

AtkinsRéalis



WFD Assessment

Limerick City & County Council in partnership with
Limerick Twenty Thirty DAC

October 2025

100117216

CLEEVES RIVERSIDE QUARTER

Notice

This document and its contents have been prepared and are intended solely as information for Limerick City & County Council in partnership with Limerick Twenty Thirty DAC and use in relation to WFD Assessment of the proposed Cleeves Riverside Quarter development.

AtkinsRéalis Ireland Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 49 pages including the cover.

Document history

Document title: WFD Assessment

Document reference: 100117216

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0	Draft	RLM, CMcl, PS	CMcl	EDT	DL	01/08/2025
1.0	Draft	RLM, CMcl, PS	CMcl	KSS	DL	11/09/2025
2.0	Final	RLM, CMcl, PS	CMcl	KSS	DL	03/10/2025
3.0	Final	RLM, CMcl, PS	CMcl	KSS	DL	17/10/2025

Client signoff

Client	Limerick City & County Council in partnership with Limerick Twenty Thirty DAC
Project	CLEEVES RIVERSIDE QUARTER
Job number	100117216
Client signature/date	



Table of Contents

Table of Contents	3
1. Introduction.....	6
1.1 Legislative Drivers	7
1.1.1 The Water Framework Directive	7
1.1.2 Article 4.7	9
1.2 Surface Water Bodies	9
1.3 Groundwater Bodies	11
1.4 Purpose of the Report	11
2. Methodology	12
2.1 Stage 1 Screening Methodology	12
2.2 Stage 2 Scoping Methodology	12
2.3 Stage 3 Impact Assessment Methodology.....	13
3. Stage 1 Screening Assessment	14
3.1 Detailed Project Description.....	14
3.2 Project Activities	19
3.3 Stage 1 Screening Assessment Outcomes	20
4. Stage 2 Scoping Assessment	21
4.1 WFD Water Bodies Baseline	21
4.1.1 Hydromorphology	22
4.1.2 Biology – Habitats	22
4.1.3 Biology – Fish.....	22
4.1.4 Water Quality	22
4.1.5 Site Specific Water Quality Assessment.....	23
4.1.6 Protected Areas	24
4.1.7 Invasive Alien Species (IAS).....	25
4.2 Scoping assessment of WFD Water bodies	25
4.2.1 Limerick Dock.....	25
4.2.2 Upper Shannon Estuary.....	27
4.2.3 Shannon (Lower)_060.....	28
4.2.4 North Ballycannon_010.....	30
4.2.5 Crompaun (East)_010.....	31
4.2.6 Limerick City Northwest GWB.....	32
4.3 Hydrological Connectivity.....	33
4.4 Designated Protected Areas	35
5. Stage 3 Impact Assessment.....	37
5.1 Hydromorphology	37
5.2 Biology.....	37
5.2.1 Biology – Habitats	37



5.2.2	Biology – Fish.....	37
5.3	Water Quality	37
5.4	Protected Areas	37
5.5	Invasive Alien Species (IAS).....	38
5.5.1	Demolition	38
5.5.2	Excavation.....	40
5.5.3	Construction	41
5.5.4	Monitoring	44
5.6	Residual risks	44
6.	Conclusions	46
	References.....	47

Tables

Table 3-1 – Construction Phasing, and Timelines.....	16
Table 3-2 - Screening of Project Activities.....	19
Table 4-1 WFD Water Bodies included in this assessment and their current status	21
Table 4-2 - Limerick Dock. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Monitoring	25
Table 4-3 – Upper Shannon Estuary. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Monitoring	27
Table 4-4 – Shannon Lower. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Modelling.....	29
Table 4-5 – North Ballycannon. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Modelling.....	30
Table 4-6 – Crompaun East. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Monitoring	31
Table 4-7 - Limerick City Northwest. Quality Elements assessed for WFD Status 2016-2021.....	32
Table 5-1 - WFD Bodies and risk to WFD Quality Element Status after mitigation.....	44

Figures

Figure 3-1 - Site Location Map	17
Figure 3-2 - Proposed phasing plan – Stages 1 to 5 (refer to Table 3-1).....	17
Figure 3-3 - Proposed phasing plan - Stages 5-9 (refer to Table 3-1)	18



Figure 3-4 - Location of proposed development zone in relation to key WFD water bodies.....	18
Figure 4-1- Water quality sampling locations. (BH: Borehole, SW: Surface Water, US: Upstream, DS: Downstream, HT: High Tide, LT: Low Tide).....	23
Figure 4-2 - Westfields Wetland with Cleeves chimney visible in the background	34
Figure 4-3 – Regional Groundwater Vulnerability Rating (GSI, 2025)	35
Figure 4-4 - Designated Protected Areas: Lower River Shannon SAC and River Shannon & River Fergus Estuaries SPA.....	36



1. Introduction

This document is a Water Framework Directive (WFD) compliance assessment for the Cleevess Riverside Quarter, hereafter referred to as 'the Project' and as described in detail in Section 3. In summary, the Project comprises the following actions:

1. Demolition of a number of structures to facilitate development
2. Construction and phased delivery of:
 - a. Buildings within the site ranging in height from 3 – 7 stories (with screened plant at roof level) including:
 - i. 232 no. residential units
 - ii. 270 no. student bedspaces, Purpose Built Student Accommodation (PBSA) with ancillary resident services at ground floor level
 - iii. 256sqm of commercial floorspace
 - iv. A creche
 - b. Extensive public realm works including creation of the Flaxmill Plaza, riverside canopy and heritage interpretative panels
 - c. 3 no. dedicated bat houses
 - d. Mobility Hub with canopy
 - e. Pedestrian / cycle connectivity from North Circular Road to Condell Road
 - f. All ancillary site development works including:
 - i. Water services, foul and surface water drainage and associated connections across the site and serving each development zone
 - ii. Attenuation measures
 - iii. Raising the level of North Circular Road
 - iv. Car and bicycle parking
 - v. Public lighting
 - vi. New communication antenna on roof top of 3 no. buildings
 - vii. All landscaping works

Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.

It must be noted that the above is an abbreviated summary of the full project description, which can be found described in detail in Section 3.1. The proposed development referenced specifically in this WFD Assessment comprises Phase II of an overall Masterplan. Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application.

The WFD legislation aims to protect and enhance the quality of the water environment across Ireland by classifying the 'status or potential' of surface and groundwater bodies and setting a series of objectives for either maintaining or, where required, improving their condition.

Although not yet a statutory requirement in Ireland, WFD compliance assessments are increasingly undertaken for developments and schemes that have potential to impact and affect the water environment, such as that under consideration here. They are done to assess and determine whether a scheme might result in deterioration of current

ecological status, with the target being that all water bodies reach 'Good Ecological Status (GES)' by 2027. Additionally, they are undertaken to assess whether implementation of a scheme may present any reasons as to why a water body might not achieve relevant future objectives, i.e. from meeting GES.

In the case of Heavily Modified Water Bodies (HMWB), namely those that have been subject to significant physical modification or that are entirely artificial in nature, e.g. canals, there is a slightly different goal of achieving 'Good Ecological Potential (GEP)' by 2027' rather than GES, recognising that certain physical modifications cannot be fully restored. The issue of HMWBs is relevant here as the section of the River Shannon (Limerick Dock) where the Project is located is currently classified as a HMWB. This is explored in further detail in Section 4.

The generic environmental objectives set out below (based on Article 4.1 of the WFD) are used for the assessment of the proposed Project:

- No changes that will adversely affect high status sites;
- No changes that will cause failure to meet surface water GES or GEP, or result in a deterioration of surface water body ecological status or potential;
- No changes that will prevent or compromise environmental objectives being met in other water bodies; and
- No changes that will cause a failure to meet good groundwater status or result in a deterioration of groundwater status.

1.1 Legislative Drivers

1.1.1 The Water Framework Directive

Directive 2000/60/EC of the European Parliament, and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy (EU Parliament 2000), is collectively known as the 'Water Framework Directive (WFD)'. The WFD aims to protect and enhance the quality of the water environment across Ireland and other EU member states by classifying the 'status or potential' of surface and groundwater bodies, and by setting a series of objectives for either maintaining or, where required, improving their condition in order to attain 'Good Status' by 2027.

The Directive is implemented through a process of river basin management planning, as set out in River Basin Management Plans (RBMP) that are updated every six years. In Ireland, the whole country and all catchments within it are classified as a single river basin, and so there is only one national RBMP, with the most recent version, The Water Action Plan¹, constituting the RBMP for the period 2022-2027.

The EU WFD (2000/60/EC) was transposed into Irish law through the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), as amended and hereafter referred to as the Water Policy Regulations. This regulation gave legal effect to the WFD in Ireland, requiring the protection and improvement of water quality across rivers, lakes, groundwater, and coastal waters. The WFD requires all natural surface water bodies to achieve both Good Chemical Status (GCS) and Good Ecological Status (GES). It also requires that good status (both qualitative

¹ <https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/>
accessed May 2025

and quantitative) be achieved for all groundwater bodies, the prevention of the deterioration in groundwater status, and the reversal of significant and sustained upward trends in pollutant concentrations in groundwater.

Following initial Water Policy Regulations, the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009), as amended and hereafter referred to as the Surface Waters Regulations, and the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010) as amended, and hereafter referred to as the Groundwater Regulations, were both promulgated to further regulate WFD characterisation, monitoring, and status assessment programmes in Ireland. This was in terms of assigning responsibilities for the monitoring of various water categories, determining quality elements, and undertaking characterisation and classification assessments.

In addition, the Directive requires compliance with objectives and standards for protected areas, specifically listed in the RBMP, for the protection of surface water and groundwater, or for the conservation of habitats and species directly dependent on water. These are:

- Drinking Water Protected Areas
- Nutrient-Sensitive Areas
- Bathing Waters
- Shellfish Waters; and
- Natura 2000 Sites, i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated under the Habitats and Birds Directive, respectively.

Status is reported at 'water body' scale, with individual water bodies forming part of the larger RBMP. The process of river basin management planning includes the preparation of programmes of measures (PoM) for achieving the environmental objectives of the regulations, with progress made against these PoMs acting as the main reporting mechanisms.

Each RBMP documents the analysis, monitoring, objective-setting and consideration of measures required to maintain or improve status at a water body scale for both surface water and groundwater bodies. The first RBMPs covered the period from 2010-2015, followed by a second cycle plan which covered the period 2018-2021, and the current third cycle plan which covers the period 2022-2027, with the Water Action Plan for Ireland published in 2024. Consultation for the fourth cycle plan, 2028-2033 is currently underway.²

Sections of the River Shannon in Limerick are designated as HMWBs under the Water Framework Directive. This includes Limerick Dock, the transitional water body immediately bordering the proposed Project area. It is designated as a HMWB due to the presence of port facilities and embankments. According to the EPA's Technical Review of HMWB Designation (March 2022³), the Shannon Estuary (Upper and Lower) are classified as HMWBs. These designations are based on significant physical alterations primarily for:

- Navigation and port activities (e.g. dredging and quay walls)
- Flood protection infrastructure
- Urban and industrial development, including modifications to the estuarine morphology.

² <https://www.gov.ie/en/department-of-housing-local-government-and-heritage/consultations/public-consultation-on-the-timetable-and-work-programme-for-irelands-fourth-cycle-water-action-plan-2028-2033/> accessed May 2025

³ https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Technical-review-of-HMWB-designation_March-2022.pdf accessed May 2025

These modifications have substantially changed the hydromorphological characteristics of these sections of the Lower Shannon, making it impossible to achieve "good ecological status" without significant impact on the existing uses.

1.1.2 Article 4.7

Member states must adhere to the conditions of the WFD unless they meet the criteria laid out in Article 4.7 of the WFD. This states that member states will not be in breach of the WFD when:

- Failure to achieve good groundwater status, good ecological status or, where relevant, good ecological potential, or to prevent deterioration in the status of a body of surface water or groundwater, as the result of new modifications to the physical characteristics of a surface water body, or alterations to the groundwater level, or
- Failure to prevent deterioration from high status to good status of a body of surface water as the result of new sustainable human development activities.
- And all the following conditions are met:
 - All practicable steps are taken to mitigate the adverse impact on the status of the water body;
 - The reasons for those modifications or alterations are specifically set out and explained in the River Basin Management Plan required under Article 13 and the objectives reviewed every six years;
 - The reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development; and
 - The beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

1.2 Surface Water Bodies

Under the Water Framework Directive (WFD) in Ireland, Good Ecological Status (GES) is assessed using a combination of biological, hydromorphological, and physico-chemical elements, as follows:

- Biological Elements – the core indicators of ecological health are comprised of:
 - Fish populations
 - Macroinvertebrates⁴
 - Macrophytes
 - Phytobenthos⁵ (mainly diatoms⁶)
- Hydromorphological Elements – these are elements relating to the flow, form, and function of natural surface water bodies that support the biological elements, in that they influence habitat availability and quality of and for aquatic life. They are comprised of:

⁴ A macroinvertebrate is an animal without a backbone (invertebrate) that is large enough to be seen with the naked eye, typically larger than 0.5 mm. These organisms are commonly found in freshwater environments like rivers, streams, ponds, and lakes and include animals such as:

Insects (e.g., mayflies, dragonflies, caddisflies), Crustaceans (e.g., shrimp, crayfish), Molluscs (e.g., snails, bivalves), worms and leeches

⁵ Photosynthetic organisms that live attached to the bottom surfaces of aquatic environments, such as rocks, sediments, or submerged plants and animals

⁶ A diatom is a type of photosynthetic microscopic, single-celled algae with walls made of silica and a two-part 'shell' (frustule)

- Hydrological regime (e.g. flow variability and quantity)
- River continuity (e.g. presence or absence of artificial and natural barriers like dams, waterfalls etc)
- Morphological conditions (e.g. riverbed structure, bank structure, and substrata)
- Physico-Chemical Elements – these include general water quality parameters essential for maintaining healthy biological communities, as follows:
 - Nutrients (e.g. phosphorus and nitrogen levels)
 - Dissolved oxygen
 - Temperature
 - pH
 - Salinity
 - Ammonia
 - Specific Pollutants – 21 priority substances (plus five specific substances under the heading ‘Polyaromatic hydrocarbons’), including heavy metals and pesticides, that are monitored to ensure they do not exceed environmental quality standards.

All these elements are assessed to certain standards⁷ and considered together to determine whether a water body meets the criteria for Good Ecological Status. If any one of these elements fails, the overall status is downgraded to that lowest status.

The RBMP outlines the actions required to enable natural water bodies to achieve these objectives through a PoM. HMWBs are considered unable to attain GES due to the physical modifications that are necessary to maintain their function for society or their ‘human use’, as they provide important socioeconomic benefits. They are, however, still required to achieve GEP, through the implementation of a series of mitigation measures outlined in the RBMP that aim to enhance the ecology of the water body without compromising its human use. HMWBs also still need to attain GCS which, along with GEP, will collectively result in Good Status of these water bodies.

New activities and projects, such as the proposed Project, that affect or have the potential to affect the water environment, may adversely impact biological, hydromorphological, physico-chemical and/or chemical quality elements (QEs) and lead to a deterioration in water body status. They may also preclude the implementation, or effectiveness, of the proposed improvement measures (including mitigation measures in HMWBs), leading to the water body failing to meet its WFD objectives for GES/GEP.

Overall ecological status of a water body is primarily based on consideration of its biological QEs (phytoplankton, macrophytes, phytoenthos, macroinvertebrates and fish) and is determined by the lowest scoring of these elements. These biological elements are ‘supported’ by the physico-chemical (water quality) and hydromorphological (hydrological or tidal regime, river continuity and morphological conditions, i.e. habitat) QEs.

To achieve GCS, a water body must pass a separate chemical status assessment, relating to pass/fail checks on the concentrations of the 21 priority substances (plus five specific substances under the heading ‘Polyaromatic hydrocarbons’), including heavy metals and pesticides, as referred to above.

⁷ <https://www.irishstatutebook.ie/eli/2019/si/77/made/en/print> accessed June 2025

1.3 Groundwater Bodies

For the purposes of reporting under the WFD in Ireland, a groundwater body is delineated (see Approach to Delineation of Groundwater Bodies: Guidance document no. GW2, 2005⁸) based on the following characteristics:

- Hydrogeological boundaries (e.g. aquifer extent, flow systems)
- Aquifer type (e.g. karst, productive fissured, poorly productive, sand and gravel)
- Recharge and discharge zones
- Pressures and risks (e.g. pollution sources, abstraction)
- Connectivity with surface water and dependent ecosystems

For groundwater bodies, good status has a quantitative and a chemical component. Both are measured on a scale of good or poor, and a confidence rating is assigned to the status assessment of high or low. Together, these provide a single final classification of either good or poor status. There is also a trend objective set for groundwater water bodies where environmentally significant and sustained rising trends in pollutant concentrations need to be identified, along with a definition of the starting point (percentage of level or concentration) for trend reversal. Furthermore, the daughter directive of the WFD specifically concerning groundwater (the Groundwater Directive) also requires the prevention of any input of priority substances and limiting (or control) of the input of all other substances to groundwater to prevent the deterioration of status.

1.4 Purpose of the Report

The purpose of this report is to present a WFD Compliance Assessment for the proposed Cleaves Riverside Quarter development in Limerick.

In summary, the report aims to:

- Provide background information on the requirements of the WFD regulations and identify a baseline understanding of the relevant surface water and groundwater bodies in the zone of influence of the project within the context of the WFD;
- Provide a detailed project description of the proposed application and an assessment of the potential for the proposed Project to cause deterioration in the WFD status of any water body directly or indirectly, or the deterioration of any protected area objectives; and,
- Assess the potential impacts on water body improvement measures and the ability to meet WFD objectives.¹

⁸ <https://www.gsi.ie/documents/Groundwater%20Body%20Delineation.pdf> accessed May 2025

2. Methodology

In the absence of formal WFD assessment guidance in Ireland, this assessment has been carried out in accordance with the UK Environment Agency's guideline document 'Water Framework Directive assessment: Estuarine and Coastal Waters (Clearing the Waters for All)' (Environment Agency 2016, updated 2017). This guidance was used as the basis of the UK's Planning Inspectorate (PINS) Advisory Note 18 'Water Framework Directive' June 2017 (PINS 2017) wherein it sets out the stages of a WFD assessment. This guidance updates and replaces Clearing the Waters, the previous WFD guidance for dredging and disposal activities in estuarine and coastal waters. On this basis it was considered appropriate to use for the assessment of the proposed Project.

The PINS WFD assessment methodology is carried out in up to three stages:

1. Screening: assessing and excluding any activities of the Project that do not need to go through the scoping or impact assessment process;
2. Scoping: identifying the receptors that are potentially at risk from each Project activity and thus may need impact assessment; and,
3. Impact assessment: considering the potential impacts of each Project activity, determining ways to avoid or minimise these impacts, and deciding whether any given activity may cause deterioration or jeopardise a water body achieving good potential after mitigation.

Further details of these components are set out in the sections below.

A site visit was undertaken by Dr. Catherine McIntyre, Principal Water Quality Scientist, on 24th July 2025 to assess and better understand the condition of the site and the surrounding area, including the Westfields Wetlands.

2.1 Stage 1 Screening Methodology

Stage 1 Screening involves assessing and excluding any activities of the Project that do not need to go through subsequent scoping or impact assessment phases.

2.2 Stage 2 Scoping Methodology

Stage 2 Scoping identifies the ground or surface water bodies that have the potential to be impacted by activities of the proposed Project. For this assessment, any water body likely to be impacted by any part of the Project or associated development works was included in the assessment, as well as any surface water body downstream of the proposed area. Surface water bodies upstream of the proposed area were also considered, as the water body directly adjacent and hydrologically connected to the Project is tidal and thus has the potential to impact on upstream water bodies as well as those downstream.

The EPA's Catchment Data Explorer, <https://gis.epa.ie/EPAMaps/>⁹ was accessed to assess the water bodies present within the proposed Project's Study Area – the Cleaves Riverside Quarter site and all hydrologically connected waterbodies – including a thorough identification of watercourses within each water body, current available classification status for all water Quality Elements (QE) based on data from the 2016-2021 monitoring programme, pressures affecting the water bodies, WFD designation, WFD risk, and sensitivity to change. The WFD compliance mapping for groundwater risk and status assessment and Water Action Plan 2022-2027 were also utilised. Where there is no pathway for impacts to WFD water bodies by project activities, the water bodies have been subsequently scoped out of further assessment.

2.3 Stage 3 Impact Assessment Methodology

Once the proposed Development Activities have been Screened in/out, and their associated risk to water body QEs have been appropriately Scoped in/out, an impact assessment is undertaken, for those water bodies scoped in, to determine potential impacts on the water body elements they may impact. Water bodies scoped into Impact Assessment (if any) are assessed for potential deterioration, potential impacts to protected areas, as well as potential mechanisms of impact including hydromorphology, biology (habitats & fish), water quality, and IAS. Additionally, any potential mitigation measures are detailed at this stage which would be required to ensure that the relevant water bodies are able to attain their required WFD objectives.

⁹ <https://gis.epa.ie/EPAMaps/>, accessed June 2025

3. Stage 1 Screening Assessment

Stage 1 Screening involves assessing and excluding any activities of the Project that do not need to go through subsequent scoping or impact assessment phases.

3.1 Detailed Project Description

The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II is subsequent to ongoing stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

Two structures within the site are designated protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), which are to be retained.

The proposed development includes:

- A. Demolition of a number of structures to facilitate development including (i) Salesians Secondary School and Fernbank House; (ii) 2 no. houses on North Circular Road; (iii) Residual piers from the basin of the reservoir; (iv) Upper Reservoir on Stonetown Terrace comprising 2 no. concrete water tanks, pump house and liquid storage tank; (v) 1960's lean-to building structures adjoining the Cold Store (former Weaving Mill); (vi) remaining fabric of c20th rear lean-to of the Flaxmill Building; (vii) c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road; (viii) Cluster of buildings including altered part of the Linen Store, the former Linen Store, Storage Building, and Office/Lab building at O'Callaghan Strand / Stonetown Terrace with partial retention of existing stone wall; (ix) warehouse on the Shipyard site; and (x) partial removal of stone boundary wall defining the Cleeves site adjoining O'Callaghan Strand / Stonetown Terrace and around the Shipyard site.
- B Construction and phased delivery of:
 - i. Residential Development in 4 development 'zones' within the site ranging in height from 3 – 7 storeys (with screened service plant at roof level) comprising; (a) 234 no. residential units; (b) 270 no. student bedspaces with ancillary resident services at ground floor level; (c) 299sqm of commercial floorspace; and (d) a creche. The specific development details of each proposed development zone comprise the following:
 - Salesians Zone – 1 no. building with 2 no. blocks extending to 6 and 7 storeys comprising 146 no. apartments (76 no. 1 bed; and 70 no. 2 bed); a creche; semi basement car and bicycle parking; reception area, plant rooms, and refuse storage, with screened external plant and photovoltaic panels at roof level; 20 no. 3 storey 3 bed triplex units with photovoltaic panels at roof level; and 30 no. car parking spaces for the dedicated use of the adjoining Salesians Primary School.
 - Quarry Zone – 1 no. Purpose Built Student Accommodation (PBSA) building with 3 no. blocks extending to 6 and 7 storeys comprising 270 no. bedspaces with study rooms, shared areas, exercise room, reception area, plant rooms, refuse storage and bicycle parking all at ground floor level and screened external plant and photovoltaic panels at roof level. Provision is made for telecommunication antennae on the roof top of one block. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.
 - Stonetown Terrace Zone – 1 no. building extending to 4 - 5 storeys comprising 38 no. apartments (6 no. studios; 12 no. 1 beds; and 20 no. 2 beds) with plant rooms and refuse storage at ground level, ancillary infrastructure at basement level at northern end of the block, with screened external plant and photovoltaic



panels at roof level; 9 no. 3 storey 3 bed townhouses with photovoltaic panels at roof level; and a dedicated secure bicycle storage facility.

- O'Callaghan Strand Zone – 1 no. building extending to 4 / 5 storeys comprising 21 no. apartments (9 no. 1 bed and 12 no. 2 bed) with an open roof structure accommodating communal open space, plant and photovoltaic panels; and 299qm of commercial ground floorspace intended to accommodate Class 1, Class 2 and / or Class 3 uses, with provision for car parking in the undercroft.
- ii. Dedicated mobility hub with canopy and photovoltaic panels including double stacker bicycle parking; and EV Charging spaces, within the Shipyard Zone. A dedicated pedestrian/cycle link connects North Circular Road with Condell Road. The remaining area of the zone shall accommodate temporary car parking and a temporary external event space to be used on a periodic basis as the need arises, pending future redevelopment proposals as detailed in the Masterplan (Stage IV).
- iii. Extensive provision of Public Realm including creation of the Reservoir/Quarry Park, the Flaxmill Square and the Riverside Corridor. Significant areas of civic and green spaces are provided, incorporating formal and informal play space; nature based SuDs, permeability and access; and a riverside canopy with photovoltaic panels functioning as an outdoor event space and incorporating heritage interpretative panels
- iv. 3 no. dedicated bat houses;
- v. Telecommunication antennae on roof of Block 2A of the PBSA, including (a) 9 no. Support poles to support 2 no. antennae each; (b) 6 no. microwave dishes affixed to the plant screen; and (c) associated telecommunications equipment and cabinets (effectively screened). To facilitate technologically acceptable locations at the time of delivery, a micro-siting allowance of 3m is proposed on the roof top of Block 2A of the PBSA for the infrastructure.
- vi. Provision of vehicular access/egress points including (a) utilisation of existing access points to the Salesians Zone, to the Flaxmill and Quarry Zones and to the Mobility Hub on the Shipyard Site Zone; (ii) reopening an existing (currently blocked) access point off O'Callaghan Strand; (iii) new access points to the proposed undercroft carparking at Salesians from the North Circular Road and at the end of Stonetown Terrace road which provides access to the Stonetown Terrace Zone; and (iv) emergency access only from Stonetown Terrace to the Flaxmill Zone;
- vii. Provision of 30 no. dedicated car parking spaces to serve the Salesians Primary School; and
- viii. All ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and serving each development zone; (b) attenuation proposals; (c) raising the level of North Circular Road between Fernhill and O'Callaghan Strand; (d) refuse collection store (e) car and bicycle parking to serve the development; (f) public lighting; (g) all landscaping works.; and (h) temporary construction measures including (i) construction access to the Quarry site including provision of a temporary access across the reservoir; and (ii) temporary use of onsite mobile crusher.

The following figures detail the site location map (Figure 3-1), the phasing of the proposed planning application with reference to Table 3-1 (Figure 3-2 and 3-3), and the location of proposed development zone in relation to the relevant WFD surface water body, Limerick Dock (Figure 3-4).

The construction phasing and timelines for each stage (Stage 1 to Stage 9) of the proposed development is presented in Table 3-1 below.



Table 3-1 – Construction Phasing, and Timelines

Stage	Description	Estimated Start and End	Construction Duration (months)
Stage 1	Construction of Bat Houses - A 3-month period is allocated exclusively to this stage to allow bats on-site to adjust to their new accommodation. No other construction activity will overlap with this stage.	Q1 2027	3months
Stage 2	Site Demolition and Enabling Works - This stage involves demolishing identified buildings and structures to facilitate development and installing enabling drainage infrastructure across the Flaxmill area. Temporary surface treatments will be applied to support access to the upper-level sites (Salesians and Stonetown). Asbestos removal, pre-condition surveys and removal of contaminated soils across the development as required will be undertaken during this stage of works.	Q2 2027 – Q2 2028	12-15months
Stage 3	Flood Protection Works - Raising the North Circular Road and implementing other flood protection measures will occur concurrently with Stage 2 and is expected to take 15 months.	Q2 2027 – Q2 2028	15months
Stage 4	Salesians Zone Development - Construction of apartments and townhouses, along with local public realm and communal open spaces, will begin midway through Stage 2	Q1 2028 – Q4 2029	18-24months
Stage 5	Stonetown Terrace Zone Development - This stage will likely begin alongside Stage 4 and take 15–18 months. Given its timeline, Stonetown Terrace is expected to be the first zone ready for occupation	Q1 2028 – Q2 2029	15-18months
Stage 6	O'Callaghan Strand Zone Development - Construction of apartments in this zone will begin midway through the Stonetown Terrace works and is expected to take 15 months, likely completing before the Salesians Zone	Q3 2028 – Q3 2029	15months
Stage 7	Quarry Zone PBSA and Public Realm - This stage includes the construction of Purpose-Built Student Accommodation (PBSA) and associated amenities, as well as public realm improvements around the reservoir.	Q3 2028 – Q2 2030	24months
Stage 8	Flaxmill Plaza and Riverside Public Realm - Delivery of Flaxmill Plaza and riverside canopy works is anticipated to take 15 months. This stage will begin after the completion of Stonetown Terrace but before the Salesians Zone is finished. Completion is expected to align with the PBSA	Q2 2029 - Q2 2030	15months
Stage 9	Shipyards Mobility Hub - The final stage involves constructing the Mobility Hub on the Shipyards site, along with associated site works. This will commence once all other stages are complete and is expected to take 6 months	Q3 2030 - Q4 2030	6months



Figure 3-1 - Site Location Map

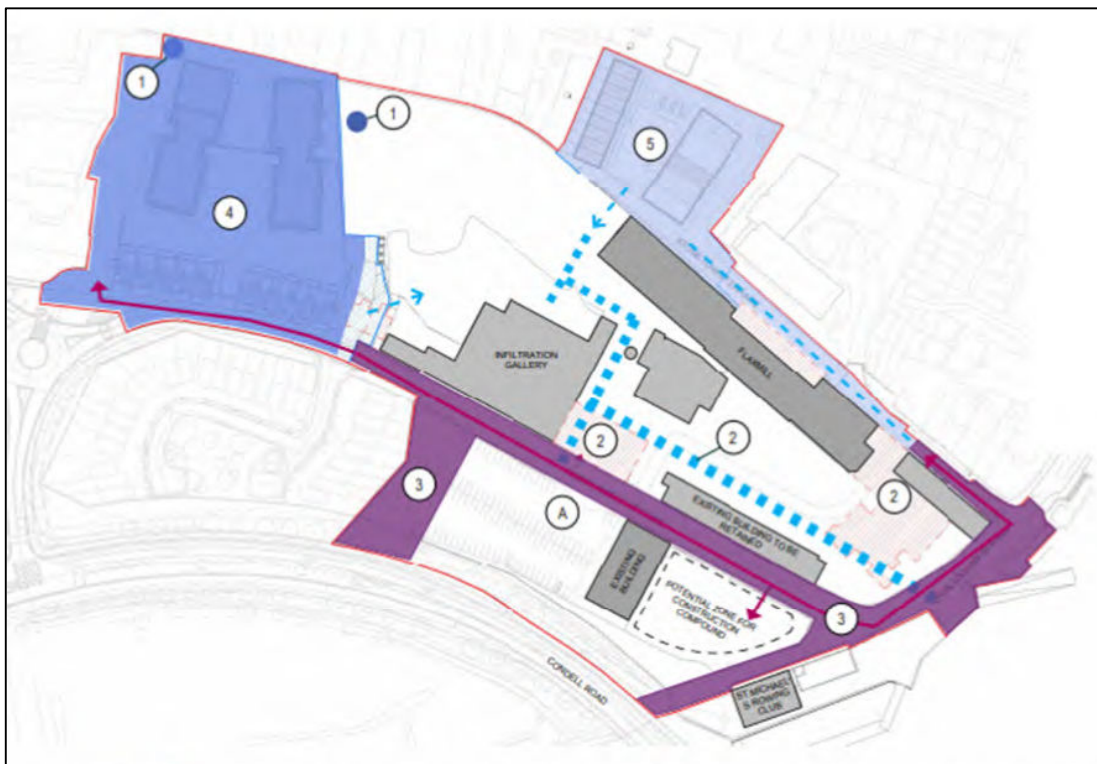


Figure 3-2 - Proposed phasing plan – Stages 1 to 5 (refer to Table 3-1).





Figure 3-3 - Proposed phasing plan - Stages 5-9 (refer to Table 3-1)

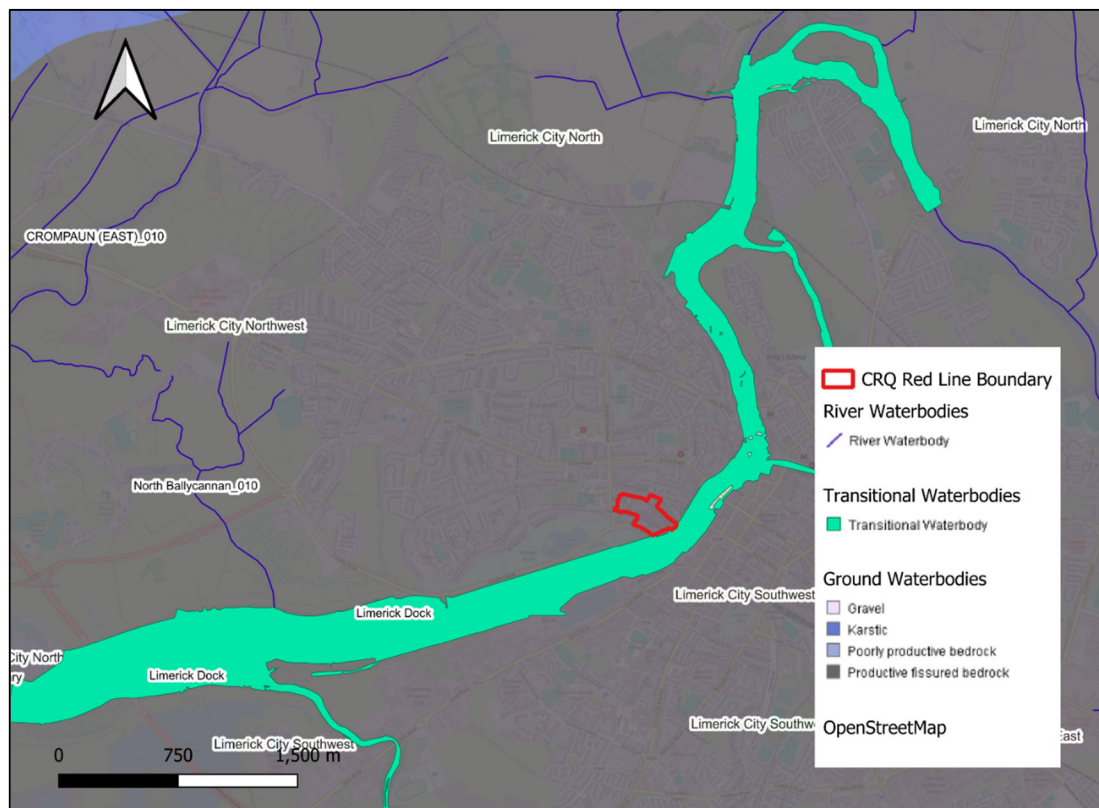


Figure 3-4 - Location of proposed development zone in relation to key WFD water bodies

3.2 Project Activities

Project activities which may pose a potential risk have been identified in the following table (Table 3-2). A source-pathway-receptor (s-p-r) approach was utilised to identify which activities have the potential to impact on water body receptors by hydrological pathways and thus which are screened in/out from further assessment. The water bodies which have the potential to face impact and were utilised in this s-p-r are fully detailed in section 4: Stage 2 Scoping Assessment.

Table 3-2 - Screening of Project Activities

Project Activity	Potential Impact	Screened In / Out
Demolition	Hazardous materials, i.e. asbestos identified in buildings for demolition. Rock crushing on site. Mobilisation of particulate material.	In
Excavation	Potential for groundwater ingress in excavation works. Mobilisation of soil, sediment, and potentially hazardous material	In
Pile Foundations	Potential for groundwater ingress and mobilisation of contaminant material and sediment	In
Removal of concrete piers from reservoir	Mobilisation of sediment and concrete material	In
Construction - Superstructures	Precast concrete is preferred. Where wet concreting is used, potential for impact on water quality	In
Construction - External Structures	No impact from canopies. Potential impact from reinforced concrete piers inserted into reservoir to support stairs and walkway. Disturbance of sediment and benthic communities.	In
Construction – Raising the level of North Circular Road between Fernhill and O’Callaghan Strand	Mobilisation of earth, sediment.	In
Construction – Spills from fuel and chemicals used on site	Contamination of surface and ground water	In
Operation – Surface water runoff/discharge	Surface water collection via SuDS measures and drains to include petrol interceptors. No impact anticipated.	Out



Operation – Foul water discharge	Foul water to be collected and distributed to existing wastewater network with capacity managed by low flow fixtures and fittings. No impact anticipated.	Out
---	---	-----

3.3 Stage 1 Screening Assessment Outcomes

A screening of the proposed Project identified a number of activities during demolition, excavation, and construction that have the potential to impact on the WFD Status of receiving water bodies. Activities which have been Screened In for further assessment include;

- Demolition – through the mobilisation of particulate matter or hazardous substances.
- Excavation – through potential groundwater ingress and subsequent contamination.
- Pile foundations – through potential groundwater ingress and subsequent contamination.
- Removal of concrete piers from reservoir – through mobilisation of sediment and concrete.
- Construction of superstructures – potential impact on water quality if wet concrete methods are chosen. Pre-cast concrete is the recommended option to avoid impacts on ecological status.
- Construction of external structures - potential impact from reinforced concrete piers inserted into reservoir to support stairs and walkway through disturbance of sediment and benthic communities.
- Construction to raise level of North Circular Road – through mobilisation of sediment.
- Spills from fuels and chemicals used on site during construction.

In short, all construction activities have been screened in.

The following Section identifies the relevant WFD water bodies which may face potential impacts through these activities and thus require subsequent mitigation measures.

4. Stage 2 Scoping Assessment

Stage 2 Scoping identifies the ground or surface WFD water bodies with potential to be impacted by activities of the proposed Project. For this assessment, any water body likely to be impacted by any part of the Project or associated development works was identified for inclusion in the assessment, as well as any surface water body downstream or upstream, given the tidal character of the Limerick Dock transitional water body, of the proposed area. Likelihood of potential impact was assessed utilising a s-p-r approach to determine which (if any) of the associated water bodies may require further impact assessment.

The EPA's Catchment Data Explorer, <https://gis.epa.ie/EPAMaps/> was used¹⁰ to assess the water bodies present within the proposed Project's Study Area including a thorough identification of watercourses within each water body, current available classification status for all water Quality Elements (QE) based on data from the 2016-2021 monitoring programme, pressures affecting the water bodies, WFD designation, WFD risk, and sensitivity to change. The WFD compliance mapping for groundwater risk and status assessment and Water Action Plan 2022-2027 were also utilised. Where there is no pathway for impacts to WFD water bodies by project activities, the water bodies have been subsequently scoped out of further assessment.

There are six water bodies identified for this WFD assessment; five surface water bodies and one ground water body.

4.1 WFD Water Bodies Baseline

The proposed Project lies within the Lower Shannon sub-catchment, hydrologically connected (see Section 4.3) to WFD transitional water body Limerick Dock (IE_SH_060_0900). The downstream receiving water body for Limerick Dock is the transitional water body Upper Shannon Estuary (IE_SH_060_0800), while the upstream inputting surface water bodies for Limerick Dock are North_Ballycannon_010 and SHANNON (LOWER)_060. Limerick Dock is the immediate adjacent watercourse to the proposed Project and thus is the primary water body considered.

North Ballcannon (IE_SH25N170970) and Crompaun East (IE_SH27C090600) are two receiving water bodies from the inputting Groundwater body Limerick City Northwest (IE_SH_GW_140) (see section 4.2.2).

Five surface water bodies and one groundwater body are considered in this assessment:

Table 4-1 WFD Water Bodies included in this assessment and their current status

WFD Water body	ID Code	Category	Status (2016-2021)	Risk (3rd Cycle)
Limerick Dock	IE_SH_060_0900	Transitional	Poor	At risk
Upper Shannon Estuary	IE_SH_060_0800	Transitional	Poor	At risk
Shannon (Lower)_060	IE_SH25S012600	River	Moderate	Review
North Ballycannon_010	IE_SH25N170970	River	Good	Not at risk
Crompaun (East)_010	IE_SH27C090600	River	Poor	At risk
Limerick City Northwest	IE_SH_G_140	Groundwater Body	Good	At risk

¹⁰ <https://gis.epa.ie/EPAMaps/>, accessed June 2025

4.1.1 Hydromorphology

Hydromorphology refers to the set of physical characteristics and processes, such as sediment transfer, formation of riffles and pools etc., of a water body that support a water body's ecological health and function. For the transitional water body Limerick Dock (IE_SH_060_0900), the baseline hydromorphology is designated as HMWB. This is due to the presence of extensive port facilities, and embankments etc. that have severely altered the natural shape (straightening) of the channel, changed the river banks (armouring), altered and deepened the channel (dredging) and changed the hydromorphological functioning (change in sediment flow and deposition) of the river channel. The connection of this water body with its surrounds, floodplain etc. has also been severely altered. It is for these reasons the site is classified as in 'Poor Ecological Potential'.

4.1.2 Biology – Habitats

Habitats present within the proposed Project site comprise mainly those typical of a built urban environment which do not provide significant supporting habitat for terrestrial biodiversity, excluding bats. Mammal and Wintering Bird surveys have been carried out which conclude that the Project site does not provide suitable habitat to support breeding protected mammals (i.e. badger, otter, etc) or SCI species associated with the nearby Designated Protected Areas. The nearby Westfields Wetland has multiple habitat types including Tidal River/Infralittoral muds (CW2/SS3), Reed and large sedge swamps (FS1) and Tall-herb swamps (FS2). Refer to Chapter 7 – Biodiversity of the EIAR for more detailed discussion of the existing habitats.

4.1.3 Biology – Fish

The Shannon transitional water bodies are the largest in the country. Not only is this estuary a crucial transit route for diadromous fish species, such as salmon and eel, but the most recent fish stock surveys (2017) indicate that the estuary is also a nursery for marine species of significant importance (both angling & conservation). Limerick Dock, the WFD water body directly adjacent (and hydrologically connected) to the proposed Project, has the lowest species richness of all the estuarine water bodies, a deterioration to 8 species (Poor status) compared to the 13 species (Moderate status) recorded in the previous fish stock survey in 2014. In the 2017 fish stock survey, Limerick Dock was assessed in combination with the Upper and Lower Shannon Estuary water bodies to form a singular Shannon Estuary monitoring zone, while in the 2014 fish stock survey it was assessed individually. In the 2014 assessment, the most abundant species were flounder and smelt, however several other species including lamprey, plaice, sand goby, smelt, sprat, thick-lipped grey mullet, and European eel were also present. Dace, an invasive species, was newly recorded in 2014, while common goby, pike, and salmon were caught in the 2008 fish stock survey but not in 2014. Due to the combined surveying of the entire Shannon Estuary in 2017, there are no records of which specific species were found in Limerick Dock. Refer to Chapter 7 – Biodiversity, of the EIAR for more detailed discussion of the fish ecology.

4.1.4 Water Quality

The characteristics relating to water quality that are monitored in the assessment of the WFD ecological status or potential of the screened in water bodies are the physico-chemical parameters including: (i) Oxygenation conditions; (ii) Nutrients – nitrogen and phosphorus; (iii) Acidification Conditions; and (iv) Specific Pollutant Conditions. All water quality elements assessed by the WFD methodology for 2016-2021 have been either "high" or "pass" and determined on the basis of either monitoring or modelling. Deterioration of these conditions would have knock on consequences for the biological habitats and species and impact the WFD status of these elements.

4.1.5 Site Specific Water Quality Assessment

A water quality monitoring programme has been carried out at the site by Priority Geotechnical Ltd (2025), comprising groundwater sampling from selected representative monitoring boreholes, the onsite reservoir (SW01), and nearby surface water in the River Shannon (at key locations upstream, and downstream of the site, as well as at the discharge outfall from site to the River Shannon).¹¹ Water samples, collected during the baseline assessment were analysed at Eurofins UK, a UKAS accredited laboratory. It is noted that some sample results had deviation codes. Accordingly these results have been discussed and considered, noting these deviations. This limitation has no material impact on the findings of this assessment. The residual impacts as stated within this assessment remain valid.

Tabulated and screened results are presented in Appendix 11-1, Chapter 11 of the EIAR. Sample locations are presented in Figure 4-1. Samples were taken on two dates (20th May 2025 and 8th July 2025) and, in the case of the surface water samples, at high tide and at low tide on 8th July.

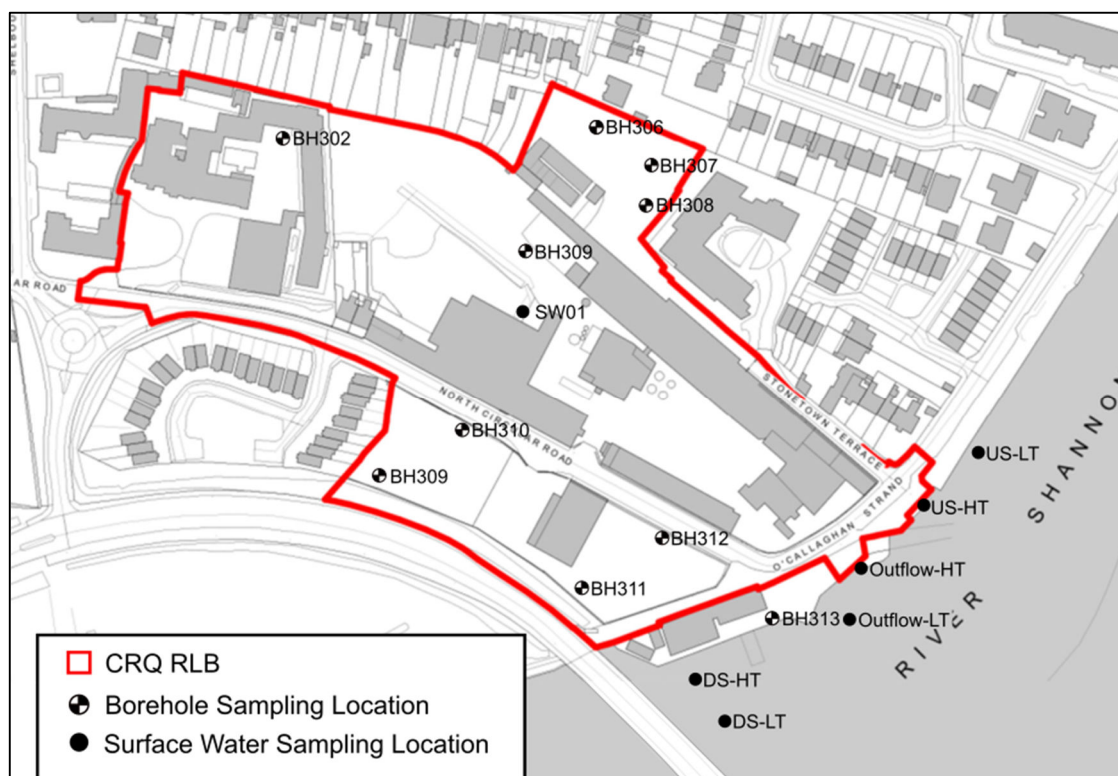


Figure 4-1- Water quality sampling locations. (BH: Borehole, SW: Surface Water, US: Upstream, DS: Downstream, HT: High Tide, LT: Low Tide)

Analytical results were screened against relevant Generic Assessment Criteria (GAC) which are statutory surface water regulation (SI 272/2009; SI 327/2012; SI 386/2015; SI 77/2019).

¹¹ Note – preliminary samples were analysed at Eurofins UK, and all had deviation codes (B - Sample age exceeds stability time (sampling to extraction); C - Sample not received in appropriate containers; H - Appropriate cooling measures were not taken for sample transportation; or a combination of these). As such, the analysis was not in accordance with accreditation standards.

4.1.5.1 Surface Water Results

For the majority of quantitative results, values for determinands were below the statutory thresholds where given. However, there were exceedances observed for BOD for five of the six surface water samples taken from the River Shannon on 08 July. The sixth sample – the outfall sample taken at high tide on that date is on the threshold for BOD (4.0 mg/L). The BOD value for the reservoir on site is 3.0 mg/L for that date. Typically, values for BOD in the River Shannon as monitored by the EPA and reported on catchments.ie are below the statutory threshold of ≤ 4.0 mg/L (95%ile). There have been three exceedances in the last 10 years. Since the upstream value also exceeds the threshold, it is unlikely that the BOD level in the surface water of the River Shannon is negatively impacted by baseline water quality at the proposed development site in this instance.

Potential exceedances are recorded for hexavalent chromium (Cr(VI)) at the outfall on 08 July at both high and low tide. The relevant GAC is 0.6 µg/L AA-EQS, i.e. annual average value environmental quality standard. Therefore, 12 samples over the year would be needed to determine if there is a breach of the EQS value for Cr(VI). Based on the water sampling results, surface water in the reservoir, despite its connectivity to the River Shannon via the outfall pipe, does not appear to be the source of the Cr(VI) as the results for this location were below the limit of detection on both occasions.

4.1.5.2 Groundwater Results

Most of the determinands analysed in the groundwater were below the relevant GAC threshold values. However, there were a number of exceedances. The most frequent exceedance was in ammoniacal nitrogen, with results above the IGTV (EPA 2003) threshold value of 0.15 mg/L found in all but two samples – BH306, and BH308 which had insufficient sample on 20 May 2025. There is no statutory threshold for ammoniacal nitrogen for transitional waterbodies, therefore there were no exceedances observed for the surface water samples. However, the values of ammoniacal nitrogen determined for the surface water were in the same range (average 0.44 mg/L) as those determined for the groundwater samples, including those taken from the River Shannon. This is in contradiction to the ammonia-N recorded at the EPA monitoring stations for Limerick Dock, which consistently average at 0.06 mg/L.

Other exceedances identified in the results are summarised as follows: pH (BH309, 20 May 2025); chloride (BH302, BH309, BH310, BH312, BH314, 20 May 2025; BH313, BH314, 08 July 2025); phosphate (BH310, 20 May 2025); sulphate (BH309, 20 May 2025); manganese (BH312, 20 May 2025 and 08 July 2025, BH313, 08 July 2025), and fluoranthene (BH312, 20 May 2025).

4.1.6 Protected Areas

The Project site is directly adjacent, and hydrologically connected, to Limerick Dock, a transitional water body which is part of the Lower River Shannon SAC and the River Shannon & River Fergus Estuaries SPA. This SAC has many qualifying interests, of which estuarine environments (the two transitional water bodies listed) are the primary habitat of interest for the proposed Project site.

The site is also adjacent and hydrologically connected to the Westfields Wetlands, part of the River Shannon & River Fergus Estuaries SPA. This SPA's qualifying interests in this area are primarily wetland and waterbirds.

4.1.7 Invasive Alien Species (IAS)

There are a number of IAS records for the broader region, including the Westfields Wetland adjacent to the application site, as well as upstream along the River Shannon in the Limerick Dock WFD transitional water body. These IAS records are primarily for Japanese Knotweed (*Reynoutria japonica*), though there are also a small number of Giant Hogweed & Himalayan Balsam records as well.

An Invasive Alien Species Site Assessment Report & Management Plan was conducted for the proposed Project site in 2021 which found viable 3rd schedule IAS (Japanese Knotweed, Himalayan Knotweed) and noted that based on the time of year site inspections were carried out (the early 2021 growing season for Himalayan Knotweed, for example) it is possible that additional IAS could present beyond the limits of those recorded. Other non-Third Schedule species (primarily Butterfly Bush, *Buddleia davidii*) have been identified on site as well. The report suggested further site monitoring visits during the summer growing period, as well as a number of other mitigation measures which are discussed in brief in section 5.5. An updated invasive species management plan has been prepared and accompanies this planning application.

4.2 Scoping assessment of WFD Water bodies

The following scoping assessment examines the risks to the WFD status of each water body due to the project activities. The quality elements listed are those which are assessed in the determination of the WFD Status, and the current status is noted. The assessment technique (Monitoring or Modelling) is given for the surface water bodies. It must be noted that elements assessed for WFD status are often inconsistent, even across the same water body type. There are variations of parameters monitored, and some are modelled only.

4.2.1 Limerick Dock

Limerick Dock is a transitional water body located in the Lower Shannon and Mulkear Catchment. The water body covers a total area of 3.30 km², most of which is bordered by urban development. It is designated as a HMWB due to its historic port facilities and associated embankments.

Limerick Dock is currently classified as 'At Risk' of not meeting its WFD objectives. The significant risk issues are a combination of altered habitats, due to morphological change, and poor fish status or potential. Although it is clear that the presence of port facilities and embankments are a significant pressure adversely impacting the hydromorphological status at this location, the Catchment Assessment (2018) states that further work is needed to determine what the significant pressures adversely impacting fish status are. Nutrient conditions improved during the 2016-2021 monitoring period compared to previous monitoring cycles and are now at Good status. The 2018 Catchment Assessment states that it appears that no further nutrient reductions are now required. The site's physico-chemical conditions are classed as High, and specific pollutant conditions pass required levels.

Table 4-2 - Limerick Dock. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Monitoring

Element	Current Status	Risk
Biological Elements		
Phytoplankton	High	No in-channel works are proposed, therefore there are no direct risks to aquatic habitats. However, indirect risks remain as a result of impacts on



		water quality due to project activities and therefore the quality of the biological habitat. Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids, chemicals from spills, or pollutants could be mobilised from the site impacting the habitat for phytoplankton species. During the operational phase, surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Fish Status	Poor	No in-channel works are proposed, therefore there are no direct risks to aquatic habitats. However, indirect risks remain as a result of impacts on water quality due to project activities and therefore the quality of the biological habitat. Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids, chemicals from spills, or pollutants could be mobilised from the site impacting the habitat for fish species. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Hydromorphological conditions	Moderate	No in-channel works or alterations to the water body or riverbank are proposed; there are, therefore, no risks to hydromorphological elements
Supporting Chemistry Conditions		
Oxygenation Conditions, Dissolved Oxygen (% Sat), Other determinand for oxygenation conditions	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids, chemicals from spills, or pollutants could be mobilised from the site impacting the oxygenation conditions of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Nutrient Conditions - Phosphorus	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul



		waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Specific Pollutant Conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids, chemicals from spills, or pollutants could be mobilised from the site adding pollutants to the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.

4.2.2 Upper Shannon Estuary

Upper Shannon Estuary is a transitional water body, immediately downstream of Limerick Dock. Due to the tidal nature of the transitional water bodies, Upper Shannon Estuary is both a receiving and inputting water body to Limerick Dock.

Table 4-3 – Upper Shannon Estuary. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Monitoring

Element	Current Status	Risk
Biological Elements		
Phytoplankton	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids, chemicals from spills, or pollutants could be mobilised from the site impacting the habitat for phytoplankton species. During the operational phase, surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Other Aquatic Flora	Poor	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids, chemicals from spills, or pollutants could be mobilised from the site impacting the habitat for aquatic flora. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Invertebrate Status	Poor	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from

		spills, suspended solids or pollutants could be mobilised from the site impacting the habitat for invertebrates. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Hydromorphological Conditions	Good	No in-channel works or alterations to the water body or riverbank are proposed; there are, therefore, no risks to hydromorphological elements
Physico-Chemical Conditions		
Oxygenation Conditions, Dissolved Oxygen (% Sat), Other determinand for oxygenation conditions	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from spills, suspended solids or pollutants could be mobilised from the site impacting the oxygenation conditions of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Nutrient Conditions - Phosphorus	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Specific Pollutant Conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from spills, suspended solids or pollutants could be mobilised from the site adding pollutants to the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.

4.2.3 Shannon (Lower)_060

Shannon Lower is a river water body immediately upstream of Limerick Dock and is an inputting water body for Limerick Dock. However, given the tidal nature of Limerick Dock, there is a small chance of Shannon Lower acting as a receiving water body.

Table 4-4 – Shannon Lower. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Modelling

Element	Current Status	Risk
Physico-Chemical Conditions		
Oxygenation Conditions, Dissolved Oxygen (% Sat), Other determinand for oxygenation conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from spills, suspended solids or pollutants could be mobilised from the site impacting the oxygenation conditions of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Acidification Conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids or pollutants could be mobilised from the site impacting the pH status of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Nutrient Conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Nitrogen Conditions	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Phosphorus conditions	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could

		be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
--	--	---

4.2.4 North Ballycannan_010

North Ballycannan is a river water body which is an inputting water body for Limerick Dock and a receiving water body for Limerick City Northwest groundwater body.

Table 4-5 – North Ballycannan. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Modelling

Element	Current Status	Risk
Physico-Chemical Conditions		
Oxygenation Conditions, Dissolved Oxygen (% Sat), Other determinand for oxygenation conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from spills, suspended solids or pollutants could be mobilised from the site impacting the oxygenation conditions of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Acidification Conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from spills, suspended solids or pollutants could be mobilised from the site impacting the pH status of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Nutrient Conditions	Pass	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste

		is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Nitrogen Conditions	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Phosphorus conditions	High	Without mitigation measures in place during demolition, excavation and construction activities, sediments, suspended solids or nutrient pollutants could be mobilised from the site impacting the nutrient concentrations of the water body. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.

4.2.5 Crompaun (East)_010

Crompaun East is a river water body which is a receiving water body for Limerick City Northwest groundwater body.

Table 4-6 – Crompaun East. Quality Elements assessed for WFD Status 2016-2021. Assessment technique: Monitoring

Element	Current Status	Risk
Biological		
Invertebrate Status or Potential	Poor	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, chemicals from spills, suspended solids or pollutants could be mobilised from the site impacting the habitat for invertebrates. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.

4.2.6 Limerick City Northwest GWB

One groundwater body is considered in this assessment: Limerick City Northwest (IE_SH_G_140).

The proposed Development site lies entirely within the area of this groundwater body. It is currently at Good (GW) status, having improved from Poor (GW) status in the 2010-2015 monitoring period due to total Phosphorus nutrient load failure for Chemical Status. Since the 2016-2021 monitoring period, nutrient load seems to be satisfactory and requires no further reduction. The groundwater body is, however, still classified as At Risk of not meeting its WFD objectives – this is due to its hydrological connection to surface water bodies that are also At Risk where groundwater contribution of phosphate has an impact.

Groundwater flow in this water body occurs along fractures, joints, and faults in the limestones and volcanic rocks of its geology. There is likely to be an epikarstic layer at the top of the limestone – a weathered zone of enhanced porosity that can easily channel water and that acts to redistribute recharge in the subsurface. In high water table conditions, this epikarst acts as a very high transmissivity layer even though the aquifers have low storativity. This means that it has the capacity to easily allow flow, despite not having the capacity to hold and store water long-term. Recharge of the groundwater is inhibited by the extensive presence of hard and impermeable surfaces in its largely urban setting. Limerick City Northwest (GW) feeds two surface water bodies; North Ballcannon (IE_SH25N170970) and Crompaun East (IE_SH27C090600) discussed in section 4.2.1.

Table 4-7 - Limerick City Northwest. Quality Elements assessed for WFD Status 2016-2021.

Element	Current Status	Risk
Quantitative Groundwater Status	Good	During the construction phase, demolition, excavation and construction activities are not anticipated to impact the quantitative groundwater status or hydrological connections to other water bodies. During the operational phase surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Excess runoff from sites and SuDS is routed to the reservoir for attenuation. Surface water calculations prove that there is sufficient capacity in the reservoir to attenuate excess runoff for a 1:100 year storm (plus 30% climate change and 10% urban creep) from adjacent sites. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
Chemical Groundwater Status	Good	Without mitigation measures in place during demolition, excavation and construction activities, sediments, hazardous substances, suspended solids or pollutants could be mobilised from the site impacting the chemical status of the groundwater. Excavation works for foundations raise the particular risk of groundwater ingress leading to groundwater contamination from sediments and pollutants. Based on the soils analytical data (presented in further detail in Chapter 10 of the EIAR), 8no. contaminants of potential concern have been identified within the soils and made ground beneath the Site, summarized as follows:



		- Asbestos Containing Material (ACM) in the form of Fibre/Clumps identified in 3no. samples (BH308, BH305 and BH306). Asbestos was also identified in 2no. samples (BH305 and BH306). - Arsenic: Exceedances (with respect to the relevant soils Generic Assessment Criteria (GAC) were identified in 3no. samples (TP309, TP321 and BH309). - Lead: Exceedances were identified in 11no. samples (BH307, BH311, BH310, TP303, TP322, TP317, TP320, TP321, BH309, and TP318) - Benzene: One exceedance was identified at BH314. - Naphthalene: One exceedance was identified at TP321. - Fluoranthene: One exceedance was identified at TP321. - Benzo[a]pyrene: Exceedances were identified in 4no. samples (BH311, TP303 and TP321). - Total Petroleum Hydrocarbons (TPH): Potential sources of TPH measured by the presence of PAHs in the soil were identified in 3no. samples (BH311, and TP321). However ACMs will be removed from site (in accordance with all relevant waste management legislation), and the above exceedances are either: - located within portions of the site where made ground / soils will require excavation and removal from site during the site enabling phase, prior to commencement of excavation works for foundations, or - located at depth beneath the Shipyard Zone of the proposed development, where excavations will be shallow (to facilitate utilities and drainage installation) and unlikely to encounter groundwater. Therefore no impacts to the chemical status of the groundwater will occur during the excavation works for foundations. Construction of shallow pile foundations, planned for the Stonetown Terrace site are at risk of groundwater ingress, with potential for groundwater contamination from sediments and pollutants. During the operational phase, surface runoff will be collected via SuDS measures and surface runoff drains will include petrol interceptors. Foul waste is to be collected and distributed through existing Uisce Éireann sewer networks. No impacts are anticipated from the operational phase.
--	--	---

4.3 Hydrological Connectivity

The site is hydrologically connected to the Limerick Dock WFD transitional water body of the River Shannon. A discharge pipe connects the reservoir on site with an outfall to the River Shannon at Limerick Dock. The Limerick Dock water body flows into the Upper Shannon Estuary and also has a very slight potential to impact the upstream Shannon Lower WFD river body due to the tidal nature of the Shannon Estuary. Immediately downstream of the site



is the River Shannon and River Fergus Estuaries SPA, a WFD registered SPA with Water Dependent Habitats/Species.

Additionally, the site is adjacent to the Westfields Wetland (Figure 4-2) which has connectivity to the Limerick Dock transitional water body with input from Limerick Dock during high tide. Westfields Wetland and Limerick Dock form part of the Lower River Shannon SAC (002165), a WFD registered SAC with Water Dependent Habitats/Species. Westfields serves as a popular local amenity, attracting a diverse range of wildlife, including migrating wildfowl. A spring is located in the Eastern Wetland. The spring is reported to have been used by the Cleeve's Factory as a water source until the 1950's when it was capped with a steel plate. However, this is unconfirmed. The wetland is connected to the River Shannon via a pipe that flows into the wetland at high tide and out at low tide. Direct connectivity of the site itself to the wetland has not been established but cannot be discounted. There are no currently available records which show a connection between the spring source at the Westfield Wetlands and the proposed development site. Accordingly, for the purpose of this assessment, it is conservatively assumed that there is an existing viable direct connection between the Wetlands and the proposed development (via. historic abstraction pipework).



Figure 4-2 - Westfields Wetland with Cleeves chimney visible in the background

Groundwater beneath the site ranges from “High Vulnerability” to “Extreme Vulnerability” to “Rock at or near surface” (Figure 4-3). The groundwater body is the Limerick City Northwest Groundwater Body and it in turn has two receiving waterbodies – North Ballcannan (IE_SH25N170970) and Crompaun East (IE_SH27C090600). Inferred groundwater flow is assumed to follow topography with groundwater discharging in a south-westerly direction towards the River Shannon.

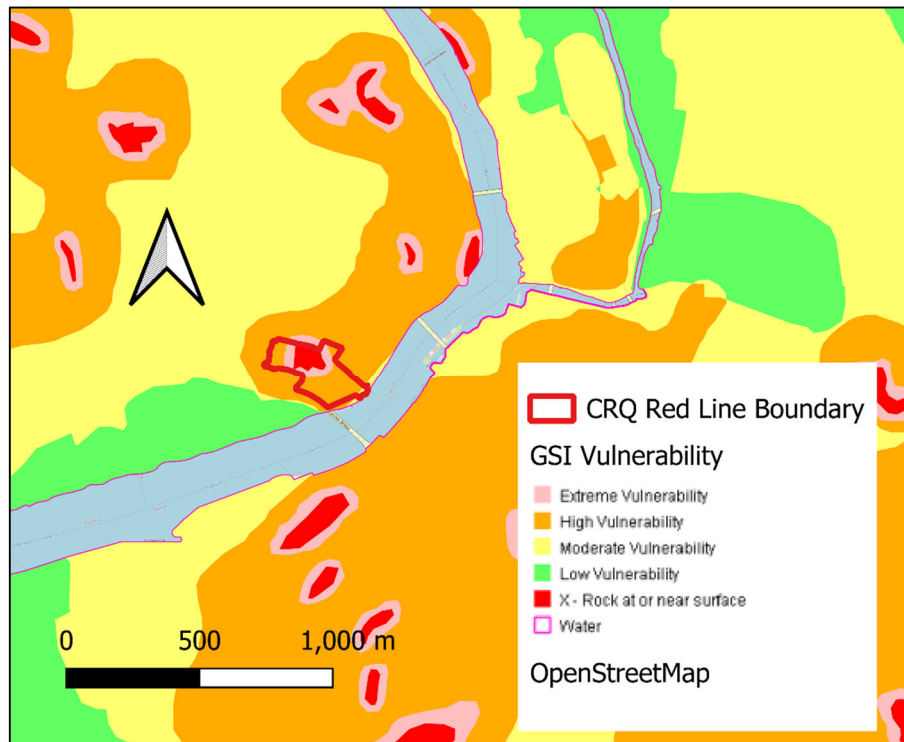


Figure 4-3 – Regional Groundwater Vulnerability Rating (GSI, 2025)

The hydrological connection of the site to multiple vulnerable and protected features, as well as the WFD goal of all waters achieving good ecological status (or potential) by 2027, emphasises the need for the development to have no negative impact on the local water quality.

It is for these reasons that all identified WFD water bodies with hydrological connectivity to the proposed Development site are 'Scoped In' for further assessment.

4.4 Designated Protected Areas

Two Designated Protected Areas are considered in this this assessment (see Figure 4-4):

- Lower River Shannon SAC (site code 002165)
- River Shannon & River Fergus Estuaries SPA (site code 004077).

The proposed Project site is adjacent to the Westfields Wetland which has connectivity to the Limerick Dock transitional water body during high tide. Westfields Wetland and Limerick Dock are part of the Lower River Shannon SAC (002165), a WFD registered SAC with Water Dependent Habitats/Species (see section 4.1.5). This is a very large, protected area stretching some 120km from Killaloe in County Clare to Loop Head / Kerry Head, encompassing the entirety of the Shannon, Feal, Mulkear, and Fergus estuaries alongside the freshwater lower reaches of the River Shannon between Killaloe and Limerick. The site is a Special Area of Conservation selected for a number of habitats and species listed on Annex I & II of the E.U. Habitats Directive.

Immediately downstream of the application site lies the River Shannon and River Fergus Estuaries SPA. This is a protected area comprising the entire estuarine habitat of the Rivers Shannon and Fergus from Limerick City westwards as far as Doonaha in County Clare and Dooneen Point in County Kerry. The site is a SPA with a number

of bird species of conservation interest (SCI). Wetlands are an important part of SPAs, as many form important habitats. The site is notable in being the most important coastal wetland site in the country, regularly supporting more than 50,000 wintering waterfowl.

Both protected areas are hydrologically connected to the application site, as the WFD water bodies discussed in section 4.1 comprise sections of each protected area. For this reason, the Lower River Shannon SAC and the River Shannon & River Fergus Estuaries SPA are both **Scoped In** for further assessment.

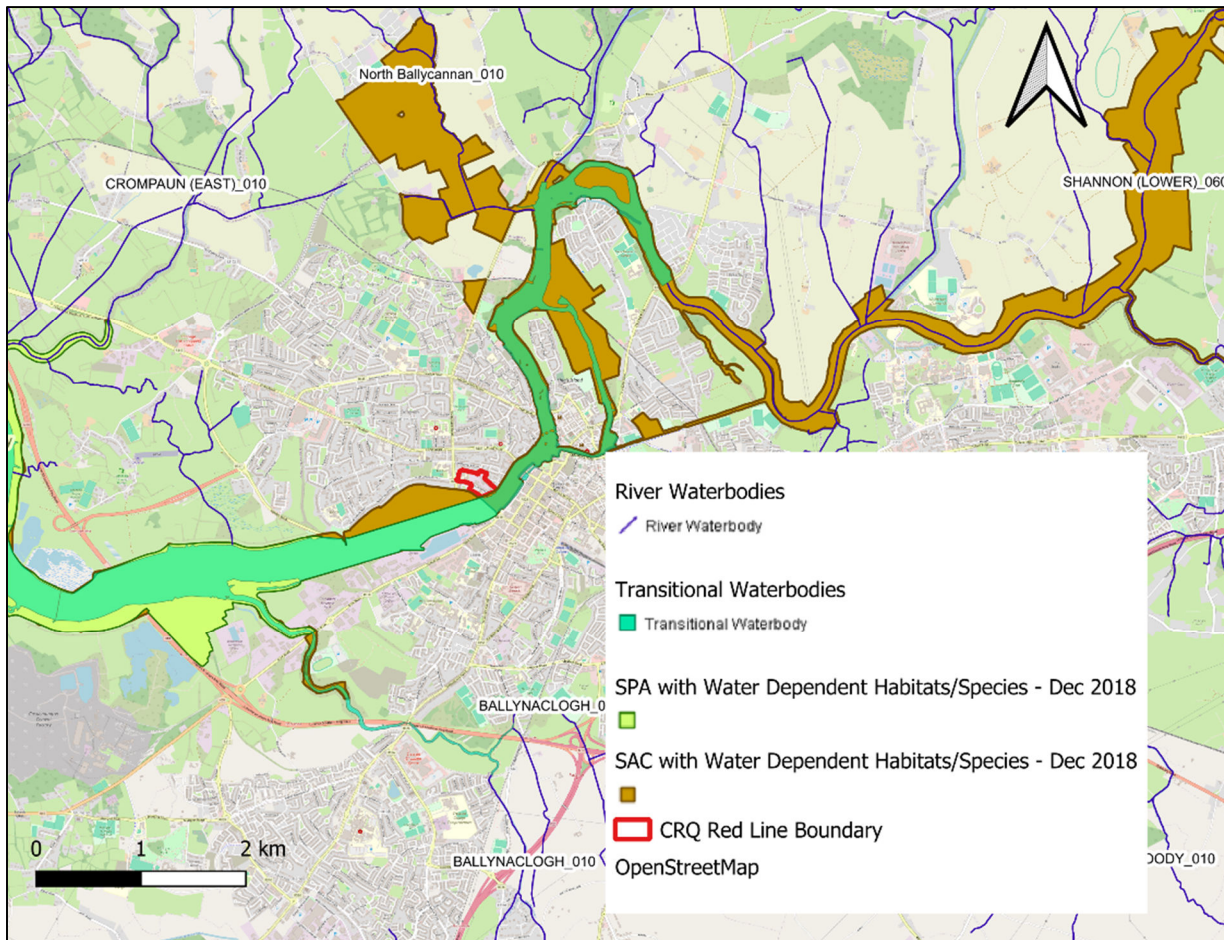


Figure 4-4 - Designated Protected Areas: Lower River Shannon SAC and River Shannon & River Fergus Estuaries SPA

Stage 2 Scoping Assessment Outcomes

Likelihood of potential impact was assessed utilising a s-p-r approach to determine which (if any) of the associated water bodies may require impact assessment. The results of this assessment are detailed in Section 4.2. Of the six potential WFD water bodies identified, all six have been 'Scoped In' for further assessment. Their hydrological connectivity to the site and the vulnerability of the groundwater beneath the site means there is potential for impact due to the project activities identified in Section 3.2. The two designated areas for protection will also be considered.

5. Stage 3 Impact Assessment

Once the proposed Development activities and their associated risk to Quality Elements have been appropriately Scoped in and out, an impact assessment is undertaken to determine the potential impacts on the water body elements, and the Mitigation Measures and/or future attainment of objectives associated with the water body.

Water bodies which are scoped into impact assessment are assessed for potential deterioration to ecological status, and any mitigation measures are detailed at this stage. The components that have been considered include hydromorphology, biology (habitats & fish), water quality, protected areas, and IAS.

5.1 Hydromorphology

The proposed development is set-back from the river edge and there are no direct, in-channel works or riverbank modifications. In addition, the proposed development does not propose or require any alteration to the riverbed, banks or flow regime. There is not likely to be hydromorphological impact on WFD water bodies as a result of this project.

5.2 Biology

5.2.1 Biology – Habitats

The proposed development is set-back from the river edge and there are no direct, in-channel works. Project activities are not likely to directly impact on riparian or aquatic habitats, although there is the potential for indirect impacts as the result of a deterioration in water quality as discussed in section 5.3.

5.2.2 Biology – Fish

The proposed development is set-back from the river edge and there are no direct, in-channel works. Project activities are not likely to directly impact on fish biology, although there is the potential for indirect impacts as the result of a deterioration in water quality as discussed in section 5.3.

5.3 Water Quality

The water quality elements are those most at immediate risk due to demolition, excavation, and construction project activities. Any impact on water quality would have subsequent consequences for biological elements and the protected areas. Potential mechanisms of impact to water quality would be due to mobilisation of soils, sediment, materials, pollutants, nutrients or other contaminants from the site during works and any runoff of contaminated surface water during operation. Sediments, soils and dissolved or suspended nutrients could cause eutrophication, or impact oxygenation conditions and the habitats that depend on the water. Pollutants and hazardous materials not only deteriorate water quality but can also be directly toxic to flora and fauna.

5.4 Protected Areas

Project activities are not likely to directly impact on designated protected areas identified in Section 4.4, although there is the potential for indirect impacts as the result of a deterioration in water quality as discussed in section 5.3.

5.5 Invasive Alien Species (IAS)

An Invasive Alien Species Site Assessment Report & Management Plan was conducted for the proposed Project site in 2021 which found viable 3rd schedule IAS (Japanese Knotweed, Himalayan Knotweed) and noted that based on the time of year site inspections were carried out (the early 2021 growing season for Himalayan Knotweed, for example) it is possible that additional IAS could present beyond the limits of those recorded. Other non-Third Schedule species (primarily Butterfly Bush, *Buddleia davidii*) have been identified on site as well. The report suggested further site monitoring visits during the summer growing period, as well as a full management plan and treatment methodology. The report notes that this plan must be screened for potential impacts on ecological receptors and sensitivities outlined in section 4.1 due to the use of herbicides in its treatment programme. The EIAR prepared for the Project notes that this management plan and treatment programme have subsequently been implemented.

An updated (2025) Invasive Species Management Plan was prepared by MKO and accompanies the application. For Japanese Knotweed off-site treatment in-combination with continued monitoring is considered the best site-specific treatment. No further evidence of Himalayan Knotweed was found in 2025, however construction works are proposed in the area previously identified in 2021. Therefore mitigation measures are proposed to include a buffer zone of 7m around the area to avoid unnecessary entering of the area by personnel and machinery, continued annual monitoring prior to construction, and a procedure for removal of any contaminated soil material in the case of excavation works.

5.6 Mitigation Measures

During demolition, excavation and construction works, mitigation measures will be implemented to prevent runoff to surface water receptors of soil, sediment, pollutants, and hazardous materials, as well as contamination of groundwater. This will include management of extracted material and monitoring of rainfall conditions when planning construction activities to minimise runoff.

5.6.1 Demolition

The CEMP (AtkinsRéalis, 2025) submitted as part of this planning application will be fully complied with by the Contractor(s) for the full duration of the demolition & construction phase and will be added to as required by the Contractor(s) (to take account of relevant planning conditions, any specific stakeholder requirements etc). In advance of commencement of works, a detailed construction management plan will be set out by the Contractor(s) within their Construction and Environmental Management Plan (CEMP). This will include management of extracted material and monitoring of rainfall conditions when planning construction activities to minimise runoff.

Demolition material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad.

All waste and material management and disposal / reused will be carried out in strict accordance with the C&DRWMP (Arup, 2025), submitted as part of this application.

As part of the asbestos management strategy, mitigation specific measures as proposed by Phoenix Environmental Safety Ltd in their 2024 Asbestos Survey Report will be implemented. Asbestos containing materials will be removed prior to the commencement of any works. A licensed asbestos removal contractor will be contracted for removal and disposal of asbestos waste and all asbestos removal works shall be undertaken in full compliance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006–2010 (S.I. No. 386 of 2006). The appointed contractor will adhere to all regulatory requirements and follow the recommendations outlined in the survey report, including the implementation of robust control measures to prevent exposure to asbestos material.



A Stockpile Management Plan will be developed by the Contractor(s), and provided to the Client and Employers Representative, in advance of commencement of construction. Stockpiled materials will not be located immediately adjacent to the onsite Reservoir, onsite drains, or any temporarily exposed groundwater (in the event that groundwater is encountered). Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.

The onsite reservoir is a key sensitive receptor, given that it is a open body of water (within excavated bedrock), with a proven discharge pipe which outfalls directly to the Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA. There is also a potential direct connection from the onsite reservoir to the Westfields Wetlands (via. reported historic abstraction from Wetlands Spring). Furthermore, based on the results of the tracer testing, there is potential for a second connection pipe between the onsite reservoir and the Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA.

In order address the potential risk of any potential water quality impacts to the onsite Reservoir, and connected surface waterbodies (Lower River Shannon SAC, the River Shannon & River Fergus Estuaries SPA, Fergus Estuary And Inner Shannon, North Shore pNHA, and Westfield Wetlands), the following mitigation measures will be implemented during the demolition and/ or construction works:

- Temporary silt fencing will be erected around the onsite Reservoir prior to the commencement of any onsite works.
- A buffer zone of 20m will apply around the onsite Reservoir, where no onsite storage or use of fuels / chemicals or stockpiled materials (including soils, C&D waste) will be permitted. This will be strictly monitored and enforced by the Contractor and Employers Representative.
- To facilitate the removal of the concrete piers from the reservoir, surface drainage will be temporarily redirected from the reservoir to allow it to be drained. During the draining of the reservoir, the existing water will be temporarily pumped and will discharge via. the existing discharge outfall (as per the existing baseline scenario). All surface water outlets from Salesians, Stonetown Terrace and the Quarry will be connected directly to the discharge pipe from the reservoir to the River Shannon.
- When the reservoir is empty, a comprehensive survey will be conducted of any exposed pipework / infrastructure which may indicate the presence of the reported historic connection to the Westfield Wetlands Spring, or any additional discharge points to the River Shannon. If viable historic pipeline connections to the Westfield Wetlands / River Shannon are uncovered, these will be further evaluated to understand the extent of the historic pipework, and if deemed suitable following assessment, such pipework will be decommissioned and sealed.
- During the temporary infilling of the onsite Reservoir to facilitate the construction works, clean imported material will be used which have been double washed at source. This will be confirmed by the supplier and regular visual checks will be carried out during the works to verify this.
- Temporary flood protection measures will be implemented within the extent of the flood zone at the Shipyard site – these measures are detailed within the CEMP (AtkinsRéalis, 2025) submitted as part of this planning application. The Contractor(s) will adhere to all temporary flood management measures as per the CEMP, for the full duration of the demolition and construction works.
- Storage areas (for diesel, oil, paint, thinners and other chemicals stored on site) will be located at all times away from the identified flood zone at the Shipyard site.



There will be no in-water works permitted at the River Shannon (Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA).

During detailed design, a shut-off valve at the nearest manhole to the existing discharge outfall (from the reservoir to the River Shannon) will be incorporated into the drainage regime for the proposed development. This manual shut-off valve will be easily accessible if required, and will allow the existing discharge outfall pipe to be shut off, preventing direct discharge from the reservoir to the River Shannon in the (highly unlikely) event of an onsite emergency / fire, and risk of contaminated fuel / firewater entering the reservoir. These proposed drainage works will be completed as soon as feasible within the construction programme.

Refer to mitigation measures as detailed below in 5.6.3. All such mitigation measures will apply to the demolition phase.

5.6.2 Excavation

No excavated waste will be disposed of or buried on site. Temporary stockpiling of native soils and imported materials onsite will require careful management in order to prevent the release of sediment into drainage ditches (and receiving water courses, and any temporarily exposed groundwater (in the event that groundwater is encountered).

Contaminated soil at the following locations requires excavation, and will not be reused onsite. Based on the results of environmental testing, this material is unsuitable for the proposed site end use:

- Stonetown Terrace Building – all onsite C&D material; and made ground / subsoils to a depth of 1.5m BGL (existing ground level) or to the maximum excavation / piling depth of foundations (if greater).
- O'Callaghan Strand Building – all made ground / subsoils to a depth of 1.0m BGL (existing ground level) or to the maximum depth of excavation for foundations (if greater).
- Flax Mill site (PBSA / Quarry Building) - all made ground / subsoils to a depth of 3.0m BGL (existing ground level) or to the maximum depth of excavation for foundations (if greater).
- Main Shipyard site – all made ground / subsoils excavated to facilitate the installation of proposed utilities (including drainage), tanks and any proposed underground structures in this area.

This material will be classified, managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.

The above identified contaminated soil will be excavated and removed for offsite disposal during the enabling works phase, and in advance of the excavation of foundations. This is to mitigate the potential risk of groundwater impacts via. existing onsite contamination.

Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations and mobilisation of contaminants. Excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours and sampling. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.



With the exception of the existing discharge pipe to the Lower River Shannon SAC (via. the onsite Reservoir), there will be no discharge of water permitted directly to the Lower River Shannon SAC, under any circumstances, during the demolition and/ or construction works.

Temporary onsite groundwater and gas monitoring wells shall be either suitably protected for the duration of the works and / or appropriately decommissioned in accordance with best practice guidance (SEPA guidance document “Good Practice for Decommissioning Redundant Boreholes and Wells“

Refer to mitigation measures as detailed below in 5.6.3. All such mitigation measures will apply to the excavation phase.

5.6.3 Construction

Construction activities and sources of pollution that may affect the water receptors will be identified. These could include excavations, dewatering, and general sources of pollution such as surface water runoff, chemical/fuel storage, wash down areas, fuelling areas and concrete use. Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site. The significance of the harm additional water would cause to groundwater or receptors will be assessed as well as the significance of the high water table on construction.

With the exception of the existing discharge pipe to the Lower River Shannon SAC (via. the onsite Reservoir), there will be no discharge of water directly to the Lower River Shannon SAC during the demolition and/ or construction works.

5.6.3.1 Detailed mitigation measures

- For the prevention of contamination of receptors by mobilised soil and sediment, the following measures will be implemented:
 - The creation of steep slopes will be avoided to prevent runoff from precipitation.
 - Heavy discharges of water onto the soil will be avoided.
 - Prevention of over-watering of loose areas for dust suppression.
 - Site traffic will be restricted to designated routes.
 - Regular leak monitoring and maintenance of dewatering pipes will be undertaken
 - The recommended maximum vehicle weightings will be maintained to avoid destabilization and subsequent erosion of soil surface
 - Disturbed land or stockpiles will be progressively rehabilitated by establishing temporary or permanent vegetation supported by irrigation.
 - Excess work areas will be covered with geotextile type liners.
 - Collection systems will be provided under machinery or equipment during wash down to prevent erosion from runoff.
 - Flow attenuation - mechanisms to control run off of precipitation such as temporary structures to slow running water to facilitate pollutant removal and infiltration and reduce runoff will be installed.
 - Sediment traps will be placed on all drainage lines such as geotextile lining.
 - Collection channels capable of collecting all runoff water during storms if it contains fine clay particles will be constructed.
 - A contained control facility will be used for concrete washout.
 - Runoff water from reservoir will be treated and discharged at a controlled flow rate through storm water discharge network (subject to agreement with LCCC).
 - Collection channels and reservoir will be inspected and cleaned on a regular basis to prevent sediment build up.



- The site will be stabilised as soon as possible after construction.
- For the prevention of contamination of receptors by fuel or chemicals used on site, the following measures will be implemented:
 - Regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and inspections of sanitary facilities and disposal will be carried out by contractors.
 - All contractors handling hazardous materials will keep appropriate spill clean-up material adjacent to storage and maintenance areas.
 - The amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards will be minimised. materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. will be used.
 - Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances.
 - The contractor shall be responsible for training all staff in the procedures for handling spills and shall provide all staff with appropriate personal protective equipment.
 - The contractor shall provide all staff with appropriate personal protective equipment.
 - Impacting adjacent sites will be avoided by ensuring all contractors activities, equipment and waste storage is confined to the allocated site boundary.
 - Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound which will be away from the onsite Reservoir, surface water gulleys or drains with a minimum 20 m buffer zone. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area.
 - Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area.
 - Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
 - Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. All drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and on spill pallets; and drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- In the event of a spill, the following procedure will be followed:
 - Identify and stop the source of the spill and alert people working in the vicinity;
 - Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
 - If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
 - Contain the spill using spill control materials, track mats or other materials as required. Do not spread or flush away the spill;
 - If possible, cover or bund off any vulnerable areas where appropriate such as the onsite Reservoir, drains, watercourses and/or sensitive habitats;
 - If possible, clean up as much as possible using the spill control materials;



- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with appropriate permits so that further contamination is limited;
- The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The Environmental Manager will notify the appropriate stakeholders such as Limerick City & County Council, National Parks and Wildlife Service and/or the EPA.

From a flooding perspective, the proposed construction compound at the Shipyard site, lies within the 0.5% AEP area for tidal flooding. Based on the extent of predicted tidal flooding, the other construction compound at the Flaxmill site is located outside of the predicted flood zone. **All fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone.**

To mitigate flood risk (or unacceptable residual flood risk) during the construction period, the contractor will employ the following mitigation measures as part of the site preparation for the construction phase (ARUP, 2025):

Demolition & Construction Stage Flood Protection Measures:

- Elevating the site compound / site storage areas at the Shipyard site via fill placement to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
- Constructing and/or implementing temporary flood defences at the Shipyard site (i.e. civil works and/or proprietary flood defence products, or a combination of both) to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
- In the event of a tidal flood warning, materials stored in the Shipyard site compound shall be removed immediately to avoid the risk of flooding to neighbouring properties.

Preparation of a Flood Emergency Response Plan for Construction Phase (FERP-CP) – A FERP-CP will be developed by the Contractor(s) for the project, which will contain a detailed response plan to a tidal flood event on the Shannon occurring while construction was active on the site, which will include the following mitigation measures (ARUP, 2025):

- Development of a FERP-CP in the first instance;
- Definition of designated roles within the construction team / firm, and associated responsibilities with regard to the implementation of the FERP-CP;
- Having an appropriate nominated person (e.g. site manager) who will be responsible for monitoring weather warnings, flood warnings, and storm-tide warnings (i.e. the 'Construction Phase Flood Manager') – this will only ever come into play on a periodic basis;
- Communication protocols to the site team to alert them to the possibility of a flood and the need to move any machinery, plant, equipment, etc, to an appropriate location within the site/site compound if safe to do so, and to evacuate the site;
- General protocols around where and how machinery, plant, other equipment and materials are stored / stockpiled / located within the site compound(s), noting that all fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone.
- Signage and other information on site drawing awareness to FERP-CP protocols (e.g. materials / plant / equipment storage, evacuation routes, etc).
- The level of the compound and the materials storage areas are to be determined by the contractor and to be confirmed in the Flood Emergency Response Plan for Construction Phase (FERP-CP), taking into account the above mitigation measures, as well as the findings of the FRA (ARUP, 2025).



The Contractor(s) will provide a copy of the FERP-CP (which will take into account any relevant planning conditions, and any relevant future additional requirements via. changes in legislation or best practice guidance) to LCCC for review and comment in advance of commencement of any demolition or construction works onsite.

Refer also to mitigation measures as detailed above in 5.6.1 and 5.6.2. All such mitigation measures will apply equally to the construction phase.

5.6.4 Monitoring

A comprehensive surface water and groundwater monitoring programme will be implemented before, during and after the proposed demolition and construction works. This is particularly important during the replacement works of the outfall pipe. Regular sampling (minimum monthly frequency) at key groundwater monitoring wells onsite, as well as at the onsite reservoir, and at key locations on the River Shannon upstream and downstream of the site. Water monitoring will be scoped, carried out and assessed by an appropriately qualified Environmental Manager or Ecological Clerk of Works. Results will be held onsite and available as required.

Excavations, especially piling for foundations will need to be carefully monitored for groundwater ingress.

Any drainage discovered during excavation will require inspection as to integrity of the pipework and connection from source to receptors with water quality analysis as required.

5.7 Residual risks

A summary of the risks to each WFD water body's Quality Element and the residual risk remaining after mitigation is given in Table 5-1. Given the residual risk to the WFD water bodies is low for biological conditions, physico-chemical conditions, and chemical groundwater status in all cases after mitigation, the subsequent risk to the habitats and biology of hydrologically connected designated protected areas (River Shannon & River Fergus Estuaries SPA and Lower River Shannon SAC) including Westfields Wetlands is also considered to be low. Likewise, given that the previously prepared IAS management plan and treatment programme have been implemented, and has been updated, the subsequent risk to the spread of IAS after mitigation is also considered to be low.

Table 5-1 - WFD Bodies and risk to WFD Quality Element Status after mitigation

WFD Water body	Quality Element	Project activities with potential impact	Residual risk to WFD status after mitigation
Limerick Dock	Biological Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low
	Hydromorphological Conditions	None	None
	Physico-Chemical Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low

Upper Shannon Estuary	Biological Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low
	Hydromorphological Conditions	None	None
	Physico-Chemical Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low
Shannon (Lower)_060	Physico-Chemical Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low
North Ballycannon_010	Physico-Chemical Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low
Crompaun (East)_010	Biological Conditions	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low
Limerick City Northwest	Quantitative Groundwater Status	None	None
	Chemical Groundwater Status	Demolition; Excavation; Removal of concrete piers from reservoir; Construction	Low

6. Conclusions

The proposed Project has the potential to impact several WFD water bodies through hydrological connectivity to the application site. Activities which were scoped into assessment and thus have a potential to impact on the ecological status of nearby water bodies include:

- Demolition – through the mobilisation of particulate matter or hazardous substances.
- Excavation – through potential groundwater ingress and subsequent contamination.
- Removal of concrete piers from reservoir – through mobilisation of sediment and concrete.
- Construction of superstructures – potential impact on water quality if wet concrete methods are chosen. Pre-cast concrete is the recommended option to avoid impacts on ecological status.
- Construction of external structures - potential impact from reinforced concrete piers inserted into reservoir to support stairs and walkway through disturbance of sediment and benthic communities.
- Construction to raise level of North Circular Road – through mobilisation of sediment.

Six WFD water bodies were subsequently scoped for potential impact through a source-pathway-receptor approach; 5 surface water bodies, and 1 groundwater body. All six of these, along with two protected areas were scoped in for further assessment.

Assessment identified that several project activities have risks associated with them that could impact, in particular, the water quality, and consequently the biological status of the WFD water bodies.

There are no direct impacts to biological quality elements (habitats & fish) anticipated by project activities, but there are indirect risks to habitats, flora and fauna associated with a potential decline in water quality. The hydromorphology of the WFD water bodies is not expected to be impacted by the project activities.

Where risk of impact exists, mitigation measures are required to prevent negative consequences to the water quality and potentially WFD Status of the water bodies. With the correct mitigation plan in place to prevent contamination during the demolition, excavation and construction phases of the project, there is no anticipated negative impact of the project on the WFD Status. The operational phase of the project is anticipated to have no impact on the WFD Status of the water bodies. After mitigation, the risks to the WFD quality elements were determined to be low, and subsequently the risks to the protected areas – the River Shannon & River Fergus Estuaries SPA and Lower River Shannon SAC – are also considered to be low.

The WFD requires member states to ensure that all water bodies achieve Good Ecological Status or Potential by 2027. In reviewing this development, there was no opportunity identified for the improvement of the WFD Status of the water bodies assessed due to project activities. As such, the project with mitigations will have no negative or positive impact on the WFD status of the water bodies. Additionally, implementation of the Project itself will not act as an impediment to the achievement of Good Ecological Status or Potential by any other means. There is no requirement for a derogation to WFD under Article 4.7.

References

Bucholz McEvoy Architects, 2025, Overall Strategy Diagram

Department of Housing, Local Government, and Heritage (DHLGH), 2025, River Basin Management Plan 2022-2027.

Department of Housing, Local Government, and Heritage (DHLGH), 2025, Public Consultation on the Timetable and Work Programme for Ireland's Fourth Cycle Water Action Plan 2028-2033.

HRA, 2025, Cleaves Riverside Quarter Environmental Impact Assessment Report

Environmental Protection Agency (EPA) Maps, 2025. Available at: <https://gis.epa.ie/EPAMaps/>

Environmental Protection Agency (EPA), 2025. Catchments Maps, 2025. Available at: <https://www.catchments.ie>

Environmental Protection Agency (EPA), 2025. Technical review of HMWB designation. Available at: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Technical-review-of-HMWb-designation_March-2022.pdf

Geological Survey Ireland (GSI), 2025. Groundwater Body Delineation. Available at: <https://www.gsi.ie/documents/Groundwater%20Body%20Delineation.pdf>

Irish Statute Book, 2025. Electronic Irish statute book (eISB). Available at: <https://www.irishstatutebook.ie/eli/2019/si/77/made/en/print>

National Parks and Wildlife Services (NPWS), 2013. Site Synopsis Lower River Shannon SAC (002165)

National Parks and Wildlife Services (NPWS), 2015. Site Synopsis River Shannon And River Fergus Estuaries SPA (004077)

MKO, 2025, Invasive Species Management Plan



AtkinsRéalis



AtkinsRéalis Ireland Limited

Unit 2B
2200 Cork Airport Business Park
Cork
T12 R279

Tel: +353 21 429 0300

© AtkinsRéalis Ireland Limited except where stated
otherwise