McCloy Consulting

Water Framework Directive Assessment

Carrigeen Renewable Energy Development

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1 INTRODUCTION

1.1 Terms of Reference

Carraigin Power Ltd has appointed McCloy Consulting Ltd to undertake a Water Framework Directive (WFD) Assessment in support of the planning application for the proposed Carrigeen Renewable Energy Development located in Co. Roscommon, (hereafter referred to as 'the Project').

This assessment has been prepared in accordance with the requirements and objectives of Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy (the Water Framework Directive), as transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), as amended. The assessment also has regard to the River Basin Management Plan for Ireland 2022–2027, associated Programme of Measures, and relevant guidance issued by the Environmental Protection Agency (EPA).

The purpose of this WFD Assessment (WFDA) is to:

- Determine whether any element of the Project, either alone or in combination with other plans or projects, has the potential to cause deterioration in the status of any surface water or groundwater body, or to compromise the achievement of the environmental objectives and "no deterioration" principle as set out under Article 4 of the Water Framework Directive; and
- Identify and describe appropriate control measures, with particular regard to the management of surface water, construction runoff, and site drainage, where a potential risk to the ecological or chemical status of any relevant water body is identified.

This assessment is intended to supplement and inform the Environmental Impact Assessment Report (EIAR) submitted in support of the planning application, with specific reference to **Chapter 11: Hydrology and Hydrogeology**. It provides a focused appraisal of WFD compliance to assist the competent authority in its consideration of the Project in the context of statutory water protection objectives and the protection, enhancement, and sustainable use of the aquatic environment.

An assessment of WFD compliance is presented as part of the Environmental Impact Assessment Report (EIAR) **Chapter 11: Hydrology and Hydrogeology**. This standalone WFDA has been prepared to supplement this by providing a focused appraisal of WFD compliance to assist the competent authority in its consideration of the Project in the context of statutory water protection objectives and the protection, enhancement, and sustainable use of the aquatic environment.

1.2 Statement of Authority

This WFDA has been carried out by McCloy Consulting Ltd, an independent environmental consultancy specialising in the water environment, with specialist knowledge of hydrological and hydrogeological assessments, sustainable drainage systems (SuDS), drainage, river modelling and flood risk assessment.

McCloy Consulting has ongoing involvement in numerous water environment studies and SuDS projects across the UK and Ireland and has developed a particular expertise in surface water management for renewable energy developments. The company has successfully designed numerous SuDS/silt management solutions for wind farms in accordance with current best practice guidance. The personnel responsible for undertaking this assessment are:

- Kate Macartney BSc (Hons) – Environmental Consultant experienced in Environmental Impact Assessment (EIA) specialising in the water environment, undertaking hydrology, water quality and flood risk assessments for renewable energy projects in the UK and Ireland;
- Iain Muir MSc CEnv MIEnvSc – Associate (Environment) and Chartered Environmentalist experienced in Environmental Impact Assessment (EIA) specialising in the water environment, undertaking hydrology, water quality and flood risk assessments for major infrastructure projects and renewable energy projects in the UK and Ireland; and
- Kyle Somerville BEng (Hons) CEng MIEI – Director and Chartered Engineer with experience in the fields of hydrology, surface water management, groundwater screening assessments for renewables developments in the UK and Ireland, and has overseen outline and detailed design of

surface water management for in excess of thirty onshore renewable developments in the UK and Ireland.

1.3 Water Framework Directive

The Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council), as amended by Directive 2008/105/EC, Directive 2013/39/EU, and Directive (EU) 2014/101, establishes an integrated and comprehensive framework for the protection, improvement, and sustainable use of inland surface waters, transitional waters, coastal waters, and groundwater across the European Union.

In Ireland, the Directive is transposed into national law by the European Communities (Water Policy) Regulations 2003 to 2022, which provide the statutory basis for the classification, monitoring, and management of water bodies, the establishment of environmental objectives, and the implementation of measures to protect and enhance water quality.

The Regulations provide for, inter alia, the characterisation and risk assessment of water bodies, the preparation and implementation of River Basin Management Plans (RBMPs), the setting of environmental quality standards and objectives, and the establishment of Programmes of Measures designed to achieve and maintain the required ecological and chemical status of waters.

Under Article 4 of the Water Framework Directive, Member States are required to prevent deterioration in the status of all surface water and groundwater bodies, to protect, enhance, and restore water bodies with the aim of achieving at least "Good" ecological and chemical status, and to maintain "High" status where it exists. The current national objective is to achieve these standards by the end of the 2022–2027 river basin management cycle, subject to the provisions for exemptions and extended deadlines set out in the Directive.

For the purposes of environmental assessment, any effect that would result in deterioration in water body status, or that would compromise the achievement of a WFD environmental objective, is considered a potentially significant impact. In this regard, Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (as amended by Directive 2014/52/EU) (the EIA Directive) requires that likely significant effects on the water environment are identified, assessed, and, where necessary, avoided, reduced, or mitigated.

Accordingly, a WFDA forms an integral component of **Chapter 11: Hydrology and Hydrogeology** of the EIAR for the Project, providing a focused evaluation of compliance with statutory water protection objectives and the "no deterioration" principle. The WFDA supplements **Chapter 11: Hydrology and Hydrogeology** of the EIAR by setting out the WFDA in the form of a standalone, focused report. It demonstrates that the Project complies with the following WFD objectives:

- Prevent deterioration in the status of any surface water or groundwater body, including deterioration of any WFD quality element;
- Ensure that the Project does not adversely affect the ability of any water body to achieve its environmental objectives, including attainment of at least Good Status or Good Ecological Potential as defined in the relevant River Basin Management Plan;
- Protect and contribute to the improvement of water quality and ecological conditions so that compliance with the objectives of the WFD and associated statutory measures is not compromised; and
- Ensure that, in combination with other plans or projects, the Project does not compromise the achievement of WFD objectives in hydrologically connected water bodies within the same catchment.

Where the assessment identifies that the Project would result in deterioration in WFD status or prevent the achievement of WFD objectives, and where such effects cannot be avoided through control measures, an assessment under Article 4.7 of the WFD will be undertaken.

1.3.1 River Basin Management Planning

The Water Framework Directive is implemented in Ireland through a system of river basin management planning, based on a cyclical six-year process of characterisation, objective setting, programme development, implementation, and review.

Ireland's first River Basin Management Plans were published in 2009, with subsequent plans prepared on a six-year cycle in accordance with the requirements of the Directive. The European Union (Water Policy) Regulations 2014 introduced a revised three-tier governance framework, assigning statutory responsibilities to national, regional, and local authorities for the coordinated delivery of WFD objectives, including catchment management, stakeholder engagement, and public participation.

The third cycle River Basin Management Plan for Ireland, covering the period 2022–2027[1], was published in 2024 and sets out the current environmental objectives, priorities, and Programmes of Measures applicable to surface water and groundwater bodies within the study areas of the Project.

A key delivery principle for the third cycle is "the right measure, in the right place", implemented through Catchment Management Work Plans and sectoral action work plans. These work plans are intended to locate and target measures at catchment and waterbody scale, informed by EPA characterisation and risk assessment, and to support tracking of implementation and outcomes.

1.3.2 Role of Local Authorities

Local Authorities have a statutory role in the implementation of the Water Framework Directive at a regional and local level, including the coordination of catchment-based measures, integration of WFD objectives into the planning and development management process, and engagement with stakeholders and communities.

In the context of the Project, Roscommon County Council is the relevant local authority and the competent authority for development management and for the local implementation of River Basin Management Plan measures within the receiving catchment.

1.3.3 Local Authority Waters Programme (LAWPRO)

At a national and regional level, the Local Authority Waters Programme (LAWPRO) operates on behalf of Ireland's 31 local authorities to support the coordinated delivery of Water Framework Directive objectives.

LAWPRO's role includes the identification of significant water management issues, prioritisation of water bodies at risk, facilitation of catchment-based planning, and the coordination of stakeholder and community engagement. LAWPRO works in collaboration with local authorities, state agencies, landowners, and other relevant parties to support the implementation of Programmes of Measures aimed at achieving and maintaining "Good" and "High" ecological and chemical status in surface water and groundwater bodies.

1.4 Water Framework Directive Assessment

There is currently no formal guidance for WFDA assessments in the Republic of Ireland; however, the approach followed for this assessment represents best practice in Ireland. The structure and content of this assessment follow guidance relevant in adjacent jurisdictions including:

- UK Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive[2];

[1] WFD Cycle 3 Catchment Assessments. Available at: https://www.catchments.ie/wfd-cycle-3-catchment-assessments-published-by-the-epa/ Accessed 04/02/2026

[2] UK Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive Accessed 04/02/2026

- The Northern Ireland Environment Agency (NIEA) (2012) Carrying Out a Water Framework Directive (WFD) Assessment on EIA Developments[3]; and
- European Commission (EC) (2017) Common Implementation Strategy (CIS) Guidance Document 36 – Exemptions to the Environmental Objectives according to Article 4(7) (2017)[4].

The WFDA follows a sequential approach:

- WFD Stage 1 Screening: to identify the extent to which the Project is likely to affect water bodies; identify the zone or zones of influence based on specific activities and/or characteristics of the Project that could affect the identified water bodies; and identify any specific activities and / or characteristics of the Project that have been screened out and why.
- WFD Stage 2 Scoping: an initial assessment to identify the risks from the Project to receptors within the zone of influence, based on the relevant water bodies and their water quality elements; and identification of those water bodies where a more detailed impact assessment is needed.
- WFD Stage 3 Impact Assessment: an assessment of the water bodies and activities carried forward from the WFD screening / scoping, set within the context of the appropriate River Basin Management Plans including:
    - identification of water bodies that are potentially affected, directly or indirectly, or at risk from the Project;
    - the baseline characteristics of the water bodies affected;
    - a description of the Project and the aspects of the development considered within the scope of the WFDA;
    - an explanation of any control measures required and how they are secured;
    - an explanation of any enhancements and/or positive contributions to the River Basin Management Plan objectives proposed and how they would be secured;
    - where a derogation is required, information to justify the case for derogation; and
    - identification of any areas of non-compliance.
- WFD Stage 4 Compliance Assessment: a formal evaluation of the Project against the requirements of Article 4(1) for surface water bodies, groundwater bodies and groundwater dependent terrestrial ecosystems (GWDTEs), and cross-article obligations (Articles 5, 11, 4(6) and 4(7)), to confirm whether the Project would result in deterioration of status, prevent the achievement of environmental objectives, or require the application of any derogations, taking into account the effectiveness of proposed control and enhancement measures.

1.5 Relevant Information

Below are the sources of information used to inform this WFDA. The information has been compiled to establish the baseline hydrological, hydrogeological and water quality context of the receiving environment, to identify the current WFD status and objectives of relevant surface water and groundwater bodies, and to assess the potential for the Project to affect these water bodies.

Sources include published datasets, guidance documents, statutory plans and mapping tools produced by relevant authorities, as well as site-specific information where available.

[3] The Northern Ireland Environment Agency (NIEA) (2012) Carrying Out a Water Framework Directive (WFD) Assessment on EIA Developments. Available at: https://www.daera-ni.gov.uk/publications/guidance-note-carrying-out-water-framework-directive-assessment-environmental-impact-assessment-developments

[4] European Commission (EC) (2017) Common Implementation Strategy (CIS) Guidance Document 36 – Exemptions to the Environmental Objectives according to Article 4(7). Available at: https://circabc.europa.eu/sd/a/e0352ec3-9f3b-4d91-bdbb-939185be3e89/cis_guidance_article_4_7_final.pdf Accessed 04/02/2026.

Collectively, these sources provide the evidence base required to evaluate potential impacts in accordance with the requirements of the WFD and associated Irish legislation. The relevant information was obtained from the following sources:

- Water Action Plan 2024: A River Basin Management Plan for Ireland: National River Basin Management Plan 2022-2027[5]
- EPA (2024) WFD Characterisation and Risk Assessment Methodology[6]
- Catchments.ie WFD Overview and Implementation Resources[7]
- EPA (2022) Good Practice Note: Strategic Environmental Assessment – Water and the WFD[8]
- European Commission (EC) (2017) Common Implementation Strategy (CIS) Guidance Document 36 – Exemptions to the Environmental Objectives according to Article 4(7)[9]
- European Commission (EC) (2022) Common Implementation Strategy (CIS) WFD Reporting Guidance[10]
- European Commission (EC) (2023) Common Implementation Strategy Guidance Document No. 24: River Basin Management in a Changing Climate[11]
- EPA Water Map Viewer[12]
- Catchments Data[13]
- NPWS Designations Viewer[14]
- EPA Maps Designated Sites[15]
- Map of Irish Wetlands[16]
- OPW Flood Risk Management Plan (Shannon Upper & Lower River Basin)[17]

[5] Department of Housing, Planning and Local Government (2024) River Basin Management Plan 2022 – 2027. Available at: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/ [Accessed: 04/02/2026]

[6] Environment Protection Agency (2024) WFD Characterisation and Risk Assessment Methodology. Available at: https://www.catchments.ie/download/water-framework-directive-guidance-on-characterisation-methodology-v5-0-2024/ [Accessed: 04/02/2026]

[7] Catchments.ie WFD Overview and Implementation Resources. Available at: https://www.catchments.ie/guide-water-framework-directive/ [Accessed: 04/02/2026]

[8] Environment Protection Agency (2022) Good Practice Note: Strategic Environmental Assessment – Water and the WFD. Aailable at: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/SEA_Screening_GoodPractice_Water-2022.pdf [Accessed: 04/02/2026]

[9] European Commission (EC) (2017) Common Implementation Strategy (CIS) Guidance Document 36 – Exemptions to the Environmental Objectives according to Article 4(7). Available at: https://circabc.europa.eu/sd/a/e0352ec3-9f3b-4d91-bdbb-939185be3e89/cis_guidance_article_4_7_final.pdf [Accessed: 04/02/2026]

[10] European Commission (EC) (2022) Common Implementation Strategy (CIS) WFD Reporting Guidance. Available at: https://cdr.eionet.europa.eu/help/WFD/WFD_715_2022/Guidance%20documents/WFD%20Descriptive%20Reporting%20Guidance.pdf [Accessed: 04/02/2026]

[11] European Commission (EC) (2023) Common Implementation Strategy Guidance Document No. 24: River Basin Management in a Changing Climate. Available at: https://wwfeu.awsassets.panda.org/downloads/lre-eu-water-framework-directive_web.pdf [Accessed: 04/02/2026]

[12] Environmental Protection Agency Water Map Viewer. Available at: https://gis.epa.ie/EPAMaps/Water [Accessed: 14/01/2026]

[13] Catchments.ie – Catchments Data. Available at: https://www.catchments.ie [Accessed 14/01/2026]

[14] National Parks and Wildlife Service – Designations Viewer. Available at: https://www.npws.ie/maps-and-data [Accessed: 14/01/2026]

[15] Environmental Protection Agency Maps Designated Sites. Available at: https://gis.epa.ie/EPAMaps/ [Accessed 14/01/2026]

[16] Wetland Surveys Ireland – Map of Irish Wetlands. Available at: https://www.wetlandsurveys.ie/miw-intro [Accessed: 14/01/2026]

[17] Office of Public Works (2018) Flood Risk Management Plan (Barrow River Basin). Available at: https://www.floodinfo.ie/publications/?t=22&a=644 [Accessed: 14/01/2026]

- OPW Flood Plans and Flood Maps[18]
- OPW Arterial Drainage Viewer[19]
- GSI Groundwater Body Descriptions[20]
- Water Action Plan 2024: A River Basin Management Plan for Ireland: National River Basin Management Plan 2022-2027[21]
- EPA Cycle 3: HA 26B Upper Shannon (Boyle) Catchment Report[22]
- EPA WFD Cycle 2: Catchment Upper Shannon Sub-catchment Breedoge_SC_010[23]
- EPA Cycle 3: HA 26C Upper Shannon Catchment Report[24]
- EPA WFD Cycle 2: Catchment Upper Shannon Sub-catchment Owenur_SC_010[25]
- EPA WFD Cycle 2: Catchment Upper Shannon Sub-catchment Shannon[Upper]_SC_030[26]
- EPA Cycle 3: HA 34 Moy & Killala Bay Catchment Report[27]
- EPA WFD Cycle 2: Catchment Moy & Killala Bay Subcatchment Moy_SC_030[28]
- Local Authority Waters Programme (LAWPRO) Carricknabraher Priority Area for Action[29]
- LAWPRO Killukin/Shannon Priority Area for Action[30]
- LAWPRO Owengarve Charlestown Priority Area for Action[31]

[18] Office of Public Works – Flood Plans and Flood Maps. Available at: https://www.floodinfo.ie/ [Accessed 14/01/2026]
[19] Office of Public Works – Arterial Drainage Viewer. Available at: https://www.floodinfo.ie/map/drainage_map/ [Accessed 14/01/2026]
[20] Geological Survey Ireland – Groundwater Body Descriptions. Available at: https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/ [Accessed 14/01/2026]
[21] Department of Housing, Planning and Local Government (2024) River Basin Management Plan 2022 – 2027. Available at; https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/ [Accessed: 14/01/2026]
[22] Environment Protection Agency (2024) WFD Cycle 3: HA 14 Barrow Catchment Report. Available at: https://www.catchments.ie/data/#/catchment/26B?_k=5myg4o [Accessed: 14/01/2026]
[23] Environment Protection Agency (2019) WFD Cycle 2: Catchment Barrow Sub-catchment Figile_SC_020. Available at: https://www.catchments.ie/data/#/subcatchment/26B/26B_1?_k=0l7tkk [Accessed: 14/01/2026]
[24] Environment Protection Agency (2024) WFD Cycle 3: HA 26C Upper Shannon Catchment Report. Available at: https://www.catchments.ie/data/#/catchment/26C?_k=yjwa58 [Accessed: 14/01/2026]
[25] Environment Protection Agency (2019) WFD Cycle 2: Catchment Upper Shannon Sub-catchment Owenur_SC_010.Available at: https://www.catchments.ie/data/#/subcatchment/26C/26C_3?_k=mdsps7 https://www.catchments.ie/data/#/subcatchment/07/07_11?_k=udvk97 [Accessed: 14/01/2026]
[26] Environment Protection Agency (2019) WFD Cycle 2: Catchment Upper Shannon Sub-catchment Shannon [Upper]_SC_030. Available at: https://www.catchments.ie/data/#/subcatchment/26C/26C_11?_k=21rvul [Accessed: 14/01/2026]
[27] Environment Protection Agency (2024) WFD Cycle 3. Available at: https://www.catchments.ie/data/#/catchment/34?_k=phj5cd [Accessed: 14/01/2026]
[28] Environment Protection Agency (2019) WFD Cycle 2: Catchment Moy & Killala Bay Subcatchment Moy_SC_030. Available: https://www.catchments.ie/data/#/subcatchment/34/34_18?_k=8h0dl4 [Accessed: 14/01/2026]
[29] Local Authority Waters Programme (2021) Carricknabraher Priority Area for Action. Available: https://www.catchments.ie/wp-content/files/areaforactionreports/AFA0039%20Carricknabraher%20AFA%20Report.pdf [Accessed 14/01/2026]
[30] Local Authority Waters Programme (2021) Killukin/Shannon Priority Area for Action. Available at: https://www.catchments.ie/wp-content/files/areaforactionreports/AFA0098%20Killukin%20Shannon%20AFA%20Report.pdf [Accessed 14/01/2026]
[31] Local Authority Waters Programme (2021) Killukin/Shannon Priority Area for Action. Available at: https://www.catchments.ie/wp-content/files/areaforactionreports/AFA0145%20Owengarve%20Charlestown%20AFA%20Report.pdf [Accessed 14/01/2026]

2 WFD STAGE I: SCREENING

2.1 Approach

WFD Stage 1 Screening identifies if a proposal requires a detailed WFA, focusing on whether it could impact water bodies (rivers, lakes, groundwater, coastal) or hinder the achievement of 'Good' status.

This Stage identifies the extent to which the Project is likely to affect water bodies; identifies the zone of influence (ZoI) based on specific activities and / or characteristics of the Project that could affect the identified water bodies; and identifies any specific activities and / or characteristics of the Project that have been screened out and why.

2.2 Screening the Project

2.2.1 The Project

The Project is located between Frenchpark and Elphin in Co. Roscommon at ITM 577843, 790000. It has a total area of 10.4km^2 (1040ha). Full details of the Project are provided in **Chapter 2: Project Description.**

Permission is being sought by the Applicant for the construction of 11 No. Wind Turbines, Turbine Foundations, Turbine Hardstands, Site Access Roads, a Permanent Met Mast, Onsite Substation, Internal Cabling, Temporary Construction Compounds, Borrow Pits, Permanent Spoil Storage, Grid Connection and all ancillary and associated works.

The Onsite Substation and Grid Connection will connect to the national electricity grid via the existing Flagford 220kV substation. The Grid Connection cabling will be primarily located within the public road corridor. The total length of the proposed 110kV underground cabling route is c.17.5km.

Temporary works will also be required to accommodate the delivery of the Wind Turbine components. These temporary works are included as part of this application and details can be viewed in **Appendix 16.3**.

As such, the Project including its associated Grid Connection and delivery of the Wind Turbine components require screening under the WFD to determine whether they could cause deterioration in WFD water body status or prevent the achievement of WFD objectives.

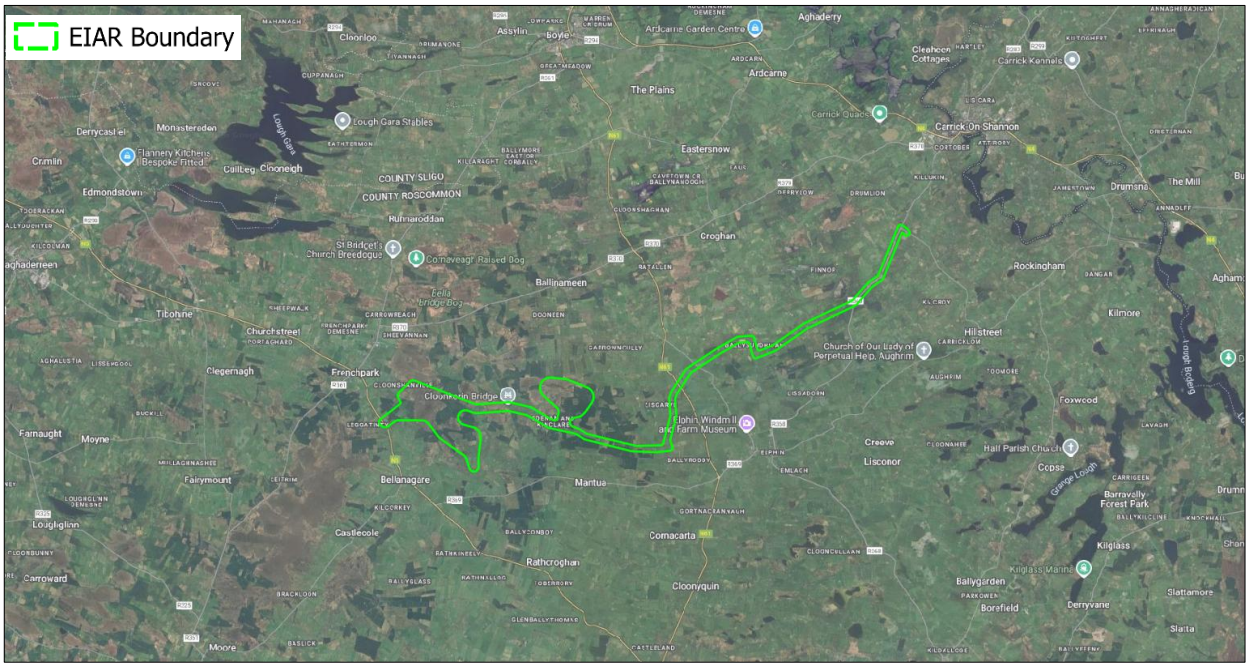

Figure 2-1: Site Context

2.3 Screening for Effects

Stage 1 Screening considers whether the Project, by virtue of its nature, scale, location or characteristics, has the potential to:

- Cause deterioration in the ecological or chemical status of a surface water or groundwater body;
- Prevent the achievement of WFD environmental objectives; or
- Introduce pressures relevant under the WFD, including hydromorphological alteration, diffuse or point-source pollution, or changes to flow and groundwater regimes.

Having regard to the characteristics of the Project (**Section 2.2**), the following potential WFD-relevant pressures have been identified at a screening level:

- Vegetation clearance and forestry felling with potential mobilisation of sediments and nutrients to surface waters;
- Earthworks and excavation associated with Turbine Foundations, Site Access Roads, Borrow Pits, spoil storage areas and cable trenches, with potential effects on runoff, sediment transport and drainage pathways;
- Works in proximity to watercourses and drainage networks, including crossings and culverting, with potential hydromorphological effects;
- Use, storage and handling of fuels, oils, lubricants and concrete, with associated pollution risk to surface water and groundwater;
- Dewatering activities with potential to affect groundwater levels, baseflows and receiving surface waters;
- Linear underground grid connection works intersecting multiple water features across several catchments; and
- Long-term operational runoff and pollution risks associated with infrastructure and maintenance activities.

2.4 Zone of Influence

To identify the relevant water bodies and to evaluate whether the proposed activities have the potential to affect a water body's ability to achieve or maintain its WFD classification, a Zone of Influence (ZoI) is defined. The ZoI encompasses not only the direct physical footprint of the proposed works, but also the extent of any potential indirect effects e.g., potential downstream effects due to changes in sediment transport and / or the release of chemical substances.

For the purposes of this assessment, the main body of the Project where Wind Turbines, Turbine Foundations, Turbine Hardstands, Site Access Roads, Onsite Substation etc. are proposed is referred to as the 'Wind Farm Site'. The Project is located within the **'EIAR Boundary'** as shown in **Figure 2-1**.

The hydrological ZoI includes the river reaches at and downstream from the EIAR Boundary, and the surface water catchments draining the Project as defined by the relevant Environmental Protection Agency (EPA) WFD datasets. The hydrological ZoI is spatially consistent with the 'Study Area' as per **Chapter 11: Hydrology & Hydrogeology**. The hydrogeological ZoI extends to the underlying aquifer catchments, also spatially consistent with **Chapter 11: Hydrology & Hydrogeology** hydrogeological 'Study Area'.

2.4.1 Screening Water Bodies

2.4.1.1 Wind Farm Site and Grid Connection

The Wind Farm Site and Grid Connection are located within a rural landscape in Co. Roscommon, characterised by a network of surface water features including rivers, small streams, drains, wetland areas and associated catchments, which form part of defined river water bodies under the Eastern and Western River Basin Management Plans.

Given the spatial extent of the Project, the number of water features potentially intersected or influenced, and the scale and duration of construction activities, there is a reasonable risk of impacts on both surface water and groundwater bodies, either through direct physical modification or indirect water quality effects. Therefore, potential effects to surface and groundwater due to the activities at the Wind Farm Site and along the Grid Connection are **'screened in'** for further assessment.

2.4.1.2 Turbine Delivery Route

Works associated with the preferred Turbine Delivery Route (TDR) are required at locations both within and outside of the EIAR Boundary. Other areas of temporary works along the TDR between Galway Port and the Wind Farm Site outside of the EIAR Boundary have been screened with regards to potential effects on the surface and groundwater environment. Due to the scale and nature of the TDR works (i.e., temporary road widening, construction of temporary load-bearing areas), no likely risk of deterioration in WFD status to the groundwater environment is anticipated and, therefore, potential effects to groundwater due to the TDR are **'screened out'** for further assessment. Works required in or near surface water bodies along the TDR have the potential to adversely affect water quality and hydrology and are, therefore, **'screened in'** for further assessment.

2.5 Screening Summary

On the basis of the above, the Project is considered to have the potential to interact with, and exert pressures upon, designated surface water and groundwater bodies within the receiving environment. There is a potential risk of deterioration in water body status and / or interference with the achievement of WFD environmental objectives in the absence of appropriate control measures.

Therefore, it is concluded that the Project be **'screened in'** for a WFDA to allow for a detailed evaluation of potential impacts, identification of relevant water bodies and receptors, and the development of appropriate avoidance, control and monitoring measures to ensure compliance with the objectives of the Water Framework Directive and relevant River Basin Management Plans.

3 WFD STAGE 2: SCOPING

3.1 Approach

WFD Stage 2 Scoping provides an initial assessment to identify the risks from the Project to receptors within the ZoI, based on the relevant water bodies and their water quality elements, and identification of those water bodies where a more detailed impact assessment is needed.

WFD Stage 2 Scoping identifies:

- The surface water and groundwater bodies to be assessed;
- The phases of the Project to be considered;
- The WFD quality elements and supporting conditions relevant to the Project; and
- The specific pressure pathways that require detailed assessment.

Details of the above are provided in the following sections.

3.2 Surface Waterbody Identification

Hydrological catchment boundaries identified are as per online EPA Interactive Map[32] and classification information was primarily sourced from RBMP documents for the relevant catchments available from Catchments.ie.[33]

3.2.1 WFD Catchments

The EIAR Boundary (Wind Farm Site and Grid Connection) lies entirely within the Upper Shannon catchment (Catchment ID: 26B). The TDR passes thought the Corrib (Catchment ID: 30) and Moy & Killala Bay (Catchment ID: 26B) catchments.

3.2.2 WFD River Sub-Catchments

Environmental Protection Agency (EPA) WFD dataset boundaries show that the Wind Farm Site lies within the Breedoge_SC_010 WFD river sub-catchment. The Grid Connection passes through the Breedoge_SC_010, Owenur_SC_010, and Shannon [Upper]_SC_030 WFD river sub-catchments (**Figure 3-1**).

The TDR was assessed with respect to proposed works that could have an effect on the surface water environment. Using OSI and EPA information, one location was identified where road widening works are proposed at the N17 / N5 Roundabout, Charlestown (Location Ref: 3.11 as per **Appendix 16.3**) in the vicinity of surface water features. The proposed widening works are located within the Moy_SC_030 sub-catchment.

[32] https://gis.epa.ie/EPAMaps/ [Accessed 04/02/2026]
[33] https://www.catchments.ie/ [Accessed 04/02/2026]

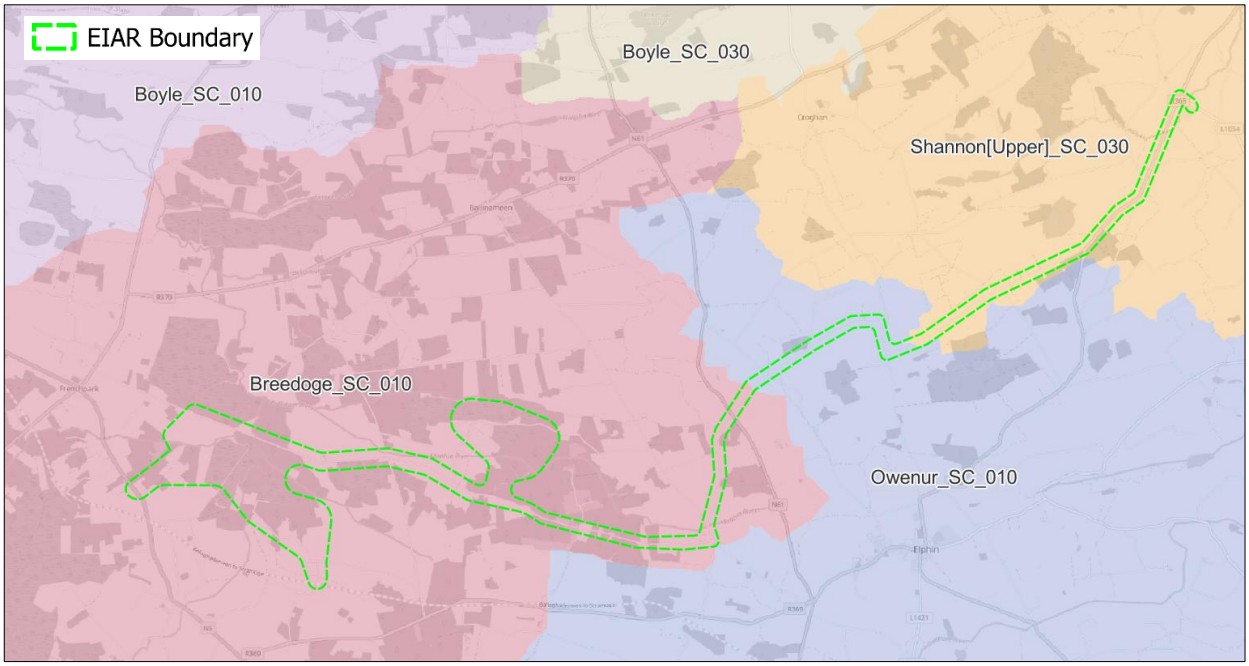

Figure 3-1: WFD River Sub-Catchments

3.2.3 WFD River Sub-Basins

For the purposes of WFD classification and assessment, the river sub-catchments are further delineated into river 'sub-basins'. The Wind Farm Site is located across three sub-basins; Carricknabraher_020 (IE_SH_26C020200) to the west, Breedoge_010 (IE_SH_26B090300) in the central section, and Mantua_010 (IE_SH_26M010200) to the east (**Figure 3-2**).

The Grid Connection is located within the Mantua_010, Kinard_010 (IE_SH_26K070500), and Killukin_020 (IE_SH_26K020700) river sub-basins (**Figure 3-2**).

The river sub-basins within which the TDR widening works are proposed is the Charlestown Stream_010.

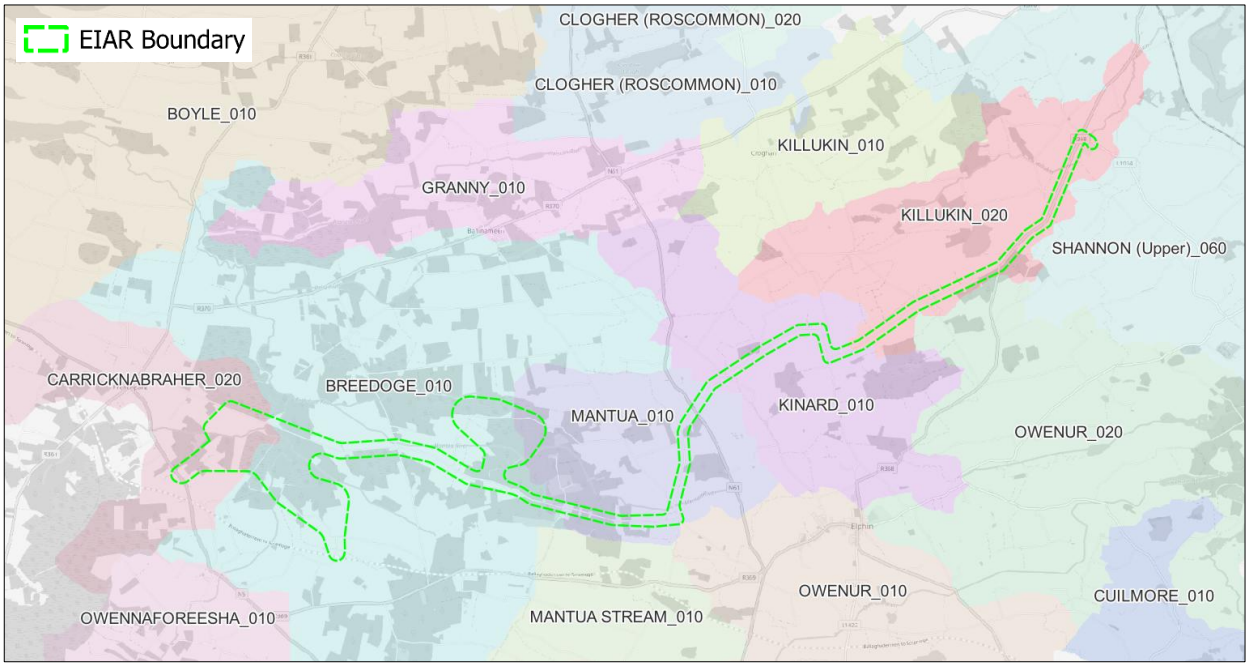

Figure 3-2: WFD River Sub-Basins

3.2.4 EPA Watercourses

Watercourses identified by EPA mapping within the EIAR Boundary and hydrologically connected to the Project are outlined in **Table 3.1** and shown on **Figure 3-3**.

Table 3.1: EPA Watercourses

Internal Ref & EPA Name / Code	River Sub-Catchment	River Sub-Basin	EPA Code	EPA Segment Code	Stream Order	Section of the Project
Ref 1: Unnamed Watercourse (IE_SH_26C020200)	Breedoge_SC_010	Carrick nabraher_020	-	26_2861	1	Wind Farm Site
Ref 2: Carricknabraher (IE_SH_26C020200)	Breedoge_SC_010	Carrick nabraher_020	26C02	26_13437	3	Wind Farm Site
Ref 3: Owennaforeesha (IE_SH_26B090300)	Breedoge_SC_010	Breedoge_010	26O04	26_1227	3	Wind Farm Site
Ref 4: Unnamed Watercourse (IE_SH_26B090300)	Breedoge_SC_010	Breedoge_010	-	26_2614	2	Wind Farm Site
Ref 5: Breedoge (IE_SH_26B090300)	Breedoge_SC_010	Breedoge_010	26B09	26_4100	4	Grid Connection
Ref 6: Mantua (IE_SH_26B090300)	Breedoge_SC_010	Breedoge_010	26M01	26_1338	3	Wind Farm Site
Ref 7: Edenan and Kinclare (IE_SH_26B090300)	Breedoge_SC_010	Breedoge_010	26E18	26_2153	1	Grid Connection
Ref 8: Mantua (IE_SH_26M010200)	Breedoge_SC_010	Mantua_010	26M01	26_3671	1	Grid Connection
Ref 9: Kinard 26 (IE_SH_26K070500)	Owenur_SC_010	Kinard_010	26K07	26_2162	2	Grid Connection
Ref 10: Unnamed Watercourse (IE_SH_26K020700)	Shannon [Upper] SC_030	Killukin_020	-	26_1115	1	Grid Connection
Ref 11: Killukin (IE_SH_26K020700)	Shannon [Upper] SC_030	Killukin_020	26K02	26_1193	2	Grid Connection
Ref 12: Drumlion (IE_SH_26K020700)	Shannon [Upper] SC_030	Killukin_020	26D27	26_2794	1	Grid Connection
Ref 13: Killukin (IE_SH_26K020700)	Shannon [Upper] SC_030	Killukin_020	26K02	26_1497	2	Grid Connection

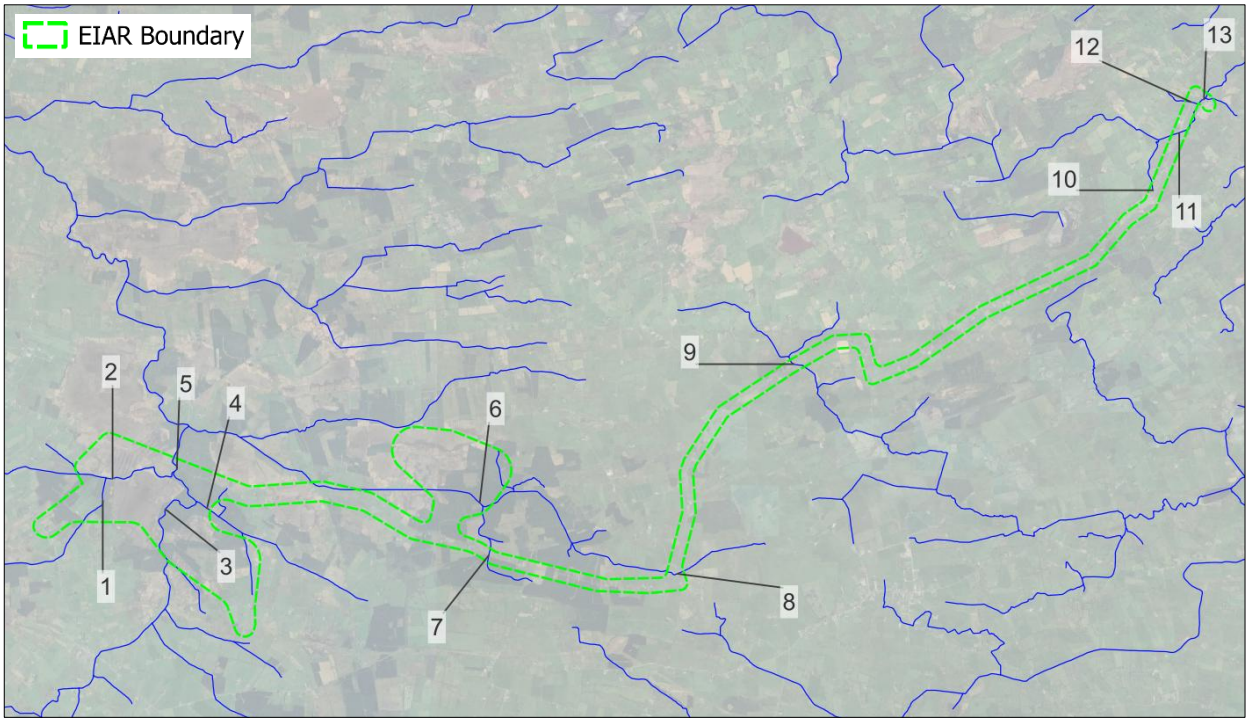

Figure 3-3: EPA Watercourses

The watercourses included in **Table 3.1** have, by their virtue of having a direct hydrological link to the EIA Boundary (Wind Farm Site and Grid Connection), been **'scoped in'** for detailed impact assessment.

As noted above, the TDR was assessed against OSI and EPA mapping to establish the presence of watercourses / waterbodies in the vicinity of the proposed works that could affect water quality and hydrology.

A non-WFD classified tributary of the Mullaghanoe River (within the Charlestown Stream_010 river sub-basin) is located immediately north of the proposed road widening at the N17 / N5 Roundabout, Charlestown (Location Ref: 3.11 as per **Appendix 16.3**). It discharges to the Mullaghanoe River approximately 450 m downstream which is classified 'Good' status under the WFD (**Figure 3-4**). Due to the potential direct hydrological link to the downstream watercourse, it has been **'scoped in'** for detailed impact assessment.

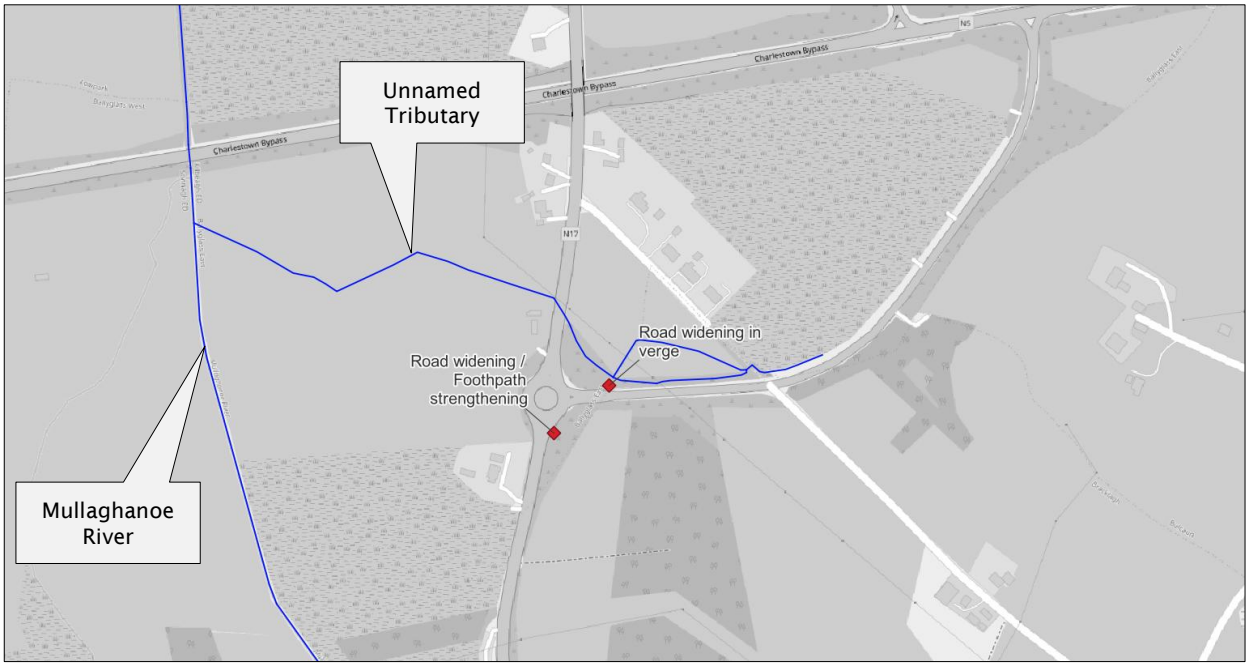

Figure 3-4: Mullaghanoe River at TDR

No other watercourses / waterbodies were identified in the vicinity of proposed widening works along the TDR. Works proposed within the Terryland_010 river sub-basin (construction of a temporary load-bearing area) are located in Galway Town at the R336 / L5034 Junction and are remote from any watercourses (Location Ref: 3.6 as per **Appendix 16.3**). Similarly, the works within the Boyle_010 river sub-basin (construction of a temporary access road) are located within agricultural lands (Location Ref: 3.13 as per **Appendix 16.3**). Water features in the immediate area are limited to discrete agricultural drainage ditches with no direct link to the wider surface water environment. Therefore, this location has been **'scoped out'** for detailed impact assessment.

3.2.5 Surface Water Quality

The following section is intended to provide a qualitative appraisal of existing surface water quality of those catchments within which the Project is located.

The WFD classification is a combination of chemical, biological and hydromorphological elements; whereby, the overall status is the lowest of the combined constituents. The EPA also use the current water quality and trends to highlight waterbodies that are 'At Risk' of failing to meet their WFD objectives.

3.2.5.1 River Water Bodies / Water Framework Directive Status

The current WFD status published by the EPA (2019-2024) of the receiving river waterbodies identified is summarised in **Table 3.2** and shown on **Figure 3-5**.

Table 3.2: Summary of River Water Body Status

River Waterbody	2013 – 2018 Status	2016 – 2021 Status	2019 – 2024 Status	Objective	Risk Status	High Status (Blue Dot) Objective
Carricknabraher_020 (IE_SH_26C020200)	Poor	Poor	Poor	Good	At Risk	No
Breedoge_010 (IE_SH_26B090300)	Poor	Good	Good	Good	Not at Risk	No
Mantua_010 (IE_SH_26M010200)	Poor	Moderate	Moderate	Good	Review	No

River Waterbody	2013 – 2018 Status	2016 – 2021 Status	2019 – 2024 Status	Objective	Risk Status	High Status (Blue Dot) Objective
Kinard_010 (IE_SH_26K070500)	Good	Good	Good	Good	Not at Risk	No
Killukin_020 (IE_SH_26K020700)	Moderate	Moderate	Moderate	Good	At Risk	No
Charlestown Stream_010 (IE_WE_34C280100)	Moderate	Moderate	Good	Good	At Risk	No

The WFD classification data available from Catchments.ie indicates the Carricknabraher_020, Mantua_010, and Killukin_020 river sub-basins have been assigned a status less than 'Good' due to ecological / biological (invertebrate) elements of the WFD classification.

Further information on the pre-existing pressures contributing to current WFD status is provided in **Section 3.2.5.2**

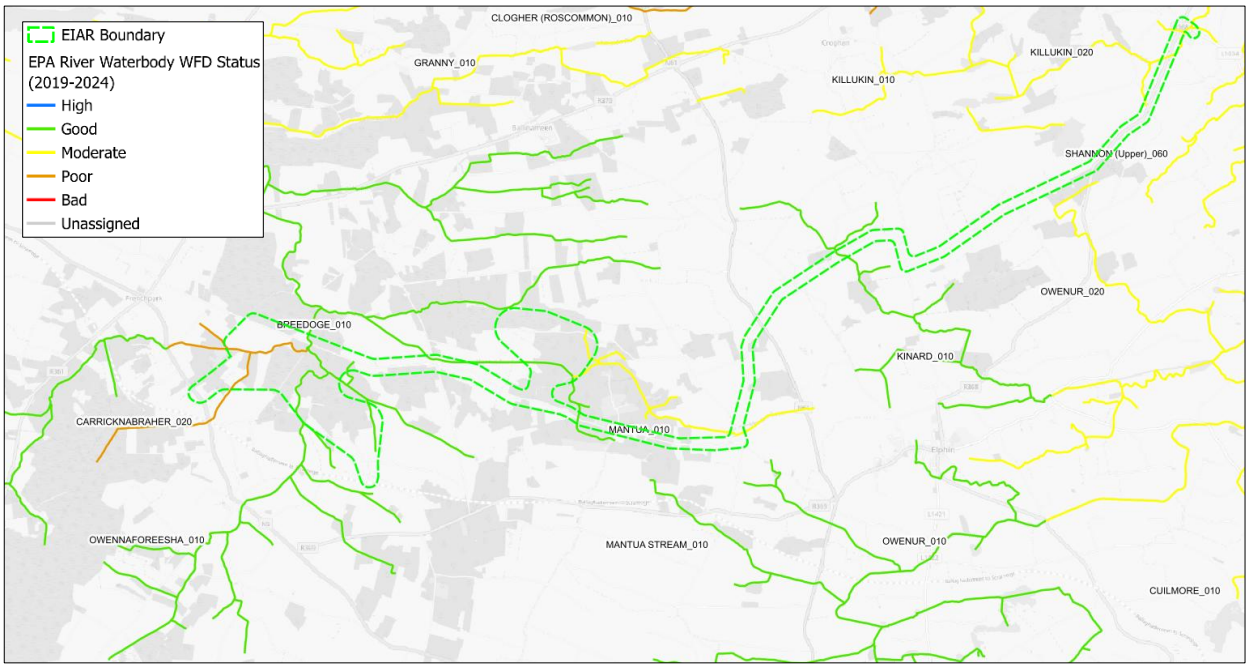

Figure 3-5: EPA River Waterbody WFD Status

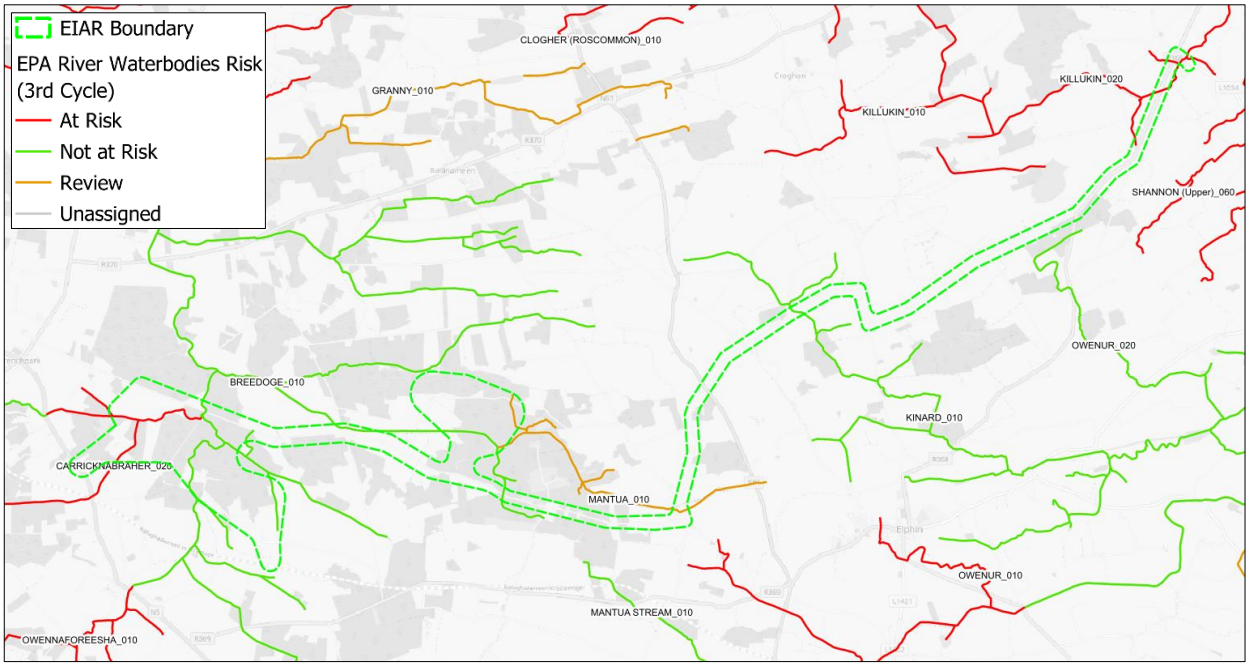

Figure 3-6: EPA River Waterbody WFD Risk Status

Table 3.3: River Water Body WFD Element Status

River Waterbody (2019 – 2024 Status)			Carricknabraher_020	Breedoge_010	Mantua_010	Kinard_010	Killukin_020	Charlestown Stream_010
			IE_SH_26C020200	IE_SH_26B090300	IE_SH_26M010200	IE_SH_26K070500	IE_SH_26K020700	IE_WE_34C280100
Ecological Status	Biological Status	Phytoplankton Status	Not available	Not available	Not available	Not available	Not available	Not available
		Other Aquatic Floras Status	Not available	Not available	Not available	Not available	Not available	Not available
		Invertebrate Status	Poor	Good	Not available	Good	Moderate	Good
		Fish Status	Not available	Not available	Not available	Not available	Not available	Not available
	Supporting Chemistry Conditions	Oxygenation Conditions	Pass	Pass	Not available	Not available	Not available	Pass
		Acidification Conditions	Pass	Pass	Not available	Not available	Not available	Pass
		Nutrients Condition	Pass	Pass	Not available	Not available	Not available	Pass
		Relevant Pollutants	Not available	Not available	Not available	Not available	Not available	Not available
	Hydro-morphology	Hydrology, Morphology, Continuity	Not available	Not available	Not available	Not available	Not available	Not available
	Ecological Status (2019-2024)		Poor	Good	Moderate	Good	Moderate	Good
Chemical Status	Chemical Status (2019-2024)		Pass	Pass	Not available	Not available	Not available	Pass
Overall WFD Quality Status (2019-2024)			Poor	Good	Moderate	Good	Moderate	Good

3.2.5.2 Significant Pressures – Rivers

The EPA use current water quality data and trends to highlight waterbodies that are 'At Risk' of failing to meet their WFD objectives by 2027. The Water Action Plan 2024: A River Basin Management Plan for Ireland and the 'Cycle 3' WFD Reports (May 2024) (**Section 1.5**) include summaries of local pressures within the catchments that present a risk to waterbodies meeting their WFD objectives.

The 'Sub-Catchment Assessments' (2019) relevant to the Project (**Section 1.5**) also provide further background and evaluation of priority issues within the respective sub-catchments.

Review of the documents relevant to the Project found the significant pressures for the Carricknabraher_020 river sub-basin to be morphological (hydromorphology) and organic (peat) in nature.

The Carricknabraher_020 is located within the 'Carricknabraher Area for Action' (area for restoration). Regarding hydromorphology, the associated the 'Carricknabraher Priority Area for Action (PAA)' report (LAWPRO, 2021) (refer to **Section 1.5**) notes that nearly all river channels in the Carricknabraher PAA are part of the Boyle Arterial Drainage Scheme (ADS). This has led to the deepening and straightening of most of the river channels in the PAA, altering their natural flow and sediment regimes, as well as habitats due to these morphological changes. Regarding peat, the PAA report notes that degraded peatlands, and the drainage channels associated with them, often leads to the loss of sediment and nutrients to receiving surface waters. The PAA report notes that in the case of activities impacting on water quality, LAWPRO will work with the relevant organisations and authorities to address the issues.

The Matua_010, also within the Carricknabraher PAA, is currently categorised as 'Review' pending the outcome of local catchment assessments to determine whether it is 'At Risk' of failing to meet its future WFD objectives by 2027. No further information is currently available from the EPA on the status of the review.

With regards to the Grid Connection, significant pressures in the Killukin_020 river sub-basin (located in the Killukin Shannon area for restoration) are noted to be sediment (Domestic Wastewater Treatments Systems (DWTS)) and nutrients (agriculture). The 'Killukin/Shannon Priority Area for Action' report (LAWPRO, 2021) notes that further work is being undertaken to identify areas with highest impact i.e., water quality sampling to better understand nutrient levels in the catchment rivers.

With regards to the TDR, significant pressures in the Charlestown Stream_010 river sub-basin (located in the Owengarve Charlestown area for restoration) are noted to be hydrological and morphological (relating to the Moy ADS), and agriculture (nutrients). The 'Owengarve Charlestown Priority Area for Action' report (LAWPRO, 2021) notes that further work is being undertaken to focus on agricultural related impacts on the Charlestown Stream_010 as well as potential impacts from ongoing arterial drainage maintenance.

Table 3.4: Summary of River Water Body Status

River Waterbody	2019 – 2024 Status	Objective	Risk Status	High Status (Blue Dot) Objective	Existing Pressures
Carricknabraher_020 (IE_SH_26C020200)	Poor	Good	At Risk	No	Morphological, Organic (hydromorphology, Peat)
Breedoge_010 (IE_SH_26B090300)	Good	Good	Not at Risk	No	N/A
Mantua_010 (IE_SH_26M010200)	Moderate	Good	Review	No	N/A
Kinard_010 (IE_SH_26K070500)	Good	Good	Not at Risk	No	N/A
Killukin_020 (IE_SH_26K020700)	Moderate	Good	At Risk	No	Sediment, Nutrients (DWTS, Agriculture)
Charlestown Stream_010 (IE_WE_34C280100)	Good	Good	At Risk	No	Hydrological, Morphological, Nutrients (Agriculture, Hydromorphology)

3.3 Groundwater Body Identification

The Project is underlain by 4 no. groundwater bodies as defined by EPA mapping. The western section of the Wind Farm Site is underlain by the GWDTE-Bellanagare Bog (SAC000592) (IE_SH_G_241), GWDTE-Cloonshanville Bog (SAC000614) (IE_SH_G_067), Castlerea Bellanagare (IE_SH_G_054), and Carrick on Shannon (IE_SH_G_048) groundwater bodies. The eastern section of the Wind Farm Site and the Grid Connection are underlain by the Carrick on Shannon (IE_SH_G_048) groundwater body **Figure 3-7**. Due to the potential direct hydrological link to the Wind Farm Site and Grid Connection, these groundwater bodies are **'scoped in'** for detailed impact assessment.

GSI mapping indicates there are no sand and gravel aquifers in the vicinity of the Project and are, therefore, **'scoped out'** for detailed impact assessment.

The characteristics of the groundwater bodies are summarised in the following sections.

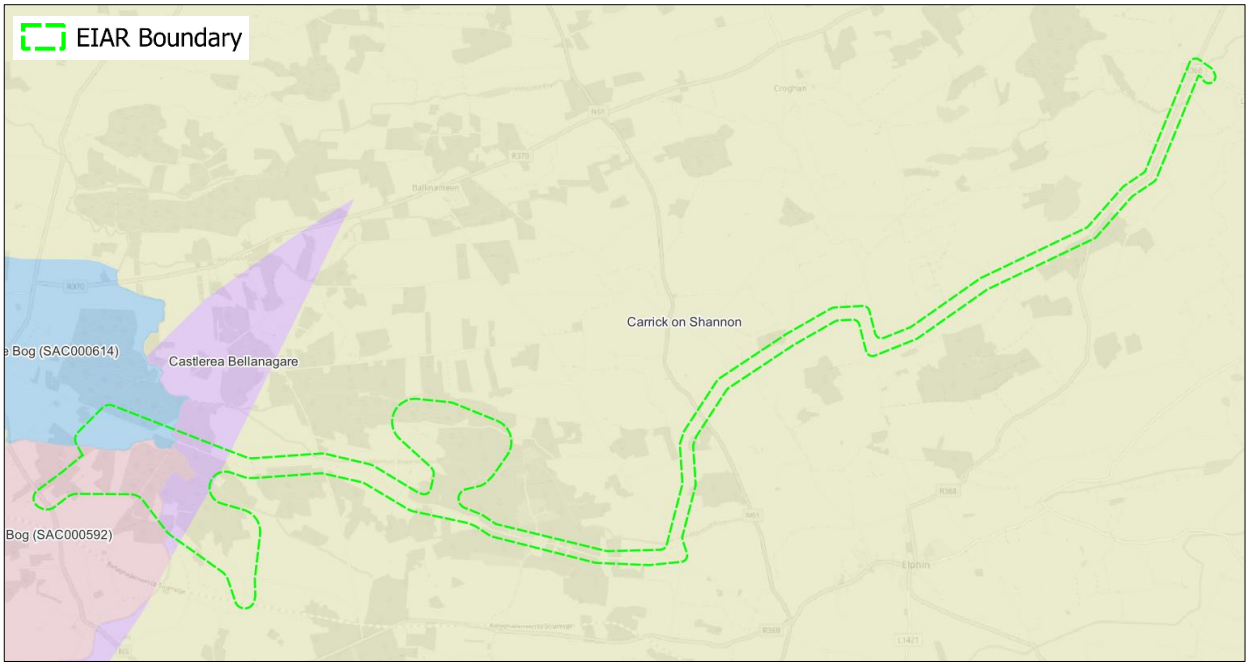

Figure 3-7: EPA Groundwater Bodies

3.3.1 Groundwater Quality / Water Framework Directive Status

The WFD requires the status of groundwater management units (groundwater bodies) within each river basin to be determined as 'Good' or 'Poor'.

For the period 2019-2024, the groundwater bodies underlying the Project have an overall WFD status of 'Good'. The overall status relates to both the quantitative and chemical (water quality) characteristics of a groundwater body. Each of the groundwater bodies is also delineated as a 'drinking water – groundwater' body.

Table 3.5: Groundwater Body WFD Status

Groundwater Status (2019 – 2024)			GWDTE-Bellanagare Bog (SAC000592)	GWDTE-Cloonshanville Bog (SAC000614)	Castlerea Bellanagare	Carrick on Shannon
			IE_SH_G_241	IE_SH_G_067	IE_SH_G_054	IE_SH_G_048
Groundwater Status	Quantitative Groundwater Status	Saline (or Other) Intrusions Test	Good	Good	Good	Good
		Impact of Groundwater on Surface Water Ecological/Quantitative Status Test	Good	Good	Good	Good
		Groundwater Dependent Ecosystems (GWDTE) - Quantitative Assessment Test	Good	Good	Good	Good
		Water Balance Test	Good	Good	Good	Good
	Chemical Groundwater Status	Saline (or Other) Intrusions Test	Good	Good	Good	Good
		Impact of Groundwater on Surface Water Ecological/Chemical Status Test	Good	Good	Good	Good
		Groundwater Dependent Ecosystems (GWDTE) - Chemical Assessment Test	Good	Good	Good	Good
		Drinking Water Protected Area Test	Good	Good	Good	Good
		General Chemical Assessment Test	Good	Good	Good	Good
Overall WFD Groundwater Status (2019-2024)			Good	Good	Good	Good

3.3.2 Significant Pressures – Groundwater

The EPA use current water quality data and trends to highlight waterbodies that are 'At Risk' of failing to meet their WFD objectives by 2027. The status of all groundwater bodies underlying the Project is currently 'Not at Risk' and there are no significant pressures associated with them.

Table 3.6: Summary of Groundwater Body Status

Groundwater Body	2013 – 2018 Status	2016 – 2021 Status	2019 – 2024 Status	Objective	At Risk	Existing Pressures
GWDTE-Bellanagare Bog (SAC000592) (IE_SH_G_241)	Good	Good	Good	Good	Not at Risk	N/A
GWDTE-Cloonshanville Bog (SAC000614) (IE_SH_G_067)	Good	Good	Good	Good	Not at Risk	N/A
Castlerea Bellanagare (IE_SH_G_054)	Good	Good	Good	Good	Not at Risk	N/A
Carrick on Shannon (IE_SH_G_048)	Good	Good	Good	Good	Not at Risk	N/A

3.3.3 Aquifer Classifications

A review of the available online GSI data indicates the bedrock aquifer underlying the majority of the Project is classified as a 'Regionally Important Aquifer - Karstified (conduit)' with the bedrock noted to be Ballymore Limestone Formation, Croghan Limestone Formation, and Bricklieve Limestone Formation.

Approximately 2.8km^2 of the western section of the Wind Farm Site is underlain by bedrock aquifer classified as 'Locally Important Aquifer (bedrock which is moderately productive only in local zones)' with the bedrock noted to be 'Boyle Sandstone Formation'.

Table 3.7: Characterisation of Bedrock Aquifers

Aquifer	Geological Characteristics	Aquifer Type	
Bedrock	Boyle Sandstone Formation	Ll	Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
	Visean Limestones (undifferentiated)	Rkc	Regionally Important Aquifer - Karstified (conduit)

3.3.4 Groundwater Vulnerability

The GSI Groundwater Vulnerability Maps are informed by the type and thicknesses of subsoils (sands, gravels, glacial tills (or boulder clays), peat, lake and alluvial silts and clays), and the presence of karst features.

The GSI mapping indicates that groundwater within the western section of the Wind Farm Site ranges from 'Low' to 'Extremely High' vulnerability. The eastern section of the Wind Farm Site is shown to be classified as 'Low' vulnerability.

The lower vulnerability zones surrounding the at the Wind Farm Site coincide with low-permeability peat deposits / overlying peat (cut-over peat bog) that provide protection to the underlying aquifer. Areas identified as Extremely High coincide with locations underlain by Till derived from limestones and alluvium, and where bedrock is at or near the surface.

The Grid Connection passes through areas with classifications ranging from 'Low' to 'Extremely High.'

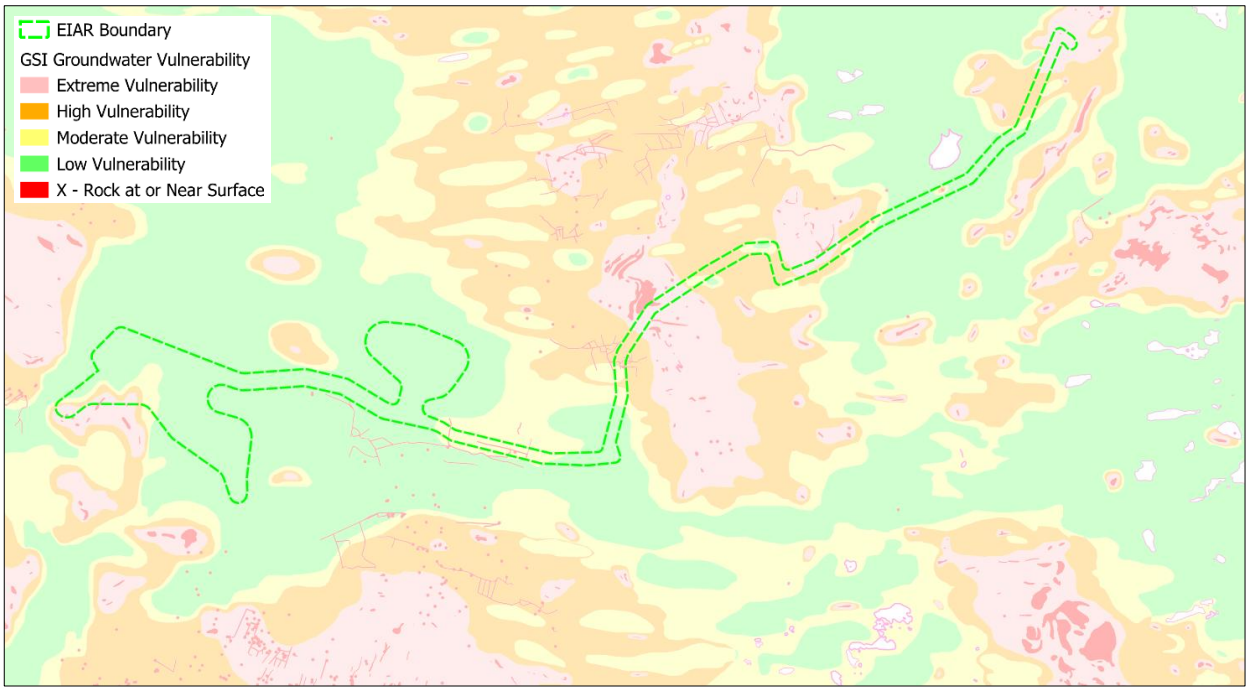

Figure 3-8: GSI Groundwater Vulnerability

3.3.5 Karst Features

A review of GSI online datasets identified 5no. karst features within the EIAR Boundary. An enclosed depression is present at the entrance from the south into the western section of the Wind Farm Site. Two enclosed depressions, a turlough and swallow hole are noted along the Grid Connection.

The underling bedrock beneath the majority of the Project is noted to be limestone (Ballymore Limestone Formation, Croghan Limestone Formation, and Bricklieve Limestone Formation) which has the potential of developing karstic features; therefore, unmapped karstic features may be present.

Geophysical surveys were undertaken across the Wind Farm Site to search for the presence of unmapped karst features (**Appendix 10.1**). The surveys observed significant weathering at the original site Wind Turbine T6, informing design development and resulting in its relocation. No other unmapped karst features were identified by the geophysical survey.

Karst features are primarily a geotechnical risk, but they may act as a direct conduit (pathway) for potential pollutants to groundwater receptor and, therefore, are **'scoped in'** for detailed impact assessment.

Figure 3-9: Karst Features

3.3.6 Groundwater Abstractions (Drinking Water)

Private water supplies and Group Water Schemes are not classified as surface water or groundwater bodies under the Water Framework Directive and, therefore, do not have assigned WFD status or objectives. However, as such supplies may abstract from or be hydrologically connected to WFD water bodies, they are considered in this assessment to provide context and to inform the evaluation of potential indirect effects arising from the Project.

GSI online mapping identifies Group Water Schemes (GWS) that are community-run water supply schemes. The mapping outlines the Zone of Contribution (ZoC) which is the land area that contributes water to supply source.

Two GWS / ZoC are shown to be within, or in proximity to, the EIAR boundary: the Peake GWS and Polecats GWS.

The Peake GWS is located at the southern extent of the western section of the Wind Fram Site. Works associated with the Project in the vicinity of the Peake GWS are limited to minor areas of road widening. At their nearest point, the works are located approximately 450m and down-gradient from the GWS. As the works are situated outside and hydraulically down-gradient of the ZoC, they do not lie within the groundwater catchment that contributes recharge to the GWS source; therefore, the Peake it is not considered likely to be affected by the Project and is **'scoped out'** for detailed impact assessment.

The Grid Connection passed through the Polecats GWS, and therefore, it is **'scoped in'** for detailed impact assessment.

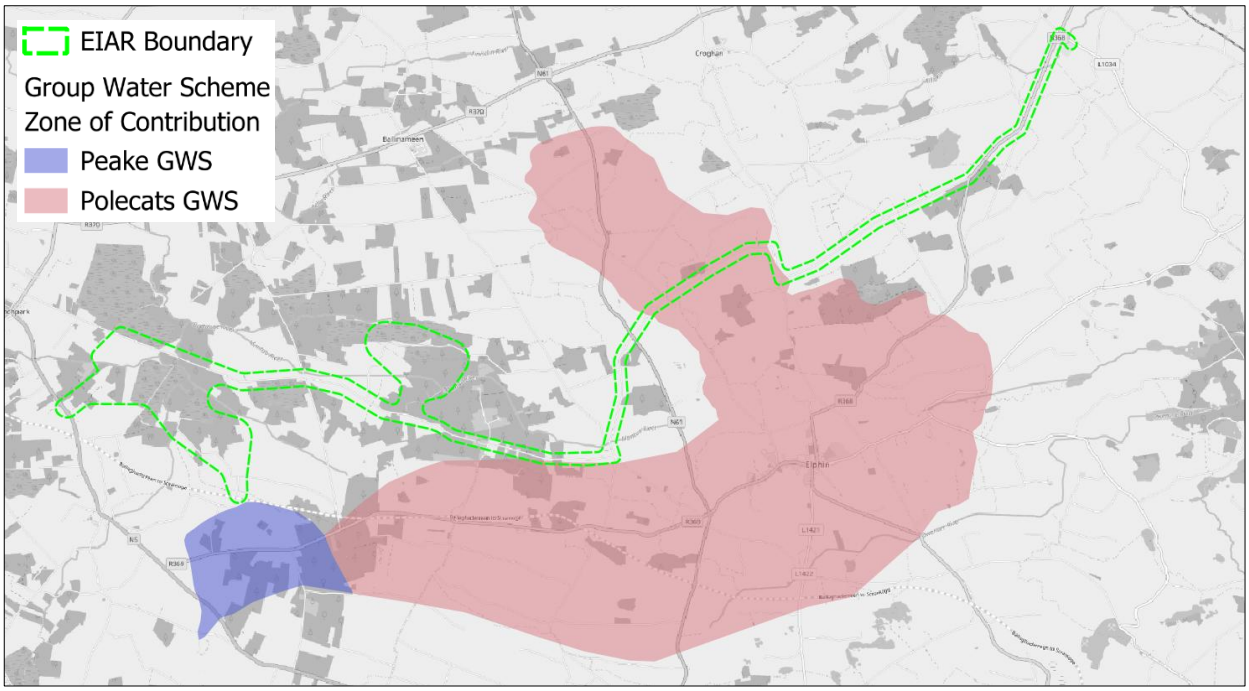

Figure 3-10: GSI GWS Zone of Contribution

3.3.7 Unregistered Potable Water Supplies

A domestic property located on the L1217 local road may be reliant on an unregistered private water supply. Internal Cabling is proposed on the L1217 local road to connect the eastern and westerns sections of the Wind Farm Site. The property is, therefore, **'scoped in'** for detailed impact assessment.

3.4 Designated Sites

While Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Natural Heritage Areas (NHAs) are designated under the Habitats Directive, Birds Directive and national legislation respectively, and are not statutory receptors under the Water Framework Directive, there is a clear regulatory and ecological linkage where such sites are hydrologically connected to surface water or groundwater bodies.

In these circumstances, the conservation objectives of designated sites may be dependent on the achievement and maintenance of WFD environmental objectives. Accordingly, this assessment identifies and considers designated sites as sensitive downstream or groundwater-dependent receptors where relevant, and cross-references the findings of the **Natura Impact Assessment** (NIS) and **Chapter 6: Biodiversity** to ensure a consistent and integrated approach to water quality, hydromorphology and habitat protection.

Designated Sites were identified utilising the datasets available on the NPWS Designations Viewer, and were screened to identify hydrological those with sensitivities to the water environment that are connected to the Project, i.e. sites which lie in the upstream catchment of, or are on downstream streamlines of the watercourses draining the lands within which the Project is located. Only sites meeting these criteria are discussed further in this assessment and shown on Figure 3-12 and Figure 3-12.

3.4.1 Cloonshanville Bog (SAC / pNHA)

Cloonshanville Bog SAC is designated as both a SAC and is a pNHA. The site supports several protected habitats, including Active Raised Bog, Degraded Raised Bog, Rhynchosporion vegetation and Bog Woodland. The north-western extent of the EIAR boundary coincides with the boundary of the SAC.

Chapter 6: Biodiversity identifies Cloonshanville Bog SAC as falling within the Zone of Influence of the Project. The accompanying NIS indicates that the bog comprises a number of raised bog ecotopes with limited interaction between groundwater and the raised bog habitats. Groundwater influence has only been

reported within deeper artificial drains in cutaway bog areas to the west of the site. The active and degraded raised bog habitats present are characteristic ombrotrophic systems that are sustained primarily by rainfall and are typically isolated from the surrounding groundwater table.

Hydrologically, the SAC is separated from the Project to the south by the L1217 local road and associated deep cut roadside drains (c. 2 m below road level) which function as a hydraulic and surface water barrier. To the south-east, the SAC is further separated from the Project by the L1217 and the Carricknabraher River.

Groundwater in the vicinity occurs within shallow peat deposits overlying weakly permeable soils, and no significant groundwater volumes have been recorded. Consequently, any potential disturbance to groundwater would be localised and temporary. Given that the qualifying habitats of Cloonshanville Bog SAC are ombrotrophic and dependent on rainfall rather than groundwater, and that any potentially groundwater-influenced flush habitats are both distant from and hydrologically separated from the Project area, the NIS concludes that there is no potential for direct or indirect impacts on the integrity of Cloonshanville Bog SAC arising from the Project. Therefore, the site is **'scoped out'** for detailed impact assessment.

3.4.2 Lough Gara (Ramsar / SPA / pNHA)

Lough Gara is designated as a Ramsar site, SPA, and a pNHA. The site is an internationally important wetland, particularly for its wintering waterfowl populations. It is of special conservation interest for species including Whooper Swan (Cygnus cygnus) and Greenland White-fronted Goose (Anser albifrons flavirostris). Lough Gara is located approximately 9 km north-west (downstream) of the EIAR boundary. The habitats and species for which the site is designated are ecologically sensitive to alterations in water quality, water quantity and flow regime and, therefore, the site is **'scoped in'** for detailed impact assessment.

3.4.3 Bellanagare Bog (SAC / SPA / pNHA)

Bellanagare Bog is designated as an SAC, SPA and pNHA. The site is classified as a western, or intermediate, raised bog, displaying characteristics of both raised bog and blanket bog. It is also of conservation interest for Greenland White-fronted Goose (Anser albifrons flavirostris). The site is located approximately 1.2 km south-west (upstream) of the EIAR boundary. Although a portion of the designated site lies within the Carricknabragher_020 catchment (approximately 1.7 km²), the qualifying habitats are primarily precipitation-dependent raised peat bog systems, albeit with some groundwater influence. Given both the separation distance and the fact that the designated site lies more than 15 m higher in elevation than the wind farm site, it is considered unlikely that the Proposed Development could affect hydrological or hydrogeological regimes at the designated site. **Chapter 6: Biodiversity** does not identify Bellanagare Bog as being within the Zone of Influence of the Project and it is, therefore, **'scoped out'** for detailed impact assessment.

3.4.4 Kilglass and Grange Loughs (pNHA)

Kilglass and Grange Loughs are designated as a pNHA and are located approximately 8 km south-east (downstream) of the proposed Grid Connection. The group of lakes is characterised by extensive reed swamp and associated freshwater marsh habitats, together with areas of very wet grassland supporting species such as Star Sedge (Carex echinata) and Ragged Robin (Lychnis flos-cuculi), with large patches of Greater Tussock Sedge (Carex paniculata) and scattered willow species (Salix spp.). Portions of the shoreline are noted to be particularly botanically rich. As the site supports water-dependent habitats and species and is hydrologically connected to the Project via the Grid Connection, it is **'scoped in'** for detailed impact assessment.

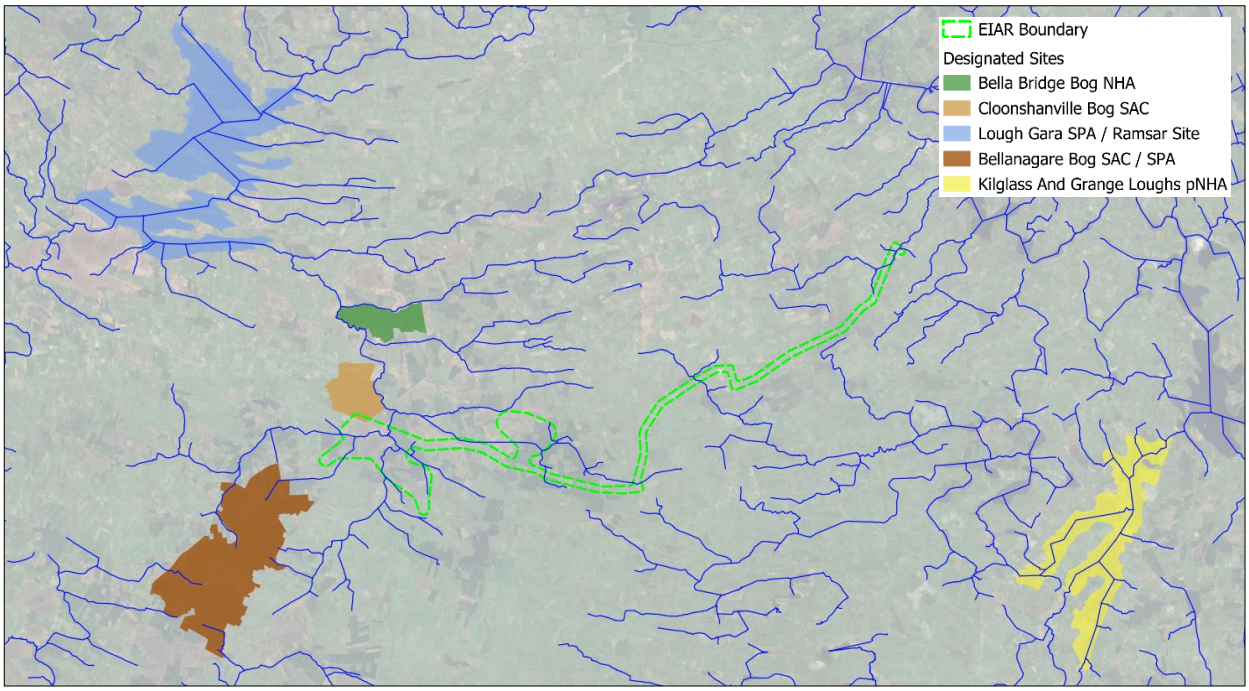

Figure 3-11: Designated Sites

3.4.5 River Moy SAC

The River Moy SAC is located approximately 450 m west (downstream) of the Turbine Delivery Route (TDR). The site is designated as a SAC due to the presence of habitat types and species that are rare or threatened in a European context, including Atlantic salmon (Salmo salar) and otter (Lutra lutra). As the Mullaghanoe River, which forms part of the designated site, supports water-dependent habitats and species and is hydrologically connected to the Project via the TDR, the site is and is **'scoped in'** for detailed impact assessment.

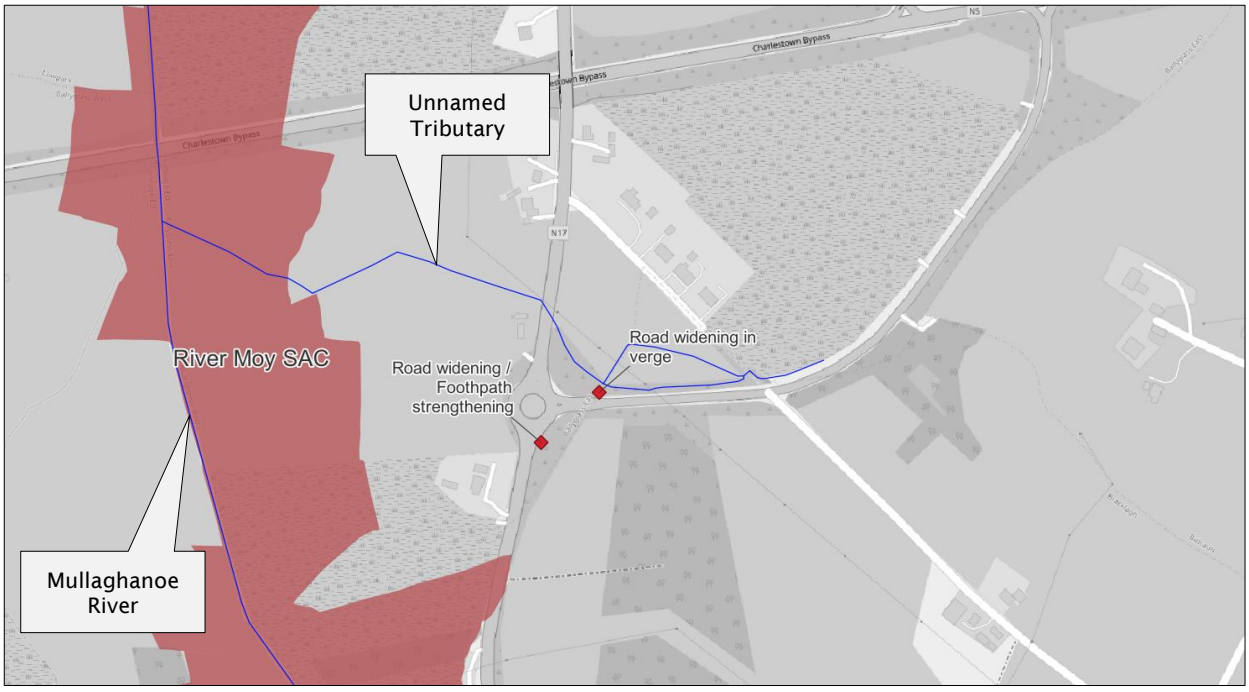

Figure 3-12: River Moy SAC (Mullaghanoe River) at TDR

3.5 Protected Areas

Protected Areas designated under Article 6 and Annex IV of the Water Framework Directive, including Bathing Waters, Drinking Water Protected Areas, Nutrient Sensitive Areas, Shellfish Waters and Salmonid-designated rivers, are intrinsically linked to the achievement of WFD environmental objectives.

Where such areas are hydrologically connected to the Project, they are considered sensitive receptors and the potential for the project to affect compliance with both WFD status objectives and the specific standards applicable to these designations is required to be evaluated. No Protected Areas were found to be hydrologically connected to the Project and are, therefore, **'scoped out'** for detailed impact assessment.

3.6 Scope of Impact Assessment

3.6.1 WFD Receptors

Based on the scoping exercise and review of hydrological and hydrogeological connectivity, the following WFD receptors are scoped into the Stage 3 WFD Impact Assessment:

Table 3.8: WFD Receptors

WFD Waterbody Type	Description	WFD Receptor
Surface Water Bodies	Rivers, streams, drains and associated watercourses of river sub-basins that are located within the Wind Farm Site and coincide with the Grid Connection and 'scoped-in' element of the TDR	• Carricknabraher_020; • Breedoge_010; • Mantua_010; • Kinard_010; • Killukin_020; and • Charlestown Stream_010.
	Downstream surface water bodies (including designated sites / protected areas with hydrological qualifying interests) that are hydrologically connected to the Project and could reasonably receive runoff, sediment or pollutants arising from Project activities.	• Lough Gara (Ramsar / SPA / pNHA); • Kilglass and Grange Loughs (pNHA); and • River Moy SAC.
Groundwater Bodies	Groundwater bodies underlying the Wind Farm Site and Grid Connection	• GWDTE-Bellanagare Bog groundwater body; • GWDTE-Cloonshanville Bog groundwater body; • Castlerea Bellanagare groundwater body; and • Carrick on Shannon groundwater body. • Abstraction / Potable Supply
	Hydraulically connected groundwater-dependent surface waters or wetlands, or other groundwater-dependent receptors.	

3.6.2 WFD Quality Elements and Supporting Conditions

The Stage 3 impact assessment will consider, where relevant to the identified pressure pathways:

- Ecological status elements for surface waters, including:
  - Biological quality elements;
  - Physico-chemical supporting elements (e.g. nutrients, suspended solids); and
  - Hydromorphological supporting conditions.
- Chemical status of surface waters, with regard to potential pollutant pathways.
- Groundwater status, including:
  - Chemical status; and
  - Quantitative status, where dewatering or groundwater interception may occur.

Only quality elements that could reasonably be affected by the Project are 'scoped in', consistent with a proportionate assessment approach.

3.6.3 Pressures

The following WFD-relevant pressures are scoped into WFD Stage 3 Impact Assessment:

- Mobilisation of suspended sediments and nutrients associated with vegetation clearance, forestry operations and earthworks;
- Hydromorphological alteration associated with watercourse crossings, culverting and drainage modifications;
- Pollution risks arising from the use, storage and handling of fuels, oils, lubricants and concrete;
- Potential effects of dewatering on groundwater levels and surface water baseflows;
- Long-term operational runoff from Site Access Roads Turbine Foundations and Turbine Hardstands; and
- Pressures associated with decommissioning and reinstatement activities.

Pressures for which no credible source–pathway–receptor (S-P-R) linkage has been identified are scoped out and not taken forward to Stage 3.

3.6.4 Development Phases

Based on the characteristics of the Project and known typical potential environmental effects of similar developments, the following phases of the Project are 'scoped in' for detailed (WFD Stage 3) impact assessment:

- Construction phase, including enabling works, forestry felling, earthworks, construction of turbines and infrastructure, grid connection works and reinstatement;
- Operational phase, including surface water runoff from infrastructure, maintenance activities, and use of fuels and lubricants; and
- Decommissioning phase, including removal of infrastructure, ground disturbance and site restoration.

Each phase is considered to ensure that both potential temporary and long-term pressures on the water environment are evaluated.

3.6.5 Matters Scoped Out of Further Assessment

Based on the nature of the Project and the findings of Stage 1 Screening and Stage 2 Scoping, the following are scoped out of detailed WFDA:

- Water bodies with no hydrological or hydrogeological connectivity to the Project;
- WFD quality elements for which no plausible impact mechanism exists; and
- Effects unrelated to WFD objectives or outside the remit of Article 4.

These scoping decisions are made on the basis of evidence and professional judgement and are documented to ensure transparency.

3.7 Scoping Summary

The WFD scoping exercise concludes that an impact assessment must address all surface water and groundwater bodies hydrologically connected to the Wind Farm Site, the 17.5 km Grid Connection corridor, and the 'scoped in' element of the TDR.

Key issues to be assessed include sediment and pollution risks, hydromorphological change and groundwater interaction, with particular focus on the construction phase, to ensure no deterioration of water body status or interference with River Basin Management Plan objectives.

4 WFD STAGE 3: IMPACT ASSESSMENT

4.1 Approach

WFD Stage 3 Impact Assessment is an assessment of the water bodies and activities carried forward from the WFD Screening / Scoping, set within the context of the appropriate River Basin Management Plans. This Stage evaluates whether the Project will cause deterioration of the identified water body's status, either directly or through cumulative impacts.

The assessment is undertaken in accordance with the principles established in relevant European and national guidance (**Section 1.5**) and case law[34], including the requirement that any project likely to affect the status of a water body must be assessed to determine whether it would lead to deterioration of a quality element or jeopardise the attainment of Good Status or Good Potential.

The assessment follows a precautionary, evidence-based and proportionate approach, consistent with EPA guidance (**Section 1.5**) and the objectives of the River Basin Management Plan for Ireland.

4.2 Predicted Environmental Effects

4.2.1 Activities Associated with Construction, Operation and Decommissioning

This section describes the potential likely effects on identified receptors that have the potential to arise at and downstream of the Project in the absence of control measures, during the following development phases:

- Construction;
- Operation and maintenance; and
- Decommissioning.

During all phases of the Project, certain activities have the potential to interact with surface water and groundwater bodies within the Wind Farm Site and downstream catchments. Such interactions could influence hydromorphological conditions and water quality parameters relevant to the assessment of WFD status. Given the nature of the Project and the works proposed, the potential pressures and pathways are broadly similar across each phase, with the highest potential for effects on WFD water bodies arising during the construction phase.

4.2.2 Components Contributing to Predicted Environmental Effects

Activities associated with the Project that could contribute to environmental effects are detailed in full within **Chapter 2: Project Description** and are summarised in the following section.

Felling of trees may result in increased mobilisation and transportation via surface water runoff of dissolved and / or sediment-bound nutrients / phosphate fertilisers from the disturbed soils and breakdown of organic matter (brash etc) into the wider water environment. The tree felling activities required as part of the Project will be the subject to a tree felling licence granted by the Minister for Agriculture, Food, and the Marine, in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (S.I. 191/2017).

During construction, the Project comprises construction of infrastructure which has the potential to cause change to local hydrology and water quality, comprising earthworks, excavations at Borrow Pits, plant movements with associated use of lubricants and fuel oils, spoil handling and placement of aggregates and cementitious materials, and dewatering associated with construction of the Temporary Construction Compounds, Turbine Foundations, development of Borrow Pits, building foundations, Site Access Roads, and cable trenches.

[34] Case C-461/13 Bund für Umwelt und Naturschutz Deutschland v Germany ("Weser" case) – 2015. Available from: https://curia.europa.eu/site/ [Accessed 04/02/2026]

The operational phase of the Project (the designed operating life estimated to be 35 years) would cause runoff from Site Access Roads, Turbine Foundations and Turbine Hardstands via drainage features, would require onsite welfare facilities with associated waste holding tank, and potentially necessitate storage and use of oils, fuels and lubricants on-site, each with the potential to cause adverse effects on the environment without adequate avoidance, design, or control measures.

Activities associated with the decommissioning phase at the end of the operating design life are generally as per those for the construction phase i.e., earthworks, plant movements with associated use of lubricants and fuel oils, spoil handling and placement of aggregates and cementitious materials, and dewatering associated with removal of turbines, buildings, hard standing areas, and buried structures followed by reinstatement and restoration of ground cover.

4.3 Likely Effects

The likely effects of the Project on the surface and groundwater environment prior to any avoidance, careful design and / or control measures are summarised in the following sections.

4.3.1 Changes in Runoff

Construction of the Project will introduce new temporary and permanent hardstanding and impermeable surfaces, including 11 no. Turbine Foundations and Turbine Hardstands, Site Access Roads, 1 no. permanent 110kV Onsite Substation compound, 6 no. Temporary Construction Compounds and areas of compacted ground associated with plant movement. These works may locally reduce infiltration and increase the rate and volume of surface water runoff, potentially resulting in a more rapid ("flashy") response to rainfall events within the site drainage network and nearby watercourses. Changes in runoff characteristics could temporarily increase water velocities in site drains and receiving watercourses, with associated risks of erosion, scour and short-term increases in downstream flood risk. A reduction in permeable ground during construction may also marginally reduce groundwater recharge in affected areas.

Excavations associated with Turbine Foundations, Internal Cabling trenches, Site Access Roads, Borrow Pits, and drainage installation have the potential to interrupt existing overland flow paths and field drainage patterns. Linear infrastructure such as new Site Access Roads tracks, drainage ditches and cable trenches may act as barriers to runoff or create preferential flow routes, which could temporarily lead to localised ponding or diversion of flows away from existing drainage pathways. This could result in short-term changes to surface water distribution across the site until reinstatement and permanent drainage measures are completed.

In total there are 15 no. watercourse crossings for the Project. This includes 6 no. watercourse crossing for Site Access Roads, 1 no. associated with Internal Cabling, and 8 no. associated with the Grid Connection infrastructure, including culverts and horizontal directional drilling beneath watercourses and structures. Works in proximity to these channels have the potential to alter flow conveyance or temporarily restrict flows during construction. If not properly managed, this could affect upstream water levels and increase localised flood risk or sediment mobilisation. Permanent crossing structures and drainage infrastructure will remain in place during operation and could continue to influence runoff patterns and flow conveyance within the site and receiving watercourses.

4.3.2 Changes to Surface & Ground Water Quality (Sediment / Suspended Pollution)

Construction of the Project will involve vegetation clearance, excavation and ground disturbance for 11 no. Wind Turbine foundations, Turbine Hardstands, Site Access Roads, Internal Cabling, 1 no. permanent 110kV Onsite Substation, 6 no. Temporary Construction Compounds, and development of 2 no. Borrow Pits, together with temporary spoil storage and soil stripping. These activities have the potential to expose soils and subsoils, increasing the risk that fine sediments could be mobilised in surface water runoff, particularly during rainfall. Ground disturbance in proximity to drainage features and on-site watercourses, as well as at 6 no. watercourse crossings for Site Access Roads, presents pathways for suspended sediment to enter receiving waters if not managed.

Construction of Site Access Roads, Turbine Hardstand areas and other infrastructure will require the import, handling and placement of aggregates and granular materials. Movement of plant and heavy goods vehicles across the Wind Farm Site, along with the establishment of 6 no. Temporary Construction Compounds and

drainage works, may generate sediment-laden runoff where disturbed ground and stockpiled materials are exposed to rainfall. Where excavations intersect shallow groundwater or collect surface water, temporary dewatering may be required; any such water may become contaminated through contact with excavated soils or construction materials and could affect nearby watercourses if not appropriately managed and discharged.

Sediment or debris entering watercourses during construction could alter channel morphology, increase turbidity and deposition, and adversely affect aquatic habitats and species. This risk is particularly relevant at locations where infrastructure crosses or is located near watercourses, including the 6 no. Site Access Road watercourse crossings at the Wind Farm Site, and 9 no. crossings associated with Internal Cabling / Grid Connection. Temporary works such as installation of culverts, excavation of cable trenches, and directional drilling launch pits near watercourses to facilitate the grid connection may also generate suspended solids if runoff is not controlled. Without appropriate management, these pathways could lead to short-term deterioration in surface water quality and associated ecological effects downstream.

4.3.3 Changes to Water Quality (Nutrient Loss)

The Project will require clearance of vegetation and forestry felling to facilitate construction of Turbine Foundations, Site Access Roads, Internal Cabling, and associated infrastructure. Removal of vegetation and disturbance of underlying soils during construction could increase the mobilisation of dissolved and sediment-bound nutrients in surface water runoff, particularly during rainfall events. Disturbed ground and exposed soils associated with earthworks, drainage installation and track construction may allow nutrients to be transported via site drainage pathways to nearby streams and field drains within the Wind Farm Site and along the Grid Connection corridor.

Nutrient release may also occur through decomposition of felled vegetation, roots and organic soils where these are temporarily stored, stripped or disturbed during construction and reinstatement works. Activities such as excavation for Turbine Foundations, Internal Cabling trenches and Site Access Roads, along with temporary spoil storage and reinstatement of soils, could create pathways for nutrient-rich runoff to enter adjacent drainage features and watercourses if not appropriately managed. These effects are most likely to occur during and shortly after vegetation clearance and earthworks, when soils are exposed and drainage patterns are temporarily altered.

4.3.4 Changes to Water Quality (Chemical Pollution of Surface Water and Groundwater)

Construction of the Project will involve the storage and use of fuels, oils, lubricants, drilling fluids and wet concrete within working areas across the Wind Farm Site. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads, plant refuelling, concrete pouring for the 11 no. Turbine Foundations, and the use of bentonite drilling fluids for horizontal directional drilling at watercourse crossings for Grid Connection, all introduce potential pathways for chemical pollutants to reach surface water or groundwater through accidental spills, leaks or poor handling.

The 6 no. Temporary Construction Compounds will include fuel and oil storage areas, concrete washout facilities and welfare units generating wastewater. Wastewater from construction staff facilities will be collected in holding tanks and removed off-site, but accidental releases or poor management could present a pathway for contamination of soils, drains or nearby watercourses. Similarly, washout water and residues from concrete works have the potential to affect water quality if not properly contained.

The horizontal directional drilling (HDD) proposed to facilitate the underground Grid Connection cable crossing of watercourses at several locations has the potential to cause pollution to surface and groundwaters as a result of ‘frac-outs’ (‘fracture-out’) e.g., where drilling fluids such as bentonite could be accidentally released into the water environment.

During operation, small quantities of oils and lubricants associated with Wind Turbine maintenance and Onsite Substation equipment will be present on site and could pose a minor pollution risk if accidental leaks or spills occur during maintenance activities.

4.3.5 Changes to Hydromorphology

Construction of the Project will involve works in proximity to a number of on-site drainage features and watercourses, including the installation of 6 no. Site Access Road watercourse crossings. Excavation, earthworks and runoff from disturbed ground have the potential to mobilise silt and suspended sediments that could enter channels during rainfall events. Any increase in sediment supply may locally alter channel sediment dynamics at crossing locations and downstream, potentially affecting bed composition, deposition patterns and the stability of channel forms.

The installation of the 6 no. Site Access Road watercourse crossings will introduce engineered structures that may modify local flow conditions within affected channels. Changes to channel bed levels, flow velocity or cross-section at crossing points could influence sediment transport processes, with potential for localised erosion or deposition upstream and downstream of structures. Temporary disturbances to drainage pathways or overland flow during construction of access tracks, cabling and drainage infrastructure may also modify flow patterns and connectivity between land and watercourses, potentially affecting the resilience of channels to future changes in hydrology or sediment input.

Although no permanent diversions of watercourses are proposed, temporary works associated with crossings, excavations and drainage installation could influence local flow routes and sediment transfer during the construction period. Alterations to runoff pathways or flow conveyance within the site drainage network may result in short-term changes to discharge patterns entering nearby streams and ditches. If not appropriately managed, these changes could influence channel morphology, sediment continuity and hydromorphological processes within receiving watercourses until permanent crossing structures and drainage systems are established and disturbed areas are reinstated.

4.4 Pre-Emptive Design Measures

The potential effects determined as being likely to be a consequence of the Project, which were described from the perspective of being prior to sympathetic design or other preventative measures, are substantially reduced or eliminated through a proactive design approach to render all likely effects insignificant. The approach avoids identified sensitive baseline receptors. This section identifies the embedded preventative measures implemented in the design.

Detail of the design evolution highlighting considerations made with regards to hydrology, hydrogeology and water quality management is presented in **Chapter 3: Alternatives Considered**.

The Project layout has evolved so that the design avoids environmental constraints pertinent to the water environment, per the following sections.

4.4.1 Avoiding Water Features (Watercourse Buffer Zones)

As a precautionary measure, buffer / exclusion zones to EPA-mapped watercourses were adopted as constraints in the design layout, and for incorporation as a construction buffer in relation to construction activities in proximity to watercourses. A 50m hydrological buffer was adopted for significant / major watercourses (catchment >0.25 km^2) and a 10m buffer for minor watercourses (catchment <0.25 km^2).

The approach, methodology and rationale are expanded further in **Chapter 11: Hydrology & Hydrogeology** and buffers are indicated on Surface Water Management drawings included in **Appendix 11.2** (and included as **Management Plan 3** (MP3) of the Construction Environmental Management Plan (**CEMP**)).

4.4.2 Abstractions / Water Supplies

With regards to known or potential potable water abstractions identified in the vicinity of the Wind Farm Site, the proposed infrastructure layout is such that no Wind Turbines / Turbine Foundations and associated excavations are sited within 250 m of known or potential potable water abstractions.

Additional control measures to be implemented during the construction phase, relating to temporary works associated with Internal Cabling along the L1217 local road within 100 m of a single dwelling reliant on a private water supply, are detailed in **Section 4.5.9**.

4.4.3 Forestry

To ensure a tree clearance method that reduces the potential for sediment and nutrient runoff, the construction methodology will follow the specifications set out in the relevant guidance i.e., 'Forest Harvesting and the Environment Guidelines' (DAFM, 2000) and 'Forestry and Water Quality Guidelines' (DAFM, 2000). The use of existing commercial forestry infrastructure will be maximised to lessen disturbance from machines used for felling. Appropriate methods are outlined in **Appendix 2.2** and summarised below:

- Brash, logs, or debris will not be allowed to enter the aquatic zones and relevant watercourses. Felled tree to be stacked in a responsible manner to prevent contamination of watercourses with organic rich leachate exuding from cuttings. Refuelling and maintenance of machinery will be conducted at dry, elevated ground, at least 50 m from aquatic zones and 20 m from watercourses.
- Sediment traps will be installed within relevant watercourses before harvesting commences, at strategic locations identified on the ground. Sediment traps will be monitored and maintained (i.e., cleaned out and/or added to, as appropriate) throughout felling, extraction, and periodically thereafter, until the site stabilises. There will be a 20m buffer around aquatic zones (10m either side) and 10m buffer around relevant watercourses (5m either side) identified in maps. Existing drains will be incorporated and enhanced where necessary and will integrate with the proposed renewable energy development's drainage system.
- Onsite supervision will be present during operations to ensure that felling and extraction are carried out appropriately and that water protection measures are adequate and remain effective throughout, and to trigger contingency measures, if necessary (e.g., to cease operations if rainfall creates a risk of sediment mobilisation and runoff). All staff must always wear high-visibility jackets and hard hats. All personnel on site must have appropriate Health and Safety training. All felling/harvesting operations to comply with the Forest Harvesting and the Environment Guidelines and Forestry and Water Quality Guidelines.

4.4.4 Site Drainage Management and SuDS Design

The Project adopts a surface water management plan / site drainage design using the principles of Sustainable Drainage, promoting the principles of onsite retention of flows and use of buffers and silt removal techniques. All drainage related control measures will be encompassed by a robust and proven Sustainable Drainage System (SuDS) design proposed as part of the Project which will be used to control drainage and silt management on the site.

The proposed on-site drainage is set out in detail at **Appendix 11.2** and the accompanying set of drainage drawings. The drainage manages flood risk at the Wind Farm Site, provides environmental protection and manages water quality and silt / suspended sediment, and avoids unnecessary disruption to existing hydrological patterns by adhering to the following principles:

- Site Access Roads and Turbine Hardstand drainage adopts SuDS principles and ensures that runoff from new Site Access Roads and Turbine Hardstand shall be reduced to the pre-development greenfield rate. The drainage system caters for protection for up to a 1 in 100-year / 1% AEP rainfall event including allowance for climate change;
- The drainage plan adopts sub-catchments to manage runoff from the Wind Farm Site where sub-catchments mimic natural topography to avoid "crossing catchments" which could locally affect flood risk;
- Drainage maintains existing overland flow routes and channels. Existing natural flow paths are maintained through the use of piped crossings under road alignments at natural depressions and at regular intermediate intervals;
- Drainage minimises transporting rainfall runoff in long linear drainage swales by providing regular channel "breakouts", whereby water is encouraged to flow overland, thus maintaining existing natural hydrological patterns;

- Drainage reduces potential disruption caused by excavations with implementation of floated track in areas where active / deep peat has been identified. This approach prevents unnecessary disturbance to the peat mass and maintains the natural hydrological regime;
    - Floated roads are proposed in all areas where active or deep peat occurs, as this method substantially reduces environmental and geotechnical impacts. Unlike full peat excavation which requires the removal, transport, handling, and storage of large volumes of peat floated tracks involve placing geotextile and aggregate directly on the peat surface. This results in minimal excavation, limited to surface vegetation stripping and minor grading, allowing the road to "float" on the peat body.
    - The adoption of floated roads was recommended following ecological and soil assessments (**Chapter 6: Biodiversity** and **Chapter 10: Soils and Geology**), which concluded that this method provides the lowest-impact solution. Floated tracks help minimise habitat disturbance, reduce soil displacement, and significantly lower carbon emissions that would otherwise arise from excavating and transporting peat. Full peat removal exposes large areas, increases sediment mobilisation risk, and disrupts long-established hydrological pathways. In contrast, floated tracks preserve the underlying peat and its hydrological integrity, thereby reducing the likelihood of drainage-induced settlement, peat oxidation, and carbon release.
-
- Drainage reducing surface water flow rates and volumes by attenuating runoff from tracks and hardstands "at source" by providing check-dams in swales, whereby the flow velocity and rate of discharge is artificially reduced to mimic natural properties. This provides an additional layer of protection rather than relying solely on "end of line" attenuation basins;
- Drainage provides attenuation and settlement ponds at main surface water discharge locations at end of drainage "runs", where runoff from significant new impermeable areas is treated and attenuated before being discharged, either by dispersal overland, or over a riparian zone adjacent to a watercourse; and
- Proposals include temporary drainage and settlement features at Borrow Pits, which are a potential source of sediments and reduced quality runoff due to dust and sludge caused by rock breaking, crushing and heavy plant movements.

Drainage design will reduce chemical, silt and other suspended pollutant transport by providing a "treatment train" of two to three stages of pollutant removal to all surface water runoff, nominally by:

- Ensuring that drainage swales are designed to convey flows at a low velocity by using a wide, flat-bottomed drain;
- Providing settlement and filtration features in all linear drainage swales (check dams, filtration dams) to reduce flow velocity and encourage settlement;
- Encouraging appropriate vegetation growth in the base of all linear drainage to provide additional filtration of water;
- Providing settlement ponds at discharge locations in order to provide treatment to contaminated runoff prior to discharge;
- Discharging surface water runoff over undisturbed vegetated ground, hence allowing any remaining silts and other pollutants to drop out of flows before entering the watercourse (having the effect of polishing the runoff); and
- Preventing the discharge of surface water runoff flows directly to existing watercourses or drainage. Discharges will be via SuDS and buffer zones which will act as a filter strip, allowing deposition of suspended solids and other pollutants.

Consideration specific to the proposed infrastructure elements are documented in the detailed site-specific drainage management / SuDS design – refer to **Appendix 11.2** and accompanying drainage drawings.

4.4.5 Drainage at Upgraded Tracks

The Project design includes the upgrading of sections of existing Site Access Roads associated with the existing agricultural, forestry and peat extraction lands. As such, the proposed upgrade works

(maintenance of existing running surface and associated drainage) may encounter current track drainage which is locally significant in terms of drainage function.

In these instances, additional preventative control measures will be deployed including placement of temporary silt barriers (e.g., check dams) within retained and replacement drains. Preventative control measures are discussed further in **Section 4.5** and will be used where appropriate.

4.4.6 Watercourse Crossings

The number of watercourse and drainage crossings has been minimised through the principle of avoidance at the layout design stage. At the Wind Farm Site, the Project will result in the crossing of 5 no. significant / major watercourses and 1 no. minor watercourse.

Crossings are designed to accommodate the track width and minimise length of affected channel. Hydraulic design of crossings has been undertaken as per the guidance and requirements provided in CIRIA C786 "Culverts, Screen and Outfall Manual", with primary parameters as follows:

- Width of the culvert will be greater than the width of the active drainage channel;
- Alignment of the culvert will suit the alignment of the drainage channel, i.e. preserve the existing direction of flow;
- The slope of the culvert will not exceed the slope of the bed of the existing drainage channel;
- Detailed design of crossings will comply with OPW Section 50 guidelines, which will include providing freeboard to design flood levels and ensuring no increase in flood risk elsewhere as a result of the bridge / culvert. Detailed hydraulic design of culverts and similar structures post permission is normal and accepted practice for wind farms in Ireland; and
- Fisheries shall be protected by adopting the guidance stated in 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' as published by Inland Fisheries Ireland (2016).

Hydraulic design of crossings has been undertaken as part of this assessment and details are provided in a 'Watercourse Crossing Schedule' included as part of **Appendix 11.1**. The crossings are subject to Section 50 consent and have been designed to give a minimum 0.3m freeboard at the inlet to the 1 % AEP Climate Change design standard.

Culvert form (type) detailed in the Watercourse Crossing Schedule is informed by site-specific assessments (i.e., **Chapter 9: Aquatic Ecology**). Clear-span / bottomless crossings are required at the proposed 5 no. crossings on major / significant watercourse to:

- Ensure preservation of the stream habitats (substrate for spawning etc.); and
- To avoid instream works during the construction of the crossings that could adversely affect water quality (i.e., bed disturbance causing release of sediment etc).

Design drawings for bottomless / clear-span crossings have been provided as part of the planning application and are included as part of the Drainage Management Drawings within **Appendix 11.2**. Elsewhere, culverts shall be of a closed conduit type.

In total, there are 8 no. watercourse crossings along the Grid Connection within the public road network between the Wind Farm Site and the 220kV Flagford Substation. At each location, the cable will be laid within the road deck over/under the existing culvert, or Horizontal Directional Drilling (HDD) under the watercourse shall be employed. Details on the proposed culvert and HDD methods are provided in **Chapter 2: Project Description** and **Planning Drawings NO. 6575-JOD-CGWF-XX-DR-C-0301 – 0306 (Drainage and Crossing Details)** and **6575-JOD-CGWF-XX-DR-C-0901 – 0912 (Trench Details)**.

Crossing all other existing culverts will be carried out using open trenching with either an undercrossing or an overcrossing, or by HDD depending on the depth and the condition of the culvert. Details are provided in **Chapter 2: Project Description** and **Planning Drawings NO. 6575-JOD-CGWF-XX-DR-C-0301 – 0306 (Drainage and Crossing Details)** and **6575-JOD-CGWF-XX-DR-C-0901 – 0912 (Trench Details)**.

During decommissioning phase, underground cables at the Wind Farm Site will be removed while the ducting will be left in-situ. The Grid Connection cabling outside the Wind Farm Site will be permanent be owned by ESBN Therefore, no works within watercourses shall be required during any phase of the Project.

Consultation and any required approval will be sought from all relevant stakeholders and regulators in accordance with OPW Section 50 guidelines (OPW, 2022), at the pre-construction detailed design stage for all works in and affecting watercourses and drains.

4.4.7 Borrow Pits

The 2 no. Borrow Pits which are to be backfilled with spoil are sited outside hydrological pollution prevention buffer zones; however, they have the potential to be a source of sediment that would cause reduced quality runoff requiring treatment. Measures that will be implemented in full to control reduced quality runoff from spoil comprise filtration of runoff through boundary aggregate bunds and across intact vegetated buffers.

4.5 Preventative Measures – Construction Phase

Additional preventative measures, over and above the designed-in / embedded measures previously detailed, that are in accordance with established best practice on construction sites will be used when appropriate to reduce or prevent the residual hazards which may not be fully mitigated by the design evolution and avoidance. Although adverse effects are not likely, these additional measures will be implemented as part of best practice.

4.5.1 Pollution Prevention Measures

The site manager will ensure that control measures (as outlined in the following **Sections 4.5.2** to **4.5.17** as identified within this assessment are fully implemented and that activities are carried out in such a manner as to prevent or reduce effects.

To ensure best practice on site and to help avoid pollution release to watercourses, IFI 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) will be adhered to. The Guidance on Pollution Prevention (GPP) series (SEPA / NIEA, 2022), relevant in similar adjacent jurisdictions, will be consulted and complied with to help avoid pollution release to watercourses. Key requirements for control of chemical pollution risk that will be implemented include those outlined in the following sections.

The following sections should be read in conjunction with the construction management information provided within **Chapter 2: Project Description**, **Appendix 2.1**, and **Appendix 11.2**.

4.5.2 Storage

All equipment, materials and chemicals required for the Project will be stored away from any watercourse (i.e. outside previously stated buffer zones) and in accordance with GPP5: Works and Maintenance in or Near Water and GPP6: Working at Construction and Demolition Sites. Chemical, fuel and oil stores will be sited on impervious bases in accordance with GPP2: Above Ground Oil Storage Tanks and within a secured bund of 110% of the storage capacity.

Storage space shall be located within the Temporary Construction Compound (as described in **Chapter 2: Project Description**); the same conditions shall apply where materials are stored at main working areas (e.g. Turbine Hardstands).

4.5.3 Vehicles and Refuelling

Standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Spill kits will also be available in designated areas throughout the Wind Farm Site. Refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas away from any watercourse or drainage ditches (i.e., outside previously stated buffer zones, **Section 4.4.1**) and will adhere to best practice as detailed in PPG7.

4.5.4 Maintenance

On-site maintenance (outside of the Temporary Construction Compound) to construction plant will be avoided in all practicable instances, unless vehicles have broken down necessitating maintenance at the point of breakdown. Spill / leak prevention measures (spill kit, drip trays, absorbent booms) will be put in place to avoid spills of oils or fuels prior to carrying out any maintenance works.

4.5.5 Cement and Concrete Batching

Measures to prevent discharge of alkaline wastewaters or contaminated storm water to watercourses / groundwater will be implemented on site. Concrete contaminated water will be discharged to a lined basin in order that it be contained for authorised disposal off site. Wastewater spillage will be minimised by using settling tanks and recycling water. Spill kits will also be available in designated areas throughout the Wind Farm Site.

4.5.6 Mess and Welfare Facilities

Mess and welfare facilities will be required during the construction phase and will be located at the Temporary Construction Compounds. Foul effluent disposal shall be via sealed cesspools with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e., there shall be no emission of treated or untreated foul effluent on the Wind Farm Site).

4.5.7 Construction in the Vicinity of Watercourses

The following procedures will apply to the general construction activities required within defined watercourse buffer zones:

- No unnecessary stripping / removal of vegetation;
- No spoil deposition or stockpiling of excavated material;
- No storage or use of chemicals, fuels, or other lubricants;
- Due consideration will be given to the prevailing ground and weather conditions (refer to **Section 4.5.17**) when programming the execution of the works in order to ensure that works are undertaken during periods of predicted low flow and low rainfall in order to minimise contact with water; and
- Ensure that roadside drains do not discharge directly into watercourses, but rather through a riparian buffer area of intact vegetation as denoted on design drawings.

Further detail is provided in **Appendix 11.2** and associated drainage drawings.

4.5.8 Construction of Watercourse Crossings

Construction of watercourse crossings will be programmed to coincide with periods of predicted low flow in the affected channel (determined by rainfall and would generally coincide with summer months) and adhere to working period restrictions imposed.

Construction will be strictly as per the design for each identified watercourse crossing and will fully implement all SuDS and additional mitigating measures proposed at the detailed design stage. For purposes of outline design, the proposed preventative control measures will consist of:

- Installation of silt fences parallel to the watercourse channel in the vicinity of the proposed crossing;
- Installation of small cut-off drains to prevent natural surface runoff entering area of construction activity; and
- Installation of filtration or other silt entraining features within the watercourse channel immediately downstream of the works location.

Further detail is provided in **Appendix 11.2** and associated drainage drawings.

4.5.9 Construction in the Vicinity of Private Water Supplies

There shall be no storage of chemicals, fuels, or other lubricants and no refuelling permitted within 100 m of private potable water supplies. To further reduce residual risk to private potable water supplies, a spill kit will be available on site at all times, and a team of operatives will be trained in the use of the spill kit.

Emergency procedures (**Section 4.5.10**) in the event of a spillage will be displayed on site and communicated to all operatives. All operatives will be made aware that any fuel spillage must be reported to the contractor's office as soon as it happens.

4.5.10 Emergency Responses

An Emergency Response Plan for dealing with an accidental spillage of chemicals, fuels, or other lubricants shall be prepared prior to works commencing and communicated to all operatives. Emergency response measures will include the following:

- Establish that there is not an immediate risk of fire, if there is call the Fire Brigade and evacuate the area;
- Stop the source of the leak – i.e. by turning off the tap, plugging the leak or rolling over the drum (if it is safe to do so);
- Contain the spillage by bunding using sandbags, earth banks, absorbent materials etc. Seal any drains to prevent entry of oil and place booms across any receiving watercourses to contain and absorb surface oil;
- Contact the Emergency Response Team;
- Notify the Environmental Manager. The Environmental Manager will assess the requirement to notify other agencies i.e. EPA or the sewage undertaker; and,
- Clean up within the contained area. All contaminated earth and materials arising from the spillage are classifies as hazardous waste and are to be disposed of via a licensed haulier to a licensed recipient in line with approved hazardous waste removal procedures.

4.5.11 Temporary SuDS

SuDS, comprising temporary drainage and silt management features will be constructed prior to earthworks (including preliminary or enabling works including felling) proceeding to construct linear works (tracks / hardstanding areas / cable routes), turbine bases, and other infrastructure.

Drainage will be provided to temporary earthworks. Permanent drainage will be installed in advance of or in parallel with completion of tracks and hardstanding areas; a planning design for permanent drainage is shown on drawings within **Appendix 11.1** and **Appendix 11.2** and associated drainage drawings.

Temporary measures will consist of:

- Temporary silt fences erected in areas where risk of pollution to watercourses has been identified, specifically, track watercourse crossing locations and areas where tracks lie within watercourse buffer zones;
- Installing temporary constructed settlement features consisting of sumps or settlement basins in areas where water is to be discharged. Principles and design standards for sizing of treatment are stated in **Appendix 11.2**;
- Upslope temporary cut-off drainage channels approximately parallel to the proposed Site Access Roads alignment will be installed in advance of any excavated cuttings for the Site Access Roads or Turbine Hardstand areas;
- Drains, natural flow paths and cut-off drain outlet locations will be identified and charted, in order to ensure that piped crossings can be installed in advance of or adjacent to the track construction;
- Settlement ponds will be constructed in advance of commencing excavations for foundations and at any other locations where dewatering of reduced quality runoff is expected; and

- Drainage swales will be installed in parallel with Access Road construction. Note that this may require that drainage swales are reformed on an ongoing basis as Access Road alignments are modified to their eventual finished design level.

The prevention measures described above will be in place at all times during the construction phase to prevent the conveyance of silts to receiving watercourses. Further detail on the measures above is elaborated in **Appendix 11.2**.

4.5.12 Electrical Cable Laying

Internal Cabling and Grid Connection laying works will be managed and limited in accordance with **Section 4.5.17** (Timing of Works / Responding to Weather) so that execution of the works is undertaken during periods with low rainfall likely to coincide with low superficial groundwater levels in order to reduce the likelihood of runoff entering the excavations.

Excavation of cable trenches will be carried out over short distances, with frequent backfilling of trenches to minimise opportunity for the ingress of water into open trenches, temporary silt traps will be provided in longer trench runs and on steeper slopes, and peat and spoil will be stored in line with a peat and spoil management plan, which is included as part of the detailed CEMP at the pre-construction stage.

4.5.13 Dewatering of Excavations

Dewatering of excavations may be required, depending on groundwater levels and flow, although based on the existing SI information (refer to **Chapter 10: Soils and Geology** and associated appendices), shallow groundwater is considered to be likely.

The majority of Turbine Foundations will be gravity based. Turbines T1 and T3 are likely to be constructed with deep piled foundation, comprising rotary bored piles into bedrock, with potential dewatering below the bedrock aquifer groundwater table anticipated at these locations.

SI works indicate that the bedrock is overlain by 3 – 8m of overburden, is variably weathered, and initially rock weak. The 2 no. Borrow Pits will be excavated only as required, subject to the results of the confirmatory ground investigations and the encountered bedrock quality. Groundwater from fractured and weathered bedrock and shallow groundwater encountered at these locations will require dewatering.

All contaminated groundwater or rainfall runoff collected in excavations will be discharged via settlement ponds or filter strips prior to entry to the receiving water environment. Temporary pumping of groundwater will be carried out as required to facilitate excavation and remove wastewater with high concentrations of suspended soils into settlement features.

The earthworks will not take place during severe weather conditions if they present a risk to materials management or stability.

Any settlement lagoons or filter strips associated with dewatering will be regularly inspected, particularly after periods of heavy rainfall and prior to periods of forecast heavy rainfall. Maintenance (to clear blockages or remove silt) will be carried out in periods of dry weather where practicable.

Settlement features at borrow pits and wider maintenance requirements are further considered in **Appendix 11.2**.

4.5.14 Piling Activities

All piling works will utilise best practice rotary bored piling techniques, avoiding the use of driven piling methods that could increase the risk of preferential pathways for contaminant migration. Drilling fluids (if required) will be selected to be non-toxic and environmentally acceptable, and their use will be strictly controlled. Closed-loop systems will be employed where practicable to minimise losses to ground.

The integrity of the borehole will be maintained throughout construction, and temporary casing will be installed where required to prevent collapse of overburden materials and to minimise the potential for vertical hydraulic connectivity between superficial deposits and the underlying bedrock aquifer. Piles will be constructed to ensure adequate sealing of the annulus, preventing the creation of preferential pathways for contaminant migration (i.e., vertical movement of water and contaminants) between strata. For bored

piles, concreting techniques (e.g. tremie through casing) will seal the annulus, avoiding long-term connections between shallow peat/bog water and deeper bedrock groundwater.

4.5.15 Dust Management

Loose track material generated during the use of Site Access Roads and the Temporary Construction Compounds will be prevented from reaching watercourses by surface water drainage systems installed at aggregate based hard standing areas. In dry weather, suppression by a dust suppression bowser will be employed.

4.5.16 Maintenance of Pollution Prevention Measures

All SuDS and additional pollution prevention measures installed will be subject to a regular maintenance regime for the life of the construction phase in order to maintain functionality of all features. This will comprise:

- Unblocking of drains;
- Maintenance of access road and other hard standing surfaces;
- Replacement of filtration features; and
- Removal of silt build-up from settlement and filtration features.

4.5.17 Timing of Works / Responding to Weather

The works programme for the construction phase will take account of weather forecasts and predicted rainfall in the region. Monitoring of weather forecasts shall be the responsibility of a suitably qualified Environmental Consultant / Environmental Clerk of Works (ECoW).

Work will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to scale and nature of the work proposed, the proximity to a receiving watercourse, and the amount of rainfall forecast.

Using the safe threshold rainfall values below will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.

Works will be suspended if forecasting suggests any of the following is likely to occur:

- >10 mm/hr (i.e. high intensity local rainfall events);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures shall be completed:

- Secure all open excavations; and
- Provide temporary or emergency drainage to prevent back-up of surface runoff.

Contractor will avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. ECoW shall check drainage after rainfall event and prior to recommencement of works.

4.6 Preventative Measures – Operational Phase

Control of the effects of the Project will comprise the following:

- Ensure best practice is adhered to on the Wind Farm Site and avoid pollution release to watercourses by incorporating pollution prevention measures (**Section 4.5**) into management policy;
- Permanent welfare facilities will be installed as part of control building / Onsite Substation facilities. Foul effluent will be disposed of through the use of sealed cesspools with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on the site); and

- There will be cyclical maintenance of permanent SuDS drainage features installed during the construction phase, including unblocking of drains, maintenance of access road and other hard standing surfaces, and removal of silt build-up from settlement features. An outline maintenance programme is included in **Appendix 11.2**.

4.7 Preventative Measures – Decommissioning Phase

As noted in **Section 4.2**, activities associated with the decommissioning phase at the end of the operating design life are generally as per those for the construction phase, and as such, control measures outlined in the construction phase will be followed as appropriate during the decommissioning phase of the Project.

The Irish Wind Energy Association (IWEA) states that when decommissioning a wind farm *"the concrete bases could be removed, but it may be better to leave them under the ground, as this causes less disturbance".* Therefore, the Turbine Foundations will remain in-situ, the Turbine Hardstand areas will be allowed to revegetate naturally, and Site Access Roads will be left for use by the relevant landowner(s). Internal Cabling will also be removed while the ducting will be left in-situ.

Prior to the decommissioning work, a comprehensive plan will be drawn submitted to the local authority for approval that takes account of the findings of this EIAR and the contemporary legislative requirements at that time, to manage and control the component removal and ground reinstatement.

4.8 Water Quality Monitoring

A water quality monitoring program will be implemented to monitor effects on the surface water quality regime during the infrastructure construction, operational and decommissioning phases of the Project, in order to:

- Demonstrate that the control measures and surface water management is performing as designed;
- Provide validation that the in-place control measures are not having an adverse effect upon the environment; and
- Indicate the need for additional control measures to prevent, reduce or remove any effects on the water environment, such as additional temporary settlement or filtration structures or short-term flocculant dosing to suit observed site conditions.

The monitoring will be informed by existing water quality baseline data and baseline monitoring rounds undertaken prior to the commencement of the construction phase.

It is proposed that the water monitoring extent, duration and frequency will be agreed with the local authority or the relevant regulating body post-consent and will nominally consist of physicochemical and biological monitoring. The extent, duration and frequency of the monitoring will be proportionate to the level of activity during each phase of the Project and the associated perceived risks.

A Water Quality Monitoring Plan is included within the **Construction and Environmental Management Plan (CEMP)** appended to the EIAR in **Appendix 2.1**.

4.9 Impact Assessment

The WFD Stage 3 Impact Assessment evaluates whether the Project will cause deterioration of the identified water body's status, either directly or through cumulative impacts, set within the context of the appropriate River Basin Management Plans and associated Programme of Measures (PoM) established via the Water Action Plan 2024: A River Basin Management Plan for Ireland: National River Basin Management Plan 2022-2027.

4.9.1 Relevant RBMP Programme of Measures

4.9.1.1 National and Sectoral Measures Applicable to Identified River Waterbodies

Under the RBMP 2022–2027, the following PoM elements are of direct relevance to the subject catchments:

- Integrated Catchment Management and Work Planning: Development and implementation of Catchment Management Work Plans to identify, locate and target measures at waterbody scale, consistent with the "right measure, right place" principle.
- Hydromorphology Measures: National workstream addressing impacts from physical modification of watercourses, including channelisation, drainage schemes, barriers and altered flow regimes, with the objective of protecting and restoring river form and function where feasible.
- Peatlands Measures: Measures aimed at reducing water quality and hydrological impacts from peat extraction and peatland drainage, and supporting restoration and improved management of peatland hydrological regimes.
- Forestry Measures: Regulatory and advisory measures to control sediment, nutrient and hydrological impacts associated with forestry operations, including clear-felling, forest road construction and replanting.
- Urban Wastewater and Urban Runoff Measures: Measures to address untreated or insufficiently treated discharges, misconnections, and runoff from hardstanding and drainage systems in settlements and dispersed development.
- Local Authority and LAWPRO-led Catchment Assessment: Local Catchment Assessments, including walkover surveys and chemical/biological sampling, to confirm pressure sources and pathways, followed by engagement with the relevant implementing authorities (e.g. EPA, OPW, Local Authorities, ASSAP, Forestry Services) to deliver targeted actions.
- Agriculture Measures: Measures to reduce diffuse nutrient and sediment losses (and associated ecological impacts), delivered through regulation, compliance assurance, targeted advisory programmes and catchment actions.
- Domestic Wastewater Treatment Systems (DWTS) Measures: Measures to reduce impacts from unsewered properties (e.g. defective septic tanks and misconnections) through inspection, guidance, remediation and enforcement.

4.9.1.2 Relevant RBMP Programme of Measures for Groundwater and GWDTEs

Under the RBMP 2022–2027 (Water Action Plan 2024), the following PoM elements are directly relevant to groundwater and GWDTE protection:

- Integrated Catchment Management / Work Planning: Catchment Management Work Plans and coordinated delivery to target measures to confirmed pollutant sources and pathways, including groundwater–surface water interactions.
- Agriculture Measures: Regulation, compliance assurance and targeted advisory actions to reduce nutrient losses (particularly nitrates) and pesticide/chemical losses to groundwater; protection of Drinking Water Protected Areas (where applicable).
- Domestic Wastewater Treatment Systems (DWTS) Measures: Inspection, guidance, remediation and enforcement measures addressing unsewered properties (septic tanks), particularly relevant where groundwater vulnerability is moderate to high and where preferential pathways may exist.
- Urban Wastewater and Urban Runoff Measures (where applicable): Measures addressing untreated discharges, misconnections and runoff that may infiltrate to groundwater.
- Hazardous Substances / Spill Prevention and Contaminated Sites Measures: Controls to prevent hazardous substances entering groundwater, and management of point sources/legacy contamination.
- Abstraction, Water Supply and Source Protection Measures: Management of abstraction pressures and source protection planning for public and private supplies.
- Monitoring, Characterisation and Trend Assessment: EPA monitoring and characterisation to confirm status, risk, significant pressures and trends; continued refinement of groundwater–ecosystem linkages.

4.9.2 Waterbody-Specific Programme of Measures Context

The table below summarises the PoM specific to the identified waterbodies associated with the Project.

Table 4.1: Waterbody-Specific Programme of Measures Context

Waterbody	RBMP 2022–2027 Status / Risk Summary	WFD Compliance Requirement for the Project
Carricknabraher_020 IE_SH_26C020200 (River)	Poor status; At Risk. Key pressures include hydromorphology (channel modification/arterial drainage) and peat-related pressures/organic loading.	Given the 'At Risk' classification, Carricknabraher_020 is treated as a sensitive receptor. The Project must demonstrate that it will: • Not cause deterioration in any WFD quality element (biological, hydromorphological or physico-chemical); • Not exacerbate existing hydromorphological or peatland drainage pressures; and • Not compromise the delivery or effectiveness of the RBMP PoM within the waterbody.
Breedoge_010 IE_SH_26B090300 (River)	Good status; Not at Risk (current cycle summary), noting historical poor status in earlier cycles and in Priority Area for Action (PAA) desk studies.	As a Good status waterbody, Breedoge_010 is subject to a strict non-deterioration and protection objective. The Project must demonstrate that it will not: • Result in deterioration of status or any quality element; • Increase the risk classification of the waterbody; or • Undermine the implementation of catchment-based restoration or protection measures under the RBMP PoM.
Mantua_010 IE_SH_26M010200 (River)	Review / Unassigned. Limited EPA monitoring data; status to be confirmed through local catchment assessment.	As a waterbody under Review / Unassigned a precautionary approach is applied. The Project must demonstrate that it will not: • Cause deterioration once status is confirmed; • Introduce new pressures that could elevate the waterbody's risk classification; or • Prejudice the effectiveness of ongoing catchment assessment and future PoM implementation.
Kinard_010 IE_SH_26K070500 (River)	Good status; Not at risk (current cycle summary).	As a Good status waterbody, Kinard_010 is subject to a strict non-deterioration and protection objective. The Project must demonstrate that it will not: • Cause deterioration in any WFD quality element; • Introduce new pressures or pathways that would increase risk; or • Undermine the ongoing effectiveness of the RBMP PoM.
Killukin_020 IE_SH_26K020700 (River)	Moderate status; At risk. Key significant issues include sediment and nutrients, with significant pressures including domestic wastewater treatment systems (DWTS), agriculture, and unidentified/unknown pressures as reported by EPA.	Given the 'At Risk' classification and identified issues (sediment and nutrients), Killukin_020 is treated as a sensitive receptor. The Project must demonstrate that it will: • Not cause deterioration in any WFD quality element; • Not increase sediment delivery risk (including via drainage pathways, exposed soils, peat/organic soils where present, and in-stream works); • Not contribute additional nutrient loading (including through accidental releases, inappropriate wastewater management, or contaminated runoff); and • Not prejudice the delivery or effectiveness of the RBMP PoM and associated Area for Action measures.
Charlestown Stream_010	Moderate status; At risk (current cycle summary). Significant issues	Given the 'At Risk' classification and the identified hydrological/morphological/nutrient issues,

Waterbody	RBMP 2022–2027 Status / Risk Summary	WFD Compliance Requirement for the Project
IE_WE_34C280100 (River)	include hydrological, morphological and nutrient pressures, with agriculture and hydromorphology identified as significant pressure types in the catchment summary table; the waterbody is listed within a LAWPRO restoration Area for Action ("Owengarve Charlestown").	Charlestown Stream_010 is treated as a sensitive receptor. The Project must demonstrate that it will: • Not cause deterioration of status or any quality element; • Avoid hydromorphological alteration of watercourses and drainage pathways, except where expressly permitted and appropriately mitigated; • Prevent increases in sediment and nutrient mobilisation during construction and operation; and • Not undermine ongoing RBMP PoM implementation and restoration actions within the Owengarve Charlestown Area for Action.
Carrick on Shannon IE_SH_G_048 (Groundwater)	Good status: Reported as Not at risk within relevant subcatchment reporting. Protection objective applies (non-deterioration).	PoM relevance is primarily through agriculture and DWTS measures (diffuse/near-field pathways), together with general hazardous substances controls and monitoring/characterisation. The Project must demonstrate that it will not: • Cause deterioration in groundwater chemical status (including through hydrocarbon spills, cement/concrete washout, contaminated runoff, or inappropriate storage/handling of hazardous substances); • Adversely affect groundwater quantitative status or groundwater-surface water connectivity through inappropriate drainage design or dewatering practices; and • Compromise the groundwater body's ability to meet its WFD objective within the RBMP cycle.
Castlerea Bellanagare IE_SH_G_054 (Groundwater)	Good status: Reported as Not at risk within relevant subcatchment reporting. Protection objective applies (non-deterioration).	As with other 'Not at Risk' groundwater bodies, the principal PoM requirement is the continued effectiveness of basic and supplementary measures that maintain status, including compliance with nitrates regulation, DWTS controls, and development consent safeguards. The Project must demonstrate a protective, non-deterioration outcome by ensuring: • Robust pollution prevention and incident response; • Groundwater-protective drainage design (including separation of potentially contaminated runoff from infiltration routes); and • Management of excavations, borrow pits, and any dewatering to avoid preferential pathways.
GWDTE-Bellanagare Bog (SAC000592) IE_SH_G_241 (Groundwater (GWDTE))	Good status: Reported as Not at risk within relevant subcatchment reporting. Protection objective applies (non-deterioration); treated as a high sensitivity receptor due to groundwater-dependent SAC habitat.	The Project must demonstrate that it will not: • Cause significant damage to the groundwater-dependent SAC habitat through alteration of groundwater levels, flow paths, or chemistry; • Introduce pollutants that could affect the wetland's water chemistry (including nutrients, hydrocarbons, suspended solids or alkaline leachate); • Create drainage or dewatering effects that could lower the water table or alter seasonal groundwater regimes supporting raised bog habitat; or • Conflict with the SAC's conservation objectives (to be considered in the project's Habitats Directive assessment).
GWDTE-Cloonshanville Bog (SAC000614) IE_SH_G_067 (Groundwater (GWDTE))	Good status: Reported as Not at risk within relevant subcatchment reporting. Protection objective applies (non-deterioration); treated as a high sensitivity receptor due to groundwater-dependent SAC habitat.	The Project must demonstrate that it will not: • Cause significant damage to the groundwater-dependent SAC habitat through alteration of groundwater levels, flow paths, or chemistry; • Introduce pollutants that could affect the wetland's water chemistry (including

Waterbody	RBMP 2022–2027 Status / Risk Summary	WFD Compliance Requirement for the Project
		nutrients, hydrocarbons, suspended solids or alkaline leachate); • Create drainage or dewatering effects that could lower the water table or alter seasonal groundwater regimes supporting raised bog habitat; or • Conflict with the SAC's conservation objectives (to be considered in the project's Habitats Directive assessment).

4.9.3 Impact Assessment

The tables in this section outline potential impacts of the Project on identified surface water and groundwater bodies. The assessment considers the potential for project-related activities, across all phases of development, to exert pressures on relevant WFD quality elements.

4.9.3.1 *Assessment of Proposed Works on WFD Receptors (Wind Farm Site)*

Table 4.2: Assessment of Proposed Works on WFD Receptors (Wind Farm Site)

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
Biological	Carricknabraher_020 (IE_SH_26C020200) Waterbody Type: River Overall 2019-2024 Status: Poor Biological Element: Poor Objective: Prevent deterioration; achieve Good Status	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 2 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T1 & T2 (including Turbine Hardstands and Turbine Foundations). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 1). Construction of 1 no. watercourse crossing of Carricknabraher Watercourse (Ref 2). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Development of biodiversity enhancement measures. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 2 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	**Construction Phase:** Construction activities (e.g., soil stripping / excavation works, material stockpiling) have potential to expose and remobilise sediments that may potentially enter a watercourse smothering aquatic species / habitat at the Wind Farm Site and downstream. In-channel works may affect conveyance capacities, potentially causing temporary flow restrictions that can impact aquatic species. Flow changes in affected watercourses may affect benthic invertebrate communities, given that individual species are adapted to specific flow conditions. Changes to flow patterns causing sediment movement may impact adversely on any macrophytes via smothering or changes to water depth. Construction works within the channel may damage bed form and substrate composition that can impact in-stream habitats. Earthworks in areas previously forested may cause the release of residual fertilisers and in areas of peat excavations may cause acidification of surface waters. Release of forestry fertilisers and acidification from peat may adversely affect nitrate and pH levels with adverse effects to fish. Release of untreated water from dewatering activities may potentially enter the watercourse smothering aquatic species / habitat at the site and downstream. Accidental spillage / leakage of hydrocarbons or cementitious materials have the potential to adversely affect water quality, with associated effects to fish and aquatic ecology. **Operational Phase**: During the operational phase of the Project, the presence of oils and lubricants associated with Wind Turbine maintenance has potential to enter and pollute the water environment. Wastewater effluent from permanent Onsite Substation building welfare facilities has the potential to enter surface water (Breedoge_010 catchment only). Improper maintenance of permanent SuDS drainage features / improper site management could result in release of sediment / suspended into watercourses within the Wind Farm Site. As a consequence, chemical pollutants, storage of materials, or from coliforms from wastewater entering watercourses have the potential to adversely affect water quality, with associated effects to fish and aquatic ecology. **Decommissioning Phase:** Removal of Wind Turbines and Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Excavation of Wind Turbine plinths and handling of hardcore could mobilise fine material or contaminants. Use of hardstands as	**Construction Phase**: Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to biological elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Forestry / Harvest Management Plan; • Site Drainage Management and SuDS Design; • Watercourse Crossings; • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2)**; • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Ensure best practice is adhered to on the Wind Farm Site and avoid pollution release to watercourses by incorporating pollution prevention measures (**Section 4.5**) into management policy. Permanent welfare facilities will be installed as part of control building / Onsite Substation facilities (Breedoge_010 catchment only). Foul effluent will be disposed of through the use of sealed cesspools with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on the site). Cyclical maintenance of permanent SuDS drainage features installed during the construction phase, including unblocking of drains, maintenance of access road and other hard standing surfaces, and removal of silt build-up from settlement features. An outline maintenance programme is included in **Appendix 11.2**. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD biological elements by appropriately managing sediment generation on site, on-site construction methods, runoff pathways, in-channel flows, and avoiding / minimising disturbance to channel substrate / bed. **Operational Phase:** All operational activities will be undertaken in accordance with a documented Environmental Management System (EMS), incorporating best practice pollution prevention measures consistent with EPA guidance and industry standards. During the operational phase, the change of land use within the footprint of the Wind Farm Site will likely have a slight / minor beneficial effect on the receiving water environment compared to existing conditions i.e., water quality pressures (sediment and nutrient issues caused by extensive peat harvesting) noted within the Carricknabraher_020 river. Habitat management and enhancement measures proposed (**Appendix 6.2)** include enhancement of raised bog remnant habitats found in the Wind Farm Site. Therefore, the Project would contribute to improvement measures with respect to pressures associated with peat identified in the Carricknabraher_020 river sub-basin / 'Carricknabraher Area for Action' (area for restoration). **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.
	Breedoge_010 (IE_SH_26B090300) Waterbody Type: River Overall 2019-2024 Status: Good Biological Element: Good Objective: No deterioration	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 4 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T3, T4, T5, T6 & T7 in the west and T8, T9, & T11 in the east (including Turbine Hardstands and Turbine Foundations). Construction of 1 no. watercourse crossing of Owennaforeesha Watercourse (Ref 3). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 4). Construction of 1no. watercourse crossing of Mantua Watercourse (Ref 6). Construction of 110kV Onsite Substation. Construction of Met Mast. Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Creation of 2no. Borrow Pits. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage, presence of on-site welfare facilities, maintenance of Onsite Substation. **Decommissioning Phase:** Removal of 8 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Mantua_010 (IE_SH_26M010200) Waterbody Type: River Overall 2019-2024 Status: Moderate Biological Element: Not Available Objective: Achieve Good Status	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of Wind Turbine T10 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation.			

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
		Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 1 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	temporary compounds may also present risks from fuel, oil or chemical spills.		
Physico-Chemical Quality	Carricknabraher_020 (IE_SH_26C020200) Waterbody Type: River Overall 2019-2024 Status: Poor Physico-Chemical Element: Pass Objective: Prevent deterioration; achieve Good Status	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 2 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T1 & T2 (including Turbine Hardstands and Turbine Foundations). Construction of **1no.** watercourse crossing of Unnamed Watercourse (Ref 1). Construction of **1 no.** watercourse crossing of Carricknabraher Watercourse (Ref 2). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Development of biodiversity enhancement measures. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 2 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground electrical and communications cabling connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	**Construction Phase:** Physico-chemical quality elements may be expected to increase if sediment concentrations increase (as a result of changes to flow patterns and runoff characteristics). Concentrations may be expected to increase given that some physico-chemical constituents (e.g., phosphorus) adhere strongly to some sediment particles. As a pollutant, nutrients (i.e., phosphates / nitrates) are largely derived from agricultural sources, however, the proposed works are located adjacent to commercial forestry, therefore, there is potential for nutrients to be locally present in soils. BOD concentrations may increase if it is presumed that some of the sediment fraction is organic. A reduced water depth may also be associated with increased water temperatures; and consequently, dissolved oxygen decreases. Some influence on water temperature may be exhibited due to changes to the turbidity. A reduced water depth (caused by sediment build up and / or temporary damming of the watercourse) may also be associated with increased water temperatures – in reality this is unlikely to increase the temperature to such a degree that the WFD status of the downstream watercourse is affected; however, a precautionary approach is adopted here. **Operational Phase**: During the operational phase of the Project, the presence of oils and lubricants associated with Wind Turbine maintenance has potential to enter and pollute the water environment. Wastewater effluent from permanent Onsite Substation building welfare facilities has the potential to enter surface water (Breedoge_010 catchment only). Improper maintenance of permanent SuDS drainage features / improper site management could result in release of sediment / suspended into watercourses within the Wind Farm Site. As a consequence, chemical pollutants, storage of materials, or from coliforms from wastewater entering watercourses have the potential to adversely affect water quality / physico-chemical parameters. **Decommissioning Phase:** Removal of Wind Turbines and Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Excavation of Wind Turbine plinths and handling of hardcore could mobilise fine material or contaminants. Use of hardstands as temporary compounds may also present risks from fuel, oil or chemical spills.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to physico-chemical elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Forestry / Harvest Management Plan; • Site Drainage Management and SuDS Design; • Watercourse Crossings; • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Ensure best practice is adhered to on the Wind Farm Site and avoid pollution release to watercourses by incorporating pollution prevention measures (**Section 4.5**) into management policy. Permanent welfare facilities will be installed as part of control building / Onsite Substation facilities (Breedoge_010 catchment only). Foul effluent will be disposed of through the use of sealed cesspools with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on the site). Cyclical maintenance of permanent SuDS drainage features installed during the construction phase, including unblocking of drains, maintenance of access road and other hard standing surfaces, and removal of silt build-up from settlement features. An outline maintenance programme is included in **Appendix 11.2**. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment minimise potential adverse effects to WFD physico-chemical elements by appropriately managing sediment generation on site, on-site construction methods, runoff pathways, in-channel flows, and avoiding / minimising disturbance to channel substrate / bed. **Operational Phase:** All operational activities will be undertaken in accordance with a documented Environmental Management System (EMS), incorporating best practice pollution prevention measures consistent with EPA guidance and industry standards. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.
	Breedoge_010 (IE_SH_26B090300) Waterbody Type: River Overall 2019-2024 Status: Good Physico-Chemical Element: Pass Objective: No deterioration	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 4 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T3, T4, T5, T6 & T7 in the west and T8, T9, & T11 in the east (including Turbine Hardstands and Turbine Foundations). Construction of 1 no. watercourse crossing of Owennaforeesha Watercourse (Ref 3). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 4). Construction of 1no. watercourse crossing of Mantua Watercourse (Ref 6). Construction of 110kV Onsite Substation. Construction of Met Mast. Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Creation of 2no. Borrow Pits. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage, presence of on-site welfare facilities, maintenance of Onsite Substation. **Decommissioning Phase:** Removal of 8 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Mantua_010 (IE_SH_26M010200) Waterbody Type: River Overall 2019-2024 Status: Moderate	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of Wind Turbine T10 (including Turbine Hardstands and Turbine Foundations).			

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
	Physico-Chemical Element: Not Available Objective: Achieve Good Status	Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 1 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
Hydromorphology	Carricknabraher_020 (IE_SH_26C020200) Waterbody Type: River Overall 2019-2024 Status: Poor Hydromorphology Element: Not Available Objective: Prevent deterioration; achieve Good Status	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 2 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T1 & T2 (including Turbine Hardstands and Turbine Foundations). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 1). Construction of 1 no. watercourse crossing of Carricknabraher Watercourse (Ref 2). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Development of biodiversity enhancement measures. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 2 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	**Construction Phase:** During construction phase, silt and suspended sediments entering watercourses increase can lead to a change in sediment dynamics within the channel at the site of works, as well as downstream. Altering sediment regime and other hydromorphological processes may reduce the resilience of the channel to future changes in water and sediment inputs (e.g., climate and / or land use change). Introducing significant steps within channels (e.g., at channel diversions) has the potential to alter the continuity of sediment transfer by causing excessive erosion and / or deposition at these locations. Engineering works have the potential to alter flow conditions (discharge and velocity, as well as flow patterns) within channels. Temporary watercourse diversions / realignments can have a local adverse impact on flows in the waterbodies. Similarly, where water is diverted across catchments alter the natural discharge of the channels, changing flow, sediment regime and other hydromorphological processes. **Operational Phase**: There is not anticipated to be any permanent loss of natural channel bed form and substrate as a result of the proposed works. New crossings on EPA-mapped watercourses will be open span, with no direct impact to watercourse hydromorphology. There would be no change in channel capacity (flow regime) as a result of the proposed works. **Decommissioning Phase:** Removal of Wind Turbines and Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Excavation of Wind Turbine plinths and handling of hardcore could mobilise fine material or contaminants. Use of hardstands as temporary compounds may also present risks from fuel, oil or chemical spills.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to hydromorphological elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Forestry / Harvest Management Plan; • Watercourse Crossings; • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2)**; • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Should future maintenance / remedial works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential effects on hydromorphological elements (including flow regime) of the receiving water environment during construction phase. New crossings associated with site access are proposed over major watercourses at the Wind Farm Site within the Carricknabraher_020 river sub-basin (1 no. over unnamed watercourse (Ref 1) and 1 no. over Carricknabraher (Ref 2) and within the Breedoge_010 river sub-basin (1 no. over Owennaforeesha Watercourse (Ref 3), 1 no. over Unnamed Watercourse (Ref 4), and 1 no. over Mantua Watercourse (Ref 6)). The crossings will be open span, with no direct impact to watercourse morphology. **Operational Phase:** It is unlikely that works would be required during the operational phase of the Project that would necessitate any in-stream working or that would directly affect watercourse hydromorphology. Design of watercourse crossings on-site when adopting best practice design standards as stated result in a not significant localised effect in terms of restricted capacity, bank and bed erosion / deposition, and sediment transfer that would affect long-term natural hydromorphological processes. Should future maintenance / remedial works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.
	Breedoge_010 (IE_SH_26B090300) Waterbody Type: River Overall 2019-2024 Status: Good Hydromorphology Element: Not Available Objective: No deterioration	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 4 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T3, T4, T5, T6 & T7 in the west and T8, T9, & T11 in the east (including Turbine Hardstands and Turbine Foundations). Construction of 1 no. watercourse crossing of Owennaforeesha Watercourse (Ref 3). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 4). Construction of 1no. watercourse crossing of Mantua Watercourse (Ref 6). Construction of 110kV Onsite Substation. Construction of Met Mast. Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Creation of 2no. Borrow Pits. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage, presence of on-site welfare facilities, maintenance of Onsite Substation. **Decommissioning Phase:** Removal of 8 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Mantua_010 (IE_SH_26M010200) Waterbody Type: River	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads.			

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
	Overall 2019-2024 Status: Moderate Hydromorphology Element: Not Available Objective: Achieve Good Status	Construction of Wind Turbine T10 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 1 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
Chemical Element	Carricknabraher_020 (IE_SH_26C020200) Waterbody Type: River Overall 2019-2024 Status: Poor Chemical Element: Pass Objective: Prevent deterioration; achieve Good Status	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 2 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T1 & T2 (including Turbine Hardstands and Turbine Foundations). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 1). Construction of 1 no. watercourse crossing of Carricknabraher Watercourse (Ref 2). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Development of biodiversity enhancement measures. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 2 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	**Construction Phase:** Chemicals which may pose a potential risk of pollution to the receiving water environment as a result of the proposed works are those contained in materials to be used / stored on site i.e., petrol, diesel and gas oil. Potential effects include: Accidental spillage / leakage of hydrocarbons from construction plant and equipment poses a risk to the water environment if not remediated promptly. Some increased concentrations of metals may occur (given their association with sediments) but such increases are likely to be negligible. **Operational Phase:** During the operational phase of the Project, the presence of oils and lubricants associated with turbine maintenance has potential to enter and pollute the water environment. Wastewater effluent from permanent Onsite Substation building welfare facilities has the potential to enter surface water (Breedoge_010 catchment only). As a consequence, chemical pollutants, storage of materials, or from coliforms from wastewater entering watercourses have the potential to adversely affect water quality / chemical parameters. **Decommissioning Phase:** Removal of Wind Turbines and Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Excavation of Wind Turbine plinths and handling of hardcore could mobilise fine material or contaminants. Use of hardstands as temporary compounds may also present risks from fuel, oil or chemical spills.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to chemical elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Forestry / Harvest Management Plan; • Site Drainage Management and SuDS Design; • Watercourse Crossings; • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Ensure best practice is adhered to on the Wind Farm Site and avoid pollution release to watercourses by incorporating pollution prevention measures (**Section 4.5**) into management policy. Permanent welfare facilities will be installed as part of control building / Onsite Substation facilities (Breedoge_010 catchment only). Foul effluent will be disposed of through the use of sealed cesspools with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on the site). **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD chemical elements by appropriately managing fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. **Operational Phase:** All operational activities will be undertaken in accordance with a documented Environmental Management System (EMS), incorporating best practice pollution prevention measures consistent with EPA guidance and industry standards. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.
	Breedoge_010 (IE_SH_26B090300) Waterbody Type: River Overall 2019-2024 Status: Good Chemical Element: Pass Objective: No deterioration	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 4 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T3, T4, T5, T6 & T7 in the west and T8, T9, & T11 in the east (including Turbine Hardstands and Turbine Foundations). Construction of 1 no. watercourse crossing of Owennaforeesha Watercourse (Ref 3). Construction of 1no. watercourse crossing of Unnamed Watercourse (Ref 4). Construction of 1no. watercourse crossing of Mantua Watercourse (Ref 6). Construction of 110kV Onsite Substation. Construction of Met Mast. Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Creation of 2no. Borrow Pits. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage, presence of on-site welfare facilities, maintenance of Onsite Substation. **Decommissioning Phase:** Removal of 8 No. Wind Turbines and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Mantua_010 (IE_SH_26M010200)	**Construction Phase:** Site clearance / Pre-construction forestry felling.			

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
	Waterbody Type: River Overall 2019-2024 Status: Moderate Chemical Element: Not Available Objective: Achieve Good Status	Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of Wind Turbine T10 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 1 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
Hydrological Linkage to Groundwater Body	GWDTE-Bellanagare Bog (SAC000592) (IE_SH_G_241) Waterbody Type: Groundwater GWDTE Overall 2019-2024 Status: Good Quantitative Groundwater Status: Good Chemical Groundwater Status: Good	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 1 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T2 & T3 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 2 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	**Construction Phase:** Groundwater quality: Soil / subsoil cover acts as a protective layer over the underlying groundwater; therefore, the removal of this layer will temporarily increase groundwater vulnerability to surface contaminants; Shallow groundwater gathering in excavations will come in contact with excavated surfaces and aggregate; There is the potential for chemicals to enter the groundwater through accidental spillage, improper transport and refuelling or inappropriate storage and disposal procedures; and Cementitious materials have the potential to enter the groundwater. Karst features: are primarily a geotechnical risk, but they may act as a direct conduit (pathway) for potential pollutants to groundwater receptor. Groundwater quantity: Excavations and dewatering required within the Wind Farm Site boundary are not anticipated to affect groundwater levels within the context of the overall groundwater body / aquifer. **Operational Phase:** Groundwater quality: During the operational phase of the Project, the presence of oils and lubricants associated with turbine maintenance has potential to enter and pollute the water environment. Wastewater effluent from permanent Onsite Substation building welfare facilities has the potential to enter surface water or shallow groundwater. As a consequence, chemical pollutants, storage of materials, or from coliforms from wastewater entering watercourses have the potential to adversely affect water quality / chemical parameters. Groundwater quantity: No effect likely during operational phase. **Decommissioning Phase:** Removal of Wind Turbines and Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Excavation of Wind Turbine plinths and handling of hardcore could mobilise fine material or contaminants. Use of hardstands as temporary compounds may also present risks from fuel, oil or chemical spills.	**Construction Phase:** Potential adverse effects from construction activities will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to underlying groundwater bodies include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Site Drainage Management and SuDS Design; • Watercourse Crossings; • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2)**; • Piling activities; • Spoil Management Plan (**Appendix 2.1**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Ensure best practice is adhered to on the Wind Farm Site and avoid pollution release to watercourses by incorporating pollution prevention measures (**Section 4.5**) into management policy. Permanent welfare facilities will be installed as part of control building / Onsite Substation facilities. Foul effluent will be disposed of through the use of sealed cesspools with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on the site). **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment minimise potential effects on underlying groundwater bodies / receiving water environment during construction phase by appropriately managing fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. **Operational Phase:** All operational activities will be undertaken in accordance with a documented Environmental Management System (EMS), incorporating best practice pollution prevention measures consistent with EPA guidance and industry standards. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.
	GWDTE-Cloonshanville Bog (SAC000614) (IE_SH_G_067) Waterbody Type: Groundwater GWDTE Overall 2019-2024 Status: Good Quantitative Groundwater Status: Good Chemical Groundwater Status: Good	**Construction Phase:** Site clearance. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 1 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbine T1 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Development of biodiversity enhancement measures. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 1 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Castlerea-Bellanagare (IE_SH_G_054) Waterbody Type: Groundwater Overall 2019-2024 Status: Good Quantitative Groundwater Status: Good Chemical Groundwater Status: Good	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of 1 no. Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T4 & T5 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Construction of Met Mast.			

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
		Operational Phase: Maintenance of Wind Turbines and on-site permanent drainage. **Decommissioning Phase:** Removal of 2 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Carrick on Shannon (IE_SH_G_048) Waterbody Type: Groundwater Overall 2019-2024 Status: Good Quantitative Groundwater Status: Good Chemical Groundwater Status: Good	**Construction Phase:** Site clearance / Pre-construction forestry felling. Upgrade of existing Site Access Roads and construction of new permanent Site Access Roads. Construction of **3 no.** Temporary Construction Compound with associated temporary site offices, parking area and security fencing. Construction of Wind Turbines T6, T7, T8, T9, T10 & T11 (including Turbine Hardstands and Turbine Foundations). Underground Internal Cabling (electrical and communications) connecting the Wind Turbines and Permanent Meteorological Mast to the Onsite Substation. Creation of 2 no. Borrow Pits. Construction of 110kV Onsite Substation. Grid Connection. **Operational Phase:** Maintenance of Wind Turbines and on-site permanent drainage, Onsite Substation. **Decommissioning Phase:** Removal of 6 No. Wind Turbine and above ground concrete plinths. Removal of all associated underground Internal Cabling (electrical and communications) connecting the Wind Turbines to the Onsite Substation (ducting is to remain in-situ).			
	Unregistered Potable Water Supply	**Construction Phase:** Underground Internal Cabling (electrical and communications) connecting the eastern and western section of the Wind Farm Site and Wind Turbines to the Onsite Substation. **Operational Phase:** Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** Removal of all associated underground Internal Cabling (electrical and communications) connecting the connecting the eastern and western section of the Wind Farm Site and Wind Turbines to the Onsite Substation (ducting is to remain in-situ).	**Construction Phase:** Groundwater quality: Soil / subsoil cover acts as a protective layer over the underlying groundwater; therefore, the removal of this layer for Internal Cabling will temporarily increase groundwater vulnerability to surface contaminants; Shallow groundwater gathering in excavations will come in contact with excavated surfaces and aggregate; There is the potential for chemicals to enter the groundwater through accidental spillage, improper transport and refuelling or inappropriate storage and disposal procedures; and Cementitious materials have the potential to enter the groundwater. Groundwater quantity: Shallow excavations and dewatering required for Internal Cabling are not anticipated to affect groundwater levels within the context of the overall groundwater body / aquifer. **Operational Phase:** During the operational phase of the Project, the Internal Cabling would by its nature (buried) and remain in-situ. Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** Removal of Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Accidental spillage / leakage of hydrocarbons from plant and equipment poses a risk to the water environment if not remediated promptly.	**Construction Phase:** Potential adverse effects from construction activities will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on receptors. The measures to minimise potential effects to potable groundwater supplies include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Pollution Prevention Measures; • Appropriate construction methods; • Construction in the Vicinity of Private Water Supplies (including Emergency Response Plan, **Appendix 2.1**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures (**Appendix 2.1**). **Construction Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** Pollution prevention measures proposed to control chemical pollution is likely to result in no permanent or temporary change in conditions. Residual risk management by Emergency Response Plan. **Operational Phase:** Accidental spillage / leaks of oils, chemicals, or other materials are unlikely during the operational phase that would cause a deterioration in water quality. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Wind Farm Site					
Connection to Protected Areas or Designated Sites	Lough Gara SPA / Ramsar Site	The designated SPA / Ramsar Site is located downstream from, and hydrologically connected to, the Carricknabraher_020, Breedoge_010, and Mantua_010 river sub-basins. Therefore, all activities associated with the Project proposed within those catchments are relevant to the designated site.	**Construction Phase:** Potential effects to the water environment and WFD receptors (as outlined previously in this assessment) are also applicable to protected areas / designated sites, particularly biological, physico-chemical and chemical elements. Temporary short-term construction activities within and adjacent to watercourses at the Wind Farm Site could result in mobilisation and release of silt / sediment that could cause a temporary minor change in sediment and stream morphology within those channels in the absence of control measures. However, it is unlikely hydromorphological processes within the designated site would be affected by the short-term construction activities within watercourses at the Wind Farm Site. **Operational Phase:** During the operational phase of the Project, the presence of oils and lubricants associated with turbine maintenance has potential to enter and pollute the water environment. Wastewater effluent from permanent Onsite Substation building welfare facilities has the potential to enter surface water. As a consequence, chemical pollutants, storage of materials, or from coliforms from wastewater entering watercourses have the potential to adversely affect water quality / chemical parameters. **Decommissioning Phase:** Removal of Wind Turbines and Internal Cabling can disturb soils and expose sediments, increasing the potential for sediment-laden runoff to nearby watercourses. Excavation of Wind Turbine plinths and handling of hardcore could mobilise fine material or contaminants. Use of hardstands as temporary compounds may also present risks from fuel, oil or chemical spills.	**Construction Phase:** Measures previously outlined in this assessment to protect the water environment and WFD receptors (biological, physico-chemical and chemical elements) are also applicable for the protection of designated areas during construction phase. **Operational Phase:** Measures previously outlined in this assessment to protect the water environment and WFD receptors (biological, physico-chemical and chemical elements) are also applicable for the protection of designated areas during operational phase. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** (outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills) that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD receptors and as result protected areas / designated sites, by appropriately managing sediment generation on site, surface water runoff, on-site construction methods, fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. **Operational Phase:** All operational activities will be undertaken in accordance with a documented Environmental Management System (EMS), incorporating best practice pollution prevention measures consistent with EPA guidance and industry standards. **Decommissioning Phase:** A Decommissioning Plan is provided in **Appendix 2.1** providing control measures that will be followed as appropriate during the decommissioning phase of the Project. Prior to the decommissioning works, a plan will be submitted to the planning authority for written agreement that takes account of contemporary legislative requirements at that time, to manage and control component removal and ground reinstatement.

4.9.3.2 Assessment of Proposed Works on WFD Receptors (Grid Connection)

Table 4.3: Assessment of Proposed Works on WFD Receptors (Grid Connection)

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Grid Connection					
Biological	Mantua_010 (IE_SH_26M010200) Waterbody Type: River Overall 2019-2024 Status: Moderate Biological Element: Not Available Objective: Achieve Good Status	Grid Connection route and associated shallow trenching along the public road corridor.	**Construction Phase:** Effects associated with proposed Grid Connection construction activities will be similar to those described in **Section 4.3** (e.g., sediment / suspended pollution or chemical pollution of surface water runoff and groundwater) and would be solely associated with the construction phase. **Operational Phase:** During the operational phase of the Project, the Grid Connection would by its nature (buried) have no effect on water quality / WFD biological elements. Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to biological elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Watercourse Crossings / Horizontal Directional Drilling (HDD); • Pollution Prevention Measures;	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD biological elements by appropriately managing sediment generation on site, on-site construction methods, runoff pathways, and avoiding / minimising disturbance to channel substrate / bed. All watercourse crossings associated with the Grid Connection route coincide with existing road crossings and culverts; the cable will be laid within the road deck over/under the existing culvert, or via HDD under the

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Grid Connection					
	Kinard_010 (IE_SH_26K070500) Waterbody Type: River Overall 2019-2024 Status: Good Biological Element: Good Objective: Maintain Good Status		**Decommissioning Phase:** No decommissioning phase effects. The cabling will be permanent.	• Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.	watercourse. Methods will not cause requirement for any in-stream work or work that would directly cause potential for pollution of the watercourse. Surface water management and pollution control and in particular to work in and adjacent to watercourses, is likely to result in no permanent change and an insignificant temporary change in conditions exceeding natural or pre-existing conditions. **Operational Phase:** The buried nature of the Grid Connection and absence of routine discharge pathways ensure that no source-pathway-receptor linkage exists between the infrastructure and receiving waterbodies. With reinstated drainage patterns and adherence to established maintenance protocols and pollution prevention guidance, the operational phase will have no effect on water quality / WFD biological elements. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.
	Killukin_020 (IE_SH_26K020700) Waterbody Type: River Overall 2019-2024 Status: Moderate Biological Element: Moderate Objective: Achieve Good Status				
Physico-Chemical Quality	Mantua_010 (IE_SH_26M010200) Waterbody Type: River Overall 2019-2024 Status: Moderate Physico-Chemical Element: Not Available Objective: Achieve Good Status	Grid Connection route and associated shallow trenching along the public road corridor.	**Construction Phase:** Effects associated with proposed Grid Connection construction activities will be similar to those described in **Section 4.3** (e.g., sediment / suspended pollution or chemical pollution of surface water runoff and groundwater) and would be solely associated with the construction phase. **Operational Phase:** During the operational phase of the Project, the Grid Connection would by its nature (buried) have no effect on water quality / WFD physico-chemical quality elements. Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** No decommissioning phase effects. The cabling will be permanent.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to physico-chemical quality elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Watercourse Crossings / Horizontal Directional Drilling (HDD); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD physico-chemical quality elements by appropriately managing sediment generation on site, on-site construction methods, runoff pathways, in-channel flows, and minimising disturbance to channel substrate / bed. All watercourse crossings coincide with existing road crossings and culverts; the cable will be laid within the road deck over/under the existing culvert, or via HDD under the watercourse. Methods will not cause requirement for any in-stream work or work that would directly cause potential for pollution of the watercourse. Surface water management and pollution control and in particular to work in and adjacent to watercourses, is likely to result in no permanent change and an insignificant temporary change in conditions exceeding natural or pre-existing conditions. **Operational Phase:** The buried nature of the Grid Connection and absence of routine discharge pathways ensure that no source-pathway-receptor linkage exists between the infrastructure and receiving waterbodies. With reinstated drainage patterns and adherence to established maintenance protocols and pollution prevention guidance, the operational phase will have no effect on physico-chemical quality elements. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.
	Kinard_010 (IE_SH_26K070500) Waterbody Type: River Overall 2019-2024 Status: Good Physico-Chemical Element: Good Objective: Maintain Good Status				
	Killukin_020 (IE_SH_26K020700) Waterbody Type: River Overall 2019-2024 Status: Moderate Physico-Chemical Element: Moderate Objective: Achieve Good Status				
Hydromorphology	Mantua_010 (IE_SH_26M010200) Waterbody Type: River Overall 2019-2024 Status: Moderate Hydromorphology Element: Not Available Objective: Achieve Good Status	Grid Connection route and associated shallow trenching along the public road corridor.	**Construction Phase:** During construction phase, silt and suspended sediments entering watercourses increase can lead to a change in sediment dynamics within the channel at the site of works, as well as downstream. Altering sediment regime and other hydromorphological processes may reduce the resilience of the channel to future changes in water and sediment inputs.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to hydromorphological elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:**	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD hydromorphological elements. All watercourse crossings coincide with existing road crossings and culverts; the cable will be laid within the road deck over the existing culvert, or via HDD under the watercourse.

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Grid Connection					
	Kinard_010 (IE_SH_26K070500) Waterbody Type: River Overall 2019-2024 Status: Good Hydromorphology Element: Not Available Objective: Maintain Good Status Killukin_020 (IE_SH_26K020700) Waterbody Type: River Overall 2019-2024 Status: Moderate Hydromorphology Element: Not Available Objective: Achieve Good Status		Engineering works have the potential to alter flow conditions (discharge and velocity, as well as flow patterns) within channels affecting hydromorphological processes. **Operational Phase:** During the operational phase of the Project, the Grid Connection would by its nature (buried) have no effect on hydromorphological elements. Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** No decommissioning phase effects. The cabling will be permanent.	• Watercourse Crossings / Horizontal Directional Drilling (HDD); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.	Methods will not cause requirement for any in-stream work or work that would directly affect watercourse morphology. **Operational Phase:** The buried nature of the Grid Connection and absence of routine discharge pathways ensure that no source–pathway–receptor linkage exists between the infrastructure and receiving waterbodies. With reinstated drainage patterns and adherence to established maintenance protocols and pollution prevention guidance, the operational phase will have no effect on hydromorphological elements. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.
Chemical Element	Mantua_010 (IE_SH_26M010200) Waterbody Type: River Overall 2019-2024 Status: Moderate Chemical Element: Not Available Objective: Achieve Good Status Kinard_010 (IE_SH_26K070500) Waterbody Type: River Overall 2019-2024 Status: Good Chemical Element: Not Available Objective: Maintain Good Status Killukin_020 (IE_SH_26K020700) Waterbody Type: River Overall 2019-2024 Status: Moderate Chemical Element: Not Available Objective: Achieve Good Status	Grid Connection route and associated shallow trenching along the public road corridor.	**Construction Phase:** Effects associated with typical proposed Grid Connection construction activities will be similar to those described in **Section 4.3** (e.g., chemical pollution of surface water runoff) and would be solely associated with the construction phase. **Operational Phase** During the operational phase of the Project, the Grid Connection would by its nature (buried) have no effect on water quality / WFD chemical elements. Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** No decommissioning phase effects. The cabling will be permanent.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to chemical elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Watercourse Crossings / Horizontal Directional Drilling (HDD); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD chemical elements by appropriately managing fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. All watercourse crossings coincide with existing road crossings and culverts; the cable will be laid within the road deck over/under the existing culvert, or via HDD under the watercourse. Methods will not cause requirement for any in-stream work or work that would directly cause potential for pollution of the watercourse. Surface water management and pollution control and in particular to work in and adjacent to watercourses, is likely to result in no permanent change and an insignificant temporary change in conditions exceeding natural or pre-existing conditions. **Operational Phase:** The buried nature of the Grid Connection and absence of routine discharge pathways ensure that no source–pathway–receptor linkage exists between the infrastructure and receiving waterbodies. With reinstated drainage patterns and adherence to established maintenance protocols and pollution prevention guidance, the operational phase will have no effect on chemical elements.. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.
Hydrological Linkage to Groundwater Body	Carrick on Shannon (IE_SH_G_048) Waterbody Type: Groundwater Overall 2019-2024 Status: Good Quantitative Groundwater Status: Good Chemical Groundwater Status: Good	Grid Connection route and associated shallow trenching along the public road corridor.	**Construction Phase:** Groundwater quality: Soil / subsoil cover acts as a protective layer over the underlying groundwater; therefore, the removal of this layer will temporarily increase groundwater vulnerability to surface contaminants; Shallow groundwater gathering in excavations will come in contact with excavated surfaces and aggregate; There is the potential for chemicals to enter the groundwater through accidental spillage, improper transport and refuelling or inappropriate storage and disposal procedures; and	**Construction Phase:** Potential adverse effects from construction activities will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to underlying groundwater bodies include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential effects on underlying groundwater bodies / receiving water environment during construction phase by appropriately managing fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. **Operational Phase:**

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Grid Connection					
	Polecats Groundwater Scheme / Zone of Contribution		Cementitious materials have the potential to enter the groundwater. Karst features: are primarily a geotechnical risk, but they may act as a direct conduit (pathway) for potential pollutants to groundwater receptor. Groundwater quantity: Shallow excavations associated with cable laying would not be anticipated to cause any change in groundwater flow routes. **Operational Phase:** During the operational phase of the Project, the Grid Connection would by its nature (buried) and remain in-situ. Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** No decommissioning phase effects. The cabling will be permanent.	• Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.	The buried nature of the Grid Connection and absence of routine discharge pathways ensure that no source-pathway-receptor linkage exists between the infrastructure and receiving waterbodies. With reinstated drainage patterns and adherence to established maintenance protocols and pollution prevention guidance, the operational phase will have no effect on underlying groundwater bodies. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.
Connection to Protected Areas or Designated Sites	Kilglass And Grange Loughs pNHA	Grid Connection route and associated shallow trenching along the public road corridor.	**Construction Phase:** Potential effects to the water environment and WFD receptors (as outlined previously in this assessment) are also applicable to protected areas / designated sites, particularly biological, physico-chemical and chemical elements. **Operational Phase:** During the operational phase of the Project, the Grid Connection would by its nature (buried) have no effect on water bodies hydrologically connected to protected areas / designated sites Any necessary future maintenance works may introduce similar risks as those outlined for the construction phase. **Decommissioning Phase:** No decommissioning phase effects. The cabling will be permanent.	**Construction Phase:** Measures previously outlined in this assessment to protect the water environment and WFD receptors (biological, physico-chemical and chemical elements) are also applicable for the protection of designated areas during construction phase. **Operational Phase:** Should future maintenance works be required, similar working methods / procedures and pollution prevention measures as outlined for the construction phase will again be employed for the duration of the works. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD receptors and as result protected areas / designated sites, by appropriately managing sediment generation on site, surface water runoff, on-site construction methods, fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. **Operational Phase:** The buried nature of the Grid Connection and absence of routine discharge pathways ensure that no source-pathway-receptor linkage exists between the infrastructure and receiving waterbodies. With reinstated drainage patterns and adherence to established maintenance protocols and pollution prevention guidance, the operational phase will have no effect on protected areas / designated sites. **Decommissioning Phase:** No decommissioning proposed. The cabling will be permanent and owned by ESBN.

4.9.3.3 *Assessment of Proposed Works on WFD Receptors (Turbine Delivery Route)*

Table 4.4: Assessment of Proposed Works on WFD Receptors (Turbine Delivery Route)

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Turbine Delivery Route					
Biological	Charlestown Stream_010 (IE_WE_34C280100) Waterbody Type: River Overall 2019-2024 Status: Good Biological Element: Good Objective: Maintain Good Status	Temporary road widening is required adjacent to a tributary of the Mullaghanoe River to facilitate Turbine Delivery Route.	**Construction Phase:** Effects associated with typical temporary road widening construction activities will be similar to those described in **Section 4.3** (e.g., sediment / suspended pollution or chemical pollution of surface water runoff and groundwater) and would be solely associated with the construction phase. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to biological elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD biological elements by appropriately managing sediment generation on site, on-site construction methods, and runoff pathways. Surface water management and pollution control and in particular to work in and adjacent to watercourses, is likely to result in no permanent change and an insignificant temporary change in conditions exceeding natural or pre-existing conditions. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.
Physico-Chemical Quality	Charlestown Stream_010 (IE_WE_34C280100) Waterbody Type: River Overall 2019-2024 Status: Good Physico-Chemical Element: Pass Objective: Maintain Good Status	Temporary road widening is required adjacent to a tributary of the Mullaghanoe River to facilitate Turbine Delivery Route.	**Construction Phase:** Effects associated with typical temporary road widening construction activities will be similar to those described in **Section 4.3** (e.g., sediment / suspended pollution or chemical pollution of surface water runoff and groundwater) and would be solely associated with the construction phase. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to physico-chemical elements include those outlined in this assessment under **Section 4.4** and **Section 4.5**: • Avoiding Water Features (Watercourse Buffer Zones); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD physico-chemical elements by appropriately managing sediment generation on site, on-site construction methods, and runoff pathways. Surface water management and pollution control and in particular to work in and adjacent to watercourses, is likely to result in no permanent change and an insignificant temporary change in conditions exceeding natural or pre-existing conditions. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.

WFD Element	Waterbody and 2019-2024 Status	Project Activities Relevant to Waterbody	Potential Effect(s) / Key Pressures	Embedded Controls that will be implemented in full (Design & Preventative Measures)	WFD Compliant (Yes / No)
Turbine Delivery Route					
Hydromorphology	Charlestown Stream_010 (IE_WE_34C280100) Waterbody Type: River Overall 2019-2024 Status: Good Hydromorphology Element: Not Available Objective: Maintain Good Status	Temporary road widening is required adjacent to a tributary of the Mullaghanoe River to facilitate Turbine Delivery Route.	**Construction Phase:** Effects associated with typical temporary road widening construction activities will be similar to those described in **Section 4.3** (e.g., sediment / suspended pollution or chemical pollution of surface water runoff and groundwater) and would be solely associated with the construction phase. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Construction Phase:** No works are proposed within the channel that would affect hydromorphology of the adjacent watercourse. Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to hydromorphology include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD hydromorphological elements. There are no requirements for any in-stream work or work that would directly affect watercourse morphology. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.
Chemical Element	Charlestown Stream_010 (IE_WE_34C280100) Waterbody Type: River Overall 2019-2024 Status: Good Chemical Element: Pass Objective: Maintain Good Status	Temporary road widening is required adjacent to a tributary of the Mullaghanoe River to facilitate Turbine Delivery Route.	**Construction Phase:** Effects associated with typical temporary road widening construction activities will be similar to those described in **Section 4.3** (e.g., chemical pollution of surface water runoff) and would be solely associated with the construction phase. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Construction Phase:** Potential adverse effects from construction activities in the vicinity of surface water features will be managed via the measures outlined in **Section 4** of this WFDA resulting in a low risk on WFD receptors. The measures to minimise potential effects to chemical elements include those outlined in this assessment under **Section 4.4** and **Section 4.5:** • Avoiding Water Features (Watercourse Buffer Zones); • Pollution Prevention Measures; • Appropriate construction methods (further detailed in **Appendix 11.2**); • Timing of Works / Responding to Weather; and • Water Quality Monitoring and Emergency Response Procedures. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD chemical elements by appropriately managing sediment generation on site, on-site construction methods, and runoff pathways. Surface water management and pollution control and in particular to work in and adjacent to watercourses, is likely to result in no permanent change and an insignificant temporary change in conditions exceeding natural or pre-existing conditions. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.
Connection to Protected Areas or Designated Sites	River Moy SAC	Temporary road widening is required adjacent to a tributary of the Mullaghanoe River to facilitate Turbine Delivery Route. Mullaghanoe River is designated as part of the River Moy SAC.	**Construction Phase:** Potential effects to the water environment and WFD receptors (as outlined previously in this assessment) are also applicable to protected areas / designated sites, particularly biological, physico-chemical and chemical elements. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Construction Phase:** Measures previously outlined in this assessment to protect the water environment and WFD receptors (biological, physico-chemical and chemical elements) are also applicable for the protection of protected areas / designated sites during construction phase. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.	**Yes.** **Construction Phase:** The adoption of control measures outlined in this assessment will minimise potential adverse effects to WFD receptors and as result protected areas / designated sites, by appropriately managing sediment generation on site, surface water runoff, on-site construction methods, fuel usage and storage, implementing pollution prevention measures on site, and managing runoff pathways. **Operational Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only. **Decommissioning Phase:** Works required to facilitate the turbine delivery shall be temporary during the construction phase only.

4.10 Cumulative Assessment

4.10.1 Approach

An assessment has also been undertaken of the cumulative effect on the water environment / WFD receptors of the Project in conjunction with other known wind farms and other developments that are proposed, in planning, construction, or operation at the time of the application that could give rise to significant cumulative effects (refer to **Chapter 2: Project Description** and **Appendix 2.4** for further details of cumulative developments).

The purpose is to determine whether the Project, in combination with other existing or permitted plans and projects within the hydrological and hydrogeological ZoI, could result in deterioration in WFD status or compromise the achievement of environmental objectives for any surface water or groundwater body.

The assessment has regard to the relevant WFD river sub-basins and groundwater bodies identified within the ZoI, some of which are currently classified as less than 'Good' status and are subject to restoration objectives and catchment-based Programmes of Measures. Existing pressures within the receiving catchments are primarily associated with hydromorphological alterations (including arterial drainage), peat degradation, agricultural nutrient inputs, sediment from domestic wastewater treatment systems, and hydrological modifications, as identified in RBMP characterisation and Areas for Action documentation.

The cumulative assessment, therefore, considers whether the Project would introduce additional pressures that could interact with these baseline conditions or impede delivery of RBMP objectives.

4.10.2 Other Wind Farm Developments

The ZoI is characterised by predominantly agricultural land use, forestry, peat extraction, dispersed rural development and local infrastructure. These land uses represent the principal existing pressures affecting WFD status in the relevant water bodies and are being addressed through national and catchment-scale measures under the RBMP Programme of Measures.

No other major similar permitted or proposed developments have been identified within the established ZoI that would give rise to significant cumulative pressures on the same surface water or groundwater receptors during the construction or operational phases of the Project (**Chapter 11: Hydrology and Hydrogeology** for further detail on the cumulative assessment area and other screened developments).

4.10.3 Other Developments

All other proposed, permitted or approved developments with potential for cumulative effects that are located within 10 km from the Wind Farm Site are outlined in **Appendix 2.4**.

The 10 km radius distance search area selected for other development, other than wind farms, is considered to be reasonable for cumulative impact assessment for EIAR and consistent with the EPA "Guidelines on the information to be contained in environmental impact assessment reports" (2022) and best practice. The developments were screened within the hydrological and hydrogeological setting / ZoI of the Project (**Section 2.4**).

In those catchments hydrologically connected to the Wind Farm Site / ZoI, 2 no. were identified within the Breedoge_010 river sub-basin (all conditional), 4 no. in the Carricknabragher_020 (the majority with 'conditional' status and one undetermined), and 1 no. in the Boyle_010 (conditional).

In those catchments hydrologically connected to the Grid Connection, 29 no. were identified within the Shannon (Upper)_060 river sub-basin (the majority 'conditional' one with 'pre-validation' status), 3 no. in the Killikin_010 (all conditional), and 4 no. in the Owenur_010 (all conditional).

4.10.4 Cumulative Assessment

The greatest risk to the environment is during the construction phase of these projects when the civil engineering works are undertaken. It is reasonable to assume that any cumulative development that has been approved for planning, is awaiting a decision, or is to submit further information to the planning authority, e.g., via planning conditions, has demonstrated (or will demonstrate prior to approval) that it

would have no adverse effect on the environment and would incorporate good practice measures (e.g., construction phase and permanent SuDS, pollution prevention measures in management policy) into their designs. Such measures would manage the rate, quantity and quality of surface water runoff such that potential effects on the water environment / WFD receptors would be negligible.

Potential cumulative effects associated with the Project would most likely arise during the construction phase, through short-term and localised risks such as sediment mobilisation, accidental pollution or temporary hydromorphological disturbance at watercourse crossings. These risks have been assessed in combination with existing baseline pressures and are considered to be minor and temporary in nature. The Project incorporates embedded design measures and preventative control measures, surface water management controls, pollution prevention procedures and monitoring, which will ensure that construction-related effects are appropriately managed and do not contribute to cumulative deterioration in water body status.

During operation, the Project will not result in untreated discharges to surface water or groundwater and will maintain greenfield runoff characteristics through permanent drainage design. As such, no cumulative operational effects are predicted.

During decommissioning, potential cumulative effects most likely arise would be short-term and localised risks such as sediment mobilisation and accidental associated with control component removal and ground reinstatement. A Decommissioning Plan is provided in **Appendix 2.1**, outlining measures to control soil disturbance, sediment-laden runoff, fuel, oil / chemical spills. The Decommissioning Plan will be followed as appropriate during the decommissioning phase of the Proposed Development to ensure that decommissioning-related effects are appropriately managed and do not contribute to cumulative deterioration in water body status.

4.10.5 Cumulative Effects Summary

Having regard to the existing pressures within the receiving catchments, the RBMP 2022–2027 Programme of Measures, and the control measures incorporated into the Project, it is concluded that the Project will not give rise to significant cumulative effects on any WFD water body. The Project will not result in deterioration of status, will not compromise the achievement of WFD environmental objectives, and will not adversely affect the implementation of catchment-based restoration measures within designated Areas for Action. Accordingly, the Project is considered compliant with WFD requirements in a cumulative context.

5 WFD COMPLIANCE ASSESSMENT

5.1 Approach

This section of the report draws on the information gathered and reported in the preceding sections to determine whether the Project, either alone or in combination with other plans or projects, has the potential to cause deterioration in the status of any surface water or groundwater body, or to compromise the achievement of the environmental objectives set out under Article 4 of the Directive.

The assessment applies the "no deterioration" principle and examines whether the Project could give rise to a deterioration in status of any quality element, prevent the attainment of "good status" or "good potential" where not yet achieved, or otherwise undermine the achievement of the relevant WFD objectives during either the construction, operational, or decommissioning phases. Where potential pathways for effect are identified, control measures embedded within the Project design and construction methodology (**Section 4.4**) are taken into account.

5.2 Surface Waterbodies

Table 5.1 presents a structured compliance assessment of the Project against the requirements of Article 4(1)(a) of the Water Framework Directive in respect of all surface water bodies hydrologically connected to the Wind Farm Site, Grid Connection and the scoped-in elements of the Turbine Delivery Route.

The matrix applies the "no deterioration" and "protection of status" legal tests to each relevant river waterbody, having regard to its current WFD classification, risk status, and identified pressures as set out in the EPA Cycle 3 Catchment Assessments, River Basin Management Plan 2022–2027, and LAWPRO Priority Areas for Action.

For each receptor, the assessment identifies the WFD quality elements potentially affected, the credible source–pathway–receptor linkages arising from the Project, and the embedded pre-emptive design measures and preventative measures that form part of the Project design and construction methodology. The assessment then evaluates, on a precautionary and evidence-based basis, whether the Project could result in deterioration of any quality element, compromise the achievement of Good Status or Good Ecological Potential, or prejudice the delivery of applicable catchment-based Programmes of Measures.

The conclusions presented are intended to support the competent authority in fulfilling its obligations under Article 4(1)(a) by demonstrating, beyond reasonable scientific doubt, that the Project will not give rise to significant adverse effects on the ecological, chemical or hydromorphological status of any affected surface water body, either alone or in combination with other plans or projects.

On the basis of the assessment presented and having regard to the embedded design and control measures, it is concluded that the Project will not result in deterioration of the status of any surface water body, will not compromise the achievement of their WFD objectives and is, therefore, considered to be in compliance with the requirements of Article 4(1)(a) of the WFD.

5.3 Groundwater Bodies

Table 5.2 provides a compliance assessment of the Project in relation to Article 4(1)(b) of the Water Framework Directive, addressing the protection of groundwater bodies and groundwater-dependent terrestrial ecosystems (GWDTEs) hydrologically connected to the Project.

The assessment considers both the chemical and quantitative status objectives for groundwater bodies, as well as the specific legal requirement to prevent significant damage to dependent surface waters and designated groundwater-dependent habitats.

Each groundwater receptor is assessed in the context of its aquifer classification, vulnerability, karst sensitivity, and current WFD status and risk designation. The matrix identifies potential pressure pathways associated with excavation, dewatering, storage and handling of fuels and chemicals, and the creation of preferential flow routes, and evaluates the effectiveness of the Project's embedded design measures, pollution prevention controls, and monitoring framework in mitigating these risks.

The assessment applies a precautionary approach consistent with EPA and European Commission guidance and determines whether the Project could result in deterioration of groundwater status, alteration of groundwater flow regimes, or adverse effects on the hydrological and hydro-chemical conditions supporting GWDTEs. The conclusions are intended to inform the competent authority's determination of compliance with Article 4(1)(b)(i) and Article 4(1)(b)(ii) of the Directive.

On the basis of the assessment presented and taking account of the embedded design and control measures, it is concluded that the Project will not result in deterioration of the chemical or quantitative status of any groundwater body, will not adversely affect groundwater-dependent terrestrial ecosystems or associated surface waters and is, therefore, considered to be in compliance with the requirements of Article 4(1)(b) of the WFD.

Table 5.1: Article 4(1) Compliance Matrix – Surface Water Bodies

River Waterbody	2022–2027 RBMP Status / Risk	Relevant Quality Elements	Key Project Pressures	Embedded Controls (Design & Preventative Measures)	Legal Test (Article 4)	Compliance Outcome	Reference
Carricknabraher_020 (IE_SH_26C020200)	Poor; At Risk (hydromorphology, peat/organic)	Invertebrates; nutrients; hydromorphology; supporting physico-chemistry	Mobilisation of suspended sediments and nutrients; runoff pathway alteration; in-stream works; hydro-morphological alteration; chemical pollution	Watercourse buffers; peat management plan; forestry felling (harvesting) management plan; staged earthworks; SuDS (swales, settlement/filtration); watercourse crossing design (clear span) to maintain continuity; silt fencing; controlled dewatering with treatment; pollution prevention measures; refuelling/chemical controls; adaptive monitoring	No deterioration; do not prejudice recovery / PoM (Art.4(1)(a)	Compliant	Sections 4.4, 4.5, and 4.9.3.1
Breedoge_010 (IE_SH_26B090300)	Good; Not at Risk	All ecological elements; chemical status	Mobilisation of suspended sediments and nutrients; runoff pathway alteration; in-stream works; hydro-morphological alteration; chemical pollution	Watercourse buffers; peat management plan; staged earthworks; SuDS (swales, settlement/filtration); watercourse crossing design (clear span) to maintain continuity; silt fencing; controlled dewatering with treatment; pollution prevention measures; refuelling/chemical controls; adaptive monitoring	Protect Good status (Art.4(1)(a)	Compliant	Sections 4.4, 4.5, and 4.9.3.1
Mantua_010 (IE_SH_26M010200)	Review / Unassigned	Precautionary – all elements	Mobilisation of suspended sediments and nutrients; runoff pathway alteration; in-stream works; hydro-morphological alteration; chemical pollution	Precautionary controls; Watercourse buffers; peat management plan; staged earthworks; SuDS (swales, settlement/filtration); silt fencing; controlled dewatering with treatment; road-corridor trench controls; silt traps; pollution prevention measures; refuelling/chemical controls; adaptive monitoring; no in-stream works	Do not introduce new pressures (Art.4(1)(a))	Compliant	Sections 4.4, 4.5, 4.9.3.1, and 4.9.3.2
Kinard_010 (IE_SH_26K070500)	Good; Not at Risk	All ecological elements; chemical status	Mobilisation of suspended sediments and nutrients; chemical pollution	Road-corridor trench controls; silt traps; pollution prevention measures; refuelling/chemical controls; adaptive monitoring reinstatement; no in-stream works	Protect Good status (Art.4(1)(a))	Compliant	Sections 4.4, 4.5, and 4.9.3.2
Killukin_020 (IE_SH_26K020700)	Moderate; At Risk (sediment / nutrients)	Invertebrates; nutrients	Mobilisation of suspended sediments and nutrients; chemical pollution	Road-corridor trench controls; silt traps; pollution prevention measures; refuelling/chemical controls; adaptive monitoring; reinstatement; no in-stream works Enhanced silt/nutrient controls; DWTS protection; no in-stream stockpiles; monitoring	No deterioration; do not prejudice recovery / PoM (Art.4(1)(a)	Compliant	Sections 4.4, 4.5, and 4.9.3.2

River Waterbody	2022–2027 RBMP Status / Risk	Relevant Quality Elements	Key Project Pressures	Embedded Controls (Design & Preventative Measures)	Legal Test (Article 4)	Compliance Outcome	Reference
Charlestown Stream_010 (IE_WE_34C280100)	Good; At Risk (hydromorphology / agriculture)	Hydromorphology; invertebrates	Temporary road works near tributary: Mobilisation of suspended sediments and nutrients; runoff pathway alteration; in-stream works; chemical pollution	Temporary works method statements; silt traps; pollution prevention measures; refuelling/chemical controls; adaptive monitoring; reinstatement; no in-stream works	Protect Good status (Art.4(1)(a))	Compliant	Sections 4.4, 4.5, and 4.9.3.34.9.3.2

Table 5.2: Article 4(1) Compliance Matrix – Groundwater Bodies and GWDTEs

Groundwater Body	2022-227 RBMP Status / Risk	Sensitivity	Key Project Pressures	Embedded Controls (Design & Preventative Measures)	Legal Test (Article 4)	Compliance Outcome	Reference
GWDTE-Bellanagare Bog (SAC000592) (IE_SH_G_241)	Good; Not at Risk	Regionally Important Aquifer - Karstified (conduit)	Fuel / chemical spills; preferential pathways via excavations; dewatering / water table alteration	Bunded storage; drip trays; lined excavations where needed; controlled dewatering; pollution prevention; no drainage / drawdown near SAC	No chemical / quantitative deterioration (Art.4(1)(b)(i)); Protect dependent ecosystem (Art.4(1)(b)(ii))	Compliant	Sections 4.4, 4.5, and 4.9.3.1
GWDTE-Cloonshanville Bog (SAC000614) (IE_SH_G_067)	Good; Not at Risk	Regionally Important Aquifer - Karstified (conduit)	Fuel / chemical spills; preferential pathways via excavations; dewatering / water table alteration	Bunded storage; drip trays; lined excavations where needed; controlled dewatering; pollution prevention; no drainage / drawdown near SAC	No chemical / quantitative deterioration (Art.4(1)(b)(i)); Protect dependent ecosystem (Art.4(1)(b)(ii))	Compliant	Sections 4.4, 4.5, and 4.9.3.1
Castlerea Bellanagare (IE_SH_G_054)	Good; Not at Risk	Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones	Fuel / chemical spills; preferential pathways via excavations; dewatering / water table alteration	Bunded storage; drip trays; lined excavations where needed; controlled dewatering; pollution prevention	No chemical / quantitative deterioration (Art.4(1)(b)(i))	Compliant	Sections 4.4, 4.5, and 4.9.3.1
Carrick on Shannon (IE_SH_G_048)	Good; Not at Risk	Regionally Important Aquifer - Karstified (conduit)	Fuel / chemical spills; preferential pathways via excavations; dewatering / water table alteration	Bunded storage; drip trays; lined excavations where needed; controlled dewatering; pollution prevention	No chemical / quantitative deterioration (Art.4(1)(b)(i))	Compliant	Sections 4.4, 4.5, 4.9.3.1, and 4.9.3.2
GWDTE groundwater bodies are treated as high sensitivity receptors because (i) the WFD requires protection of groundwater-dependent ecosystems from significant damage, and (ii) the SAC designations introduce additional legal duties to avoid adverse effects on site integrity and to have regard to SAC conservation objectives.							

5.4 Cross-Article Compliance Groundwater Bodies

Table 5.3 summarises the Project's compliance with the wider procedural and implementation requirements of the Water Framework Directive, including Articles 5 and 11, and the potential applicability of the temporary deterioration and derogation provisions under Articles 4(6) and 4(7).

This table demonstrates that all relevant pressures and waterbody characteristics have been appropriately identified and assessed in accordance with Article 5, and that the Project has been designed, mitigated and conditioned to be consistent with the River Basin Management Plan 2022–2027 Programme of Measures, as required under Article 11.

The assessment also considers, on a precautionary basis, whether any residual effects of the Project could give rise to circumstances where reliance on the temporary deterioration provisions of Article 4(6) or the derogation tests of Article 4(7) would be necessary. In this regard, the matrix documents the basis for concluding that the Project will achieve full compliance with Article 4(1) objectives and that no exemption or derogation is required.

This cross-article assessment is intended to provide a transparent and auditable compliance record to support the competent authority's statutory decision-making process and to demonstrate that the Project has been evaluated in a manner consistent with European and national WFD guidance and relevant case law.

Table 5.3: Cross-Article Compliance (Articles 5, 11, 4(6) and 4(7))

Requirement	Legal Test	Outcome
Article 5 – Characterisation & Pressures	All relevant pressures identified and assessed	Compliant
Article 11 – Programme of Measures	Measures consistent with RBMP 2022–2027	Compliant
Protected Areas	No deterioration of supporting water quality	Compliant
Temporary Deterioration (Art.4(6))	Only permissible if justified	Not relied upon
Derogation (Art.4(7))	Only if objectives cannot be met	Not required

5.5 Compliance Summary

5.5.1 Article 4 Compliance

On the basis of the Stage 3 Impact Assessment, the receiving waterbody status and risk context under the 2022–2027 River Basin Management Plan, and the full suite of embedded design, construction and operational control measures, it is concluded that the Project will not result in deterioration of the status of any surface water or groundwater body, will not compromise the achievement of WFD environmental objectives, and will not prejudice the delivery or effectiveness of the RBMP Programme of Measures, either alone or in combination with other plans or projects.

The Project adheres to the "no deterioration" principle under Article 4(1) of Directive 2000/60/EC and maintains protection objectives for Good status waterbodies, while ensuring that At Risk and Review waterbodies are not subject to additional pressures that would hinder recovery. The assessment does not rely on any temporary deterioration provision under Article 4(6), and no derogation under Article 4(7) is required.

5.5.2 Cumulative Impact and Catchment Context

The assessment has considered the Project in the context of the existing and known pressures identified for the relevant catchments, including the context of arterial drainage schemes, peatland management, forestry, agricultural diffuse pollution, domestic wastewater pathways, and ongoing LAWPRO Priority Areas for Action.

With the implementation of the Project's infrastructure design (including watercourse crossings), drainage design, SuDS, pollution prevention, peat management, and monitoring framework, the Project will not act cumulatively with existing or reasonably foreseeable activities to:

- Increase sediment, organic or nutrient loading to Carricknabraher_020, Breedoge_010, Mantua_010, Kinard_010, Killukin_020 or Charlestown Stream_010;
- Increase chemical loading to groundwater bodies;
- Alter surface water or groundwater flow regimes
- Alter surface water dynamics in a manner that exacerbates hydromorphological stress; or
- Reduce the effectiveness of RBMP catchment measures or LAWPRO-led restoration actions.

5.5.3 Programme of Measures (PoM) Compliance Statement

The Project will be designed, constructed and operated so as to be consistent with, and not undermine, the RBMP 2022–2027 Programme of Measures. In particular, the Project will:

- Avoid introducing new point or diffuse sources of sediment, nutrients, organic matter or hazardous substances;
- Avoid hydromorphological alteration of watercourses and drainage features beyond what is expressly permitted and conditioned; and
- Align control measures and monitoring with catchment-based objectives, including the protection of Good status and support for recovery in At Risk and Review waterbodies, consistent with LAWPRO's "right measure, right place" framework.

Accordingly, the Project is compliant with Article 11 of the WFD and supports, rather than conflicts with, national, regional and local PoM delivery mechanisms.

6 CONCLUSION

This Water Framework Directive Assessment has evaluated the Project against the statutory objectives of Directive 2000/60/EC, as transposed into Irish law, and the RBMP 2022–2027. The assessment has considered surface waters, groundwater bodies and groundwater-dependent terrestrial ecosystems within the defined Zone of Influence, including designated sites with hydrological sensitivity.

In the absence of control measures, certain construction-phase activities could present a risk to water quality, quantity, and hydromorphology. However, with the implementation of the embedded design measures, preventative control measures and monitoring framework, no adverse effect on WFD status or objectives is predicted.

It is therefore concluded that the Project:

- Will not cause deterioration in any WFD quality element of surface water or groundwater bodies;
- Will not prevent the achievement of Good status or Good ecological potential in any waterbody;
- Will not compromise groundwater-dependent ecosystems; and
- Is fully compliant with Articles 4, 5 and 11 of the Water Framework Directive and the RBMP 2022–2027.

No derogation under Article 4(7) is required.