

Appendix 9B

WATER FRAMEWORK DIRECTIVE REPORT



BRITTAS WIND FARM

Water Framework Directive Assessment

Orsted

July 2024



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AWP

Project Checked By Doc. No. Rev. Date Prepared By Approved By Status No. 23318 WFD Assessment 29/05/2024 кс мт Draft А

MWP, Engineering and Environmental Consultants

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

www.mwp.ie



1. Introduction

1.1 Background

This report presents an assessment in accordance with the requirements of the EU Water Framework Directive (WFD) (2000/60/EC). The Directive requires all Member States to protect and improve water quality in all waters so that good ecological status is achieved by 2027 at the latest and establishes an integrated and coordinated framework for the sustainable management of water. The Directive has been transposed into Irish Law by Article 4 and 7 of the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended).

In accordance with the WFD, proposals that have the potential to impact 'water bodies' as designated by the WFD are required to demonstrate that actions would not result in a deterioration in 'Good' status. This report screens for water bodies within proximity to the Brittas Wind Farm (referred to as the proposed project) that have the potential to be impacted on by the development. Refer to Chapter 02 of the EIAR for a detailed project description.

The assessment is carried out in the following stages as set out UK guidance (in the absence of an equivalent in Ireland):

- Stage 1 WFD Screening;
- Stage 2 WFD Scoping; and
- Stage 3 WFD Impact Assessment.

The WFD considers both the environmental status of surface water and groundwater. The purpose of this assessment is to provide the regulators with an overview of possible effects that may occur during the construction and operation of the proposed facility.

This WFD Assessment is contained as an Appendix to the **Environmental Impact Assessment Report (EIAR)** and specifically to supplement the **Chapter 09 Water** of the **EIAR** and should, therefore, be read together with this chapter.

1.2 Competency of Assessor and Reviewer

The assessment was completed by Kate Cain, Environmental Scientist with MWP. Kate holds an BSc in Environmental Management and has over 15 years; of experience. Kate has authored Environmental Impact Assessment Reports, Detailed Site Assessments, Environmental Reports and Construction and Environmental Management Plans for a wide range of projects.

This assessment has been reviewed by Olivia Holmes. Olivia is a Chartered Engineer and Chartered Environmental Practitioner with over twenty years' experience in Environmental Engineering focussing primarily on Environmental Impact Assessment (EIA), Appropriate Assessment (AA) and planning. She has prepared and reviewed a number of chapters for EIARs over her career for a broad range of projects.

2. Legislative Context

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

The EU Water Framework Directive (WFD) (2000/60/EC) was transposed into Irish law by the S.I. No. 722/2003 - European Communities (Water Policy) Regulations 2003 (as amended). These Regulations cover governance, the characterisation of WFD river basins and the development of River Basin Management Plans (RBMP), environmental objectives and programmes of measures for achieving the latter, and criteria for determining quality standards.

The Regulations provide for the implementation of the WFD in Ireland, providing for the designation of all waters (rivers, lakes, estuarine waters, transitional coastal waters, and groundwaters) as 'water bodies', and setting objectives for the achievement of Good Ecological Status (GES) or Good Ecological Potential (GEP) and Good Chemical Status (GCS).

2.2 WFD Objectives

There are two principal objectives of the WFD:

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

The current baseline quality (referred to as the current 'status') of all water bodies is reported every six years as part of the RBMP cycle in Ireland. The first RBMP cycle in Ireland covered the period 2009 to 2015. The second cycle plan covered the period 2018-2021. The draft third cycle RMBP covering the period 2022-2027 was launched for public consultation in 2020 and is still to be published.

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

2.3 WFD Classification

The information used in the classification of the status of our water bodies is collected in the national WFD monitoring programme. Information on a range of different elements is collected (EPA, 2022):

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

Rivers, lakes, estuaries and coastal waters can be awarded one of five statuses and groundwater just two (**Figure 2-1**) (Catchments.ie, 2024). High status is the reference condition, and it is defined as the biological, chemical, and morphological conditions associated with no or very low human pressure. The reference condition is considered to be the best status achievable or benchmark for a given water body. The reference conditions will vary depending on the water body type, whether it is man-made or natural (or a combination of the two), and the local biodiversity of the region (EIRGRID, 2021).



Figure 2-1: WFD Classification (Catchments.ie, 2022)

2.3.1 Ecological Status

There are 18 biological assessment methods used to assess ecological status (EPA, 2019-2021) (**Table 2-1**). The ecological status classification for the water body, and the confidence in this, is determined from the worst scoring quality element. This means that the condition of a single quality element can cause a water body to fail to reach its WFD classification objectives (EIRGRID, 2021).

Table 2-1: Biological assessment methods used to assess ecological stat	tus
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Water Category				
Biological quality elements (BQE)	Rivers	Lakes	Transitional	Coastal

Macroinvertebrates	Quality Rating System (Q-value) <i>AWICS</i> (Acidification)	LAMM (acidification)	Infaunal Quality Index (IQI)	Infaunal Quality Index (IQI)
Aquatic Plants	Mean Trophic Rank (MTR) LEAFPACS	Free Macrophyte Index	Intertidal Seagrass tool Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE)	Intertidal Seagrass tool Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE)
Macroalgae	Mean Trophic Rank (MTR) LEAFPACS	Not applicable	Opportunistic Green Macroalgal Abundance (OGA Tool)	Opportunistic Green Macroalgal Abundance (OGA Tool) RSL - Rocky Shore reduced species List
Phytoplankton	Not applicable	Lake Phytoplankton Index Phytoplankton biomass (chlorophyll)	Phytoplankton biomass (chlorophyll) Phytoplankton composition	Phytoplankton biomass (chlorophyll) Phytoplankton composition
Phytobenthos	Trophic diatom Index (TDI)	Lake Trophic Diatom Index	Not applicable	Not applicable
Fish	Fish Classification Scheme 2 Ireland (FCS2)	Fish in lakes 2 (FIL2)	Transitional Fish Classification Index (TFCI) Estuarine Multi- metric Fish Index (EMFI)	Not applicable

*Italics indicate new method or method under development

The current status and measures designed to achieve the water body objectives are set out by the EPA in the draft RBMP (2022-2027). For this RBMP cycle, a single national River Basin District has been defined for Ireland. This is broken down into 46 catchment management units and the proposed developed is located within Catchment 16 (Suir Catchment) within the sub catchment 16_22 (Suir_SC_000). Refer to **Figure2-2** for the WFD Sub catchments and **Figure 3-2** showing the location of the Suir Catchment within the River Basin District.



Figure2-2: Sub Catchment Locations (EPA Maps, 2024)

2.3.2 Chemical Status

Chemical status is assessed by compliance with environmental standards for chemicals that are listed in the EC Environmental Quality Standards Directive (2008/105/EC); transposed in Ireland by the European Communities Environmental Objectives (Surface Waters) Regulations 2009 S.I. No. 272/2009 (as amended).

These chemicals include priority substances, priority hazardous substances, and eight other pollutants carried over from earlier directives. Chemical status is recorded as 'good' or 'poor'. The chemical status classification for the water body is determined by the worst scoring chemical (EIRGRID, 2021).

2.3.3 Hydromorphology Status

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

An alternative environmental objective, Good Ecological Potential (GEP) applies in these cases. In practice, this means that ecology must be as close as possible to that of a similar natural water body, but without compromising its human use. The water bodies of relevance to this project are not classified as HMWB so the classification of these is not discussed further (EIRGRID, 2021).

2.4 WFD Protected Areas

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

- Areas used for water abstraction European Union (Water Policy) (Abstractions Registration) Regulations 2018 (S.I. No. 261 of 2018);
- Areas designated for the protection of economically significant aquatic species (Freshwater Fish Directive 78/659/EEC; Shellfish Directive 79/923/EEC);
- Recreational waters (Bathing Waters Directive 76/160/EEC);
- Nutrient Sensitive Areas (Nitrates Directive 91/676/EEC; Wastewater Treatment Directive 91/271/EEC);
- Areas of protected species or habitats where water quality is an important factor in their protection (Natura 2000 sites under Birds Directive 79/409/EEC and Habitats Directive 72/43/EEC); and
- Surface waters (The European Communities Environmental Objectives (Surface Waters) Regulations [S.I. No 272 of 2009], and amendment regulations 2012 [S.I. 327 of 2012]).

Surface waterbodies draining the proposed project eventually flow into the Lower River Suir SAC (Site Code: 002137) after Thurles. At its closest point this designated site is located approximately 5.5km downstream of the proposed project site and is hydrologically connected with the site via the River Suir.

Potential impacts of the proposed project on Special Areas of Conservation (SAC) and Special Protection Areas (SPA) are addressed in **Chapter 06 Biodiversity**, **Chapter 07 Ornithology** of this **EIAR** and in the **Natura Impact Statement (NIS)** submitted with the planning application.

2.5 Compliance with the WFD and Purpose of the WFD Assessment

All new developments in Ireland that may have an impact on the water environment are required to comply with objectives of the WFD, under European Communities Environmental Objectives (Surface Waters) Regulations 2009 S.I. No. 272/2009 (as amended).

This includes ensuring that no changes occur that cause a deterioration of the current status of any water body, and that the development does not prevent the achievement of the future status objectives of any water body. Water body status deterioration can occur as a result of deterioration of any of the quality elements that make up the overall status (e.g., biological, physicochemical or hydromorphological elements for surface waters) even where this does not result in a lowering of overall water body status.

The purpose of the WFD Assessment is to assist developers and regulators understand the impact that the development may have on the immediate water body and any linked water bodies and to ensure that the development will not prevent compliance with the WFD Objectives. This report presents the findings of the WFD assessment process undertaken for the proposed Brittas Wind Farm.

3. Project Description and Catchment Area

3.1 **Project Description**

Brittas Wind Farm Ltd. (the Applicant) propose to develop a wind farm (named Brittas Wind Farm) comprising ten (10) No. wind turbines approximately 3km to the north of Thurles, Co. Tipperary. The wind farm is proposed in the townlands of Brittas, Rossestown, Clobanna, Brownstown, Killeenleigh and Kilkillahara.

The main components of the project are ten (10) wind turbines with a height of 180m, an on-site 110kV electrical substation, a Battery Energy Storage System (BESS) and an underground electrical connection to an existing 110kV substation at Thurles which is connected to the National Grid. Should it become operational, this wind farm will be capable of providing over 57 megawatts (MW) of renewable electricity to the National Grid.

Refer to **Figure 3-1** for the location of the proposed project. A detailed description of the proposed site location and description of the proposed project is provided in **Chapter 02 Project Description** of this **EIAR**.



Figure 3-1: Project Location

The subject site is located within Hydrometric Area No. 16, also known as the Suir Catchment. The Suir catchment is divided into 29 sub catchments with 168 river waterbodies, seven lakes, four transitional waterbodies and 43 groundwater bodies (EPA Catchments, 2021). There are coastal waterbodies in the catchment (**Figure 3-2**).



Figure 3-2: Suir Catchment Area (EPA, 2021)

The proposed project is located within sub catchments 16_22 (Suir_SC_010) and 16_21 (Suir_SC_040) and within the following river sub basins:

- Suir_050; and
- Suir_060.

Refer to Figure2-2 for overview of the sub-catchment extents.

3.2 Relevant Surface Water Body and Status

The River Suir (IE_SE_16S020500 and IE_SE_16S020600) flows in an easterly direction north of Turbine 1 and 2. The river then bends and flows in a southerly direction between Turbines 3, 6, 7 and 8. It continues in a southerly direction and flows to the east of Turbine 9 and 10.

The Rossestown Bridge Stream (IE_SE_16S020500) flows to the east of Turbine 4. The Athnid More Stream (IE_SE_16S020500) then confluences this stream to the north of Turbine 5 which flows in a southerly direction to the East of Turbine 3 and 7 before the confluence with the River Suir passing Turbine 9 and 10. The grid connection route crosses this stream over a single span arch stone bridge.

The Rossestown Stream (IE_SE_16R010300) flows to the east of the proposed project site and confluences with the Rossestown Bridge Stream. Refer to **Figure 3-3** for the location of these streams in relation to the proposed project infrastructure.

The Farranreigh 16 Stream (IE_SE_16D020400) is located to the east of Thurles and is crossed by the grid connection over a single span arch bridge before connecting into the Thurles substation.

The River Suir is designated for a Natura 2000 site downstream of the proposed projects site after Thurles. This protected area is named the Lower River Suir SAC (Site code 002137). Refer to **Chapter 05 Biodiversity** of this **EIAR** and the **Natura Impact Statement (NIS)** submitted with the planning application package for further details on these sites.



Figure 3-3: Location of Surface Water Bodies

Table 3-1 provides a summary of the WFD status for the surface water bodies applicable to the proposed project. The water quality for the Suir_050 (surface water features located to the north of the L8017) has been consistently 'good' since monitoring commenced in 2007 and classified as 'not at risk' of meeting the WFD objectives. The Suir_060 (from the L8017 and flowing south towards Thurles) has fluctuated between 'poor' and 'moderate' with the latest monitoring cycle resulting indicating a 'poor' water quality. This portion of the Suir River is also 'at risk' of meeting the objectives of the WFD. Refer to **Figure 3-4** for the river waterbody risk status (EPA Maps, 2024).

Table 3-1: River Status

Surface Water										
River Waterbody	Segment		River			Water Quality Status (Q Value)				
Code	Code	Flow Network Name	waterbody Risk Name	Туре	WFD Risk*	2007-2009	2010-2012	2010-2015	2013-2018	2016-2021
IE_SE_16S020500	16_502		Suir_050	River /	Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
IE_SE_16S020600	16_10663	Suir	Suir_060	Stream	At Risk	Q3, Q2-3 (Poor)	Q3, Q2-3 (Poor)	Q3-4 (Moderate)	Q3-4 (Moderate)	Q3 <i>,</i> Q2-3 (Poor)
	16_2671	Deserver Drides	Suir_050	River /	Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
IE_3E_103020300	E_SE_165020500 Rossestov	ROSSESLOWIT BLIDge	Suir_050	Stream	Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
IE_SE_16S020500	16_135	Athnid More Stream	Suir_050	River / Stream	Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
	16_2380	Deserved and Character		River / Stream	Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
IE_SE_165020500	16_10692	Rossestown Stream	Sulr_050		Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
IE_SE_16D020400	16_2885	Farranreigh 16	Drish_060	River / Stream	At Risk	Q3, Q2-3 (Poor)	Q3-4 (Moderate)	Q3-4 (Moderate)	Q3-4 (Moderate)	Q3-4 (Moderate)
*Water bodies for Revi	iew are not con	sidered to be At Risk but	t require further e	evidence tha	t the objective	s are being met,	typically with or	ngoing monitorir	ng and/or possib	ly modelling.



Figure 3-4: River Waterbody Risk (Source: EPA)

3.3 Relevant Groundwater Body and Status

The Groundwater Bodies (GWB) underlying proposed project site and grid connection are the Templemore (EU Cide: IE_SE_G_131) GWB and the Thurles (EU Code: IE_SE_G_158) GWB. Refer to **Figure 3-5** for a map showing the location of the GWBs in relation to the proposed project.



Figure 3-5: Groundwater Bodies

At present, the EPA classifies the Templemore GWB as having a WFD Status (2016-2021) of 'good', with a current WFD risk score of 'at risk' (**Figure 3-6**). This water body had not achieved the WFD objective of good status in terms of water quality for the following:

- Chloride has an increasing trend indicating deterioration. It has exceeded the Indicative Quality Guide1 since 2015 (Figure 3-7); and
- Conductivity has a decreasing trend but is above the Indicative Quality Guide (Figure 3-8).

The Thurles GWB is classified as having a WFD Status (2016-2021) of 'good', with a current WFD risk score of 'not at risk' (**Figure 3-6**). This GWB therefore meets the objective of good status for quality elements monitored by the EPA.

¹ EPA: Indicative water quality for the parameter being trended only, as determined using the aggregated concentrations for the baseline period, i.e. 2007-12 for groundwater.



Figure 3-6: EPA Groundwater Body Risk



Figure 3-7: Groundwater Trend Graph Chloride



Figure 3-8: Groundwater Trend Graph Conductivity

The majority of the proposed project site and grid connection are situated within an aquifer that is described by Geological Survey Ireland (GSI) as a Locally Important Bedrock Aquifer, which is Moderately Productive only in Local Zones (Category LI) (**Figure 3-9**). Parts of the grid connection route to Thurles is situated within an aquifer which is described as a Regionally Important Aquifer, which comprises of bedrock which is Karstified (diffuse) (Category Rkd) and a locally important aquifer with bedrock that is generally moderately productive (Category Lm).



Figure 3-9: EPA Bedrock Aquifer Classification



Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Mapping provided by the GSI indicates that the majority of the site is underlain by an aquifer of high vulnerability. Refer to **Figure 3-10** illustrates the groundwater vulnerability beneath the site and within the greater area.

Groundwater Vulnerability is used to represent the natural ground characteristics that determine the ease with which groundwater may be contaminated by human activities. Groundwater vulnerability maps are based on the type and thicknesses of subsoils (sands, gravels, glacial tills (or boulder clays), peat, lake and alluvial silts and clays), and the presence of karst features. Groundwater is most at risk where the subsoils are absent or thin and, in areas of karstic limestone, where surface streams sink underground at swallow holes. All land area is assigned one of the following groundwater vulnerability categories:

- Rock near surface or karst (X);
- Extreme (E);
- High (H);
- Moderate (M); and
- Low (L).

Refer to **Figure 3-10** for the groundwater vulnerability applicable to the proposed project. As can be seen from the figure, the groundwater vulnerability ranges from moderate to extreme. contaminants may reach groundwater in a vertical or sub-vertical direction and is categorised as 'at risk'.



Figure 3-10: Groundwater Vulnerability



Table 3-2 provides a summary of the WFD status for the groundwater aquifer under the site. The water quality has remained of a good quality from 2007 to the latest results in 2021. The Templemore aquifer is however at risk in terms of the WFD status. This means that there may be exceedances of quality standards and thresholds that would result in failure to achieve the environmental objectives of associated surface waters.

Code	Nome	Turne	WFD Risk*	Water Quality Status			
	Name	туре		2007-2012	2010-2015	2013-2018	2016-2021
IE_SE_G_131	Templemore	Groundwater	At Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)
IE_SE_G_158	Thurles	Groundwater	Not at Risk	Q4 (Good)	Q4 (Good)	Q4 (Good)	Q4 (Good)

Table 3-2: Groundwater Status

* At risk means not achieving the environmental objectives related to point sources or exceedances of quality standards and thresholds that would result in failure to achieve the environmental objectives of associated surface waters

The GSI database lists sixteen boreholes and one dug well in proximity to the proposed project site. The current use of most (10) of these boreholes is unknown with the remainder for agricultural and domestic use (**Figure 3-11**). The Yield Class ranges between poor and moderate for these boreholes with some of them having an unknown yield class.

The current turbine locations are not located within any Groundwater Group Schemes or Public Supply Source Protection Area. The closest turbine to a Group Scheme is approximately 500m.

As no groundwater will be abstracted as part of the proposed project, these schemes will be unaffected by any activity associated with the proposed site development.



Figure 3-11: GSI Groundwater Wells and Springs

4. Methodology and Findings

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

This section details the WFD assessment methodology for the surface water and groundwater components of the facility. For each of the stages, a description of the process adopted is provided, together with initial relevant information that may facilitate early decision-making.

Published methodologies for the assessment of plans or projects in relation to undertaking WFD assessments across all types of water bodies that are specific to Ireland are currently not available. There is however an EU-level guidance document of relevance titled "Water Framework Directive Project assessment checklist tool" (2018), published by the Joint Assistance to Support Projects in European Regions (JASPERS). In addition, the Planning Inspectorate Advice Note 18: The WFD (PINS, 2017) provides guidance on the WFD process, and the information required.

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

The WFD assessment process consists of various assessment stages as follows:

• Stage One: Screening;

- Stage Two: Scoping; and
- Stage Three: Detailed Impact assessment.

4.1 Stage One: Screening

4.1.1 Objectives and Approach

This stage aims to determine if the Proposed project has impact pathways to WFD water bodies. This includes collating available information on the project and baseline environment of the water bodies which could potentially be impacted. Should it be determined during this phase that there are no impact pathways to WFD water bodies, Stage 2 and 3 are not required.

Stage One requires the following main tasks to be undertaken:

- Initial screening to identify relevant water bodies in the study area. The following criteria are used to select water bodies for inclusion in the early stages of the assessment:
 - All surface water bodies that could potentially be directly impacted by the proposed project;
 - Any surface water bodies that have direct connectivity (e.g., upstream and/or downstream from the proposed project) and could therefore potentially be indirectly affected by the proposed works; and
 - Any groundwater bodies that underlie the proposed project and therefore have the potential for direct impacts, and any hydraulically connected groundwater bodies that may receive indirect impacts.
- Review the RBMP and determine the water bodies to be included in the assessment area;
- Collection of water body baseline data; and
- Collection of information in respect of the Proposed project, broken down in sufficient detail so that the compliance of each activity can be considered in the assessment.

The screening process considers the potential risk to WFD objectives as a result of the proposed project. It draws on the relevant information concerning the design and implementation proposals for the proposed project and the WFD baseline data from the data collation stage.

The activities associated with the proposed project have been broken down into the following phases (described fully in **Chapter 02 Project Description** of the **EIAR**):

- Construction; and
- Operation.

The screening has been based on a qualitative assessment utilising expert knowledge to assess potential risks from elements of the proposed project to the WFD objectives.

4.1.2 Findings

In order to undertake the screening assessment and identify the water bodies that are potentially at risk, the project was divided into phases and activities (**Table 4-1**). The operational life of the proposed project is expected to be 35 years. The WFD status of the water bodies of interest are likely to have changed within a 40-year



timescale so the potential for decommissioning activities to affect the WFD status of Irish water bodies is not included in this assessment.

Table 4-1: Project Phases and Activities

Project Phase	Potential Effect	Activity
Construction Phase	Increased Surface Runoff	Progressive replacement of the vegetated surface with impermeable surfaces (turbine hardstanding, access tracks, spoil depositions areas, an electrical sub- station compound, BESS, and two temporary construction compounds)
	Increase in Suspended Solids	Activities including earthworks (removal of vegetated material), excavation, cut and fill activities and trenches for laying of cables.
	Deterioration of water quality	Use of machinery during construction Spillage or leakage of fuels (and oils) stored on site Spillage or leakage of fuels (and oils) from construction machinery or site vehicles Spillage of oil or fuel from refuelling machinery on site Use of cement on site and entry of cement based products into the site drainage system to surface water resources Construction of structures over watercourses within the proposed project site has the potential to interfere with water quality during the construction phase Potential Biological contamination from leaking sanitary waste from welfare facilities
	Morphological Changes to Surface Water Courses & Drainage Patterns	Diversion, culverting and bridge crossings of surface watercourses can result in morphological changes, changes to drainage patterns and alteration of aquatic habitats
	Lowering of Groundwater Levels and decrease in Local Well Supplies	Groundwater levels may be lowered as a result of dewatering due to excavation works and dewatering of the proposed borrow pit
Operational Phase	Increased Surface Runoff	Slight increase in run-off from a storm event to the streams within the site due to a minor decrease in ground permeability at the turbine hardstands, grid connection, BESS and substation compound
Thuse	Hydrocarbon Spill	During the operational phase, oil will be used in cooling the transformers

As part of the **EIAR**, mitigation measures will be implemented to reduce the effect of the proposed project on the surface water and groundwater bodies. In addition to the mitigation measures developed through design of the wind farm, the following control measures are proposed:

Site Clearance (Tree Felling):



- Felling of 1.4 ha of forestry and removal of 4086m of hedgerow is required within and around the proposed wind farm infrastructure to accommodate the construction of foundations, hardstands and access tracks as well as to facilitate assembly of turbines and provide ecological buffers;
- It is proposed to fell to a distance of up to 105m around turbines;
- All forestry felling will be undertaken in accordance with a forestry felling licence, using good working practices as outlined by the Department of Agriculture, Food, and the Marine (DAFM) Standards for Felling and Reforestation (2019).

River Crossings:

- No work will take place within 50m buffer zones of EPA mapped watercourses except for construction works detailed in Section 9.4.2.4 of Chapter 09 Water;
- Any works taking place in the vicinity of unmapped watercourses or land drains will be undertaken in accordance with the mitigation measures set out in this Chapter and in the CEMP (attached as Appendix 2B of Volume III);
- Working near watercourses during or after intense or prolonged rainfall events will be avoided and work will cease entirely near watercourses when it is evident that there is a risk that pollution could occur;
- All construction method statements will be developed in consultation with Inland Fisheries Ireland and in accordance with the details in the **CEMP** accompanying this application; and
- The selection criteria and other details of the proposed crossings can be found in **Chapter 03 Civil Engineering**. These crossings will be subject to a Section 50 application to ensure flood risk upstream and downstream of the crossing is not increased.

Concrete Control:

During the pouring of concrete, the following measures will be implemented to avoid spilling concrete outside construction areas and to prevent concrete entering any part of the drainage system:

- Concrete pours will be supervised by the construction manager, who will ensure the area of the pour is completely drained of water before a pour commences;
- Pours will not take place during heavy rainfall; and
- There will be a dedicated concrete chute washout area on site. Concrete trucks will be washed out off site at the source quarry. Wet concrete operations are not envisaged for the proposed development within or adjacent to watercourses or aquatic zones. No batching will take place on site. However, if wet concrete operations are required in such locations, a suitable risk assessment will be completed prior to works being carried out.

Plant and Refuelling:

The following will be undertaken in relation to plant and refuelling:

- Only qualified persons shall operate machinery or equipment;
- Machinery and equipment shall be checked on a regular basis to ensure they are working properly (no oil/fuel leaks etc.);
- No refuelling shall take place within 50m of any watercourse;
- Fuel will be stored in doubly-bunded bowsers or in bunded areas at the site compound;



- Plant nappies and spill kits will be readily available on plant equipment or when working with fuel operated heavy tools;
- To mitigate against sources of contamination, refuelling of plant and vehicles will only take place within designated areas of the site compound or in other areas specifically designated for this purpose;
- Only emergency breakdown maintenance will be carried out on site;
- Appropriate containment facilities will be provided to ensure that any spills from breakdown maintenance vehicles are contained and removed off site;
- There will be no discharge of any priority or hazardous substances to groundwater and surface waters; and
- A suitable permanent fuel and oil interceptor will be installed to deal with all substation surface water drainage. Temporary petrol and oil interceptors will be installed at the site compound for plant repairs/storage of fuel/temporary generator installation.

Inspection and Maintenance:

- The drainage and treatment system for the proposed wind farm will be continuously managed and monitored and particularly after heavy rainfall events during the construction phase;
- The drainage and treatment system will be regularly inspected and maintained to ensure that any failures are quickly identified and repaired so as to prevent water pollution;
- A programme of inspection and maintenance will be designed and dedicated construction personnel assigned to manage this programme as outline in the CEMP. A checklist of the inspection and maintenance control measures will be developed, and records kept of inspections and maintenance works; and
- These drainage controls will be kept in place during the operational phase of the proposed wind farm until the vegetation is re-established.

Weather Monitoring:

• Weather monitoring is a key input to the successful management of the drainage and treatment system during the construction of the proposed wind farm. This will involve 24 hour advance meteorological forecasting (Met Éireann download) and on site rain gauge linked to a trigger-response system. When a pre-determined rainfall trigger level is exceeded (e.g., 1 in 5 year storm event), planned responses will be undertaken. These responses will involve control measures including the cessation of construction until the storm event has passed over and flood flows have subsided. Dedicated construction personnel will be assigned to monitor weather. Refer to the **CEMP** attached as **Appendix 2B** of **Volume III** for further details of the control measures and relevant personal.

Wheel Washes:

• Wheel washes will be provided for heavy vehicles exiting the site to ensure that tracks outside of the site boundary are clean. These can take the form of dry or wet wheel wash facilities. In the case of a wet wheel wash a designated bunded and impermeable wheel wash area will be provided, and the resultant wastewater will be diverted to a settlement pond for settling out of suspended solids.

Water Quality Monitoring

- A programme for water monitoring will be prepared in consultation with Inland Fisheries Ireland prior to the commencement of the construction of the proposed wind farm. The plan will include monitoring of water during the pre-construction, throughout and post construction phases;
- Further baseline water quality monitoring of all streams near the development site will be undertaken prior to construction to confirm existing conditions at the time of construction. This baseline data will include the main components of a full hydrograph for the streams including both high spate flow and base flow where possible;
- During the construction phase of the project, a surface water monitoring schedule, finalised prior to construction, will be followed. In summary, weekly field monitoring of surface water quality chemistry will be carried out at the identified and agreed surface water quality monitoring locations;
- Continuous, in-situ, monitoring equipment will be installed at selected locations upstream and downstream of the proposed project. The monitoring equipment will provide continuous readings for turbidity levels, flow rate and water depth in the watercourses;
- Each month, the EcoW (refer to the **CEMP** in **Volume III** of the **EIAR** for details of the person to be appointed) will take samples from each location and bring to a laboratory for analysis on a range of parameters with relevant regulatory limits and EQSs. This will be compared with the baseline data obtained prior to construction from the EPA and from sampling. If the measured value exceeds the baseline values, the cause will be determined, and remedial measures put in place as necessary.
- Periodic visual observations at each of the monitoring points will be recorded with specific reference to flow, stream substrate and water colour. Photos will be taken to support visual observation, and inspection sheets including visual observation results and photographic records will be kept on site; and
- Visual observations will also be completed after major rainfall events along with photographs which will be collected and assessed by the EcoW.

Detailed mitigation measures are provided in Chapter 03 Civil Engineering, Chapter 09 Water and the CEMP (attached to the EIAR as an Appendix 2B).

Effects on groundwater and surface water have been identified and detailed in **Chapter 09 Water** of the **EIAR**. The criteria, their explanations and the effect rating methodology outlined in **Chapter 01 Introduction** of the **EIAR** have been used to assess the effects.

Using the water bodies identified in **Section 3** and the activities and mitigation measures to be implemented, a WFD screening exercise was undertaken to determine any potential effects of the proposed project on the ability of these water bodies to reach the objectives of the WFD. The results of the screening assessment are summarised in **Table 4-2**.

From the justification in **Table 4-2** and the detailed impact assessment undertaken and the mitigation proposed in **Chapter 09 Water of the EIAR** and the **CEMP**, it is unlikely that the development will cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status.

No further assessment (scoping or detailed impact assessment) of the WFD is recommended given that no significant deterioration or change in water body status is anticipated due to the implementation of mitigation measures and the fact that there is no groundwater was intercepted during the test pits and hydrologic connectivity to the surface water body.

Table 4-2: Results of the Screening Exercise

Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
Construction Phase	se					
Progressive replacement of the vegetated surface with impermeable surfaces (turbine hardstanding, access tracks, spoil depositions areas, an electrical sub- station compound, BESS, and two temporary construction compounds)	Surface Water	Suir_050 (IE_SE_16S020500) Suir_060 (IE_SE_16S020600) Drish_060 (IE_SE_16D020400)	Quality	Increased Surface Run-off Increase in the proportion and speed of surface water runoff reaching the surface water drainage network.	Screened Out	The creation of impermeable areas within a development site has the effect of increasing rates of runoff into the downstream drainage system and this may increase flood risk and flood severity downstream. The proposed wind farm is located within a large rural catchment with an open drainage system. The footprint of the impermeable areas and the associated increase in runoff rate is very small in the context of the catchment size and therefore represents a negligible increase in downstream flood risk. However, it is proposed to provide attenuation to limit the flow rate into the settlement ponds during high intensity storm events so that they do not become overloaded. This will also attenuate the flow to the downstream watercourses. The site drainage system was designed integrally with the proposed wind farm infrastructure layout as a measure to ensure that the proposal will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchments from sediment runoff. The design elements have been outlined in detail in Chapter 03 Civil Engineering including drainage and surface water management and run off on site. The water impact assessment undertaken (Chapter 09 Water of the EIAR) and the project specific CEMP detail robust mitigation measures to protect the hydrological environment. With the implementation of these measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives.

Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
Activities including earthworks (removal of vegetated material), excavation, cut and fill activities and trenches for laying of cables.	Surface Water	Suir_050 (IE_SE_16S020500) Suir_060 (IE_SE_16S020600) Drish_060 (IE_SE_16D020400)	Quality	Increase in suspended solids Potential impact on surface water quality as a result of discharge of sediment to surface water during construction activities and dewatering of excavations.	Screened Out	The site drainage system was designed integrally with the proposed wind farm infrastructure layout as a measure to ensure that the proposal will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchments from sediment runoff. A fundamental principle of the drainage design is that clean water flowing in the upstream catchment, including overland flow and flow in existing drains, is allowed to bypass the works areas without being contaminated by silt from the works. This will be achieved by intercepting the clean water and conveying it to the downstream side of the works areas either by piping it or diverting it by means of new drains or earth mounds. The dirty water from the works areas will be collected in a separate drainage system and treated by removing the suspended solids before overland dispersal. Dirty water drains will be provided on one or both sides of the access tracks and along the periphery of the turbines, crane hardstands, substation compound, met mast, borrow pit and the temporary site construction compound. The implementation of sediment and erosion control measures is essential in preventing sediment pollution and an increase of suspended solids. The settlement ponds and check dams will provide the essential mechanism for the removal of silt from construction related runoff and the controlled return of the treated runoff to the downstream watercourses. The design elements have been outlined in detail in Chapter 03 Civil Engineering including drainage and surface water management on site. The water impact assessment undertaken (Chapter 09 Water of the EIAR) and the project specific CEMP detail robust mitigation measures to protect the hydrological environment from an increase in suspended solids entering the watercourses. With the implementation of change measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve t
	Groundwater	Templemore (IE_SE_G_131) Thurles (IE_SE_G_158)	Quality	Potential impact on groundwater quality as a result of excavations	Screened Out	The timing of the construction phase soil stripping and excavation works will take into account predicted weather, particularly rainfall. Soil stripping activities will be suspended during periods of prolonged rainfall events. The area of exposed ground will be kept to a minimum by maintaining where possible existing vegetation that would otherwise be subject to erosion in the vicinity of the wind farm infrastructure.

Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
				that may extend to the groundwater table.		The design elements have been outline in detail in Chapter 03 Civil Engineering and include management of water during excavation activities. The water impact assessment undertaken (Chapter 09 Water of the EIAR) and the CEMP detail mitigation measures to protect the geohydrological environment during excavation activities. Following the implementation of these mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives.
Activities relating to the use of machinery on site, potential for spillage / leakage of hydrocarbons / oils / cement and biological contamination	Surface Water	Suir_050 (IE_SE_16S020500) Suir_060 (IE_SE_16S020600) Drish_060 (IE_SE_16D020400)	Quality	Potential impact on surface water quality from hydrocarbons entrained in surface water run off from open excavation areas.	Screened Out	The primary method of reducing the potential effect from cementitious material on the hydrology of the proposed wind farm is the selection of ready-mixed concrete as opposed to site batching of concrete. By removing cement in its raw state from the site the potential for a significant effect from hydrolysis of cement in the surrounding watercourses is eliminated. Concrete truck washouts for Brittas will be limited to washing down chutes only. The chute wash down area, which will retain the washout water, will be located within the construction compound and there will be no other chute wash down activity on any other part of the proposed wind farm. The storage of fuels / oils will include the following:

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Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
from leaking sanitary waste from welfare facilities and the construction of structures over watercourses	Groundwater	Templemore (IE_SE_G_131) Thurles (IE_SE_G_158)	Quality	Potential impact on groundwater quality beneath the site as a result of spillage / leaks of hydrocarbons.	Screened Out	 Any storage of fuels/oil will be located at least 50m from any identified watercourses and fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores; Collision with the oil stores will be prevented by locating oils within a steel container in a designated area of the site compound away from vehicle movements; Leakages of fuel/ oil from stores will be prevented by storing these materials in bunded tanks which have a capacity of 110% of the total volume of the stored oil; Ancillary equipment such as hoses and pipes will be contained within the bunded storage container; Taps, nozzles or valves will be fitted with a lock system to prevent any potential leaks; and The long term storage of waste oils will not be allowed on site. These waste oils will be collected in leak-proof containers and removed from the site for disposal or re-cycling by an approved service provider. Plant nappies or absorbent mats will be placed under refuelling points during all refuelling to absorb drips. Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas, at least 50m away from drains and open water. To reduce the potential for oil leaks, only vehicles and machinery will be allowed onto the site that are mechanically sound. An up to date service record will be required from the main contractor. Should there be an oil leak or spill, the leak or spill will be contained immediated yuing oil spill kits, all oil and any contaminated material will be removed and properly disposed of in a licensed facility. Immediate action will be facilitated by easy access to oil spill kits. An oil spill kit that includes absorbing pads and socks will be kept at the site compound and also in site vehicles and machinery. Correct action in the event of a leak or spill will be facilitated by training all vehicle/machinery operators in the use of the spill kits and th

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Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
						emergency service for major fuel spills will be immediately called for assistance, their contact details will be kept in the site office and in the spill kits kept in site vehicles and machinery. As part of the water impact assessment undertaken (Chapter 09 Water of the EIAR) and the project specific CEMP detail robust mitigation measures to protect the hydrological and geohydrological environment from hydrocarbons or cement spills. After implementation of these mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives.

Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
Diversion, culverting and bridge crossings of surface watercourses can result in morphological changes, changes to drainage patterns and alteration of aquatic habitats	Surface Water	Suir_050 (IE_SE_16S020500) Suir_060 (IE_SE_16S020600) Drish_060 (IE_SE_16D020400)	Quantity / Quality	Morphological Changes to Surface Water Courses & Drainage Patterns and potential effect on surface water quality during construction of watercourse crossings	Screened Out	The site drainage system was designed integrally with the proposed wind farm infrastructure layout as a measure to ensure that the proposal will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchments from sediment runoff. No work will take place within 50m buffer zones of watercourses identified in Chapter O9 Water of the EIAR except for drainage/stream crossings and associated road construction. Working near watercourses during or after intense or prolonged rainfall events will be avoided and work will cease entirely near watercourses when it is evident that there is a risk that pollution could occur. All construction method statements will be developed in consultation with Inland Fisheries Ireland and in accordance with the details in the CEMP accompanying this application. The grid connection will require two watercourse crossings. The watercourse crossing on L4120-18 (Rossestown Road) and L8015-0 (Furze Road) are single span masonry arch bridges. The 110kV cable will cross the bridge in a flatbed formation or alternatively a horizontal directional drill (HDD) methodology will be used. Descriptions of the methodologies suitable for crossing these bridges are detailed in Chapter 03 Civil Engineering of this EIAR. No instream works will be required. Five water crossings will be required at the Wind Farm site for the internal access roads and underground cables. Where an open drain or watercourse is encountered will cross the open drain or watercourse is encountered buring the installation of the internal site cable trenches; the cable trenches will cross the open drain or watercourse is encountered for in-stream works. The design elements for these crossings have been outlined in detail in Chapter 03 Civil Engineering of this EIAR and the effect of these crossings on the surface water features has been undertaken (Chapter 09 Water of the EIAR). These chapters and the project specific CEMP detail ro

Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
	Groundwater	Templemore (IE_SE_G_131) Thurles (IE_SE_G_158)	Quality	Decrease in groundwater quality from directional drilling works as boring may extend below the water table.	Screened Out	The proposed grid connection route will require two (2) watercourse crossings as noted above. The directional drilling process is detailed in Chapter 03 Civil Engineering of the EIAR . Impact on groundwater quality could result should the borings extend below the water table. The HDD method to be used will however ensure that the boring does not extend below the water table. As part of the water impact assessment undertaken (Chapter 09 Water of the EIAR) and after implementation of these mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives.
Dewatering due to excavation works and dewatering of the proposed borrow pit	Groundwater	Templemore (IE_SE_G_131) Thurles (IE_SE_G_158)	Quantity	Lowering of groundwater levels and decrease in local well supplies	Screened Out	It is not anticipated that large volumes of groundwater will be encountered within the borrow pit. Therefore, it is unlikely that there will be any effect on neighbouring wells as a result of the proposed project. As part of the water impact assessment undertaken (Chapter 09 Water of the EIAR) and after implementation of these mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives.
Operational Phas	e					
Operation of the wind farm	Surface Water	Suir_050 (IE_SE_16S020500) Suir_060 (IE_SE_16S020600) Drish_060 (IE_SE_16D020400)	Quality	Slight increase in run-off from a storm event to the streams within the site due to a minor decrease in ground permeability at the turbine hardstands, grid connection, BESS and substation compound could lead to increase to	Screened Out	The runoff control measures for the wind farm site have been designed in the context of storm events of varying duration and intensity. As part of the water impact assessment undertaken (Chapter 09 Water of the EIAR) and after implementation of the mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives during the operational phase of the wind farm in relation to increased run off and its effect on surface water quality.

Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
				flood risk downgradient of the site		
Generation, use and storage of liquid wastes from lubricating oils, cooling oils, fuels from plant and maintenance vehicles etc. This potential exists within the turbine	Surface Water	Suir_050 (IE_SE_16S020500) Drish_060 (IE_SE_16D020400)QualityImpact on surface water quality should contaminated run off from lubricating oils, fuels from plant and maintenance vehicles discharge into surface water plant and maintenance vehicles discharge into surface water outDuring the operation phase groundwater. Potential imp maintenance of the wind far spillages. This will have bee adequate bunding impleme effective drainage from the installed for the construction life of the wind farm. Routine inspection and pre ensure the smooth and eff for inspection of the draina contaminated plant and maintenance vehiclesScreened outDuring the operation phase groundwater. Potential imp maintenance of the wind far effective drainage from the installed for the construction life of the wind farm. Routine inspection and pre ensure the smooth and eff for inspection of the draina contaminated	During the operation phase there will be no emissions to surface or groundwater. Potential impact on water quality due to the operation and maintenance of the wind farm is principally related to the minor risk of oil spillages. This will have been mitigated by design through the provision of adequate bunding implemented in the construction stage. To ensure effective drainage from the permanent internal road, the drainage network installed for the construction phase will remain in place for the operational life of the wind farm. Routine inspection and preventive maintenance visits will be undertaken to ensure the smooth and efficient running of the wind farm. This will include for inspection of the drainage systems for the Turbine bases, the road network, the river crossing and the substation building. If/where necessary			
substation, electrical transmission structures and operations maintenance buildings.	Groundwater	Templemore (IE_SE_G_131) Thurles (IE_SE_G_158)	Quality	Impact on ground water quality should contamination seep into the soil and reach the groundwater table	Screened Out	obstructions will be removed from water courses or drains to ensure the drainage system operates in accordance with the design specification. As part of the water impact assessment undertaken (Chapter 09 Water of the EIAR), and after implementation of the mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives during the operational phase.

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Activity	Water Resource	Water Body Name and ID Number	Water Aspect (Quality / Quantity)	Effect	Screening for further assessment	Justification
Operation of the wind farm.	Groundwater	Templemore (IE_SE_G_131) Thurles (IE_SE_G_158)	Quantity	Potential impact on groundwater recharge due to the loss of infiltration area associated with the construction of hardstand areas around the turbine bases, access roads and the substation building.	Screened Out	Runoff from the hardstand areas will percolate to ground immediately adjacent to the hardstand areas which will greatly reduce the loss of rainfall recharge associated with the hardstand areas. As part of the water impact assessment undertaken (Chapter 09 Water of the EIAR) and after implementation of these mitigation measures, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives.



4.2 Stage Two: Scoping

As all activities were screened out on **Section 4.1**, a scoping assessment in terms of the WFD requirements was not undertaken for the project.

4.3 Stage Three: Impact Assessment

As all activities were screened out on **Section 4.1**, a detailed impact assessment in terms of the WFD requirements was not undertaken for the project.

5. Conclusion

The WFD assessment indicates that, based on the current understanding of the proposed project and the mitigation measures proposed in the **EIAR**, the proposed project will not cause significant deterioration or change in water body status to prevent attainment to achieve the WFD objectives, or potential to achieve, future good status.

No further assessment (scoping or detailed impact assessment) of the WFD is recommended given that no significant deterioration or change in water body status is anticipated due to the implementation of mitigation measures.



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