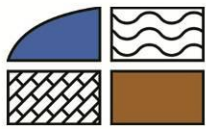




APPENDIX 9-3

WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT



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**WATER FRAMEWORK DIRECTIVE ASSESSMENT
REPOWERING OF KILGARVAN WIND FARM, CO. KERRY**

FINAL REPORT

Prepared for:
ORSTED

Prepared by:
HYDRO-ENVIRONMENTAL SERVICES

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1. INTRODUCTION

1.1 BACKGROUND

Hydro-Environmental Services (HES) were requested by MKO, on behalf of Orsted, to complete a Water Framework Directive (WFD) Compliance Assessment for a planning application for the proposed repowering of the Kilgarvan Wind Farm, Kilgarvan, Co. Kerry. The proposed repowering application comprises the replacement of the current 28 no. operational turbines and install of 11 no. larger turbines.

The purpose of this WFD assessment is to determine if any specific components or activities associated with the proposed repowering will compromise WFD objectives or cause a deterioration in the status of any surface water or groundwater body and/or jeopardise the attainment of good surface water or groundwater status. This assessment will determine the water bodies with the potential to be impacted, describe the proposed mitigation measures and determine if the project is in compliance with the objectives of the WFD.

This WFD Assessment is intended to supplement the EIAR submitted as part of the wind farm planning application.

Please note that for the purposes of this WFD Compliance Report, where:

- the 'Proposed Development' is referred to, this relates to all the project components described in Chapter 4; and,
- 'the Proposed Development site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary.

1.2 STATEMENT OF AUTHORITY

Hydro-Environmental Services (HES) are a specialist hydrological, hydrogeological and environmental practice that delivers a range of water and environmental management consultancy services to the private and public sectors across Ireland and Northern Ireland. HES was established in 2005, and our office is located in Dungarvan, County Waterford. We routinely complete impact assessments for hydrology and hydrogeology for a large variety of project types including wind farms.

This WFD assessment was prepared by Michael Gill, Conor McGettigan and Jenny Law.

Michael Gill (P. Geo., B.A.I., MSc, Dip. Geol., MIEI) is an Environmental Engineer with over 22 years' environmental consultancy experience in Ireland. Michael has completed numerous hydrological and hydrogeological impact assessments of wind farms in Ireland. He has also managed EIAR assessments for infrastructure projects and private residential and commercial developments. In addition, he has substantial experience in wastewater engineering and site suitability assessments, contaminated land investigation and assessment, wetland hydrology/hydrogeology, water resource assessments, surface water drainage design and SUDs design, and surface water/groundwater interactions. For example, Michael has worked on the EIS/EIARs for Slievecallan WF, Cahermurphy (Phase I & II) WF, Carrownagowan WF, and Croagh WF and over 100 other wind farm related projects across the country.

Conor McGettigan (BSc, MSc) is an Environmental Scientist with 3 years' experience in the environmental sector in Ireland. Conor holds an M.Sc. in Applied Environmental Science (2020) and a B.Sc. in Geology (2016) from University College Dublin. Conor routinely prepares hydrological and hydrogeological impact assessments and WFD compliance assessments for a variety of development types, primarily wind farms and quarries.

Jenny Law (BSc, MSc) is an Environmental Geoscientist holding an honours degree in applied environmental geosciences from the University College Cork. Jenny has assisted in the preparation of the land, soils and geology and hydrology chapters for various environmental impact assessment reports, hydrological impact assessments, Water Framework Directive Assessment reports and Flood Risk Assessment reports for a variety of projects including several wind farm developments and strategic housing developments.

1.3 WATER FRAMEWORK DIRECTIVE

The EU Water Framework Directive (2000/60/EC), as amended by Directives 2008/105/EC, 2013/39/EU and 2014/101/EU ("WFD"), was established to ensure the protection of the water environment. The Directive was transposed in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003).

The WFD requires that all member states protect and improve water quality in all waters, with the aim of achieving good status by 2027 at the latest. Any new development must ensure that this fundamental requirement of the WFD is not compromised.

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

The second River Basin Management Plan (2018 - 2021) objectives, which have been integrated into the design of the proposed wind farm development, include:

- Ensure full compliance with relevant EU legislation;
- Prevent deterioration and maintain a 'high' status where it already exists;
- Protect, enhance and restore all waters with aim to achieve at least good status by 2027;
- Ensure waters in protected areas meet requirements; and,
- Implement targeted actions and pilot schemes in focused sub-catchments aimed at (1) targeting water bodies close to meeting their objectives and (2) addressing more complex issues that will build knowledge for the third cycle.

Furthermore, the Department of Housing, Local Government and Heritage are currently reviewing the submissions made on the Draft River Basin Management Plan (2022 - 2027) which was out for public consultation in Q4 of 2021 and Q1 of 2022. As of January 2023, the plan has not been published while the draft plan is available to view at <https://www.gov.ie/en/consultation/2bda0-public-consultation-on-the-draft-river-basin-management-plan-for-ireland-2022-2027/>.

Our understanding of these objectives is that water bodies, regardless of whether they have 'Poor' or 'High' status, should be treated the same in terms of the level of protection and mitigation measures employed.

2. WATERBODY IDENTIFICATION & CLASSIFICATION

2.1 INTRODUCTION

This section identifies those surface water, and groundwater bodies and protected areas with potential to be affected by the Proposed Development and reviews any available WFD information.

2.2 SURFACE WATERBODY IDENTIFICATION

On a regional scale, the Proposed Development site is located in 3 no. surface water catchments. To the southwest, the vast majority of the Proposed Development site, is located within the Dunmanus-Bantry-Kenmare surface water catchment within Hydrometric Area 21. A small area in the northwest of the Proposed Development site and the majority of the main access road, is located in the Laune-Maine-Dingle Bay catchment within Hydrometric Area 22. Meanwhile, a small section of the main access road is located within Lee, Cork Harbour and Youghal Bay surface water catchment within Hydrometric Area 19. All 3 no. surface water catchments are situated within the South Western River Basin District.

Within the Dunmanus-Bantry-Kenmare surface water catchment, the Proposed Development site is located within the Roughty River sub-catchment (Roughty_SC_010) and the Roughty_030 river WFD sub-basin. The Proposed Development site is drained by several tributaries of the Roughty River which flow to the southwest before discharging into the north-westerly flowing Roughty River. The main tributaries include the Garrow stream in the southeast which discharges into the Glanlee River to the south of the Proposed Development site. The Glanlee River confluences with the Roughty River ~600m south of the Proposed Development site. Further north, the Thureehouma stream flows to the southwest ~100m west of the Proposed Development site, draining several standing lake waterbodies, Lough Nabirria and Doo Loughs, before it confluences with the Roughty River ~720m to the southwest of the Proposed Development site. OSI mapping also records the presence of several additional unnamed mountain streams which flow to the southwest from the Proposed Development Site before discharging into the Roughty River. All the watercourses draining this area of the Proposed Development site form part of the Roughty_030 river waterbody.

The Roughty River flows veers to the southwest near the R569. The Roughty then flows to the south of Kilgarvan town before the Roughty_040 river waterbody discharges into the Inner Kenmare River transitional waterbody. Further downstream this waterbody discharges into the Outer Kenmare Coastal waterbody.

Within the Laune-Maine-Dingle Bay surface water catchment, the Proposed Development site is located within the Flesk River sub-catchment (Flesk[Kerry]_SC_010) and 3 no. WFD river sub-basins. The northwest of the Proposed Development site is located in the Loo_010 river WFD sub-basin. An unnamed tributary of the Loo River rises immediately to the northwest of the Proposed Development site and flows to the north before discharging into the Loo River. The Loo River continues to the northeast and confluences with the Flesk River ~3.6km to the north. However, no proposed wind farm development infrastructure is located within the catchment of the Loo River. Much of the main access road is also located within the Flesk River sub-catchment. This area of the Proposed Development site is drained by the Coomagearlachy and the Owgarriv rivers which discharge into the Flesk River ~1km west of the Clonkeen substation. These waterbodies form part of the Flesk(Kerry)_040 SWB. The northern section of the main access road is located in the Flesk(Kerry)_030 river sub-basin with the Flesk River flowing to the southwest to the north of the N22.

Following its confluence with the Loo River, the Flesk River flows to the northwest, through the Flesk(Kerry)_050 and _060 river segments. To the south of Killarney, the Flesk River becomes part of the Laune_010 river waterbody which discharges into Lough Leane lake waterbody.

Within the Lee, Cork Harbour and Youghal Bay surface water catchment, the Proposed Development site is located within the Sullane River sub-catchment (Sullane_SC_010) and the Sullane_010 river WFD sub-basin. Here a small section of the main access road is drained by the Inchamore stream which flows to the southeast before discharging into the Bardinch River. The Bardinch River in turn discharges into the Sullane River ~4.5km southeast of the Proposed Development site. These waterbodies in the vicinity and directly downstream of the Proposed Development site form part of the Sullane_010 river waterbody.

Further downstream, the Sullane River continues to flow to the southeast before the Sullane_060 river waterbody discharges into Carrigdrohid Reservoir (i.e. Carrigdrohid lake waterbody) to the southeast of Macroom, Co. Cork.

Table A presents the catchment area of each river waterbody downstream of the Proposed Development site. Within the Dunmanus-Bantry-Kenmare surface water catchment the Roughty_030 surface waterbody has a total catchment of 120.41km². The catchment area for the Roughty River increases progressively downstream as more tributaries discharge into the river with the Roughty_040 river waterbody having a total catchment area of 206.77km².

In addition, **Table A** presents the area of the Proposed Development site which drains to each waterbody and presents this area as a percentage of the total catchment area for that waterbody. This helps identify those surface waterbodies which are most susceptible to potential impacts from the Proposed Development. For example, the Proposed Development site is 6.06% of the total catchment area of the Roughty_030 river waterbody but only 3.5% of the total catchment draining to the Roughty_040. Therefore, those waterbodies which are located in close proximity to the Proposed Development site are more susceptible to water quality impacts as a result of activities associated with the Proposed Development. The potential for the Proposed Development to impact a waterbody decreases further downstream due to the increasing catchment area to the surface waterbody and resulting increase in flow volumes.

Figure A below is a local hydrology map of the area.

Table A: Catchment Area of River Waterbodies Downstream of Proposed Development Site

WFD River Sub-Basin	Total Catchment Area (km ²)	Area of Proposed Development Site Draining to Waterbody (km ²)	Site as % Area of Catchment
Dunmanus-Bantry-Kenmare Catchment			
Roughy_030	120.41	7.30	6.06
Roughy_040	206.77	7.30	3.5
Laune-Maine-Dingle Bay Catchment			
Flesk(Kerry)_030	60.95	0.07	0.11
Loo_010	31.69	0.14	0.44
Flesk(Kerry)_040	126.58	0.34	0.27
Flesk(Kerry)_050	304.37	0.34	0.11
Flesk(Kerry)_060	329.68	0.34	0.10
Lee, Cork Harbour and Youghal Bay Catchment			
Sullane_010	32.4	0.11	0.34
Sullane_020	71.52	0.11	0.15
Sullane_030	93.63	0.11	0.12
Sullane_040	110.25	0.11	0.10
Sullane_050	200.95	0.11	0.05
Sullane_060	234.94	0.11	0.05

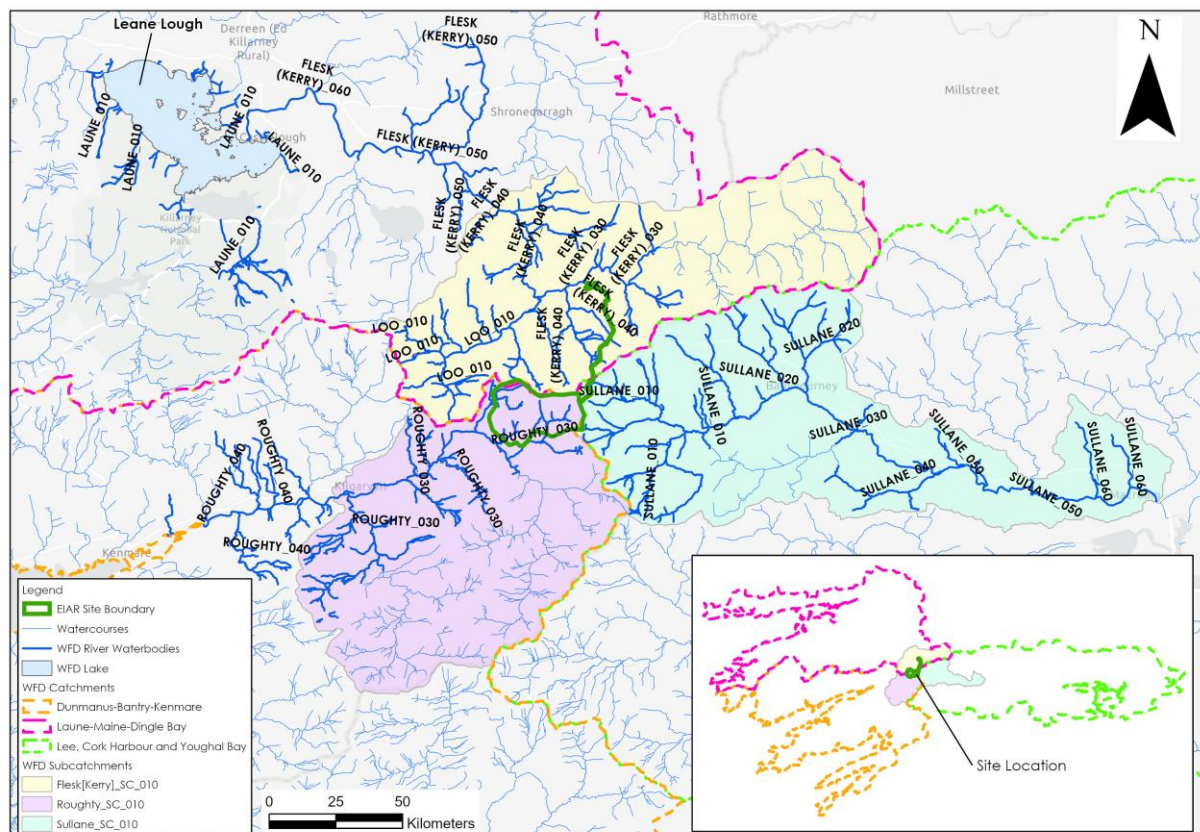


Figure A: Local Hydrology Map

2.3 SURFACE WATER BODY CLASSIFICATION

A summary of the WFD status and risk result for Surface Water Bodies (SWBs) downstream of the Proposed Development site are shown in **Table B**. The overall status is based on the ecological, chemical and quantitative status of each SWB.

Local Groundwater Body (GWB) and Surface water Body (SWB) status information is available from (www.catchments.ie).

As stated above the vast majority of the Proposed Development site is located in the Dunmanus-Bantry-Kenmare surface water catchment and drains to the Roughty River. The Roughty River in the vicinity and downstream of the Proposed Development site (Roughty_030) achieved 'High' status in all 3 no. WFD cycles. The Roughty_030 is listed as a high ecological objective status waterbody and is currently meeting this objective. Further downstream, the Roughty_040 SWB achieved 'High' status in the latest WFD cycle (2016-2021). The Inner Kenmare River transitional waterbody and the Outer Kenmare River coastal waterbody achieved 'Good' status in all 3 no. WFD cycles. The Outer Kenmare River SWB is also listed as a high ecological status objective waterbody.

In terms of the risk status of these SWBs, the Roughty_030 and the Inner Kenmare River SWBs have been deemed to be 'not at risk' of failing to meet their respective WFD objectives. The risk status for the Roughty_040 and the Outer Kenmare River SWBs is currently under review.

The 3rd Cycle Draft Dunmanus-Bantry-Kenmare Catchment Report (EPA, 2021) states that excess nutrients and morphological impacts remain the most prevalent issues in this catchment. The significant pressure impacting the greatest number of waterbodies in this catchment is forestry, followed by hydromorphology, agriculture and peat. However, the 3rd Cycle Draft Report does not identify any significant pressures to be impacting on SWBs downstream of the Proposed Development site.

Within the Laune-Maine-Dingle Bay surface water catchment, in the vicinity of Clonkeen substation the Flesk River (Flesk(Kerry)_030) achieved 'High' status in all 3 no. WFD cycles. The Loo_010 SWB, which drains the northwest of the Proposed Development site, is of 'Good' status. Further downstream, the status of the Flesk River ranges from 'Good' to 'High'. Before discharging into Lough Leane, the Flesk River flows through the Laune_010 SWB which achieved 'Poor' status in the latest WFD cycle (2016-2021). Lough Leane itself achieved 'Good' status in all 3 no. WFD cycles.

In terms of the risk status of these SWBs, the Flesk(Kerry)_040 SWB has been deemed to be 'at risk' of failing to meet its WFD objectives. This SWB is listed as a high ecological status objective waterbody and is currently only achieving 'Good' status. Further downstream, the risk status of the Flesk(Kerry)_050 SWB is currently under review. All other SWBs downstream of the Proposed Development site are considered to be 'not at risk'.

The 3rd Cycle Draft Laune-Maine-Dingle Bay Catchment Report (EPA, 2021) states that morphological impacts remain the most prevalent issues in this catchment. The significant pressure impacting the greatest number of waterbodies in this catchment is agriculture followed by hydromorphology and forestry. Hydromorphological impacts have been identified as a significant pressure on the Flesk(Kerry)_040 SWB. In relation to hydromorphology the Draft Catchment Report states that overgrazing has been causing morphological impacts on this SWB. No other significant pressures have been identified on SWBs downstream of the Proposed Development site.

As stated above, a small section of the Proposed Development site (main access road) is located in the Lee, Cork Harbour and Youghal Bay catchment. Downstream of the Proposed Development site, the status of the Sullane River ranges from 'Good' to 'High' status. The Sullane River, sections _010 to _050, are all listed as high ecological status objective

waterbodies, with the Sullane_030, _040 and _050 SWBs currently meeting this 'High' status objective. Meanwhile, the Sullane_010 and Sullane_020 SWBs have been deemed to be 'at risk' of not meeting their WFD objectives.

The 3rd Cycle Draft Lee-Cork Harbour and Youghal Bay Catchment Report (EPA, 2021) states that excess nutrients remain the most prevalent issues in this catchment. The significant pressure impacting the greatest number of waterbodies in this catchment is hydromorphology followed by agriculture and urban runoff. Hydromorphology has been listed as a significant pressure on the Sullane_010 and the Sullane_020 SWBs. In relation to hydromorphology the Draft Catchment Report states that embankments were identified to be impacting the Sullane_010 SWB.

The SWB status for the 2016-2021 WFD cycle are shown on **Figure B**.

Table B: Summary WFD Information for River Water Bodies

SWB	Overall Status 2010-2015	Overall Status 2013-2018	Overall Status 2016-2021	3 rd Cycle Risk Status	WFD Pressures
Dunmanus-Bantry-Kenmare Catchment					
Roughty_030	High	High	High	Not at risk	None
Roughty_040	Unassigned	Unassigned	High	Under review	None
Inner Kenmare River	Good	Good	Good	Not at risk	None
Outer Kenmare River	Good	Good	Good	Under review	None
Laune-Maine-Dingle Bay Catchment					
Flesk(Kerry)_030	High	High	High	Not at risk	None
Loo_010	High	Good	Good	At risk	None
Flesk(Kerry)_040	High	Good	Good	Under review	Hydromorphology
Flesk(Kerry)_050	Good	Good	High	Not at risk	None
Flesk(Kerry)_060	Good	Good	Good	Not at risk	None
Laune_010	Unassigned	Unassigned	Poor	Not at risk	None
Lough Leane	Good	Good	Good	Not at risk	None
Lee, Cork Harbour and Youghal Bay Catchment					
Sullane_010	High	Good	Good	At risk	Hydromorphology
Sullane_020	High	Good	Good	At risk	Hydromorphology
Sullane_030	High	High	High	Not at risk	None
Sullane_040	Good	Good	High	At risk	Other
Sullane_050	High	High	High	Not at risk	None
Sullane_060	Good	Good	Good	Not at risk	None

2.4 GROUNDWATER BODY IDENTIFICATION

According to data from the GSI database and bedrock geology series (www.gsi.ie), the bedrock underlying the Proposed Development site is classified as a Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones (LI).

The majority of the Proposed Development site, including all 11 no. proposed turbines associated with the repowering application, is underlain by the Beara Sneem Groundwater Body (GWB). Meanwhile, the northwest of the Proposed Development site and the majority of the main access road are underlain by the Cahersiveen GWB. Additionally, ~1km of the main access road is underlain by the Ballinhassig West GWB.

2.5 GROUNDWATER BODY CLASSIFICATION

The GWBs are assigned a status based on the assessment of groundwater chemical and quantitative figures.

The Beara Sneem (IE_SW_G_019), Cahersiveen (IE_SW_G_022) and Ballinhassig West (IE_SW_G_005) GWBs underlying the Proposed Development site achieved 'Good' status in all 3 no. WFD cycles (2010-2015, 2013-2018 and 2016-2021) (**Table C**). This status is defined based on the quantitative status and chemical status of each GWB. The Beara Sneem and Ballinhassig West GWBs have been deemed to be 'not at risk' of failing to meet their WFD objectives while the risk status for the Cahersiveen GWB is currently 'under review'. No significant pressures have been identified to be impacting these GWBs.

The GWB status for the 2016-2021 WFD cycle are shown on **Figure B**.

Table C: Summary WFD Information for Groundwater Bodies

GWB	Overall Status 2010-2015	Overall Status 2013-2018	Overall Status 2016-2021	Risk Status 3 rd Cycle	Pressures
Beara Sneem	Good	Good	Good	Not at risk	None
Cahersiveen	Good	Good	Good	Under Review	None
Ballinhassig West	Good	Good	Good	Not at risk	None

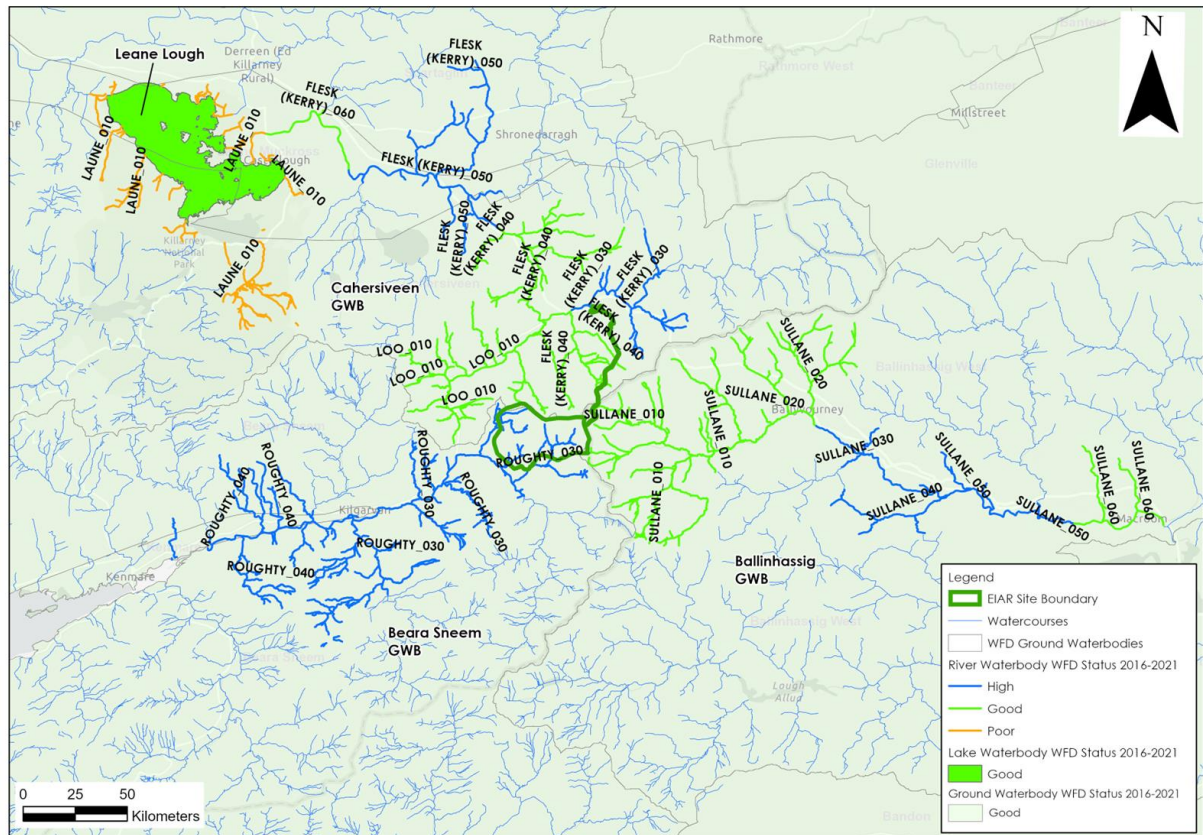


Figure B: WFD Groundwater and Surface Waterbody Status (2016-2021)

2.6 PROTECTED AREA IDENTIFICATION

The WFD requires that activities are also in compliance with other relevant legislation, as considered below. Nature conservation designations, bathing waters, nutrient sensitive areas (NSA), shellfish areas and drinking water protected area's (DWPA) are looked at as part of the assessment.

2.6.1 Nature Conservation Designations

Within the Republic of Ireland designated sites include Natural Heritage Areas (NHAs), Proposed Natural Heritage Areas (pNHAs), Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs).

Ramsar sites are wetlands of international importance designated under the Ramsar Convention (adopted in 1971 and came into force in 1975), providing a framework for the conservation and wise use of wetlands and their resources.

Within the Dunmanus-Bantry-Kenmare surface water catchment, the only designated sites with potential to be impacted by the Proposed Development will occur downstream along the Roughty River.

The closest designated site is the Roughty River pNHA (Site Code: 001376). This pNHA is located ~400m southwest of the Proposed Development site along the Roughty River.

The Sillahertane Bog NHA (Site Code:001882) exists ~3.1km southeast of the Proposed Development site. This designated site is located upstream of the Proposed Development site, in the Roughty_020 WFD river sub-basin.

The Kilgarvan Ice House pNHA/SAC (Site Code: 000364) exists ~3.8km southwest of the Proposed Development site, in the townland of Caher and ~7.8km to the southwest in the townland of Lounaghan.

The Roughty River Estuary becomes a pNHA (Site Code: 002092) ~12.7km southwest of the Proposed Development site. Further downstream in the vicinity of Kenmare town, the Kenmare River Estuary is designated as an SAC (Site Code: 002158). Kenmare Bay also contains a number of islands which are designated as the Kenmare River Islands pNHA (Site Code: 000363).

Within the Laune-Maine-Dingle Bay Catchment, the closest designated site to the Proposed Development site is the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA (Site Code: 000365). This designated site exists ~1.4km northwest of the Proposed Development site, along the Loo River and ~70m north of the existing Clonkeen substation along the Flesk River.

Further downstream, Lough Leane forms part of the Killarney National Park SPA (Site Code: 004038) and supports a wide variety of wintering waterfowl. This designated site is hydrologically connected with the Proposed Development site via the Flesk River and its associated tributaries.

Within the Lee, Cork Harbour and Youghal Bay Catchment, the only designated sites with potential to be impacted by the Proposed Development will occur downstream along the Sullane River. The closest downstream designated site is St. Gobnet's Wood SAC/pNHA (Site Code: 000106) which is located ~8.7km east of the Proposed Development site.

2.6.2 Bathing Waters

Bathing waters are those designated under the Bathing Water Directive (76/160/EEC) or the later revised Bathing Water Directive (2006/7/EC).

There are no bathing water sites located in the vicinity of the Proposed Development site. The Proposed Development site is ~48km southeast of Inch (IESWBWC230_0000_0200), the nearest bathing water site (as the crow flies).

2.6.3 Nutrient Sensitive Areas

Nutrient Sensitive Areas (NSA) comprise Nitrate Vulnerable Zones and polluted waters designated under the Nitrates Directive (91/676/EEC) and areas designated as sensitive areas under the Urban Wastewater Treatment Directive (UWWTD)(91/271/EEC). Sensitive areas under the UWWTD are water bodies affected by eutrophication associated with elevated nitrate concentrations and act as an indication that action is required to prevent further pollution caused by nutrients.

The nearest NSA to the Proposed Development site is the Lough Leane NSA (IELK_SW_1994_0009) approximately 25km downstream of the Proposed Development Site via the Flesk River.

2.6.4 Shellfish Waters

The Shellfish Waters Directive (2006/113/EC) aims to protect or improve shellfish waters in order to support shellfish life and growth.

The nearest Shellfish area to the Proposed Development site is the Kenmare River/Sneem/Ardgroom shellfish area (IEPA2_0018) approximately 20km downstream of the Proposed Development, mapped within the Outer Kenmare River coastal waterbody.

2.6.5 Drinking Water

The nearest DWPA to the Proposed Development site is the Flesk_040 DWPA (IEPA1_SW_22F020100).

The Sullane_060 DWPA (IEPA1_SW_19S020480) is situated approximately 21km downstream of the Proposed Development site via the Sullane River.

The Flesk_040 DWPA met its DWPA objectives in 2019, whilst the Sullane_060 DWPA did not.

Meanwhile, all GWBs underlying the Proposed Development site are listed as DWPAs.

3. WFD SCREENING

As discussed in **Section 2**, there are a total of 4 no surface waterbodies (2 no. river waterbodies, 1 no. transitional waterbody and 1 no. coastal waterbody) located downstream of the Proposed Development site within the Dunmanus-Bantry-Kenmare Catchment. Meanwhile, in the Laune-Maine-Dingle Bay Catchment there are a total of 6 no. river waterbodies located between the Proposed Development site and Lough Leane. Finally within the Lee, Cork Harbour and Youghal Catchment there are a total of 6 no. river waterbodies located downstream of the Proposed Development site and Carrigdrohid Reservoir.

In addition, 3 no. groundwater bodies underlie the Proposed Development site.

Furthermore, there are several protected areas in the vicinity of the Proposed Development, including the Roughty River pNHA, the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA, the St. Gobnet's Wood SAC/pNHA and the Flesk_040 DWPA.

3.1 SURFACE WATER BODIES

Within the Dunmanus-Bantry-Kenmare Catchment and with consideration for the construction, operational and decommissioning phases of the Proposed Development, it is recommended that all sections of the Roughty River downstream of the Proposed Development site are carried through to the WFD Impact Assessment. These waterbodies (Roughty_030 and Roughty_040) are selected for assessment due to their proximity to the Proposed Development site and the location of the proposed 11 no. turbines and all associated siteworks within the Roughty_030 river sub-basin. The Proposed Development works must not in any way result in a deterioration in the status of these SWBs and/or prevent them from meeting the biological and chemical characteristics for good status in the future.

Further downstream, the Inner Kenmare River transitional waterbody and the Outer Kenmare River coastal waterbody have been screened out due to their distant location from the Proposed Development site and the large volumes of water in these SWBs. Furthermore, these SWBs contain saline waters and will therefore be less susceptible to any potential impacts resulting from the Proposed Development. The proposed works have no potential to cause a deterioration in the status of these screened out SWBs and/or jeopardise their attainment of good surface water status in the future.

Within the Laune-Maine-Dingle Bay Catchment and with consideration for the construction, operational and decommissioning phases of the Proposed Development, it is recommended that the Flesk(Kerry)_030 and Flesk(Kerry)_040 river waterbodies are carried through to the WFD Impact Assessment. These waterbodies are selected for assessment due to presence of proposed road upgrade works in the catchments to these SWBs. The Proposed Development works must not in any way result in a deterioration in the status of these SWBs and/or prevent them from meeting the biological and chemical characteristics for good status in the future.

While the northwest of the Proposed Development site drains to the Loo_010 waterbody, no works are proposed in this area and therefore the Proposed Development has no potential to impact the status of the Loo waterbody. Consequently, the Loo_010 waterbody has been screened out of further assessment. Further downstream the Flesk River (Flesk(Kerry)_050 and _060), the Laune_010 SWB and Lough Leane have been screened out due to their distant location from the Proposed Development site, the increasing volume of water within these SWBs and the minor nature of the proposed upstream works (road upgrades, widening and minor forestry felling). The proposed works have no potential to cause a deterioration in the status of these screened out SWBs and/or jeopardise their attainment of good surface water status in the future.

Within the Lee, Cork Harbour and Youghal Bay Catchment and with consideration for the construction operational and decommissioning phases of the Proposed Development, the Sullane_010 SWB has been selected for further assessment due to the presence of proposed road upgrade works within its catchment. The Proposed Development works must not in any way result in a deterioration in the status of this SWB and/or prevent it from meeting the biological and chemical characteristics for good status in the future.

Further downstream, the Sullane River as far as Carrigdrohid Reservoir (Sullane_020 to Sullane_060) has been screened out due to their distant location from the Proposed Development site, the increasing volume of water within these SWBs and the minor nature of the proposed upstream works (road upgrades and widening). The proposed works have no potential to cause a deterioration in the status of these screened out SWBs and/or jeopardise their attainment of good surface water status in the future.

3.2 GROUNDWATER BODIES

With respect to groundwater bodies, the Beara Sneem, Cahersiveen and Ballinhassig West GWBs are carried through to the WFD Impact Assessment due to their location directly underlying the Proposed Development site. The Proposed Development works must not in any way result in a deterioration in the status of these GWBs and/or prevent them from meeting the qualitative and quantitative characteristics for good status in the future.

3.3 PROTECTED AREAS

This Roughty River pNHA is located ~400m southwest of the Proposed Development site. This site is hydrologically connected with the Proposed Development site via the Glanlee River, the Thureehouma stream and several other unnamed tributaries of the Roughty River. The hydrological pathway between the Proposed Development site and the pNHA is ~800m in length. With consideration for the construction, operational and decommissioning phases of the Proposed Development, it is considered that the Roughty River pNHA is carried through into the WFD Impact Assessment due to its proximal location downstream of the Proposed Development site.

The Sillahertane Bog NHA exists ~3.1km southeast of the Proposed Development site. This designated site is located upstream of the Proposed Development site, in the Roughty_020 WFD river sub-basin, and therefore has no potential to be impacted by the Proposed Development. The Sillahertane Bog NHA has therefore been screened out of this WFD assessment.

The Kilgarvan Ice House pNHA/SAC exists ~3.8km southwest of the Proposed Development site. This SAC is designated due to the presence of the Lesser Horseshow Bat and has no hydrological qualifying interests. Despite its proximity to the Roughty River, the pNHA/SAC does not include the Roughty River and therefore has been screened out as it is not hydrologically connected with the Proposed Development site.

The Roughty River Estuary becomes a pNHA ~13km southwest of the Proposed Development site within the Inner Kenmare River transitional waterbody. The length of the hydrological connection is ~16km. The Roughty River Estuary pNHA has been screened out due to its distant location from the Proposed Development site and the large volumes of water within the Inner Kenmare River transitional waterbody which will make the Roughty River Estuary pNHA less susceptible to any potential impacts resulting from the Proposed Development.

Further downstream the Kenmare River Estuary SAC and the Kenmare River Islands pNHA have also been screened out due to their distant locations from the Proposed Development site and the large volumes of water within the Inner Kenmare River transitional waterbody and the Outer Kenmare River coastal waterbody, which will make the Kenmare River Estuary SAC

and the Kenmare River Islands pNHA less susceptible to any potential impacts resulting from the Proposed Development.

The Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC/pNHA exists ~1.4km northwest of the Proposed Development site, along the Loo River and ~70m north of the existing Clonkeen substation. This designated site is hydrologically connected with the Proposed Development site via the tributaries of the Flesk River which drain the main access road. The shortest hydrological pathway between the Proposed Development site and the SAC/pNHA is ~170m via a tributary of the Flesk River. With consideration for the construction, operational and decommissioning phases of the Proposed Development, it is considered that the Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC/pNHA is carried through into the WFD Impact Assessment due to its proximal location downstream of the Proposed Development site.

Further downstream, Lough Leane forms part of the Killarney National Park SPA. This designated site is hydrologically connected with the Proposed Development Site via the Flesk River and its associated tributaries. However due to its distant location from the Proposed Development and the large volumes of water within Lough Leane, the Killarney National Park SPA has been screened out.

The St. Gobnet's Wood SAC/pNHA is located ~8.7km east of the Proposed Development site. The length of the hydrological connection along to Bardinch and Sullane rivers to this SAC is ~12.5km. This designated site has been screened out due to the terrestrial nature of its qualifying interests. The Proposed Development has no potential to effect the conservation objectives of this SAC/pNHA.

The bathing waters at Inch have been screened out due to its distal location from the Proposed Development site (~48km). The Proposed Development has no potential to cause a deterioration to the bathing area.

The Lough Leane NSA has been screened out due to its distant location (~25km) from the Proposed Development site and the large volume of water in this lake waterbody. The Proposed Development has no potential to cause a deterioration to the NSA.

The Shellfish area at Kenmare River/Sneem/Ardgroom has been screened out due to its distal location downstream (20km) from the Proposed Development site. The Proposed Development has no potential to cause a deterioration to this shellfish area.

The north of the Proposed Development site drains to the Flesk_040 SWB which is a designated DWPA. Therefore, an assessment is required to consider the potential effects of the Proposed Development on the Flesk_040 DWPA.

The Sullane_060 DWPA has been screened out due to its distant location (~21km) from the Proposed Development site, the increased catchment area of the Sullane River (~235km²) and the minor nature of the upstream works (road upgrades). Therefore, the Sullane_060 DWPA has been screened out as the Proposed Development has no potential to impact the DWPA.

The Beara Sneem, Cahersiveen and Ballinahassig West GWB DWPA's are included in the WFD Assessment due to their location directly underlying the Proposed Development site.

3.4 WFD SCREENING SUMMARY

A summary of WFD Screening discussed above is shown in **Table D**.

Table D: Screening of WFD Waterbodies Located Downstream of Proposed Development Site

Type	WFD Classification	Waterbody Name/ID	Inclusion in Assessment	Justification
Surface Water Body	Dunmanus-Bantry-Kenmare Catchment			
	River	Roughy_030	Yes	The Proposed Development site, including the 11 no. proposed turbines, is mapped within the Roughy_030 river sub-basin. All watercourses draining this area of the Proposed Development site form part of the Roughy_030 SWB. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this SWB.
	River	Roughy_040	Yes	The Roughy_040 SWB is located directly downstream of the Roughy_030 SWB and in close proximity (~7.5km) to the Proposed Development site. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this SWB.
	Transitional	Inner Kenmare River	No	The Inner Kenmare River transitional waterbody has been screened out due to its distant location (~13km) from the Proposed Development site, the large volumes of water within this SWB and the saline nature of its waters. Therefore, the Inner Kenmare River SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	Coastal	Outer Kenmare River	No	The Outer Kenmare River coastal waterbody has been screened out due to its distant location (~20km) from the Proposed Development site, the large volume of water within this SWB and the saline nature of its waters. Therefore, the Outer Kenmare River SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	Laune-Maine-Dingle Bay Catchment			
	River	Flesk(Kerry)_030	Yes	The Proposed Development site, including the location of proposed roadworks, is located within the Flesk_030 river sub-basin. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this SWB.
	River	Loo_010	No	The northwest of the Proposed Development site is located in the Loo_010 river sub-basin. However, no Proposed Development works are located in this area. Therefore, the Loo_010 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Flesk(Kerry)_040	Yes	The Proposed Development site, including the location of proposed roadworks, is located in the Flesk(Kerry)_040 river sub-basin. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this SWB.
	River	Flesk(Kerry)_050	No	The Flesk(Kerry)_050 SWB has been screened out due to the lack of any proposed works within this river sub-basin. Furthermore, the works proposed upstream of this SWB are minor and comprise of road upgrades and felling of small areas of forestry (~3.16ha). Therefore, the Flesk(Kerry)_060 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Flesk(Kerry)_060	No	The Flesk(Kerry)_060 SWB has been screened out due to its distant location from the Proposed Development site, the increasing volume of water in this SWB associated with its large upstream catchment area (~329km ²) and the minor nature of the upstream works. Therefore, the Flesk(Kerry)_060 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Laune_010	No	The Laune_010 SWB has been screened out due to its distant location from the Proposed Development site, the increasing volume of water in this SWB and the minor nature of the upstream works. While the Laune_010 is of 'Poor' status, the Proposed Development has no potential to cause a deterioration in the status of this SWB and/or jeopardise its attainment of 'Good' status in the future.
	River	Lough Leane	No	Lough Leane has been screened out due to its distant location from the Proposed Development site and the large volume of water in this lake waterbody. Therefore, Lough Leane has been screened out as the Proposed Development has no potential to impact the status of this SWB.

Lee, Cork Harbour and Youghal Bay Catchment				
	River	Sullane_010	Yes	The Proposed Development site, including the location of proposed roadworks, is located within the Sullane_010 river sub-basin. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this SWB.
	River	Sullane_020	No	The Sullane_020 SWB is located directly downstream of the Sullane_010 SWB. However, this SWB has been screened out due to the lack of any proposed works within this river sub-basin and the minor nature of the proposed upstream works (road widening and ~0.45ha of felling). Therefore, the Sullane_020 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Sullane_030	No	The Sullane_030 SWB has been screened out due to its distant location (~9.5km) from the Proposed Development site, the increased catchment area of the Sullane River (~93km ²) and the minor nature of the upstream works (road upgrades). Therefore, the Sullane_030 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Sullane_040	No	The Sullane_040 SWB has been screened out due to its distant location (~12km) from the Proposed Development site, the increased catchment area of the Sullane River (~110km ²) and the minor nature of the upstream works (road upgrades). Therefore, the Sullane_040 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Sullane_050	No	The Sullane_050 SWB has been screened out due to its distant location (~15.5km) from the Proposed Development site, the increased catchment area of the Sullane River (~200km ²) and the minor nature of the upstream works (road upgrades). Therefore, the Sullane_050 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
	River	Sullane_060	No	The Sullane_060 SWB has been screened out due to its distant location (~21km) from the Proposed Development site, the increased catchment area of the Sullane River (~235km ²) and the minor nature of the upstream works (road upgrades). Therefore, the Sullane_060 SWB has been screened out as the Proposed Development has no potential to impact the status of this SWB.
Groundwater Bodies				
Groundwater Body	Groundwater	Beara Sneem	Yes	The Proposed Development site, including the 11 no. proposed turbines, is underlain by the Beara Sneem GWB. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this GWB.
	Groundwater	Cahersiveen	Yes	Some minor road upgrades and proposed roads overlie the Cahersiveen GWB. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this GWB.
	Groundwater	Ballinhassig West	Yes	Some minor road upgrades and proposed roads overlie the Ballinhassig West GWB. Therefore, an assessment is required to consider the potential impacts of the Proposed Development on this GWB.
Protected Areas				
Protected Areas	Nature Conservation Designations	Roughy River pNHA	Yes	The Roughy River pNHA is located directly downstream and in close proximity to the Proposed Development site. Therefore, an assessment is required to consider the potential effects of the Proposed Development on the Roughy River pNHA.
		Sillahertane Bog NHA	No	This designated site is located upstream of the Proposed Development site and therefore has no potential to be impacted by the Proposed Development. The Proposed Development has no potential to effect the conservation objectives of this NHA.
		Kilgarvan Ice House pNHA / SAC	No	The Kilgarvan Ice House pNHA/SAC does not include the Roughy River and has no hydrological qualifying interests and therefore is not hydrologically connected with the Proposed Development site. The Proposed Development has no potential to effect the conservation objectives of this SAC/pNHA.
		Roughy River Estuary pNHA / SAC	No	This designated site has been screened out due to its distant location (~13km) from the Proposed Development site, the large volumes of water within this estuary and the saline nature of its waters. The Proposed Development has no potential to effect the conservation objectives of this SAC/pNHA.

		Kenmare River Estuary SAC	No	This designated site has been screened out due to its distant location (>13km) from the Proposed Development site, the large volumes of water within the estuary and the saline nature of its waters. The Proposed Development has no potential to effect the conservation objectives of this SAC.
		Kenmare River Islands pNHA	No	This designated site has been screened out due to its distant location (>13km) from the Proposed Development site, the large volumes of water within this estuary and the saline nature of its waters. The Proposed Development has no potential to effect the conservation objectives of this pNHA.
		Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA	Yes	This designated site exists immediately to the north of the Proposed Development site and is hydrologically linked with the Proposed Development site via several tributaries of the Flesk River. Therefore, an assessment is required to consider the potential effects of the Proposed Development on this designated site.
		Killarney National Park SPA	No	This SPA has been screened out due to its distant location from the Proposed Development site and the large volume of water in Lough Leane. The Proposed Development has no potential to effect the conservation objectives of this SPA.
		St. Gobnet's Wood SAC /pNHA	No	The St. Gobnet's Wood SAC /pNHA has been due to the terrestrial nature of its qualifying interests. The Proposed Development has no potential to effect the conservation objectives of this SAC/pNHA.
	Bathing Waters	Inch	No	The bathing waters at Inch have been screened out due to its distal location from the Proposed Development site. The Proposed Development has no potential to cause a deterioration to this bathing area.
	Nutrient Sensitive Areas	Lough Leane	No	Lough Leane NSA has been screened out due to its distant location from the Proposed Development site and the large volume of water in this lake waterbody. Therefore, Lough Leane NSA has been screened out as the Proposed Development has no potential to impact the NSA.
	Shellfish Areas	Kenmare River / Sneem / Ardgroom	No	The Shellfish area at Kenmare River/Sneem/Ardgroom has been screened out due to its distal location downstream (20km) from the Proposed Development site. The Proposed Development has no potential to cause a deterioration to this shellfish area.
	Drinking Water Protected Area	Flesk(Kerry)_040 DWPA	Yes	The north of the Proposed Development site drains to the Flesk_040 SWB which is a designated DWPA. Despite works being minor in nature (road upgraded), water quality effects may occur in an unmitigated scenario on watercourses in the vicinity of the works. Therefore, an assessment is required to consider the potential effects of the Proposed Development on the Flesk_040 DWPA.
		Sullane_060 DWPA	No	The Sullane_060 DWPA has been screened out due to its distant location (~21km) from the Proposed Development site, the increased catchment area of the Sullane River (~235km ²) and the minor nature of the upstream works (road upgrades). Therefore, the Sullane_060 DWPA has been screened out as the Proposed Development has no potential to impact the DWPA.
		GWBs	Yes	The Beara Sneem, Cahersiveen and Ballinahassig West GWBs and associated DWPAs directly underlie the Proposed Development site. Therefore, an assessment is required to consider the potential effects of the Proposed Development on these DWPAs.

4. WFD COMPLIANCE ASSESSMENT

4.1 PROPOSALS

The Proposed Development includes the dismantling of the existing 28 no. turbine wind farm (Kilgarvan Phase I and Kilgarvan Phase II wind farm developments), the upgrade of the existing site access road network, the erection of 11 no. new turbines, underground grid cabling between the proposed turbines and the existing on-site substation, upgrade of the existing onsite substation, extension of the onsite borrow pit, 2 no. temporary construction compounds, forestry felling and all associated site development works including drainage infrastructure and landscaping.

Due to the nature of wind farm developments, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risks to groundwater at the Proposed Development site will be the chemical pollution of groundwater from cementitious materials, hydrocarbon spillage and leakages.

The primary risk to surface waters will be entrained suspended sediments (peat and soil particles) in site runoff during earthworks and tree felling along with release cement-based compounds and/or hydrocarbons. The Proposed Development may also result in changes to surface water runoff volumes and flow patterns. The Proposed Development includes works over and in close proximity to waterbodies.

There are a number of potential adverse effects to both surface and groundwater.

4.2 POTENTIAL EFFECTS

4.2.1 Construction Phase (Unmitigated)

4.2.1.1 Potential Surface Water Quality Effects

Construction phase activities including the dismantling of the existing wind farms, site levelling/construction and building turbine foundation excavation, road upgrades and proposed road construction within the Proposed Development site will require earthworks resulting in removal of vegetation cover and excavation of peat, soil and subsoils. The main risk will be from surface water runoff from bare soil/peat, spoil storage areas and borrow pit drainage/dewatering during construction works.

Hydrocarbons and cement-based compounds will be used during the construction phase. Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a significant pollution risk to surface waters at all construction sites. The accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk. Hydrocarbon has a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in the death of aquatic organisms.

Release of effluent from wastewater treatment systems also has the potential to impact on surface waters if site conditions are not suitable for an on-site percolation unit. There are 2 no. construction compounds proposed.

Tree felling will also be required to facilitate the Proposed Development. A total of ~8.9ha of felling is proposed and this has the potential to effect downstream surface water quality. Most of the felling is proposed in the catchment of the Roughty River (~5.76ha), whilst smaller areas of felling are proposed in the Flesh_040 (~0.15ha) and Flesk_030 (3.01ha) catchments.

The Proposed Development also includes 10 no. existing watercourse crossings which will need to be upgraded. 5 no. existing crossings are located in the Roughty catchment, with 1 no. existing crossing over a watercourse in the Sullane catchment and 4 no. crossings over watercourses in the Flesk catchment. In addition, 1 no. new crossing is proposed over a tributary of the Roughty River.

Construction phase activities can result in the release of suspended solids and pollutants in runoff water and could result in an increase in the suspended sediment load, resulting in increased turbidity, increased pH and contamination which in turn could affect the water quality and fish stocks in the downstream watercourses.

The potential for water quality effects in the Roughty river will decrease downstream of the Proposed Development site due to the increasing volumes of water within the Roughty_040 SWB associated with its large upstream catchment area of 206.77km². Meanwhile, due to the minor and transient nature of the works proposed in the Flesk and Sullane catchment, there is limited potential for a change in the overall status of these SWBs.

A summary of potential status change to SWBs arising from surface water quality impacts from earthworks during the construction phase of the Proposed Development in the unmitigated scenario are outlined in **Table E**.

Table E: Surface Water Quality Effects During Construction Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Status Change	Potential
Roughty_030	IE_SW_21R010250	High	Good	
Roughty_040	IE_SW_21R010350	High	High	
Flesk(Kerry)_030	IE_SW_22F020060	High	High	
Flesk(Kerry)_040	IE_SW_22F020100	Good	Good	
Sullane_010	IE_SW_19S020100	Good	Good	

4.2.1.2 Potential Groundwater Quality Effects

Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a major pollution risk to groundwater. The accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk. Chemicals such as cement-based compounds also pose a threat to the groundwater environment. Runoff from concrete works can impact on groundwater quality.

These sources of contamination have the potential to impact on groundwater quality in the groundwater bodies which underlies the Proposed Development site.

However, the potential for the qualitative status of the underlying GWBs to be changed as a result of the Proposed Development is limited. These GWBs are extensive (Beara Sneem GWB is 188,400ha, Cahersiveen GWB is 85,000ha and the Ballinhassig West GWB is 176,200ha) compared to the Proposed Development site (775ha).

A summary of potential status change to GWBs arising from potential groundwater quality impacts during the construction phase of the Proposed Development in the unmitigated scenario are outlined in **Table F**.

Table F: Groundwater Quality Effects During Construction Phase (Unmitigated)

GWB	WFD Code	Current Status	Assessed Status Change	Potential
Beara Sneem	IE_SW_G_019	Good	Good	
Cahersiveen	IE_SW_G_022	Good	Good	
Ballinhassig West	IE_SW_G_005	Good	Good	

4.2.1.3 Potential Groundwater Quantity Effects

Dewatering of deep excavations have the potential to impact on local groundwater levels.

However, groundwater level effects will not occur due to the local hydrogeological regime and the elevation of the Proposed Development site.

No significant dewatering will be required as part of the Proposed Development.

A summary of potential status change to GWBs arising from potential groundwater quantity impacts during the construction phase of the Proposed Development in the unmitigated scenario are outlined in **Table G**.

Table G: Groundwater Quantity Effects During Construction Phase (Unmitigated)

GWB	WFD Code	Current Status	Assessed Status Change	Potential
Beara Sneem	IE_SW_G_019	Good	Good	
Cahersiveen	IE_SW_G_022	Good	Good	
Ballinhassig West	IE_SW_G_005	Good	Good	

4.2.1.4 Potential Impacts on Protected Areas

Roughy River pNHA

With the requirement for earthworks during the construction phase, there is potential for contaminants, including suspended solids, nutrients and hydrocarbons, to enter the local watercourses and ultimately the Roughy River pNHA, located ~400m downstream of the Proposed Development site. The entry of contaminants to the Roughy River could potentially affect the Roughy River pNHA.

Therefore, it can be concluded that the Proposed Development may have the potential to affect the Roughy River pNHA in an unmitigated scenario throughout its construction phase.

Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA

The Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA exists ~1.4km northwest of the Proposed Development site along the Loo River and ~70m north of the existing Clonkeen substation along the Flesk River.

This SAC contains many lowland lakes including Lough Leane which tend to be species rich and the Flesk River associated with the lake is also of importance as it supports floating vegetation, submerged vegetation and rare invertebrates. This designated site is

hydrologically connected with the Proposed Development site via the tributaries of the Flesk River which drain the main access road.

With the requirement for earthworks during the construction phase, there is potential for contaminants, mainly suspended solids, to enter the local watercourses and ultimately the Flesk River. The entry of contaminants to the Flesk River could potentially affect the water associated qualifying interests (some of which are listed below), of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA.

- [3260] Floating River Vegetation
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)
- [1029] Freshwater Pearl Mussel (*Margaritifera Margaritifera*)
- [1095] Sea Lamprey (*Petromyzon marinus*)

Therefore, it can be concluded that the Proposed Development may have the potential to affect the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA in an unmitigated scenario throughout its construction phase.

Flesk_040 DWPA

Construction phases activities as described above in **Section 4.2.1.1**, could result in an increase in the suspended sediment load, resulting in increased turbidity, increased pH and contamination which could affect the water quality in the Flesk River, therefore impacting on the Flesk_040 DWPA.

Beara Sneem, Cahersiveen and Ballinahassig West GWB DWPAs

The GWB DWPA directly underling the Proposed Development Site have the potential to be effected by the Proposed Development due to the potential accidental release of contaminants such as hydrocarbons during the construction phase of the development.

As stated above in **Section 4.2.1.3**, no groundwater quantity effects will occur.

4.2.2 Operational Phase (Unmitigated)

Potential effects associated with the operational phase of the Proposed Development will be much reduced in comparison to the construction phase. Any effects will occur at the Proposed Development site and will be associated with minor maintenance works. No maintenance works will be required along the main access road and therefore there is no potential to impact on the status of downstream SWBs or underlying GWBs.

4.2.2.1 Surface Water Quantity Effects

Progressive replacement of the soil, peat or vegetated surface with impermeable surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. This could potentially increase runoff from the Proposed Development Site and increase flood risk downstream of the development. In reality, the access roads will have a higher permeability than the underlying peat.

During storm rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and causing hydromorphological effects.

The potential effects will be greatest in the Roughty Catchment while no significant effects will occur along the main access road (within the Flesk and Sullane river catchments) due to the minor nature of the proposed works.

A summary of potential status change to SWBs arising from increased runoff during the operation phase of the Proposed Development in the unmitigated scenario are outlined in **Table H**.

Table H: Potential Surface Water Quantity Effects During Operational Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Roughly_030	IE_SW_21R010250	High	Good
Roughly_040	IE_SW_21R010350	High	High
Flesk(Kerry)_030	IE_SW_22F020060	High	High
Flesk(Kerry)_040	IE_SW_22F020100	Good	Good
Sullane_010	IE_SW_19S020100	Good	Good

4.2.2.2 Surface Water Quality Effects

During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. In addition, all permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads and hardstand areas. These works would be of a very minor scale and would be very infrequent. Potential sources of sediment laden water would only arise from surface water runoff from small areas where new material is added during maintenance works.

A summary of potential status change to SWBs arising from surface water quality impacts during the operation phase of the Proposed Development in the unmitigated scenario are outlined in **Table I**.

Table I: Surface Water Quality Effects During Operational Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Roughly_030	IE_SW_21R010250	High	High
Roughly_040	IE_SW_21R010350	High	High
Flesk(Kerry)_030	IE_SW_22F020060	High	High
Flesk(Kerry)_040	IE_SW_22F020100	Good	Good
Sullane_010	IE_SW_19S020100	Good	Good

4.2.2.3 Groundwater Quality Effects

The risks to groundwater quality are the same as those described in **Section 4.2.1.2** but of a lesser extent than during the construction phase due to the limited activity at the Proposed Development site with only minor maintenance required during the operational phase.

No groundwater quality effects will occur along the main access road and therefore the Cahersiveen and Ballinhassig West GWBs have no potential to be impacted during this phase of the Proposed Development.

A summary of potential status change to GWBs arising from groundwater quality impacts during the operation phase of the Proposed Development in the unmitigated scenario are outlined in **Table J**.

Table J: Groundwater Quality Effects During Operational Phase (Unmitigated)

GWB	WFD Code	Current Status	Assessed Status Change	Potential
Beara Sneem	IE_SW_G_019	Good	Good	
Cahersiveen	IE_SW_G_022	Good	Good	
Ballinhassig West	IE_SW_G_005	Good	Good	

4.2.2.4 Protected Area Impacts (Operational Phase)

During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. In addition, all permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete.

Therefore, the risk of any operational phase activities that may affect the conservation objectives of the designated sites is greatly reduced.

Similarly, the risk of surface water connections from the Proposed Development site to the Flesk_040 DWPA is reduced.

4.3 MITIGATION MEASURES

In order to mitigate against the potential negative effects on surface and groundwater quality, quantity and flow patterns, mitigation measures will be implemented during the construction and operational phases of the Proposed Development. These are outlined below.

4.3.1 Construction Phase

4.3.1.1 Mitigation Measures to Protect Surface Water Quality

A suite of general SuDs drainage controls available for surface water management are summarised (along with their application) in **Table K** below. These include avoidance controls, source controls, in-line controls, water treatment controls, and outfall controls.

During the construction phase of the Proposed Development, excavations will be limited to minimise the generation of spoil. Sediment will be generated where excavations are required (turbine foundations) and dirty water from these work areas will be routed via drains to settlement ponds for treatment and removal of suspended solids prior to release into the existing drainage network. There will be no direct or untreated discharge from construction work areas into the existing drainage network.

Finally, regular inspection and maintenance for the on-site drainage system will be completed regularly during the construction phase. This will be of particular importance following periods of heavy rainfall to check for blockages in any drains and any excess build-up of silt within settlement ponds which will decrease the effectiveness of the drainage system unless removed.

Table K: Summary of Drainage Mitigation & their Application

Management Type	Description of SuDs drainage control method	Applicable Works Area
Avoidance Controls:	<ul style="list-style-type: none"> • Application of 50m buffer zones to natural watercourses where possible; • Using small working areas; • Working in appropriate weather and suspending certain work activities in advance of forecasted wet weather. 	Construction work areas where sediment is being generated.
Source Controls:	<ul style="list-style-type: none"> • Use of upstream interceptor drains and downstream collector drains, vee-drains, diversion drains, flumes and culvert pipes. 	Construction work areas where sediment is being generated.
	<ul style="list-style-type: none"> • Using small working areas; • Covering stockpiles; • Weathering off / sealing stockpiles and promoting vegetation growth. 	Stockpiles areas
In-Line Controls:	<ul style="list-style-type: none"> • Interceptor drains, vee-drains, oversized swales/collector drains; • Erosion and velocity control measures such as: <ul style="list-style-type: none"> ○ sand bags; ○ oyster bags filled with gravel; ○ filter fabrics; ○ straw bales; ○ flow limiters; ○ weirs or baffles; ○ and/or other similar/equivalent or appropriate systems. • Silt fences, filter fabrics; • Collection sumps, temporary sumps, pumping systems; • Attenuation lagoons; • Sediment traps, stilling / settlement ponds. 	Interceptor and collection drainage systems
Water Treatment Controls:	<ul style="list-style-type: none"> • Temporary sumps; • Attenuation ponds; • Temporary storage lagoons; • Sediment traps, Stilling / Settlement ponds, silt bags; • Proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems. 	Surface water treatment locations
Outfall Controls:	<ul style="list-style-type: none"> • Level spreaders; • Buffered outfalls; • Vegetation filters; • Silt bags; • Flow limiters and weirs. 	Drainage run outfalls and overland discharge points

Each element of the wind farm development (i.e., access roads, turbines, borrow pit and peat repository) will have an array of drainage control measures to ensure protection of downstream watercourses. Each drainage control element is not stand alone but occurs as part of a treatment train of control systems (i.e., check dams, silt traps, settlement ponds etc).

4.3.1.2 Mitigation Measures to Protect Against Release of Hydrocarbons

The potential pollution of groundwater during the construction phase will be mitigated by the provision of appropriate controls and working methods. These include best practice methods for storage and handling of fuels and chemicals and include:

- On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser.

- The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site, and will be towed around the site by a 4x4 jeep to where machinery is located.
- The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages.
- The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site.
- Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;
- Onsite refuelling will be carried out by trained personnel only;
- A permit to fuel system will be put in place;
- Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system;
- All fuel storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area;
- Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage;
- The electrical control building (at the substation) will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor;
- The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,
- An emergency plan for the construction phase to deal with accidental spillages is included within the Construction and Environmental Management Plan;
- Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.

4.3.1.3 Mitigation Measures to Prevent Release of Wastewater

The best practice methods for wastewater management at the 2-no. proposed on-site construction compounds during the construction phase include:

- During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds, maintained by the providing contractor, and removed from site on completion of the construction works;
- Water supply for the site office and other sanitation will be brought to site and removed after use from the site to be discharged at a suitable off-site treatment location; and,
- No water or wastewater will be sourced on the site, nor discharged to the Proposed Development site.

4.3.1.4 Mitigation Measures to Prevent Release of Cement-Based Products

Best practice methods for cement-based compounds includes:

- No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;
- Where possible pre-cast elements for culverts and concrete works will be used;
- Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of concrete contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse

will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds;

- Weather forecasting will be used to plan dry days for pouring concrete; and,
- The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event.

4.3.1.5 Mitigation Measures for Clear-Felling

All felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents, to ensure that felling, planting and other forestry operations result in minimal potential negative effects to the receiving environment.

There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document "Forestry and Water Quality Guidelines" will be adhered to during felling operations. The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures (discussed below) to be properly installed and operate effectively.

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines;
- All machinery will be operated by suitably qualified personnel;
- Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works;
- These machines will traverse the site along specified off-road routes (referred to as racks);
- The location of racks will be chosen to avoid wet and potentially sensitive areas;
- Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall;
- Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;
- In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction;
- Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses;
- Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded;

- Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites;
- Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff;
- Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and,
- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.

In addition felling works will only be completed during periods of low rainfall and all drains will be inspected and maintained before, during and after the proposed felling works.

4.3.1.6 Mitigation Measures to Prevent Morphological Changes to Surface Watercourses

The Proposed Development design has been optimised to utilise the existing infrastructure (roads and hardstands) where practicable. This design prevents the unnecessary disturbance of the existing site drainage network prevents the requirement for widespread instream works across the Proposed Development Site.

Mitigation for windfarm culvert upgrades:

- The proposed new natural stream crossing will be a bottomless culvert and the existing banks will remain undisturbed as much as possible;
- Any guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland will be incorporated into the design of the proposed crossings;
- As a further precaution near stream construction work will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", that is, May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses;
- During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed on-site; and,
- All access road river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.

If instream works are required in minor watercourses, the following mitigation will be employed:

- In-stream works at natural watercourses will only be done over a dry period during the months of July, August and September (as required by IFI for in-stream works) to avoid the salmon spawning season;
- Firstly, the crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance of vegetation;
- A minimum 10 metre vegetative buffer zone will be maintained (if present) between disturbed areas and the watercourse bank. There will be no storage of material / equipment, excavated material (see below) or overnight parking of machinery inside the 10m buffer zone;

- Double silt fencing will be placed upslope of the buffer zone on each side of the watercourse. The silt fencing will have removable "gates" as required to allow access of excavator while maintaining ease of replacement for overnight or during periods of heavy rainfall. The silt fencing will be extended at least 10m upstream and downstream of the crossing location works;
- Bog mats will be used underneath the excavator, inside the 10 metre vegetative buffer zone, to prevent soil erosion/rutting and potential surface water quality impacts from localised surface water runoff;
- A temporary sump will be constructed in the watercourse bed upstream of the proposed dam location if a natural pool does not already exist. The sump will be lined with clean rockfill to prevent scouring and erosion during pumping at the intake;
- An energy dissipater (such as clean rock fill or splash plates) will be placed on the watercourse bed downstream of the dam at the pump outfall. This will prevent scouring and erosion of the watercourse bed at the outfall during pumping;
- Dams are to be made of sand (clean) bags, cobbles or clean well-graded coarse gravel fill. Poorly sorted material will not be used as it would be a potential source of fine sediment;
- Watercourse bed excavation works will only commence once the stream flow is isolated from the proposed trench excavation area;
- Temporary storage of excavated material will be undertaken outside of the 10m buffer on flat ground or within a local hollow area. A containment berm will be placed downslope of the excavated material which in turn will be surrounded by secondary silt fence protection to prevent saturated soil from flowing back into the watercourse;
- Any pumped water from trench dewatering will be discharged onto a well vegetated, flat, dry area at least 50m from a watercourse via a straw bale dewatering structure or geotextile filter bag (i.e. silt bag). Silt fencing will also be placed downslope of the outfall;
- If there is no suitable area for discharge onto ground, temporary settlement ponds will be used where necessary and will be put in place prior to commencement of preparation works;
- Sediment laden water from trench dewatering will not be discharged directly to a watercourse;
- Clay bunds will be placed within the trench backfill on either side of the watercourse to prevent the trench acting as a drain towards the watercourse, thus preventing potential water quality impacts;
- Once the lean mix concrete is in place in the trench, a layer of fine sand (5 – 10cm) will be over the cement prior to backfilling. This will prevent release of cement into the watercourse when flow is restored;
- Upon completion of the in-stream work, the watercourse crossing will be restored to its original configuration and stabilised to prevent bank erosion by means of timber stakes, timber planks and geotextiles as required;
- Operation of machinery and use of equipment within the 10m buffer will be kept to a minimum to avoid any unnecessary disturbance;
- Disturbance of bankside soils and watercourse sediments will be kept to the minimum required for the cable laying process to avoid any unnecessary impact on the watercourse morphology;
- There will be no batching or storage of cement allowed at the watercourse crossing;
- There will be no refuelling allowed within 100m of the watercourse crossing;
- All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing; and,
- Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted.

4.3.1.7 Mitigation Measures for Protected Areas

The potential for material to enter the downstream protected areas is negligible as mitigation controls as described above will be implemented. These measures include the use of silt

fences, silt traps and check dams. Emphasis will also be placed on prevention of hydrocarbon releases to local watercourses.

It can be concluded that with best practice methods adhered to during the construction of the proposed wind farm development, the potential for the project to impact upon the qualifying interests of designated sites is not significant.

Similarly, these mitigation measures will ensure that surface water runoff from the Proposed Development site will be equivalent to baseline conditions and will therefore have no effect on downstream water quality within the Flesk(Kerry)_040 DWPA.

4.3.2 Operational Phase

4.3.2.1 Increased Site Runoff and Hydromorphology Effects

The operational phase drainage system of the Proposed Development will be installed and constructed in conjunction with the road and hardstanding construction work as described below:

- Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader;
- Swales/road-side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling;
- On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains;
- Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock;
- Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and,
- Settlement ponds have been designed in consideration of the greenfield runoff rate.

4.3.2.2 Mitigation Measures to Protect Surface Water Quality

The mitigation measures to protect against poor quality runoff during the operational phase of the Proposed Development are the same as those outlines in **Section 4.3.1** above.

Mitigation measures for oils and fuels during the operational phase of the Proposed Development are the same as those outlines in **Section 4.3.1.2** above.

4.3.2.3 Mitigation Measures to Protect Groundwater Quality

It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants.

4.3.2.4 Mitigation Measures to Protect Protected Areas

The mitigation measures to protect against poor quality runoff during the operational phase of the Proposed Development are the same as those outlined above.

It can therefore be concluded that with best practice methods adhered to during the operational phase of the Proposed Development, the potential for the project to impact

upon the qualifying interests of the local designated sites and the water quality within the Flesk(Kerry)_040 DWPA is not significant.

4.3.1 Decommissioning Phase

The potential impacts associated with decommissioning of the Proposed Development will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.

During decommissioning, it will be possible to reverse or at least reduce some of the potential effects caused during construction, and to a lesser extent operation, by rehabilitating constructed areas such as turbine bases and hard standing areas. This will be done by covering with vegetation to encourage vegetation growth and reduce run-off and sedimentation.

The wind farm site roadways will be kept and maintained following decommissioning of the wind farm infrastructure, as these will be utilised by as amenity paths.

The electrical cabling connecting the site infrastructure to the on-site substation will be removed, while the ducting itself will remain in-situ rather than excavating and removing it, as this is considered to have less of a potential environmental impact, in terms of soil exposure, and thus on the possibility of the generation of suspended sediment which could enter nearby watercourses.

The turbines will be removed by disassembling them in a reverse order to their erection. This will be completed using the same model cranes as used in their construction. They will then be transported off-site along their original delivery route. The disassembly and removal of the turbines will not have an impact on the hydrological/hydrogeological environment at the Proposed Development site.

Other impacts such as possible soil compaction and contamination by fuel leaks will remain but will be of reduced magnitude than the construction phase because of the smaller scale of the works and reduced volumes on-site. Similar mitigation as outlined in **Sections 4.3.1.1** for the construction phase will be implemented during the decommissioning phase to ensure no impacts of receiving waters.

With the implementation of the mitigation measures outlined above no significant effects on the hydrological and hydrogeological environment will occur during the decommissioning phase of the Proposed Development.

4.3.2 Potential Effects with the Implementation of Mitigation

In all instances, the mitigation measures described in **Section 4.3** are sufficient to meet the WFD Objectives. The assessment of WFD elements for the WFD waterbodies is summarised in **Table L** below.

Similarly with the implementation the mitigation measures there will be no effect on the status of downstream protected areas.

Table L: Summary of WFD Status for Unmitigated and Mitigated Scenarios

SWB	WFD Code	Current Status	Assessed Status – Unmitigated	Assessed Status with Mitigation Measures
Dunmanus Bantry Kenmare Catchment				
Roughly_030	IE_SW_21R010250	High	Good	High
Roughly_040	IE_SW_21R010350	High	Good	High
Laune-Maine-Dingle Bay Catchment				
Flesk(Kerry)_030	IE_SW_22F020060	High	Good	High
Flesk(Kerry)_040	IE_SW_22F020100	Good	Good	Good
Lee, Cork Harbour, Youghal Bay Catchment				
Sullane_010	IE_SW_19S020100	Good	Good	Good
Sullane_020	IE_SW_19S020170	Good	Good	Good
Groundwater Bodies				
Beara Sneem	IE_SW_G_019	Good	Good	Good
Cahersiveen	IE_SW_G_022	Good	Good	Good
Ballinhassig West	IE_SW_G_005	Good	Good	Good

5. REPORT CONCLUSION

WFD status for SWBs (Surface Water Bodies) and GWBs (Groundwater Bodies) hydraulically linked to the Proposed Development site are defined in **Section 2** above.

The Proposed Development does not involve any abstraction of groundwater or alteration of drainage patterns. Therefore, the quantitative status (i.e., the available quantity (volume) of groundwater and surface water locally) to the receiving waters will remain unaltered during the construction and operational phase of the Proposed Development.

There is no direct discharge from the Proposed Development site to downstream receiving waters. Mitigation for the protection of surface water during the construction, operation and decommissioning phases of the development will ensure the qualitative status of the receiving waters will not be altered by the Proposed Development.

There is also mitigation proposed to protect groundwater quality within the Proposed Development site during the construction, operational and decommissioning phases of the development. These mitigation measures will ensure the qualitative status of the underlying GWBs will not be altered by the Proposed Development.

Furthermore, mitigation measures during the construction, operation and decommissioning phases of the Proposed Development will ensure that there will be no significant effects on any of the protected areas in the vicinity of the Proposed Development including the Roughty River pNHA, The Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC/pNHA and the Flesk(Kerry)_040 DWPA.

There will be no change in GWB or SWB status in the underlying GWB or downstream SWBs resulting from the Proposed Development. There will be no change in quantitative (volume) or qualitative (chemical) status, and the underlying GWB and downstream SWBs are protected from any potential deterioration.

As such, the Proposed Development:

- will not cause a deterioration in the status of all surface and groundwater bodies assessed;
- will not jeopardise the objectives to achieve 'Good' surface water/groundwater status;
- does not jeopardise the attainment of 'Good' surface water/groundwater chemical status;
- does not jeopardise the attainment of 'Good' surface water/groundwater quantity status;
- does not permanently exclude or compromise the achievement of the objectives of the WFD in other waterbodies within the same river basin district;
- is compliant with the requirements of the Water Framework Directive (2000/60/EC); and,
- is consistent with other Community Environmental Legislation including the EIA Directive (2014/52/EU), the Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC) (Note that a full list of legislation complied with in relation to hydrology and hydrogeology is included in Section 9.1.4 of EIAR Chapter 9).

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