existing navigational channel and does not involve land reclamation, permanent structures, or alterations to riverbanks or floodplain areas. The works will be undertaken entirely within the established river channel and will not reduce flood storage capacity or obstruct flow conveyance.

Maintenance dredging will restore previously established bed levels within the navigation channel by removing accumulated sediments. As such, the works will not increase flood risk either within the immediate vicinity of the site or at downstream or upstream locations.

The proposed project is not expected to change how tides move, how far floods reach, or how water flows through the area.

Given the temporary and maintenance nature of the works, together with the absence of permanent infrastructure, the proposed development is not expected to give rise to increased flood risk and is considered consistent with national planning guidance relating to flood risk management.

5.8 Protected Sites

5.8.1 Natura 2000 Sites

A Natura Impact Statement (NIS) accompanies this application. The NIS report objectively concluded that the proposed project at Sarsfield Lock, Limerick City, either individually or in combination with other plans or projects, is not likely to have significant effects on any Natura 2000 site located within the Zone of Influence of the proposed development.

The potentially affected Natura sites are as follows and are shown in **Figure 5-12**:

- Lower River Shannon SAC (Code: 002165)
- River Shannon and River Fergus Estuaries SPA (Code: 004077)

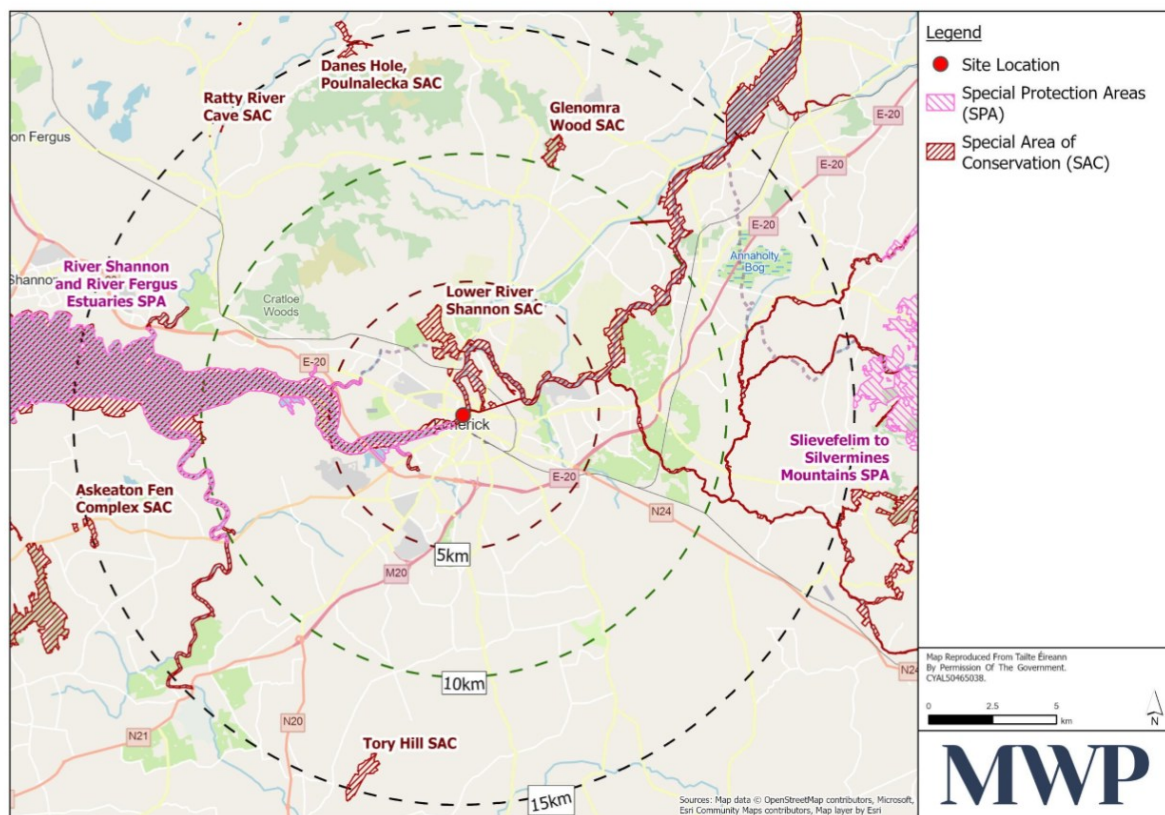


Figure 5-12: European Sites Located within the Potential ZOI of the Proposed Development Map

5.8.2 Nationally Designated Conservation Sites

There are 2 NHAs within the Zone of Influence listed as follows and shown in **Figure 5-13**:

- Woodcock Hill Bog NHA.
- Gortacullin Bog NHA.

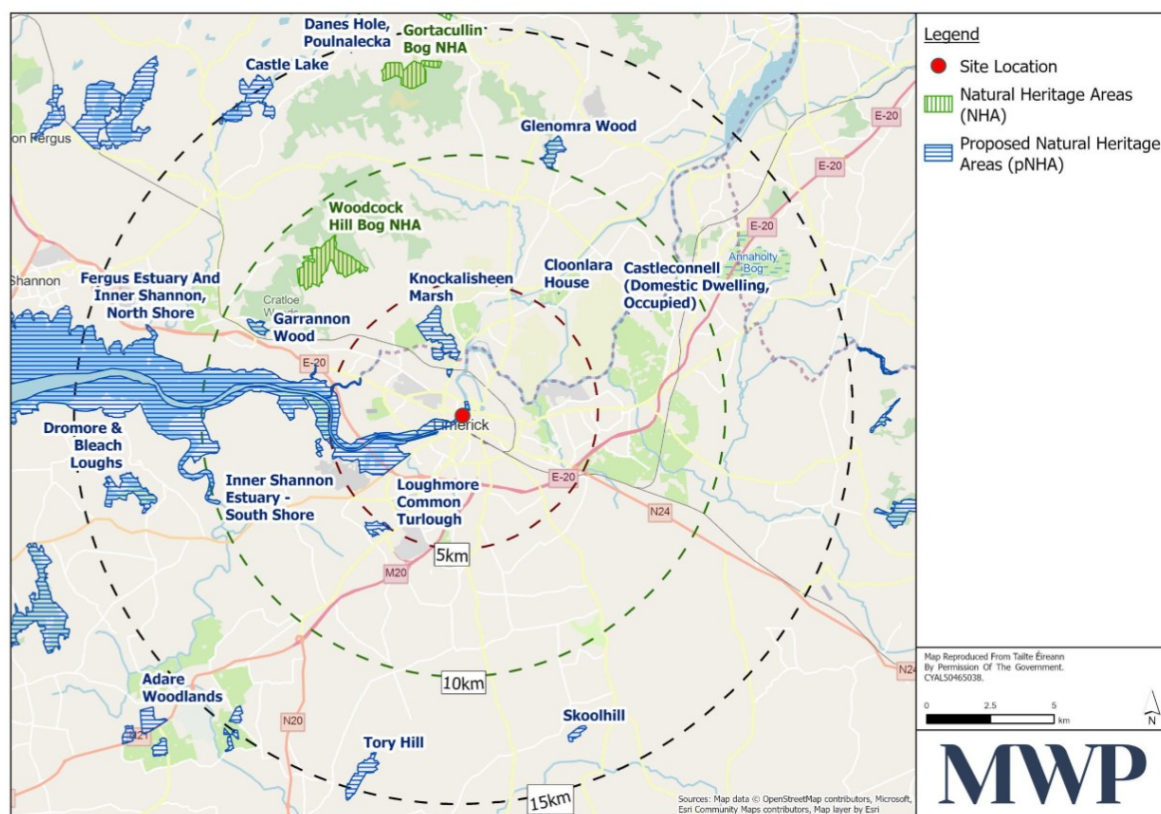


Figure 5-13: Nationally Designated Conservation Sites Map

6. Compliance Assessment

Any activity that is part of the proposed development and that could have the potential to lower the status of any of the quality elements of a water body or preclude the measures necessary to achieve good status must be assessed to determine its compliance with the WFD.

Stage 1: Screening aims to determine if the proposed development has impact pathways to WFD water bodies. This includes collating available information on the project and baseline environment of the water bodies which could potentially be impacted. Should there be an activity that is determined to be screened in for further assessment, this will move forward to Stage 2: Scoping. During this stage, if an impact is screened in, this will be carried forward to Stage 3: Impact Assessment.

6.1 Stage One: Screening

Stage 1 is to identify the extent to which the proposal is likely to affect the water bodies and to identify what activities should go through the scoping or impact assessment stages. This section therefore:

- Defines which activities have been screened in for further assessment, considering the activities that may result from construction and operation of the Proposed Project that could directly or indirectly impact water bodies.
- Identifies the relevant water bodies (surface and groundwater) that could be directly or indirectly impacted by the Proposed Project and defines which water bodies have been screened in for further assessment.

In order to undertake the screening assessment and identify water bodies that are potentially at risk, the project was divided onto phases and activities, see **Table 6-1**. The operational life of the Proposed Project is expected to be in excess of 50 years. There is no decommissioning envisaged for the Proposed Project.

Table 6-1: Project Phases and Activities

Project Phase	Activity
Dredging Phase	Localised Dredging within the Lock
	Mobilisation of dredging plant, barges and support vessels to the works area
	Sediment Discharge
	Transport of Dredged Material

Table 6-2: Results of the Screening Exercise

Phase	Activity	Water Resource	Waterbody Name and ID Number	Impact	Screening for Further Assessment	Justification
Dredging Phase	Localised dredging within the Lock	Groundwater	Limerick City North (IE_SH_G_139)	Short-term increase in turbidity	Screened Out	Dredging does not interact with groundwater. Dredging will be to historic levels.
			Limerick City East (IE_SH_G_138)			
			Limerick City Southwest (IE_SH_G_141)			
		Transitional Water	Limerick Dock (IE_SH_060_0900)		Screened In	Works occurring in surface waters, direct and indirect hydrological connectivity between all waterbodies.
			Upper Shannon Estuary (IE_SH_060_0800)			
			Maigne Estuary (IE_SH_060_0800)			
			Fergus Estuary (IE_SH_060_1100)			
			Deel Estuary (IE_SH_060_0600)			
			Lower Shannon Estuary (IE_SH_060_0300)			
			Foynes Harbour (IE_SH_060_0350)			

Phase	Activity	Water Resource	Waterbody Name and ID Number	Impact	Screening for Further Assessment	Justification
			Clonderalaw Bay (IE_SH_060_1200)			
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Groundwater	Limerick City North (IE_SH_G_139)	Potential fuel/debris spill from vessel	Screened Out	Dredging will be done to historic levels (removal of 12,000m ³) with DOP submersible pumping which has no potential to penetrate to GWB.
			Limerick City East (IE_SH_G_138)			
			Limerick City Southwest (IE_SH_G_141)			
		Transitional Water	Limerick Dock (IE_SH_060_0900)		Screened In	Direct and indirect hydrological connection between surface waterbodies means potential for spill to affect all downstream transitional waters.
			Upper Shannon Estuary (IE_SH_060_0800)			
			Maigue Estuary (IE_SH_060_0800)			
			Fergus Estuary (IE_SH_060_1100)			
			Deel Estuary (IE_SH_060_0600)			
			Lower Shannon Estuary (IE_SH_060_0300)			

Phase	Activity	Water Resource	Waterbody Name and ID Number	Impact	Screening for Further Assessment	Justification
			Foynes Harbour (IE_SH_060_0350)			
			Clonderalaw Bay (IE_SH_060_1200)			
Dredging Phase	Sediment Discharge	Groundwater	Limerick City North (IE_SH_G_139)	Temporary suspended solids/turbidity increase	Screened Out	Non-hazardous sediment unlikely to penetrate through and affect GWB.
			Limerick City East (IE_SH_G_138)			
			Limerick City Southwest (IE_SH_G_141)			
		Transitional Water	Limerick Dock (IE_SH_060_0900)		Screened In	Accidental spillage of sediments into the water column during the removal. Hydrological linkage between all waterbodies.
			Upper Shannon Estuary (IE_SH_060_0800)			
			Maigue Estuary (IE_SH_060_0800)			
			Fergus Estuary (IE_SH_060_1100)			
			Deel Estuary (IE_SH_060_0600)			

Phase	Activity	Water Resource	Waterbody Name and ID Number	Impact	Screening for Further Assessment	Justification
Dredging Phase	Transport of Dredged Material		Lower Shannon Estuary (IE_SH_060_0300)			
			Foynes Harbour (IE_SH_060_0350)			
			Clonderalaw Bay (IE_SH_060_1200)			
		Groundwater	Limerick City North (IE_SH_G_139)	Sediment loss from barge due to vessel movement	Screened Out	Transport by barge has no pathway to GWBs.
			Limerick City East (IE_SH_G_138)			
			Limerick City Southwest (IE_SH_G_141)			
		Transitional Water	Limerick Dock (IE_SH_060_0900)		Screened In	Transport of sediment occurs on vessels within surface waterbodies. Potential for spillage/leakage into water column. 70m ³ of granular material to be removed, which would settle onto riverbed in the navigational channel.
			Upper Shannon Estuary (IE_SH_060_0800)			
			Maigne Estuary (IE_SH_060_0800)			
			Fergus Estuary (IE_SH_060_1100)			

Phase	Activity	Water Resource	Waterbody Name and ID Number	Impact	Screening for Further Assessment	Justification
			Deel Estuary (IE_SH_060_0600)			
			Lower Shannon Estuary (IE_SH_060_0300)			
			Foynes Harbour (IE_SH_060_0350)			
			Clonderalaw Bay (IE_SH_060_1200)			

6.2 Stage Two: Scoping

A Stage 2 Scoping Assessment is required as the transitional waterbodies were determined to have screened in at Stage 1 based on the potential for impacts arising from activities associated with the Proposed Project. The aim of the scoping stage is to identify receptors within the waterbodies brought forward which may be impacted. These receptors include:

- Hydromorphology,
- Habitats,
- Fish Species,
- Water Quality,
- Protected Areas.

The scoping assessment was undertaken, and the results are presented in **Table 6-3**. For the Limerick Dock (IE_SH_060_0900), Upper Shannon Estuary (IE_SH_060_0800), Maigue Estuary (IE_SH_060_0800), Fergus Estuary (IE_SH_060_1100), Deel Estuary (IE_SH_060_0600), Lower Shannon Estuary (IE_SH_060_0300), Foynes Harbour (IE_SH_060_0350), and Clonderalaw Bay (IE_SH_060_1200) waterbodies, hydromorphology, water quality, fish, habitats, and protected areas were identified as relevant quality elements requiring further consideration. For the Limerick City North (IE_SH_G_139), Limerick City East (IE_SH_G_138) and Limerick City Southwest (IE_SH_G_141) groundwater bodies, no WFD quality elements were identified for further consideration due to the absence of a hydrological pathway between the dredging works and the underlying GWBs.

Table 6-3: Results of Scoping Exercise

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
Dredging Phase	Localised dredging within the Lock	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	Yes	Temporary disturbance of sediments within and immediately outside the lock.
				Habitats	Yes	Temporary disturbance of benthic habitats due to dredging.
				Fish Species	Yes	Works occur in the water. Vibrations and short-term turbidity may disturb the fish.
				Water Quality	Yes	Short-term increase in suspended solids/turbidity.
				Protected Areas	Yes	Limerick Dock (IE_SH_060_0900) discharges into the Lower River Shannon SAC (Code: 002165) and then the River Shannon and River Fergus Estuaries SPA (Code: 004077).
Dredging Phase	Localised dredging within the Lock	Transitional Water	Upper Shannon Estuary (IE_SH_060_0800)	Hydromorphology	No	Waterbody located approximately 4.5 km downstream; dredging effects will have dissipated fully before reaching this waterbody.
				Habitats	No	Waterbody located approximately 4.5 km downstream; no pathway for habitat disturbance at this distance.
				Fish Species	No	Waterbody located approximately 4.5 km downstream; dredging effects will have dissipated fully before reaching this waterbody.
				Water Quality	No	Waterbody located approximately 4.5 km downstream; dilution and dispersion will eliminate any water quality

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
						influence before reaching the Upper Estuary (IE_SH_060_0800).
				Protected Areas	No	Waterbody located approximately 4.5 km downstream; dilution and dispersion will eliminate any influence on protected areas before reaching the Upper Estuary (IE_SH_060_0800) in the Lower River Shannon SAC (Code: 002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077).
Dredging Phase	Localised dredging within the Lock	Transitional Water	Maigue Estuary (IE_SH_060_0800)	Hydromorphology	No	Waterbody located approximately 11.79 km downstream; dilution and dispersion will eliminate any influence on hydromorphology before reaching the Maigue Estuary (IE_SH_060_0800).
				Habitats	No	Waterbody located approximately 11.79 km downstream; distance and dilution will prevent any downstream influence.
				Fish Species	No	Waterbody located approximately 11.79 km downstream; fish receptors will likely not be exposed to any effects that far downstream.
				Water Quality	No	Waterbody located approximately 11.79 km downstream; any temporary alterations to the water quality will remain local to Limerick Dock (IE_SH_060_0900 and will not affect downstream waterbodies.
				Protected Areas	No	Despite Maigue Estuary (IE_SH_060_0800) being located in the Lower River Shannon SAC (Code:

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
						002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077), dredging impacts are unlikely to propagate over 11.79 km from the proposed project site to the protected areas.
Dredging Phase	Localised dredging within the Lock	Transitional Water	Fergus Estuary (IE_SH_060_1100)	Hydromorphology	No	Waterbody located approximately 23.3 km downstream; distance and dilution will prevent any downstream influence.
				Habitats	No	Waterbody located approximately 23.3 km downstream; distance and dilution will prevent any downstream influence.
				Fish Species	No	Waterbody located approximately 23.3 km downstream; fish receptors will not be exposed to any effects that far downstream.
				Water Quality	No	Waterbody located approximately 23.3 km downstream; any temporary alterations to the water quality will remain local to Limerick Dock (IE_SH_060_0900) and will not affect downstream waterbodies.
				Protected Areas	No	Despite Fergus Estuary (IE_SH_060_1100) being located in the Lower River Shannon SAC (Code: 002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077), dredging impacts are unlikely to propagate over 23.3 km from the proposed project site to the protected areas.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
Dredging Phase	Localised dredging within the Lock	Transitional Water	Deel Estuary (IE_SH_060_0600)	Hydromorphology	No	Waterbody located approximately 25 km downstream; distance and dilution will prevent any downstream influence.
				Habitats	No	Waterbody located approximately 25 km downstream; distance and dilution will prevent any downstream influence.
				Fish Species	No	Waterbody located approximately 25 km downstream; fish receptors will not be exposed to any effects that far downstream.
				Water Quality	No	Waterbody located approximately 25 km downstream; any temporary alterations to the water quality will remain local to Limerick Dock (IE_SH_060_0900) and will likely not affect downstream waterbodies.
				Protected Areas	No	Despite Deel Estuary (IE_SH_060_0600) being located in the Lower River Shannon SAC (Code: 002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077), dredging impacts are unlikely to propagate over 25 km from the proposed project site to the protected areas.
Dredging Phase	Localised dredging within the Lock	Transitional Water	Lower Shannon Estuary (IE_SH_060_0300)	Hydromorphology	No	Waterbody located approximately 23 km downstream; distance and dilution will prevent any downstream influence.
				Habitats	No	Waterbody located approximately 23 km downstream; distance and dilution will prevent any downstream influence.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Fish Species	No	Waterbody located approximately 23 km downstream; fish receptors will not be exposed to any effects that far downstream.
				Water Quality	No	Waterbody located approximately 23 km downstream; any temporary alterations to the water quality will remain local to Limerick Dock (IE_SH_060_0900) and will likely not affect downstream waterbodies.
				Protected Areas	No	Despite Lower Shannon Estuary (IE_SH_060_0300) being located in the Lower River Shannon SAC (Code: 002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077), dredging impacts cannot propagate over 23 km from the proposed project site to the protected areas.
Dredging Phase	Localised dredging within the lock	Transitional Water	Foynes Harbour (IE_SH_060_0350)	Hydromorphology	No	Waterbody located approximately 32 km downstream; distance and dilution will prevent any downstream influence.
				Habitats	No	Waterbody located approximately 32 km downstream; distance and dilution will prevent any downstream influence.
				Fish Species	No	Waterbody located approximately 32 km downstream; fish receptors will not be exposed to any effects that far downstream.
				Water Quality	No	Waterbody located approximately 32 km downstream; any temporary alterations to the water quality will

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
						remain local to Limerick Dock (IE_SH_060_0900) and will likely not affect downstream waterbodies.
				Protected Areas	No	Despite Foynes Harbour (IE_SH_060_0350) being located in the Lower River Shannon SAC (Code: 002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077), dredging impacts are unlikely to propagate over 32 km from the proposed project site to the protected areas.
Dredging Phase	Localised dredging within the lock	Transitional Water	Clonderalaw Bay (IE_SH_060_1200)	Hydromorphology	No	Waterbody located approximately 43 km downstream; distance and dilution will prevent any downstream influence.
				Habitats	No	Waterbody located approximately 43 km downstream; distance and dilution will prevent any downstream influence.
				Fish Species	No	Waterbody located approximately 43 km downstream; fish receptors will not be exposed to any effects that far downstream.
				Water Quality	No	Waterbody located approximately 43 km downstream; any temporary alterations to the water quality will remain local to Limerick Dock (IE_SH_060_0900) and will likely not affect downstream waterbodies.
				Protected Areas	No	Despite Clonderalaw Bay (IE_SH_060_1200) being located in the Lower River Shannon SAC (Code: 002165) and River Shannon and River Fergus Estuaries SPA (Code: 004077), dredging impacts are unlikely to

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
						propagate over 43 km from the proposed project site to the protected areas.
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	Yes	Mobilisation involves moving vessels within the dock. While effects are temporary and small, propeller movement may cause localised bed disturbance.
				Habitats	Yes	Temporary disturbance of benthic habitats and organisms via suspended sediments from vessel movement.
				Fish Species	Yes	Short-term disturbance due to noise and vibration from vessel activity.
				Water Quality	Yes	Risk of accidental hydrocarbon leakage and turbidity increases from vessel movement.
				Protected Areas	Yes	Potential short-term risk to downstream designated sites in the event of accidental pollution
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Upper Shannon Estuary (IE_SH_060_0800)	Hydromorphology	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 4.5 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance.
				Habitats	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 4.5 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Fish Species	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 4.5 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance that could affect fish species.
				Water Quality	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 4.5 km downstream, vessel movements are unlikely to generate water quality effects that could propagate over this distance.
				Protected Areas	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 4.5 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance.
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Maigne Estuary (IE_SH_060_0800)	Hydromorphology	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 11.79 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance.
				Habitats	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 11.79 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Fish Species	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 11.79 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance that could affect fish species.
				Water Quality	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 11.79 km downstream, vessel movements are unlikely to generate water quality effects that could propagate over this distance.
				Protected Areas	No	Mobilisation is confined to Limerick Dock (IE_SH_060_0900). At approximately 11.79 km downstream, vessel movements are unlikely to generate effects that could propagate over this distance.
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Fergus Estuary (IE_SH_060_1100)	Hydromorphology	No	Located over 23 km downstream, mobilisation effects are spatially limited and are unlikely to spread beyond Limerick Dock (IE_SH_060_0900).
				Habitats	No	Located over 23 km downstream, mobilisation effects are spatially limited and are unlikely to spread beyond Limerick Dock (IE_SH_060_0900).
				Fish Species	No	Located over 23 km downstream, mobilisation effects are spatially limited and are unlikely to spread beyond Limerick Dock (IE_SH_060_0900).

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Water Quality	No	Located over 23 km downstream, mobilisation effects are spatially limited and are unlikely to spread beyond Limerick Dock (IE_SH_060_0900).
				Protected Areas	No	Located over 23 km downstream, mobilisation effects are spatially limited and are unlikely to spread beyond Limerick Dock (IE_SH_060_0900).
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Deel Estuary (IE_SH_060_0600)	Hydromorphology	No	Approximately 25 km of distance and tidal propagation eliminate any pathway for interaction with this waterbody.
				Habitats	No	Approximately 25 km of distance and tidal propagation eliminate any pathway for interaction with this waterbody.
				Fish Species	No	Approximately 25 km of distance and tidal propagation eliminate any pathway for interaction with this waterbody.
				Water Quality	No	Approximately 25 km of distance and tidal propagation eliminate any pathway for interaction with this waterbody.
				Protected Areas	No	Approximately 25 km of distance and tidal propagation eliminate any pathway for interaction with this waterbody.
Dredging Phase	Mobilisation of dredging plant, barges and support	Transitional Water	Lower Shannon Estuary (IE_SH_060_0300)	Hydromorphology	No	Mobilisation effects are restricted to Limerick Dock (IE_SH_060_0900) and are unlikely to travel through multiple estuaries to reach this waterbody.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
	vessels to the works area			Habitats	No	Mobilisation effects are restricted to Limerick Dock (IE_SH_060_0900) and are unlikely to travel through multiple estuaries to reach this waterbody.
				Fish Species	No	Mobilisation effects are restricted to Limerick Dock (IE_SH_060_0900) and are unlikely to travel through multiple estuaries to reach this waterbody.
				Water Quality	No	Mobilisation effects are restricted to Limerick Dock (IE_SH_060_0900) and are unlikely to travel through multiple estuaries to reach this waterbody.
				Protected Areas	No	Mobilisation effects are restricted to Limerick Dock (IE_SH_060_0900) and are unlikely to travel through multiple estuaries to reach this waterbody.
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Foynes Harbour (IE_SH_060_0350)	Hydromorphology	No	At approximately 32 km downstream, mobilising plant within Limerick Dock (IE_SH_060_0900) has no hydrological or physical connection capable of producing detectable effects.
				Habitats	No	At approximately 32 km downstream, mobilising plant within Limerick Dock (IE_SH_060_0900) has no hydrological or physical connection capable of producing detectable effects.
				Fish Species	No	At approximately 32 km downstream, mobilising plant within Limerick Dock (IE_SH_060_0900) has no hydrological or physical connection capable of producing detectable effects.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Water Quality	No	At approximately 32 km downstream, mobilising plant within Limerick Dock (IE_SH_060_0900) has no hydrological or physical connection capable of producing detectable effects.
				Protected Areas	No	At approximately 32 km downstream, mobilising plant within Limerick Dock (IE_SH_060_0900) has no hydrological or physical connection capable of producing detectable effects.
Dredging Phase	Mobilisation of dredging plant, barges and support vessels to the works area	Transitional Water	Clonderalaw Bay (IE_SH_060_1200)	Hydromorphology	No	This waterbody is located in the outer estuary over 40 km away. Mobilisation impacts do not propagate beyond Limerick Dock (IE_SH_060_0900), therefore no pathway exists.
				Habitats	No	This waterbody is located in the outer estuary over 40 km away. Mobilisation impacts do not propagate beyond Limerick Dock (IE_SH_060_0900), therefore no pathway exists.
				Fish Species	No	This waterbody is located in the outer estuary over 40 km away. Mobilisation impacts do not propagate beyond Limerick Dock (IE_SH_060_0900), therefore no pathway exists.
				Water Quality	No	This waterbody is located in the outer estuary over 40 km away. Mobilisation impacts do not propagate beyond Limerick Dock (IE_SH_060_0900), therefore no pathway exists.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Protected Areas	No	This waterbody is located in the outer estuary over 40 km away. Mobilisation impacts do not propagate beyond Limerick Dock (IE_SH_060_0900), therefore no pathway exists.
Dredging Phase	Sediment Discharge	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	Yes	Localised disturbance from repeated slurry discharge at designated in-channel points.
				Habitats	Yes	Temporary disturbance and smothering of benthic habitats in close proximity to discharge points.
				Fish Species	Yes	Short term increase in suspended solids/turbidity and behaviour disturbance.
				Water Quality	Yes	Short term suspended solids/ turbidity at discharge locations.
				Protected Areas	Yes	Discharge into Limerick Dock (IE_SH_060_0900) which flows into Upper Shannon Estuary (IE_SH_060_0800) and further estuaries downstream, which are all part of the Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Sediment Discharge	Transitional Water	Upper Shannon Estuary (IE_SH_060_0800)	Hydromorphology	No	The sediment plumes within Limerick Dock (IE_SH_060_0900) will dissipate quickly and are unlikely to affect riverbed conditions 4.5 km downstream.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Habitats	No	Habitat disturbance is confined to the immediate discharge areas.
				Fish Species	No	Turbidity increases will settle before reaching this waterbody; fish populations here are unlikely to be exposed.
				Water Quality	No	Suspended solid concentrations will dissipate quickly and will be confined to Limerick Dock (IE_SH_060_0900). Unlikely for detectable water quality change to occur 4.5 km downstream.
				Protected Areas	No	Suspended solid concentrations will dissipate rapidly and will remain confined to Limerick Dock (IE_SH_060_0900). It is unlikely for a pathway for effects to arise within the Lower River Shannon SAC (002165) or the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Sediment Discharge	Transitional Water	Maigue Estuary (IE_SH_060_0800)	Hydromorphology	No	No pathway; waterbody is approximately 11.79 km downstream from dredging works and effects will dissipate fully upstream in Limerick Dock (IE_SH_060_0900).
				Habitats	No	More than 11 km downstream; there is no hydrological or transport pathway capable of conveying suspended solids/turbidity to this waterbody.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Fish Species	No	More than 11 km downstream; there is no hydrological or transport pathway capable of conveying suspended solids/turbidity to this waterbody.
				Water Quality	No	More than 11 km downstream; there is no hydrological or transport pathway capable of conveying suspended solids/turbidity to this waterbody.
				Protected Areas	No	Suspended solid concentrations will dissipate rapidly and will remain confined to Limerick Dock (IE_SH_060_0900). It is unlikely for a pathway for effects to arise within the Lower River Shannon SAC (002165) or the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Sediment Discharge	Transitional Water	Fergus Estuary (IE_SH_060_1100)	Hydromorphology	No	More than 23 km downstream; there is no hydrological pathway capable of conveying turbidity to this waterbody.
				Habitats	No	More than 23 km downstream; there is no hydrological pathway capable of conveying turbidity to this waterbody.
				Fish Species	No	More than 23 km downstream; there is no hydrological pathway capable of conveying turbidity to this waterbody.
				Water Quality	No	More than 23 km downstream; there is no hydrological pathway capable of conveying turbidity to this waterbody.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Protected Areas	No	Suspended solid concentrations will dissipate rapidly and will remain confined to Limerick Dock (IE_SH_060_0900). It is unlikely for a pathway for effects to arise within the Lower River Shannon SAC (002165) or the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Sediment Discharge	Transitional Water	Deel Estuary (IE_SH_060_0600)	Hydromorphology	No	Discharge impacts are unlikely to propagate over 25km.
				Habitats	No	Discharge impacts are unlikely to propagate over 25km.
				Fish Species	No	Discharge impacts are unlikely to propagate over 25km.
				Water Quality	No	Discharge impacts are unlikely to propagate over 25km.
				Protected Areas	No	Discharge impacts are unlikely to propagate over 25km.
Dredging Phase	Sediment Discharges	Transitional Water	Lower Shannon Estuary (IE_SH_060_0300)	Hydromorphology	No	The turbidity plume will remain within Limerick Dock (IE_SH_060_0900) and unlikely to extend to mid-estuary locations.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Habitats	No	The turbidity plume will remain within Limerick Dock (IE_SH_060_0900) and are unlikely to extend to mid-estuary locations.
				Fish Species	No	The turbidity plume will remain within Limerick Dock (IE_SH_060_0900) and are unlikely to extend to mid-estuary locations.
				Water Quality	No	The turbidity plume will remain within Limerick Dock (IE_SH_060_0900) and are unlikely to extend to mid-estuary locations.
				Protected Areas	No	The turbidity plume will remain within Limerick Dock (IE_SH_060_0900) and are unlikely to extend to mid-estuary locations.
Dredging Phase	Sediment Discharges	Transitional Water	Foynes Harbour (IE_SH_060_0350)	Hydromorphology	No	Due to distance (approximately 32 km) and dispersion, no pathway exists.
				Habitats	No	Due to distance (approximately 32 km) and dispersion, no pathway exists.
				Fish Species	No	Due to distance (approximately 32 km) and dispersion, no pathway exists.
				Water Quality	No	Due to distance (approximately 32 km) and dispersion, no pathway exists.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Protected Areas	No	Due to distance (approximately 32 km) and dispersion, no pathway exists.
Dredging Phase	Sediment Discharges	Transitional Water	Clonderalaw Bay (IE_SH_060_1200)	Hydromorphology	No	Located in the outer estuary approximately 43 km from the works. All discharge-related effects are confined to the Limerick Dock (IE_SH_060_0900) area
				Habitats	No	Located in the outer estuary approximately 43 km from the works. All discharge-related effects are confined to the Limerick Dock (IE_SH_060_0900) area
				Fish Species	No	Located in the outer estuary approximately 43 km from the works. All discharge-related effects are confined to the Limerick Dock (IE_SH_060_0900) area
				Water Quality	No	Located in the outer estuary approximately 43 km from the works. All discharge-related effects are confined to the Limerick Dock (IE_SH_060_0900) area
				Protected Areas	No	Located in the outer estuary approximately 43 km from the works. All discharge-related effects are confined to the Limerick Dock (IE_SH_060_0900) area
Dredging Phase	Transport of Dredged Material	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	Yes	Minor localised disturbance due to propeller movement from the vessel.
				Habitats	Yes	Temporary disturbance of benthic habitats due to vessel movement.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Fish Species	Yes	Short term behaviour disturbance due to vessel movement.
				Water Quality	Yes	Potential for minor turbidity from vessel movement or accidental spillage during material handling.
				Protected Areas	Yes	Potential minor water quality risk to downstream designated sites (Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Transport of Dredged Material	Transitional Water	Upper Shannon Estuary (IE_SH_060_0800)	Hydromorphology	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and are unlikely to propagate 4.5 km downstream. No pathway exists.
				Habitats	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and are unlikely to propagate 4.5 km downstream. No pathway exists.
				Fish Species	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and are unlikely to propagate 4.5 km downstream. No pathway exists.
				Water Quality	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
						Vessel-related disturbance is localised and are unlikely to propagate 4.5 km downstream. No pathway exists.
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Transport of Dredged Material	Transitional Water	Maugue Estuary (IE_SH_060_0800)	Hydromorphology	No	At almost 12 km downstream, there is no pathway for vessel movement to affect the hydromorphology of the Maigue Estuary (IE_SH_060_0800).
				Habitats	No	At almost 12 km downstream, there is no pathway for vessel movement to affect the habitats of the Maigue Estuary (IE_SH_060_0800).
				Fish Species	No	At almost 12 km downstream, there is no pathway for vessel movement to affect the fish species of the Maigue Estuary (IE_SH_060_0800).
				Water Quality	No	At almost 12 km downstream, there is no pathway for vessel movement to affect the water quality of the Maigue Estuary (IE_SH_060_0800).
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
Dredging Phase	Transport of Dredged Material	Transitional Water	Fergus Estuary (IE_SH_060_1100)	Hydromorphology	No	Fergus Estuary (IE_SH_060_1100) is over 23 km beyond the effects of the vessel mobilisation and material transport in Limerick Dock (IE_SH_060_0900).
				Habitats	No	Fergus Estuary (IE_SH_060_1100) is over 23 km beyond the effects of the vessel mobilisation and material transport in Limerick Dock (IE_SH_060_0900).
				Fish Species	No	Fergus Estuary (IE_SH_060_1100) is over 23 km beyond the effects of the vessel mobilisation and material transport in Limerick Dock (IE_SH_060_0900).
				Water Quality	No	Fergus Estuary (IE_SH_060_1100) is over 23 km beyond the effects of the vessel mobilisation and material transport in Limerick Dock (IE_SH_060_0900).
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Transport of Dredged Material	Transitional Water	Deel Estuary (IE_SH_060_0600)	Hydromorphology	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 25 km away.
				Habitats	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 25 km away.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Fish Species	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 25 km away.
				Water Quality	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 25 km away.
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Transport of Dredged Materials	Transitional Water	Lower Shannon Estuary (IE_SH_060_0300)	Hydromorphology	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 23 km downstream.
				Habitats	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 23 km downstream.
				Fish Species	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 23 km downstream.
				Water Quality	No	Vessel activity during the transport stage is unlikely to propagate effects far enough to reach a waterbody that is approximately 23 km downstream.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Transport of Dredged Materials	Transitional Water	Foynes Harbour (IE_SH_060_0350)	Hydromorphology	No	Foynes Harbour (IE_SH_060_0350) lies more than 30 km downstream. Transport of dredged material from the Limerick Dock (IE_SH_060_0900) is unlikely to produce any disturbance capable of reaching this distance.
				Habitats	No	Foynes Harbour (IE_SH_060_0350) lies more than 30 km downstream. Transport of dredged material from the Limerick Dock (IE_SH_060_0900) is unlikely to produce any disturbance capable of reaching this distance.
				Fish Species	No	Foynes Harbour (IE_SH_060_0350) lies more than 30 km downstream. Transport of dredged material from the Limerick Dock (IE_SH_060_0900) is unlikely to produce any disturbance capable of reaching this distance.
				Water Quality	No	Foynes Harbour (IE_SH_060_0350) lies more than 30 km downstream. Transport of dredged material from the Limerick Dock (IE_SH_060_0900) is unlikely to produce any disturbance capable of reaching this distance.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Impact Assessment	Rational /Justification
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).
Dredging Phase	Transport of Dredged Materials	Transitional Water	Clonderalaw Bay (IE_SH_060_1200)	Hydromorphology	No	Clonderalaw Bay (IE_SH_060_1200) is situated over 40 km downstream in the outer estuary. No pathway exists for vessel activities to affect this waterbody.
				Habitats	No	Clonderalaw Bay (IE_SH_060_1200) is situated over 40 km downstream in the outer estuary. No pathway exists for vessel activities to affect this waterbody.
				Fish Species	No	Clonderalaw Bay (IE_SH_060_1200) is situated over 40 km downstream in the outer estuary. No pathway exists for vessel activities to affect this waterbody.
				Water Quality	No	Clonderalaw Bay (IE_SH_060_1200) is situated over 40 km downstream in the outer estuary. No pathway exists for vessel activities to affect this waterbody.
				Protected Areas	No	Transport of dredged material is confined to Limerick Dock (IE_SH_060_0900) and its immediate vicinity. Vessel-related disturbance is localised and unlikely to affect Lower River Shannon SAC (002165) and the River Shannon & River Fergus Estuaries SPA (004077).

6.3 Stage Three: Impact Assessment

The purpose of a Stage 3 impact assessment is to determine whether the Proposed Project and its activities would inhibit the identified waterbodies from achieving 'Good' status as outlined in the WFD. This can be due to deterioration of the current ecological and/or chemical status of the waterbodies or impacts on water quality and the identified water dependant species and habitats that are present in the relevant waterbodies.

The assessment draws on the relevant information concerning the design and implementation proposals for the proposed development and the WFD baseline data from the data collation stage.

The results of the impact assessment exercise are set out in **Table 6-4**.

Table 6-4: Impact Assessment Exercise

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
Dredging Phase	Localised dredging within the Lock	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	No	The dredging will loosen and move some of the sediment on the bottom of the lock, but only in a very small and controlled area. The lock walls stop anything from spreading far. Nothing about the dredging will change how the Dock works or how water flows, and dredging will be to historic levels only, so it won't affect its hydromorphological status.
				Habitats	No	Some benthic species will be disturbed while the sediment is being removed, but this only happens right where the dredging is occurring. These areas are anticipated to recover naturally once work stops. There will be no long-lasting damage to habitats in Limerick Dock (IE_SH_060_0900). Therefore, the activity is unlikely to prevent the waterbody from maintaining Good Ecological Status.
				Fish Species	No	Fish may temporarily move away from the area due to the noise and cloudiness caused by dredging, but this is short-term and normal. Once the work finishes, conditions go back to normal quickly. No barriers to fish passage will occur, and no long-term effects on fish populations or WFD biological quality elements are expected.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
				Water Quality	No	The dredging will make the water temporarily cloudy for a short time while sediment is disturbed. The turbidity will stay confined to the lock and will settle quickly after the work stops. The activity is unlikely to cause any ongoing or widespread change in water quality. As such, the project will not hinder reaching or maintaining 'Good' Status.
				Protected Areas	No	Even though Limerick Dock (IE_SH_060_0900) flows into protected sites further downstream, the disturbance from dredging stays very close to the lock and fades quickly. It is unlikely to travel far enough to reach any protected habitats or species, so it won't affect the WFD objectives for these areas. No deterioration of WFD Protected Area objectives is predicted to occur.
Dredging Phase	Mobilisation of dredging plant, barges and support vessels	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	No	Moving vessels in and out of the Limerick Dock (IE_SH_060_0900) will create some short-term propeller wash, but this disturbance is very small and happens only during mobilisation. It will not change the shape, flow or structure of Limerick Dock (IE_SH_060_0900). The area is already an active navigation channel being used by vessels daily, so the presence of the dredging vessel will be negligible. There will be no lasting physical impact on the

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
						waterbody that would hinder attainment or maintenance of 'Good' status.
				Habitats	No	Vessel movement can briefly stir up fine sediments and disturb animals living on the riverbed, but only right beside where the boats travel. These effects settle quickly once the vessels pass. No lasting damage to habitats are predicted to occur.
				Fish Species	No	Fish may temporarily move away because of increased noise, boat engines or small bursts of sediment from propeller wash. This is short-lived, happens over a very small area and does not affect the long-term health of fish populations.
				Water Quality	No	Mobilisation may cause brief, minor cloudiness in the water from sediment being stirred up by boat propellers. There is also a very small risk of accidental spills, but industry-standard controls (proper refuelling practices, spill kits) will prevent this. No long-term effect on water quality will occur that would hinder attainment or maintenance of 'Good' status.
				Protected Areas	No	Although the Dock is connected to designated sites downstream, the small, short-term disturbance caused by vessel mobilisation will stay close to Limerick Dock

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
						(IE_SH_060_0900) and settle quickly. It is not anticipated to travel far enough to reach any protected habitats or species.
Dredging Phase	Sediment Discharge	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	No	The discharge involves pumping a mixture of mostly water and fine silt (about 80% water, 20% sediment) back into the River Shannon at set locations. This adds a temporary plume of fine material to the river but does not change the shape of the riverbed, the direction of flow, or the structure of the channel. The discharge is timed to coincide with an ebb tide, meaning the river naturally carries the fine sediment away. No long-term physical changes are anticipated to occur.
				Habitats	No	The discharged material is very fine silt. It stays in the water for a short time before settling out naturally. Any effects on bottom-dwelling animals are short-lived and limited to a small area near the discharge points. The amount of material being added is small compared to natural sediment loads in the Shannon. Habitat conditions return to normal once the plume disperses.
				Fish Species	No	Fish may temporarily avoid the immediate discharge area because the water becomes cloudier during pumping. This cloudiness does not harm fish and clears quickly as the tide moves the water downstream. Fish

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
						can freely move around the area and return once the plume disperses. There is no lasting impact on fish health or movement.
				Water Quality	No	Discharging fine silt into the river will make the water briefly cloudy near the discharge points. Because the discharge happens on an ebb tide, the river quickly carries the cloudiness away and disperses it. The material being discharged is natural river silt (clean, not contaminated) and does not affect chemical water quality. The temporary increase in suspended solids settles out quickly and will not hinder attainment or maintenance of 'Good' status.
				Protected Areas	No	The temporary plume from the discharge will settle and disperse quickly in the strong tidal currents of the River Shannon. It will not travel far enough to reach any protected sites. The small amount of extra silt is similar to what naturally moves through the estuary every day. Therefore, there is no impact on protected habitats or species, and the activity will not affect WFD objectives for designated areas.
Dredging Phase	Transport of Dredged Material	Transitional Water	Limerick Dock (IE_SH_060_0900)	Hydromorphology	No	The movement of barges and support vessels will cause some small, temporary disturbance from propeller wash. This happens only along the navigation route inside Limerick Dock (IE_SH_060_0900). It does not

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
						change the shape of the riverbed or alter how water flows. Any disturbance settles quickly, so it will not affect the waterbody's physical condition.
				Habitats	No	Barge movements may stir up a small amount of fine sediment from the riverbed, which can briefly disturb bottom-dwelling species along the transport route. These effects are short-lived and happen only close to the vessels. Habitats recover naturally once the vessels pass.
				Fish Species	No	Fish may temporarily avoid the area because of noise and movement from the barges, but this is minor and does not last long. Fish can freely swim away and return once the vessels have passed. No long-term impacts on fish populations or behaviour are expected.
				Water Quality	No	Transporting the dredged material may briefly make the water slightly cloudy due to sediment being disturbed by propellers. The risk of accidental spills is very small and managed by standard good practice such as proper loading, secure transport and spill-response equipment. Water conditions return to normal quickly, and there is no lasting impact on water quality.

Phase	Activity	Water Resource	Waterbody Name and ID Number	Receptors	Will activity hinder reaching or maintaining 'Good' status?	Rational /Justification
				Protected Areas	No	Any disturbance caused by vessel movement is small and stays within Limerick Dock (IE_SH_060_0900). It does not travel downstream into protected sites. The activity will not affect any designated habitats or species and will not interfere with WFD objectives for protected areas.

7. Conclusion

The key focus of the assessment was to ensure that the set up and operation of the Proposed Project does not result in a deterioration in the current WFD status of the water bodies within the WFD study area, and also to ensure that the project does not compromise the achievement of the WFD objectives for the improvement in the overall status of these water bodies. The assessment also considers the protected areas linked to the water bodies in question and ensures that the protected area objectives are also unaffected.

With the implementation of the mitigation measures outlined above it is unlikely that the proposed project will cause any significant deterioration or change to the existing WFD status of waterbodies within the surrounding area of the Proposed Project. Therefore, the Proposed Project will not compromise the objectives of attaining 'good' surface water status in the WFD.

8. References

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