APPENDIX 9-3

WATER FRAMEWORK DIRECTIVE COMPLIANCE REPORT

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WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT

MEENBOG WIND FARM, CO. DONEGAL

FINAL REPORT

Prepared for:

PLANREE LTD

Prepared by:

HYDRO-ENVIRONMENTAL SERVICES

DOCUMENT INFORMATION

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1. INTRODUCTION

1.1 BACKGROUND

Hydro-Environmental Services (HES) were requested by MKO, on behalf of Planree Ltd, to complete a Water Framework Directive (WFD) Compliance Assessment for the Prospective Development.

The Prospective Development is described in full in Chapter 4 of this Environmental Impact Assessment Report (EIAR). The Prospective Development relates to the completion of construction, operation and decommissioning of the Meenbog Wind Farm. Consistent with Chapter 1 of this EIAR, this WFD Compliance Assessment refers to the 'Subject Development', 'Existing Development', 'Prospective Development', 'Permitted Development', 'Site', 'Wind Farm Site', 'Grid Connection Site', 'BMEP Site', 'Grid Connection', ' November 2020 Peat Slide', '2017 EIAR' and 'proposed turbines' or 'proposed turbine locations'. The Prospective Development also includes biodiversity enhancement lands for hen harrier habitat and peatland habitat, referred to as the 'BMEP Site'.

The purpose of this WFD Compliance Assessment is to determine if any specific components or activities associated with the Prospective Development 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 Prospective Development is in compliance with the objectives of the WFD.

This WFD Compliance Assessment is intended to supplement this EIAR.

This report has been compiled using the following data sources:

- Environmental Protection Agency database (www.epa.ie);
- Northern Ireland Environmental Agency mapping (www.ni-environmental.gov.uk);
- Observation recorded during various site visits as described in Section 9.2.2 of this EIAR;
- Drainage mapping as described in Section 9.3.5 of this EIAR; and,
- Surface water monitoring as described in Section 9.3.7 of this EIAR.

1.2 STATEMENT OF AUTHORITY

Hydro-Environmental Services (HES) are a specialist geological, 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 Compliance Assessment was prepared by Michael Gill, Conor McGettigan and Nitesh Dalal.

Michael Gill (BA, BAI, Dip Geol., MSc, MIEI) is an Environmental Engineer and Hydrogeologist with over 23 years' environmental consultancy experience in Ireland. Michael has completed numerous geological, hydrological and hydrogeological impact assessments of wind farms and

renewable projects in Ireland. For example, For example, Michael has worked on 120 wind farm-related projects including original application for Meenbog Windfarm.

Conor McGettigan (BSc, MSc) is an Environmental Scientist with over 5 years' experience in the environmental sector in Ireland. Conor holds an M.Sc. in Applied Environmental Science (2020) from University College Dublin and a B.Sc. in Geology (2016) from University College Dublin. Conor has prepared hydrological and hydrogeological impact assessments for a wide variety of developments on peatlands. Conor has also prepared several flood risk assessments and Water Framework Directive compliance assessments for various renewable energy developments in Ireland.

Nitesh Dalal (B.Tech, PG Dip., MSc) is an Environmental Scientist with over 7 years' experience in environmental consultancy and environmental management in India and over 1 year environmental consultancy experience in Ireland. Nitesh holds a M.Sc. in Environmental Science from University College Dublin (2024), a PG Diploma in Health, Safety and Environment from Annamalai University, India (2021) and B.Tech. in Environmental Engineering (2016) from Guru Gobind Singh Indraprastha University, India (2016).

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, and the third cycle covers the period from 2022 to 2027[1]. The RBMPs are forward looking.

The Water Action Plan 2024 is Ireland's 3rd River Basin Management Plan (2022 - 2027). The objectives of the Water Action Plan 2024 have been integrated into the design of the Prospective Development and include:

- Ensure full compliance with relevant EU legislation;
- Prevent deterioration;
- Meet the water standards and objectives for designated protected areas;
- Protect high-status waters; and,

[1] *The WFD RBMP cycles are forward looking plans, so 2009-2015 (1st Cycle), 2016-2021 (2nd Cycle), and 2022-2027 (3rd Cycle) are the plans and they use status from the previous 6 years.*
The EPA updates status every three years, but they also complete an additional assessment mid-RBMP cycle. The mid-cycle status does not get reported to the Commission.
The linkage between the two is that the 2nd Cycle plan uses the 2009-2015 status, the 3rd Cycle plan uses the 2016-2021 status. The 2013-2018 status was not used in the RBMP and the 2019-2024 status will not be used in the next RBMP.

- Implement targeted action and pilot schemes in focus sub-catchments aimed at (i) targeting water bodies close to meeting their objective and (ii) addressing more complex issues that will build knowledge for future cycles.

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 Waterbodies (SWBs) and Groundwater Bodies (GWBs) with potential to be affected by the Prospective Development and reviews any available WFD information.

2.2 SURFACE WATERBODY IDENTIFICATION

Wind Farm Site

The vast majority of the Wind Farm Site is located in the Foyle River surface water catchment within Hydrometric Area No. 1. This river basin district is an international river basin district with ~3% of this district located in Northern Ireland. Meanwhile, a small area in the northwest of the Wind Farm Site is mapped in the Donegal Bay North regional surface water catchment, with Hydrometric Area No. 37 of the North Western River Basin District.

Within the Foyle River catchment, the Wind Farm Site is located in the Mourne Beg River sub-catchment (MourneBeg_SC_010). The Mourne Beg River, a tributary of the Mourne River, flows to the southeast from Lough Mourne, situated ~2km northeast of the Wind Farm Site entrance. The Mourne Beg River flows to the east, ~150m north of the Wind Farm Site before it crosses into Northern Ireland. Further downstream, this watercourse discharges into the River Derg, ~15km to the east. The River Derg continues to the east. The Mourne River is formed at the meeting of the River Derg and the River Strule, ~27km east of the Wind Farm Site. The Mourne River then flows to the north, through the town of Strabane, before it confluences with the Finn River to form the River Foyle.

In terms of WFD river sub-basins, the Wind Farm Site is located in a total of 5 no. WFD river sub-basins within the Mourne Beg River sub-catchment.

- The northwest of the Wind Farm Site is located in the Mourne Beg_010 WFD river sub-basin. This area is drained by the EPA mapped Croaghonagh Stream, referred to as the Mary Breen's Burn on local OSI mapping. This watercourse flows to the northeast and discharges into the Mourne Beg River, ~1.8km northeast of the Wind Farm Site. All watercourses within this area for part of the Mourne Beg_010 surface waterbody (SWB).
- A small area in the northeast of the Wind Farm Site is also mapped in the Mourne Beg_010 WFD river sub-basin. Here, the Mourne Beg River is located ~100m north of the Wind Farm Site.
- Much of the Wind Farm Site is located in the Bunadaowen_010 WFD river sub-basin (i.e. the Bunadowen River which is spelt "Bunadaowen" on EPA WFD mapping). This area is drained by the Bunadowen River and several of its smaller tributaries. There is a high density of mapped watercourses in this area of the Wind Farm Site, all of which form part of the Bunadaowen_010 SWB.
- A small area in the northeast of the Wind Farm Site is mapped in the Mourne Beg River (Derrygoonan) WFD river sub-basin. This area is drained by the Shruhanagarve Stream which flows to the northeast, before it discharges into the Mourne Beg River. These watercourses form part of the Mourne Beg River (Derrygoonan) SWB.
- The southeast of the Wind Farm Site is located in the Glendergan River WFD river sub-basin. An unnamed tributary of the Glendergan River flows to the south from the area

of the Wind Farm Site. The Glendergan River itself forms the southeastern boundary of the Wind Farm Site. This watercourse discharges into the River Derg ~3.7km to the southeast.

Within the Donegal Bay North surface water catchment, the Wind Farm Site is mapped in the Eske River sub-catchment (Eske_SC_010) and the Lowerymore_020 river sub-basin. Within this area, a tributary of the Lowerymore River, referred to by the EPA as the Barrack Hill Stream flows to the southwest in the vicinity of the Wind Farm Site entrance. The Lowerymore River flows to the southwest, through Barnesmore Gap, before the Lowerymore_020 SWB discharges into Lough Eske ~8.7km to the southwest

Table A presents the total upstream catchment area of each river waterbody downstream of the Wind Farm Site. The Bunadaowen_010 basin has the smallest upstream catchment area at 10.62km^2. The total upstream catchment area increases significantly downstream reaching 208.89km^2 within the Derg River (Millbrook) basin (upstream of the confluence between the Derg and the Mourne Beg Rivers). Similarly, within the Eske_SC_010 sub-catchment, the Lowerymore_020 river have the smallest catchment area at 22.54 km^2 and increases downstream with Eske_020 having the upstream catchment area of 114.12km^2. Therefore, those waterbodies which are located in close proximity to the Wind Farm Site will have been more susceptible to water quality effects as a result of activities associated with the Wind Farm Site. The potential for the Wind Farm Site to impact the waterbodies decreased further downstream due to the increasing catchment area to the surface waterbody and resulting increase in flow volumes.

Table A: Catchment Area of Surface Waterbodies Downstream of Wind Farm Site

WFD River Sub-Basin	Total Upstream Catchment Area (km^2)
MourneBeg_SC_010 Sub-Catchment	
Bunadaowen_010	10.62
Mournebeg_010	29
Mourne Beg River (Derrygoonan)	97.98
Mourne Beg River (Lisnacloone)	112.3
Derg River (Millbrook)	208.89
Eske_SC_010 Sub-Catchment	
Lowerymore_020	22.54
Lowerymore_030	30.88
Eske_010	89.77
Eske_020	114.12
LeaghanyRiver_SC_010 Sub-Catchment	
Glendergan River	37.14

Grid Connection Site

The Grid Connection Site is predominantly located in the Donegal Bay North catchment and the Eske River sub-catchment (Eske_SC_010). The Grid Connection Site passes through the Lowerymore_020 and Lowerymore_030 WFD river sub-basins.

Within the Donegal Bay north catchment there are a total of 14 no. watercourse crossings along the Grid Connection Site over the Lowerymore_020 and Lowerymore_030 rivers.

Note that the Prospective Development does not include any works at the Grid Connection Site. Therefore, there will be no potential for effects on downstream waterbodies or designated sites. The only potential for effects will be associated with the works within the Wind Farm Site.

BMEP Site

The BMEP Site is located within the Foyle River surface water catchment and the Mourne Beg River sub-catchment (MourneBeg_SC_010) and Mourne Beg River (Derrygoonan) river sub-basin. A small tributary of the Mourne Beg River (Derrygoonan) originates from the Habitat Enhancement Site. The Mourne Beg River (Derrygoonan) flows to the south/southeast immediately to the south of Parcel 2 (the western section) of land proposed for habitat enhancement. With regards to Parcel 1 (the eastern section) of land proposed for habitat enhancement, the Mourne Beg River (Derrygoonan) flows to the south along the eastern boundary of the Habitat Enhancement Site.

A local hydrology map is presented as **Figure A** below.

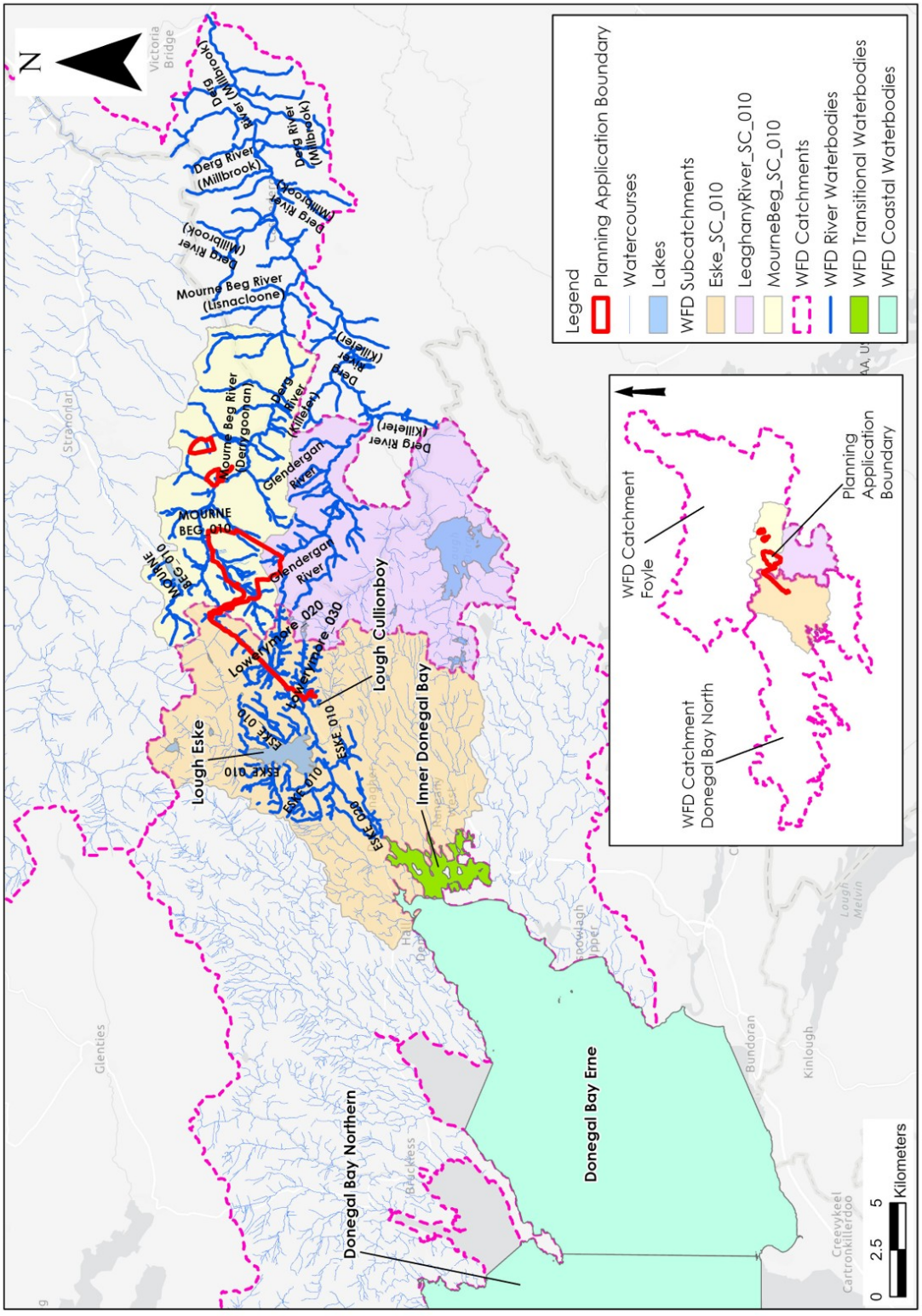

Figure A: Local Hydrology Map

2.3 SURFACE WATERBODY CLASSIFICATION

A summary of the WFD status and risk result for SWBs downstream of the Prospective Development are shown in **Table B**. The overall status is based on the ecological, chemical and quantitative status of each SWB. Local SWB status information is available from (www.catchments.ie).

Within the Foyle River surface water catchment, the Mourne Beg_010 SWB in the vicinity of the Wind Farm Site achieved 'Poor' status in latest 3 no. WFD cycles (2013-2018, 2016-2021 and 2019-2024). Meanwhile, the status of the Bunadaowen_010 SWB improved from 'Moderate' to 'Good' status in the latest WFD cycle (2019-2024). The east of the Wind Farm Site is drained by the Mourne Beg River (Derrygoonan) SWB which achieved 'Poor' status in the latest WFD cycle. The status of the Glendergan River has improved from 'Poor' to 'Moderate' in the latest WFD cycle. Downstream of the Site the Mourne Beg River (Lisnacloone) is of 'Moderate' status while the Derg River (Milbrook) have "Poor" status.

The majority of the waterbodies in the vicinity and downstream of the Site within the Foyle catchment have been deemed to be 'at risk' of failing to meet their respective WFD objectives except for Glendergan river which is "under review".

The 3rd Cycle Foyle Catchment Report (EPA, 2024) states that the significant pressure affecting the greatest number of waterbodies in this catchment is agriculture. The significant pressures impacting the SWBs in the vicinity and downstream of the Site are as follows:

- Agriculture is only listed as a significant pressure on the Derg River (Milford).
- Forestry is a significant pressure on the Mourne Beg_010, Bunadaowen_010 and Mourne Beg River (Derrygoonan) SWBs.
- Abstraction was identified as a significant pressure on the Mourne Beg_010 and Mourne Beg River (Derrygoonan) rivers.
- Peat drainage and peat extraction (i.e. extractive industry) have been identified as a significant pressure on the Mourne Beg River (Derrygoonan) and the Derg River (Milbrook).
- Unknown anthropogenic pressures are also listed to be impacted several SWBs including the Mourne Beg River (Derrygoonan), Mourne Beg (Lisnacloone) and Derg River (Millbrook) SWBs.

Within the Donegal Bay North surface water catchment, the Lowerymore_020 and Lowerymore_030 SWBs in the vicinity and downstream of the Wind Farm Site achieved 'High' status in the latest 3 no. WFD cycles. Further downstream, the Eske_010 and Eske_020 river waterbodies and the Eske lake waterbody are of 'Good' status. In terms of transitional waterbodies, the Inner Donegal Bay have achieved "Good" status and in terms of coastal waterbodies, the Donegal Bay Erne and the Donegal Bay Northern have achieved "High" status. With regard to risk status, the status of the Eske lake waterbody is currently under review while all other SWBs are 'not at risk'. No significant pressures have been identified on these SWBs.

The SWB status for the 2019-2024 WFD cycle are shown on **Figure B**.

Table B: Summary WFD Information for Surface Waterbodies

SWB	Overall Status (2013-2018)	Overall Status (2016-2021)	Overall Status (2019-2024)	Risk Status	Pressures
Foyle WFD Catchment					
Bunadaowen_010	Poor	Moderate	Good	At risk	Forestry
Mourne Beg_010	Poor	Poor	Poor	At risk	Abstraction and Forestry
Mourne Beg River (Derrygoonan)	Moderate	Moderate	Poor	At risk	Abstraction, Forestry, Peat & Others
Mourne Beg (Lisnacloone)	Moderate	Moderate	Moderate	At risk	Other
Derg River (Millbrook)	Moderate	Moderate	Poor	At risk	Agriculture, Peat & Other
Glendergan River	Moderate	Poor	Moderate	Under review	None
Donegal Bay North WFD Catchment					
Lowerymore_020	High	High	High	Not at risk	None
Lowerymore_030	High	High	High	Not at risk	None
Eske_010	Good	Good	Good	Not at risk	None
Lough Eske	Good	Good	Good	Under Review	None
Eske_020	Good	Good	Good	Not at risk	None
Inner Donegal Bay	Good	Good	Good	Not at risk	None
Donegal Bay Erne	High	High	High	Not at risk	None
Donegal Bay Northern	High	High	High	Not at risk	None

2.4 GROUNDWATER BODY IDENTIFICATION

Wind Farm Site
Based on the GSI bedrock mapping (www.gsi.ie) the Wind Farm Site is underlain by a total of 3 no. bedrock geological formations.

The majority of the Wind Farm Site is underlain by Lough Eske Psammite Formation comprising of feldspathic psammite, quartzite and marble. The southern section is underlain by the Lough Mourne Formation which is noted to comprise of coarse and feldspathic pale pink psephites in a pale green chloritic matrix. A small area in the west, at the Wind Farm Site entrance, is underlain by the Barnesmore Granite. The bedrock geology mapped underlying the Wind Farm site is classified as Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (Pl).

In terms of Groundwater Bodies (GWBs), the vast majority of the Wind Farm Site is underlain by the Castlederg GWB. Meanwhile, a small area in the west of the Wind Farm Site is underlain by the Donegal south GWB.

Grid Connection Site
The majority of the north of the Grid Connection Site is underlain by Barnesmore Granite with some areas underlain by Lough Eske Psammite Formation described as Feldspathic psammite; quartzite, marble. The majority of the south of the Grid Connection Site is underlain by Lough Mourne Formation described as quartz and feldspar pebbles, green matrix with a very small area underlain by Lough Eske Psammite Formation. The bedrock geology mapped underlying the Grid Connection Site is classified as Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (Pl).

In terms of Groundwater Bodies (GWBs), the Grid Connection Site is underlain by the Donegal south GWB.

BMEP Site
The BMEP Site is underlain by the Lough Eske Psammite Formation described as feldspathic psammite; quartzite, marble and classified as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (Pl).

In terms of Groundwater Bodies (GWBs), the BMEP Site is underlain by the Castlederg GWB.

2.5 GROUNDWATER BODY CLASSIFICATION

The Castlederg and Donegal South GWBs, which underlie the Site, achieved 'Good' status in latest WFD cycles (2013-2018, 2016-2021 and 2019-2024) which is defined based on the quantitative status and chemical status of the GWB. These GWBs have been deemed to be 'not at risk' of failing to meet their respective WFD objectives. Furthermore, no significant pressures have been identified on these GWBs (refer to **Table C**).

The GWB status for the 2019-2024 WFD cycles are shown on Figure B.

Table C: Summary WFD Information for Groundwater Bodies

GWB	Overall Status 2013-2018	Overall Status 2016-2021	Overall Status 2019-2024	3rd Cycle Risk Status	Pressures
Castlederg	Good	Good	Good	Not at risk	None
Donegal South	Good	Good	Good	Not at risk	None

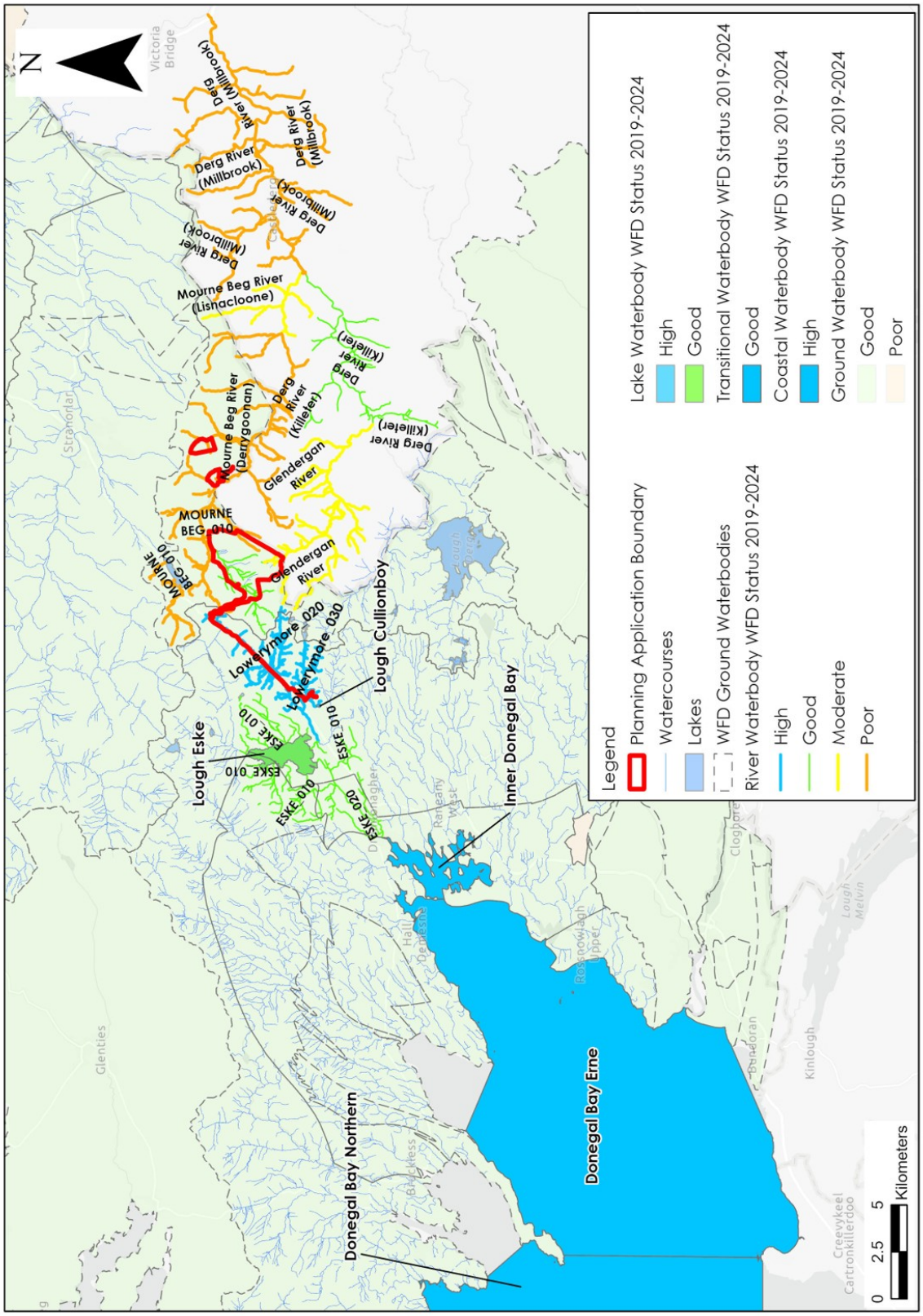

Figure B: WFD Groundwater and Surface Waterbody Status (2019-2024)

2.6 ZONE OF INFLUENCE

The Zone of Influence (ZoI) of the Prospective Development extends to the following SWBs and GWBS:

- River SWBs – Bunadaowen_010, Mourne Beg_010, Mourne Beg River (Derrygoonan), Mourne Beg (Lisnacloone), Derg River (Millbrook), Lowerymore_020 and _030, Eske_010 and _020 and the Glendergan River;
- Lake Waterbodies – Lough Eske;
- GWBs – Castlederg and Donegal South GWBs; and,
- Transitional and Coastal Waterbodies - Inner Donegal Bay transitional SWB, Donegal Bay Erne and Donegal Bay Northern coastal SWBs.

2.7 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's), shellfish protected areas and Drinking Water Protected Area's (DWPA) within the vicinity of the Site are considered as part of the assessment.

2.7.1 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). Within Northern Ireland designates sites include Special Areas of Conservation (SACs), Areas of Special Scientific Interest (ASSIs), Local Nature Reserves (LNRs) and National Natures Reserves (NNRs).

The Prospective Development is not located within any designated conservation site, however, there are designated sites within the Wind Farm Site boundary and in close proximity to some elements of the Prospective Development. Small sections of Croaghonagh Bog SAC/pNHA (Site Code: 000129) and Cashelnavean Bog NHA (Site Code: 000122) are located within Wind Farm Site. The Wind Farm is also hydrologically connected to some downstream designated sites including the Lough Eske and Ardnamona Wood SAC (Site Code: 000163) along the Lowerymore River and the River Finn SAC along the Mourne Beg River.

The connectivity of all local designated sites to the Wind Farm Site are assessed as follows:

- Croaghonagh Bog SAC/pNHA (Site Code: 000129) is located immediately to the east of the Wind Farm Site entrance road. This area of the Wind Farm Site is located in the catchment of the Lowerymore River. The SAC/pNHA is located upstream of the site access road and the works areas, therefore limiting the potential for effects to occur. However, the SAC/pNHA are predominantly located in the catchment of Mary Breen's Burn and is therefore hydrologically connected to other elements of the Wind Farm which are drained by this watercourses, although with an increased separation distance.
- Cashelnavean Bog NHA (Site Code: 000122) is located to the west of the Wind Farm Site entrance and to the west of the N15. No direct hydrological connections exist between the Prospective Development and this NHA.
- Barnesmore Bog NHA (Site Code: 002375) is located ~400m west of the Wind Farm Site. This NHA is located upstream of the Wind Farm Site. Therefore, there is no potential hydrological and hydrogeological connectivity.
- Lough Eske and Ardnamona Wood SAC/pNHA (Site Code: 000163) are located ~5km southwest of the Wind Farm Site. The Lowerymore River provides a direct hydrological connection between the Wind Farm Site and this SAC.

- The River Finn SAC (Site Code: 002301) is located downstream of the Wind Farm Site and adjacent to the western section of the BMEP Site along the Mourne Beg River. The works areas associated with the Prospective Development are hydrologically connected to this SAC.

Meanwhile designated sites within Northern Ireland were identified using the Northern Ireland Environment Agency (NIEA) Catchment Map viewer. Designated sites within Northern Ireland and hydraulically connected to the Wind Farm Site include:

- The River Foyle and Tributaries SAC (Site Code: UK0030320) is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River.
- Croagh Bog ASSI (ASSI378) is located downstream of the Wind Farm Site and the BMEP Site along the lower reaches of the Shruhangarve Stream.
- The River Foyle and Tributaries ASSI (ASSI229) is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River.
- Killeter Forest Bogs and Lakes ASSI is located ~1km to the south of the Wind Farm Site. The Glendergan River acts as a hydraulic barrier between the Wind Farm Site and this ASSI.

A small section of the N15, including the Grid Connection Site, overlaps with the mapped extent of the Cashelnavean Bog NHA. The Grid Connection Site runs in close proximity to the Barnesmore Bog NHA which is located topographically upgradient of the Grid Connection. Lough Eske and Ardnamona Wood SAC are located immediately downstream of the Grid Connection Site at Keadew Bridge.

2.7.2 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 waters immediately downstream of the Site. The closest bathing waters mapped is Murvagh (IENWBWC010_0000_0100) located ~13km southwest of southern section of the Grid Connection Site.

2.7.3 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.

There are no NSAs in the vicinity or downstream of the Site. The nearest NSA is Killybegs Harbour (IE_NW_085_0000) which is located ~28km southwest of southern section of the Grid Connection Site.

2.7.4 SHELLFISH WATERS

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

There are no Shellfish Protected Waters within the vicinity of the Site. The closest designated shellfish area downstream is in Donegal Bay (IE_NW_050_0100) located ~13km southwest of southern section of the Grid Connection Site.

2.7.5 SALMONID WATERS

There is no Salmonid Waters mapped in the vicinity or downstream of the Site.

2.7.6 DRINKING WATER

The closest mapped drinking water protected area (DWPA) to the Site is the Lough Mourne (Mourne DL) is an Article 7 Abstraction for Drinking Water. This lies upstream of the Wind Farm Site and is within the Mournebeg_010 basin. However, Uisce Éireann abstract water from the Bunadowen River within the Wind Farm Site and pump it to Lough Mourne Reservoir, ~1.7km to the north. This abstraction is currently not mapped on the online WFD database.

The Lough Cullionboy DWPA is also mapped upstream of the southern portion of the Grid Connection Site. In the Donegal Bay North Catchment, the Eske_020 SWB upstream of Donegal Town and downstream of Lough Eske is listed as a DWPA.

Meanwhile, all the GWBs in Ireland are listed as DWPA.

3. WFD SCREENING

3.1 SURFACE WATER BODIES

With consideration for the construction activities associated with the Prospective Development, it is considered that the Mourne Beg_010, Bunadaowen_010, Mourne Beg River (Derrygoonan), Glendergan River, and Lowerymore_020 SWBs are carried through into the WFD Compliance Assessment due to the location of Prospective Development within these respective WFD river sub-basins. Furthermore, the Mourne Beg River (Lisnacloone) and Lowerymore_030 SWBs will be included in the assessment due to their location directly downstream of the Mourne Beg River (Derrygoonan) and the Lowerymore_020 SWBs respectively. The Prospective Development must not in any way result in the deterioration in the status of these SWBS and/or prevent them from meeting the biological and chemical characteristics for good status in the future.

Note that the Prospective Development does not include any works at the Grid Connection Site. The Lowerymore_020 and Lowerymore_030 SWBs are included solely due to the works proposed within the Wind Farm Site which are located within the catchment of these SWBs. The Eske_010 SWB is screened out due to its distant location from the Wind Farm Site and the lack of works at the Grid Connection Site.

The Derg River (Milbrook) and Eske_020 SWBs have been screened out of the WFD Compliance Assessment due to the increasing flow volumes in these SWBs and their distant location from the Prospective Development. The Derg River (Milbrook) SWB is located downstream of the confluence between the Mourne Beg and Derg Rivers. This increase in flow volumes would provide a significant dilution effect. Similarly, the Eske_020 SWB is distant from the Wind Farm Site and downstream of Lough Eske. The construction activities will 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. Note that the Prospective Development does not in any way rely upon the dilution or assimilation capacity of any downstream watercourse. The mitigation measures prescribed in Section 4.3 will ensure the protection of all watercourses including those in close proximity to the Wind Farm Site.

The Lough Eske SWB has been screened out due to the large volumes of water within this waterbody and its distant location from the Wind Farm Site. Additionally, the Inner Donegal Bay transitional waterbody and Donegal Bay Erne and Donegal Bay Northern coastal waterbodies have also been screened out due to distant location, large volume of water and saline nature of the water. The construction activities had no potential, and will 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 GWBs, the Castlederg and Donegal South GWBs have been screened in due to their location directly underlying the Wind Farm Site and the BMEP Site. The Prospective Development must not in any way have resulted in a deterioration in the status of these SWBS and/or prevented them from meeting the biological and chemical characteristics for good status in the future.

3.3 PROTECTED AREAS

Croaghonagh Bog SAC and pNHA: A small section in the west of the Wind Farm Site is located within the Croaghonagh Bog SAC and pNHA. This SAC and pNHA is hydrologically connected to Prospective Development. With consideration for the construction and operation activities

associated with the Prospective Development, it is considered that the Croaghonagh Bog SAC is carried through into the WFD Compliance Assessment.

Cashelnavean Bog NHA: Cashelnavean Bog NHA (Site Code: 000122) is located to the west of the Wind Farm Site entrance and to the west of the N15. No direct hydrological connections exist between the Prospective Development and this NHA.

Lough Eske and Ardnamona Wood SAC and pNHA: This designated site is located ~5km southwest of the Wind Farm Site. The Lowerymore River provides a direct hydrological connection between the Wind Farm Site and this SAC.

River Finn SAC: The River Finn SAC lies downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River within the Mourne Beg (Derrygoonan) sub-basin and is hydrologically connected with the Prospective Development. With consideration for the construction and operation activities associated with the Prospective Development, it is considered that the River Finn SAC is carried through into the WFD Compliance Assessment.

Barnesmore Bog NHA: The Barnesmore Bog NHA is located ~400m west of the Wind Farm Site. This NHA is located upstream of the Wind Farm. Therefore, there is no potential hydrological and hydrogeological connectivity.

River Foyle and Tributaries SAC: The River Foyle and Tributaries SAC is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River and is hydrologically connected with the Prospective Development. With consideration for the construction and operation activities associated with the Prospective Development, it is considered that the River Foyle and Tributaries SAC is carried through into the WFD Compliance Assessment.

Croagh Bog ASSI: The Croagh Bog ASSI is located downstream of the Wind Farm Site and the BMEP Site and is hydrologically connected with the Prospective Development. With consideration for the construction and operation activities associated with the Prospective Development, it is considered that the Croagh Bog ASSI is carried through into the WFD Compliance Assessment.

River Foyle and Tributaries ASSI: The River Foyle and Tributaries ASSI is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River and is hydrologically connected with the Prospective Development. With consideration for the construction and operation activities associated with the Prospective Development, it is considered that the River Foyle and Tributaries ASSI is carried through into the WFD Compliance Assessment.

Killeter Forest Bogs and Lakes ASSI: Killeter Forest Bogs and Lakes ASSI is located to the south of the Wind Farm Site. The Glendergan River acts as a hydraulic barrier between the Wind Farm Site and this ASSI. Therefore, there is no potential hydrological and hydrogeological connectivity. Therefore, no hydrological or hydrogeological impacts will occur on this ASSI as a result of the Prospective Development.

Murvagh Bathing Waters: The Murvagh bathing waters has been screened out due to distant location and large volume of water within the associated SWB. Therefore, the Prospective Development has no potential to impact the status of these bathing waters.

Killybegs Harbour NSA: The Killybegs Harbour NSA has been screened out due to lack of hydrological connection between this NSA and Prospective Development. Therefore, the Prospective Development has no potential to impact the status of this NSA.

Donegal Bay Shellfish Waters: The Donegal Bay shellfish water has been screened out due to distant location, large volume of water and saline nature of the water within the associated

SWB. Therefore, the Prospective Development has no potential to impact the status of these shellfish waters.

Lough Mourne DWPA: Lough Mourne DWPA is an Article 7 Abstraction for Drinking Water and is partly sourced from the Bunadaowen River. With consideration for the construction and operation activities associated with the Prospective Development, it is considered that the Lough Mourne DWPA is carried through into the WFD Compliance Assessment.

Lough Cullionboy DWPA: The Lough Cullionboy DWPA is mapped upstream of the southern portion of the Grid Connection Site. The Prospective Development has no potential to impact the status of this DWPA.

Eske_020 DWPA: The Eske_020 DWPA has been screened out due to distant location from the Wind Farm Site and increased volume of water within this SWB. Therefore, the Prospective Development has no potential to impact the status of this DWPA.

3.4 WFD SCREENING SUMMARY

A summary of WFD Screening discussed above for SWBs and GWBs is shown in **Table D**.

Table D: Screening of WFD water bodies located within the study area

Type	WFD Classification	Waterbody Name/ID	Inclusion in Assessment	Justification
Surface Water Body	**Foyle WFD Catchment**			
	River	Bunadaowen_010	**Yes**	The Wind Farm Site is located in the Bunadaowen_010 WFD river sub-basin. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	River	Mourne Beg_010	**Yes**	The Wind Farm Site is located in the Mourne Beg_010 WFD river sub-basin. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	River	Mourne Beg River (Derrygoonan)	**Yes**	The eastern part of the Wind Farm Site and BMEP Site are located in the Mourne Beg River (Derrygoonan) WFD river sub-basin. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	River	Mourne Beg (Lisnacloone)	**Yes**	The Mourne Beg (Lisnacloone) is located directly downstream of the Mourne Beg River (Derrygoonan). Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	River	Derg River (Millbrook)	No	The Derg River (Millbrook) is located downstream of the confluence of the Mourne Beg and Derg Rivers. Due to the large flow volumes in this SWB, and its distant location from the Site. The Prospective Development has no potential to impact the status of this SWB.
	River	Glendergan River	**Yes**	The southeastern part of the Wind Farm Site is located in the Glendergan River WFD sub-basin. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	Donegal Bay North WFD Catchment			
	River	Lowerymore_020	**Yes**	A small section in the west of the Wind Farm Site is located in the Lowerymore_020 WFD river sub-basin. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	River	Lowerymore_030	**Yes**	The Lowerymore_030 WFD river sub-basin is downstream of the Lowerymore_020 SWB. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SWB.
	River	Eske_010	No	No works are proposed at the Grid Connection Site and the Eske_010 SWB is distant from the Wind Farm Site. The Prospective Development has no potential to impact the status of this SWB.
	Lake	Lough Eske	No	No works are proposed at the Grid Connection Site and the Lough Eske SWB is distant from the Wind Farm Site. The Prospective Development has no potential to impact the status of this SWB.
	River	Eske_020	No	No works are proposed at the Grid Connection Site and the Eske_020 SWB is distant from the Wind Farm Site. The Prospective Development has no potential to impact the status of this SWB.
	Transitional	Inner Donegal Bay	No	No works are proposed at the Grid Connection Site and this SWB is distant from the Wind

				Farm Site. The Prospective Development has no potential to impact the status of this SWB.
	Coastal	Donegal Bay Erne	No	No works are proposed at the Grid Connection Site and this SWB is distant from the Wind Farm Site. The Prospective Development has no potential to impact the status of this SWB.
	Coastal	Donegal Bay Northern	No	No works are proposed at the Grid Connection Site and this SWB is distant from the Wind Farm Site. The Prospective Development has no potential to impact the status of this SWB.
Groundwater Body	Groundwater	Castlederg GWB	**Yes**	The majority of the Wind Farm Site and the BMEP Site are underlain by the Castlederg GWB. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this GWB.
	Groundwater	Donegal South GWB	**Yes**	A small section of the Wind Farm Site is underlain by the Donegal South GWB. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this GWB.
Protected Areas	SAC and pNHA	Croaghonagh Bog SAC and pNHA	**Yes**	A small section in the west within the Wind Farm Site is located within the Croaghonagh Bog SAC/pNHA. This SAC/pNHA is hydrologically connected to Prospective Development. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SAC/pNHA.
	NHA	Cashelnavean Bog NHA	No	A small section to the Grid Connection is located within the Cashelnavean Bog NHA. However, no works are proposed at the Grid Connection Site. There is no direct hydrological connection to the Wind Farm Site. The Prospective Development has no potential to impact the status of this NHA.
	SAC and pNHA	Lough Eske and Ardnamona Wood SAC and pNHA	**Yes**	The Lough Eske and Ardnamona Wood SAC is located downstream of the Wind Farm Site along the Lowerymore River. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SAC and pNHA.
	SAC	River Finn SAC	**Yes**	The River Finn SAC lies downstream of the Wind Farm Site and the BMEP along the Mourne Beg River. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SAC.
	NSA	Barnesmore Bog NHA	No	The Barnesmore Bog NHA is mapped within the Lowerymore_020 and Lowerymore_030 river sub-basin. However there is no hydrological connection with the Wind Farm Site. The Prospective Development has no potential to impact the status of this NHA.
	SAC	River Foyle and Tributaries SAC	**Yes**	The River Foyle and Tributaries SAC is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this SAC.
	ASSI	Croagh Bog ASSI	**Yes**	The Croagh Bog ASSI is located downstream of the Wind Farm Site and the BMEP Site along the lower reaches of the Shruhangarve Stream. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this ASSI.
	ASSI	River Foyle and Tributaries ASSI	**Yes**	The River Foyle and Tributaries ASSI is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this ASSI.
	ASSI	Killeter Forest Bogs and Lakes ASSI	No	Killeter Forest Bogs and Lakes ASSI is located to the south of the Wind Farm Site. The Glendergan River acts as a hydraulic barrier between the Wind Farm Site and this ASSI. The Prospective Development has no potential to impact the status of this ASSI.

	Bathing Waters	Murvagh	No	The Murvagh bathing waters has been screened out due to distant location and large volume of water within the associated SWB. The Prospective Development has no potential to impact the status of this bathing waters.
	NSA	Killybegs Harbour	No	The Killybegs Harbour NSA has been screened out due to lack of hydrological connection between this NSA and Prospective Development. The Prospective Development has no potential to impact the status of this NSA.
	Shellfish Waters	Donegal Bay	No	The Donegal Bay shellfish water has been screened out due to distant location, large volume of water and saline nature of the water within the associated SWB. The Prospective Development has no potential to impact the status of this Shellfish waters.
	Drinking Water	Lough Mourne	**Yes**	While Lough Mourne Reservoir is located upstream of the Wind Farm Site, the reservoir is partly sourced from the Bunadaowen River. Therefore, an assessment is required to consider the potential effects of the Prospective Development on this DWPA.
		Lough Cullionboy	No	The Lough Cullionboy DWPA is mapped upstream of the southern portion of the Grid Connection. The Prospective Development has no potential to impact the status of this DWPA.
		Eske_020	No	The Eske_020 DWPA has been screened out due to distant location from the Wind Farm Site. The Prospective Development has no potential to impact the status of this DWPA.

4. WFD COMPLIANCE ASSESSMENT

4.1 PROSPECTIVE DEVELOPMENT PROPOSALS

The Prospective Development comprises of the completion of construction, operation and decommissioning of the Meenbog Wind Farm.

The Prospective Development is described in full in Chapter 4 of this EIAR. It is worth noting that the works are relatively minor in nature and do not require extensive groundworks, as the majority of the wind farm civil works have been completed under the Existing Development.

4.2 POTENTIAL EFFECTS

4.2.1 CONSTRUCTION PHASE (UNMITIGATED)

4.2.1.1 Potential Surface Water Quality Effects from Works within the Site

Construction phase activities for the completion of the civil works, tree felling and the proposed biodiversity enhancement works 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, peat and spoil storage areas and borrow pit drainage 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. Concrete and other cement-based products are highly alkaline and corrosive and can have a significant negative impact on water quality

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.

Clear felling of coniferous forestry plantations is also proposed at the Wind Farm Site and the BMEP Site. Potential surface water quality effects from felling include the release of elevated concentrations of suspended solids and nutrient release which has the potential to effect downstream surface water quality.

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 SWBs.

However, it is worth noting that the Prospective Development works are relatively minor in nature and do not require extensive groundworks, as the majority of the wind farm civil works have been completed under the Existing Development. The minor nature of the proposed works limit the potential for effects that can alter the overall status of the downstream SWBs.

A summary of potential status change to SWBs arising from surface water quality effects during the construction phase of the Prospective Development at the Site in the unmitigated scenario are outlined in **Table E**.

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

SWB	WFD Code	Current Status	Assessed Potential Status Change
Bunadaowen_010	IE_NW_01B010100	Good	Good
Mournebeg_010	IE_NW_01M010200	Poor	Poor
Mourne Beg River (Derrygoonan)	UKGBNI1NW010102066	Poor	Poor
Mourne Beg River (Lisnacloone)	UKGBNI1NW010102064	Moderate	Moderate
Derg River (Millbrook)	UKGBNI1NW010102095	Poor	Poor
Lowerymore_020	IE_NW_37L010300	High	High
Lowerymore_030	IE_NW_37L010400	High	High
Glendergan River	UKGBNI1NW010102067	Moderate	Moderate

4.2.1.2 Potential Groundwater Quality/Quantity Effects at the Site

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.

The release of untreated wastewater would also have the potential to impact local groundwater quality.

However, the potential for the activities at the Wind Farm Site and the BMEP Site to impact the status of the underlying GWBs is limited given the scale of the Site in comparison to the overall size of the Castlederg GWB (~139km^2) and the Donegal South GWB (~534km^2).

Furthermore, the majority of the wind farm civil works have been completed under the Existing Development. The minor nature of the majority of the proposed works limits the potential for effects that can alter the overall status of the underlying GWBs. The shallow nature of the works at the BMEP Site limits the potential for effects on groundwater.

A summary of potential status change to GWBs arising from works at the Wind Farm Site and BMEP Site during the construction phase of the Prospective Development in the unmitigated scenario are outlined **Table F**.

Table F: Potential Groundwater Quality Effects at the Wind Farm Site during the Construction Phase (Unmitigated)

GWB	WFD Code	Current Status	Assessed Potential Status Change
Castlederg	IEGBNI_NW_G_005	Good	Good
Donegal South	IE_NW_G_047	Good	Good

4.2.1.3 Potential Effects on Protected Areas

The surface water connections from the Prospective Development could transfer poor quality surface water that may affect the conservation objectives of these designated sites.

The designated sites included in this assessment which have been deemed to have the potential to be impacted by the Prospective Development include:

Croaghonagh Bog SAC and pNHA:
A small section to the west within the Wind Farm Site is located within the Croaghonagh Bog SAC and pNHA. The surface water connections from the Wind Farm Site to the SAC and pNHA could transfer poor quality surface water that may affect the conservation objectives of the Croaghonagh Bog SAC and pNHA.

Lough Eske and Ardnamona Wood SAC and pNHA:
The Lough Eske and Ardnamona Wood SAC and pNHA is located downstream of the Wind Farm Site and some area of the Grid Connection is mapped within this SAC and pNHA along the Lowerymore River within the Lowerymore_030 river sub-basin. The surface water connections from the Wind Farm Site and the Grid Connection to the SAC and pNHA could transfer poor quality surface water that may affect the conservation objectives of the Lough Eske and Ardnamona Wood SAC and pNHA.

River Finn SAC:
The River Finn SAC lies downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River within the Mourne Beg (Derrygoonan) sub-basin. The surface water connections from the Wind Farm Site and the BMEP Site to the SAC could transfer poor quality surface water that may affect the conservation objectives of the River Finn SAC.

River Foyle and Tributaries SAC:
The River Foyle and Tributaries SAC is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River. The surface water connections from the Wind Farm Site and the BMEP Site to the SAC could transfer poor quality surface water that may affect the conservation objectives of the River Foyle and Tributaries SAC.

Croagh Bog ASSI:
The Croagh Bog ASSI is located downstream of the Wind Farm Site and the BMEP Site along the lower reaches of the Shruhangarve Stream. The surface water connections from the Wind Farm Site and the BMEP to the ASSI could transfer poor quality surface water that may affect the conservation objectives of the Croagh Bog ASSI.

River Foyle and Tributaries ASSI:
The River Foyle and Tributaries ASSI is located downstream of the Wind Farm Site and the BMEP Site along the Mourne Beg River and the Glendergan River. The surface water connections from the Wind Farm Site and the BMEP to the ASSI could transfer poor quality surface water that may affect the conservation objectives of the River Foyle and Tributaries ASSI.

Lough Mourne DWPA:
While Lough Mourne Reservoir is located upstream of the Site, the reservoir is partly sourced from the Bunadaowen River. The surface water connections from the Wind Farm Site to the DWPA could transfer poor quality surface water that may affect the conservation objectives of the Lough Mourne DWPA.

All other designated sites including Barnesmore Bog NHA, Killeter Forest Bogs and Lakes ASSI, Murvagh Bathing Waters, Killybegs Harbour NSA, Donegal Bay Shellfish waters, Lough Cullionboy and Eske_020 DWPA have been screened out due to their location upstream, lack

of hydrological connection, distant location or increased volume of water within the associated SWBs.

4.2.2 OPERATIONAL PHASE (UNMITIGATED)

Potential effects associated with the operational phase of the Prospective Development will be much reduced in comparison to the construction phase. Any effects will occur at the Site and will be associated with minor maintenance works or changes in runoff volumes associated with the footprint of the Prospective Development.

No maintenance works will be required along the Grid Connection and therefore there is no potential to impact on the status of downstream SWBs or underlying GWBs.

4.2.2.1 Potential Surface Water Quantity Effects Downstream of the Site

The 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 Site and increase flood risk downstream of the Prospective Development. The potential for effects is limited given the small footprint of the Prospective Development and given that the majority of the wind farm civil works have already been completed. Section 9.5.3.1 of the EIAR demonstrates that the increase in runoff as a result of the Prospective Development will equate to 0.13% increase in the average daily/monthly runoff volumes for the Wind Farm Site. The additional volume is low due to the fact that the runoff potential across the majority of the Wind Farm Site is naturally high. Also, the calculation assumes that all hardstanding areas will be impermeable which will not be the case as access tracks will be constructed of permeable stone aggregate. The increase in runoff from the Prospective Development will, therefore, be negligible. This is even before mitigation measures will be put in place.

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

Table G: Potential Effect on Surface Water Quantity Downstream of Wind Farm Site in Operational Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Bunadaowen_010	IE_NW_01B010100	Good	Good
Mournebeg_010	IE_NW_01M010200	Poor	Poor
Mourne Beg River (Derrygoonan)	UKGBNI1NW010102066	Poor	Poor
Mourne Beg River (Lisnacloone)	UKGBNI1NW010102064	Moderate	Moderate
Derg River (Millbrook)	UKGBNI1NW010102095	Poor	Poor
Lowerymore_020	IE_NW_37L010300	High	High
Lowerymore_030	IE_NW_37L010400	High	High
Glendergan River	UKGBNI1NW010102067	Moderate	Moderate

4.2.2.2 Potential Effects on Surface Water Quality Effects Downstream of the Site

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 tracks 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.

Maintenance works may also be required at the BMEP Site which could include tracking of machinery over ground. However, maintenance will be infrequent and there would be no potential for significant effects.

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

Table H: Potential Effects on Surface Water Quality Effects Downstream of the Site in Operational Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Bunadaowen_010	IE_NW_01B010100	Good	Good
Mournebeg_010	IE_NW_01M010200	Poor	Poor
Mourne Beg River (Derrygoonan)	UKGBNI1NW010102066	Poor	Poor
Mourne Beg River (Lisnacloone)	UKGBNI1NW010102064	Moderate	Moderate
Derg River (Millbrook)	UKGBNI1NW010102095	Poor	Poor
Lowerymore_020	IE_NW_37L010300	High	High
Lowerymore_030	IE_NW_37L010400	High	High
Glendergan River	UKGBNI1NW010102067	Moderate	Moderate

4.2.2.3 Potential Effects on Protected Areas

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. No significant works will be undertaken at the BMEP Site.

Therefore, the risk of any operational phase activities that may affect the conservation objectives of the designated sites is greatly 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 prospective development. These are outlined below.

4.3.1 CONSTRUCTION PHASE

4.3.1.1 Mitigation Measures for Earthworks Resulting in Suspended Solids Entrainment in Surface Waters

Mitigation by Avoidance
The key mitigation measure to be implemented during the construction phase is the avoidance of sensitive hydrological features where possible, by application of suitable buffer zones (i.e. 50m to main watercourses).

The majority of the Prospective Development is located outside of the delineated 50m natural watercourse (river and stream) buffer zones. Silt fences will be installed as an additional water protection measures around existing watercourses in certain locations, particularly where works are proposed within the hydrological buffer zones. The silt fences will be installed as single, double or triple silt fences depending on the space available and the anticipated loading. Further details in silt fences are included in Appendix 4-3 CEMP of the EIAR.

The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operate effectively. The proposed buffer zone will:

- Avoid physical damage (river/stream banks and river/stream beds) to watercourses and associated release of sediment;
- Avoid excavations within close proximity to surface watercourses;
- Avoid the entry of suspended sediment from earthworks into watercourses; and,
- Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone (where possible) and allowing percolation across the vegetation of the buffer zone.

Mitigation by Design:

- Source controls:
    - Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.
    - Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas.
- In-Line controls:
    - Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.
- Treatment systems:
    - Temporary sumps and ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems.

It should be noted that for the Wind Farm Site, an extensive network of forestry, Existing Development, and agricultural drains already exist, and these will be integrated and enhanced as required and used within the Wind Farm drainage system. The integration of the existing forestry drainage network and the Wind Farm network is relatively simple. The key elements being the upgrading and improvements to existing water treatment elements, such as in line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls.

The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Wind Farm Site drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion;
- Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area;
- Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces;
- Buffered outfalls which will be numerous over the Site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the Wind Farm Site; and,
- Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters.

Pre-commencement Temporary Drainage Works:
Prior to the commencement of construction works (new road/hardstand, turbine foundation installs or upgrade of existing roads) the following key temporary drainage measures will be installed:

- All existing land and forestry drains that intercept the works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps;
- Clean water interceptor drains will be installed upgradient of the works areas;
- Check dams/silt fence arrangements (silt traps) will be placed in all existing that have surface water flows; and,
- A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone.

Silt Fences:
Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids such as those present in the subsoils/sandstone tills that overlie the site. This will act to prevent entry to water courses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be placed within drains down-gradient of all construction areas inside the hydrological buffer zones.

Silt Bags:
Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters or sedimats Sediment entrapment mats, consisting of coir or jute matting, will be placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.

Settlement Ponds:
The Wind Farm Site has been divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 10-year return period rainfall event were calculated for each catchment. These flows were then used to design settlement ponds for each drainage catchment. The settlement ponds are designed for 11hr or 24hr retention times used to settle out medium silt (0.006mm) and fine silt (0.004mm) respectively (EPA, 2006)[2]. Settlement ponds at the borrow pit are designed to allow 24hr retention and settlement ponds along access roads and at turbine hardstands will have 11hr retention as there is additional in-line drainage controls proposed along access tracks and at hardstands.

Level Spreaders and Vegetation Filters:
The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not intended to be a primary treatment component for development surface water runoff. They are not stand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. In the absence of level spreaders, the potential for ground erosion is significantly greater than not using them.

Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the site to provide a polishing filter for the Wind Farm site drainage prior to reaching the downstream watercourses.
Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls → check dams → silt traps → settlement ponds → level spreaders → silt fences → vegetation filters).

Pre-emptive Site Drainage Management
The works programme for the entire construction stage of the Prospective Development will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily basis at the Site to direct construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,

[2] Environmental Protection Agency (2006): Environmental Management in the Extractive Industry (Non-Scheduled Minerals).

- Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest.

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

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

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

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

- All active excavations will be secured and sealed off;
- Temporary or emergency drainage will be installed to prevent back-up of surface runoff; and,
- No works will be completed during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

Timing of Site Construction Works:
Construction of the site drainage system will only be carried out during periods of low 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. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.

Monitoring:
An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.
Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. Checks will be carried out on a daily basis.

During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards (EQSs) will be undertaken for each primary watercourse, and specifically following heavy rainfall events (as per the CEMP included in Appendix 4-3 of this EIAR).

Allowance for Climate Change
Climate change rainfall projections are typically for a mid-century (2050) timeline. The projected effects of climate change on rainfall are therefore modelled towards the end of the life cycle of the Prospective Development, as the turbines have a life span of 25 years. It is likely that the long-term effects of climate change on rainfall patterns will not be observed during the lifetime of the Wind Farm. As outlined in the above sections we have designed settlement ponds for a 1 in 10-year return flow. This approach is conservative given that the Prospective Development will likely be built over a much shorter period (12 months), and therefore this in-built redundancy in the drainage design more than accounts for any potential short term climate change rainfall effects.

However, the settlement ponds are designed for 1 in 10 years flows with built in redundancy (+20%) to account for climate change effects on rainfall.

4.3.1.2 Mitigation Measures for Tree Felling

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

- Forestry Standards Manual (Forest Service, 2015)
- Forest Protection Guidelines (Forest Service, 2002)
- Forest Operations and Water Protection Guidelines (Coillte, 2013)
- Forestry and Water Quality Guidelines (Forest Service, 2000b)
- Forestry and the Landscape Guidelines (Forest Service, 2000c)
- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018)
- Coillte Planting Guideline SOP
- Code of Best Forest Practice (Forest Service, 2000)

Mitigation by Avoidance:
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" are shown in **Table I**.

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. The buffer/setback zone will:

- Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment;
- Avoid soil disturbance and compaction within close proximity to surface watercourses;
- Avoid the entry of suspended sediment from works into watercourses; and,
- Avoid the entry of suspended sediment from the drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone.

Table I: Minimum Buffer Zone Widths (Forest Service, 2000)

Average Slope leading to the aquatic zone		Buffer zone width on either side of the aquatic zone	Buffer zone width for highly erodible soils
Moderate	(0 – 15%)	10 m	15 m
Steep	(15 – 30%)	15 m	20 m
Very steep	(>30%)	20 m	25 m

In addition to the application of buffer/setback zones, the following supplementary mitigation measures will be employed during felling works:

Mitigation by Design:
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 (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance;
- All machinery will be operated by suitably qualified personnel;

- Checking and maintenance of roads and culverts will be on-going through any felling operation. 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;
- 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 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 spoil repository 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. Check dams and silt traps will 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.

Silt Traps:
Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.

Pre-emptive Site Drainage Management :
The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily/weekly basis, as required, to allow site staff to direct proposed and planned construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Éireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;

- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,
- Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest.

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

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

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

Timing of Prospective Development Felling Works:
Felling will only be carried out during periods of no or low 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.

Drain Inspection and Maintenance:
The following items will be carried out during pre-felling inspections and after:

- Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines;
- Inspection of all areas reported as having unusual ground conditions;
- Inspection of main drainage ditches and outfalls. During pre-felling inspections the main drainage ditches will be identified. Ideally the pre-felling inspection will be carried out during rainfall;
- Following tree felling all main drains will be inspected to ensure that they are functioning;
- Extraction tracks within 10m of drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground;
- Culverts on drains exiting the Site, if impeded by silt or debris, will be unblocked; and,
- All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.

4.3.1.3 Mitigation Measures for Surface Water Quality from Excavation Dewatering

Management of groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:

- Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place;
- If required, pumping of excavation inflows will prevent build-up of water in the excavation;

- The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters;
- The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit;
- There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur;
- Daily monitoring of excavations by the Environmental Clerk of Works will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken; and,
- A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed.

4.3.1.4 Mitigation Measures for Leakage or Spillage of Hydrocarbons

Mitigation measures proposed to avoid release of hydrocarbons at the Site are as follows:

- All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site;
- On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site;
- Heavy plant and machinery will be refuelled on-site by a fuel truck, with spill kits kept onboard, that will come to the Site as required on a scheduled and organised basis;
- Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area in the construction compound when not in use;
- Only designated trained operatives will be authorised to refuel plant on-site;
- Refuelling or maintenance of machinery will not occur within 50m of a watercourse;
- Fuels stored on Site will be minimised;
- Any diesel or fuel oils stored at the temporary construction compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity;
- The plant used will be regularly inspected for leaks and fitness for purpose; and,
- An emergency plan for the construction phase to deal with accidental spillages will be contained within the Construction and Environmental Management Plan (Appendix 4-2). Spill kits will be available to deal with accidental spillages.

4.3.1.5 Mitigation Measures for Release of Cement-Based Products

- 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 cement 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; and,
- At turbine foundations, sand blinding, DPM, and lean-mix blinding are used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering. The concrete cures within 72hrs.

4.3.1.6 Mitigation Measures for Wastewater Disposal

- 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;
- Welfare facilities are also present at the existing onsite substation (constructed as part of the Existing Development). Wastewater is stored in an underground tank and is removed by a licenced contractor. These facilities will also be used during the construction of the Prospective Development;
- 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 Site.

4.3.1.7 Mitigation Measures to Prevent Morphological Changes to Watercourses

Mitigation measures for the new proposed steel and timber footbridge crossing associated with the amenity proposals s are detailed below:

- The proposed crossing will comprise a clear-span steel and timber footbridge. No permanent structures will be located within the watercourse channel and the existing bed and banks will remain undisturbed;
- All drainage and sediment-control measures will be installed prior to commencement of works in the vicinity of the watercourse;
- Construction activities will be undertaken from the banks where practicable and no plant or machinery will enter the watercourse;
- Plant and equipment will not be permitted to track across the channel;
- Access to the opposite bank will be required that avoids disturbance of the bed and banks;
- Any excavated material will be stored outside the watercourse buffer and protected from erosion.
- Appropriate sediment-control measures, including silt fencing where necessary, will be installed down-gradient of works areas.
- Refuelling, plant maintenance and material storage will be undertaken in designated areas away from the watercourse.
- Spill kits will be maintained on site and emergency response procedures implemented in the event of an accidental release.
- The crossing will be designed and constructed in accordance with OPW requirements and in consultation with IFI, as required.

The following mitigation measures will be implemented with respect to upgrade of the crossing at T14 and the new box culvert:

- In-stream works will be undertaken during low-flow conditions and during the time period as recommended by IFI;
- Where required, the works area will be isolated from the watercourse using over-pumping, fluming or other appropriate flow management measures;
- Temporary flow management measures will be monitored throughout the works to ensure uninterrupted downstream flow and to prevent scour, erosion or sediment mobilisation;
- Where the box culvert is installed in sections, the joint will be sealed to prevent granular material entering the watercourse;
- Sediment and erosion control measures will be installed prior to commencement of works and maintained throughout construction;
- Excavated material and stockpiles will be stored away from the watercourse and protected from runoff;

- Refuelling, plant maintenance, and chemical storage will be undertaken in designated areas away from the watercourse;
- Spill kits will be available on-site and all personnel will be trained in spill response procedures.
- Plant and machinery entering the site will be inspected to ensure they are free from leaks and in good working order;
- Concrete works will be managed to prevent cementitious material or wash water entering the watercourse;
- Disturbed channel banks and riparian areas will be reinstated and stabilised immediately following completion of works;
- Regular environmental inspections will be undertaken to ensure compliance with water quality protection measures; and,
- Any pollution incident will be reported and remedial action implemented immediately.

Meanwhile, all new proposed culverts and proposed culvert upgrades at drain crossings required for the Prospective Development will be suitably sized for the expected peak flows in the relevant drain. Some culverts may be installed to manage drainage waters from works areas of the Prospective Development, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In all cases, culverts will be oversized to allow mammals to pass through the culvert. All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

All culvert upgrades and new culverts will be designed and constructed in accordance with OPW Guidance.

4.3.1.8 Mitigation Measures for the Use of Siltbuster

Measures employed to prevent overdosing and potential chemical carryover:

- The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur;
- Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system;
- Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment;
- Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and,
- Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs).

4.3.1.9 Mitigation Measures for Hydrologically Connected Designated Sites

Mitigation measures in relation to the protection of downstream surface water quality detailed in the preceding sections as follows:

- Mitigation measures for sediment control are detailed in Section 4.3.1.1 (earthworks) and 4.3.1.3 (excavation dewatering).
- Mitigation measures in relation to felling are prescribed in Section 4.3.1.2.
- Mitigation measures for the control of hydrocarbons during construction works are detailed in Section 4.3.1.4.
- Mitigation measures for the control of cement-based products during construction works are detailed in Section 4.3.1.5.
- Mitigation measures in relation to wastewater are detailed in Section 4.3.1.6.

- Mitigation measures in relation to watercourse crossings are prescribed in Section 4.3.1.7

Implementation of these mitigation measures will ensure the protection of water quality in receiving waters.

Furthermore, groundwater from below the Site may also discharge as baseflow, via shallow groundwater flowpaths, to the local rivers and tributaries of the Mourne Beg River, thus entering the downstream designated sites. Groundwater quality and quantity will not be affected by the Prospective Development. Mitigation measures with respect to groundwater quality are prescribed in the preceding sections as follows:

- Mitigation measures for the control of hydrocarbons during construction works are detailed in Section 4.3.1.4;
- Mitigation measures for the control of cement-based products during construction works are detailed in Section 4.3.1.5; and,
- Mitigation measures in relation to wastewater are detailed in Section 4.3.1.6.

4.3.1.10 Mitigation Measures for Lough Mourne Surface Water Drinking Supply

Mitigation measures in relation to the protection of downstream surface water quality detailed in the preceding sections as follows:

- Mitigation measures for sediment control are detailed in Section 4.3.1.1 (earthworks) and 4.3.1.3 (excavation dewatering).
- Mitigation measures in relation to felling are prescribed in Section 4.3.1.2.
- Mitigation measures for the control of hydrocarbons during construction works are detailed in Section 4.3.1.4.
- Mitigation measures for the control of cement-based products during construction works are detailed in Section 4.3.1.5.
- Mitigation measures in relation to wastewater are detailed in Section 4.3.1.6.
- Mitigation measures in relation to watercourse crossings are prescribed in Section 4.3.1.7

4.3.1.11 Mitigation Measures for Local Private Groundwater Abstractions

Mitigation measures for the protection of groundwater quality have been detailed above:

- Mitigation measures for the control of hydrocarbons during construction works are detailed in Section 4.3.1.4;
- Mitigation measures for the control of cement-based products during construction works are detailed in Section 4.3.1.5; and,
- Mitigation measures in relation to wastewater are detailed in Section 4.3.1.6.

4.3.1.12 Mitigation Measures for Habitat Enhancement

The proposed mitigation measures in relation to felling will be the same as those prescribed in Section 4.3.1.2. These best practice measures will help protect surface water quality however nutrient release is an unavoidable consequence of deforestation. The mitigation measures with respect to hydrocarbons (Section 4.3.1.4) and wastewater (Section 4.3.1.6) will also be implemented at the BMEP Site.

The mitigation measures set out above will not completely prevent the release of nutrients to downstream watercourses. The release of phosphate into the environment is an unavoidable consequence of deforestation. However, the proposed Habitat Enhancement, will remove a significant source of nutrients (i.e. the existing commercial forestry). The proposed Biodiversity Enhancement works only includes 1 no. round of deforestation in comparison to the Do-

Nothing Scenario in which the BMEP Site would be felled and replanted several times. This will have a positive long-term effect with regards to nutrient concentrations in local and adjacent watercourses.

4.3.1.13 Mitigation Measures for Groundwater Quality due to Blasting

The extraction of bedrock at the proposed borrow pits will follow the current international best practice. This protocol will be employed to mitigate the potential effects of explosives on groundwater quality during blasting operations.

It is noted that no elevated concentrations of nitrate have been detected during the groundwater sampling completed at the Wind Farm Site (refer to EIAR Section 9.3.10).

4.3.2 OPERATIONAL PHASE

4.3.2.1 Mitigation Measures for Progressive Replacement of Natural Surface with Lower Permeability Surfaces

The operational phase drainage system of the Prospective Development will be installed and constructed in conjunction with the road and hardstanding construction work as described below and as shown on the Drainage drawings submitted with this planning application (Appendix 4-4):

The operational phase drainage system of the Subject Development will have been installed under the construction phase with drainage systems as follows:

- Interceptor drains have been installed up-gradient of the Existing Development infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. This water will then be directed to areas where it can outfall to the existing drainage network or be re-distributed over natural ground;
- Swales/road side drains are present and collect runoff from access roads and turbine hardstanding areas, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling;
- Check dams are 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, 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.

The proposed integration of the Prospective Development drainage with the Existing Development drainage is a key component of the proposed drainage management. Surface water flowpaths will be maintained where they already exist, avoiding the creation of new or altered surface water flowpaths, and maintaining the drainage regime (i.e. normal flow) within the agricultural lands and forested areas. Critically, there will be no alteration of the catchment size contributing to each of the main downstream watercourses. All wind farm drainage water captured within individual site sub-catchments will be attenuated and released within the same sub-catchments that it was captured.

There will be no discharge of untreated or unattenuated waters during the Operational Phase. Discharge will be restricted to greenfield runoff rates and there will be no significant alteration of existing drainage patterns.

4.3.2.2 Mitigation Measures for Suspended Solids Entrainment in Surface Waters

Mitigation measures for sediment control are the same as those outlined in Section 4.3.1.1.

Mitigation measures for control of hydrocarbons during maintenance works are similar to those outlined in Section 4.3.1.4.

4.3.2.3 Mitigation Measures for Release of Cement-Based Products

None required. The concrete in turbine bases sets within 3 days of concrete pour.

4.3.2.4 Mitigation Measures for Release of Wastewater

It is proposed to install a sealed underground holding tank for effluent (wastewater) from the substation building. The tank shall be routinely emptied by a licensed contractor. A level sensor will be installed in the tank which shall be linked to the on-site SCADA system. If the level of the tank contents rise to a predetermined 'high' level a warning shall appear on the overall SCADA system for the site and automatic notification shall be sent to the facility manager. A formal service agreement will be entered into with a suitably permitted waste contractor, in relation to the servicing and de-sludging of the wastewater holding tank on site. There will be no discharge of wastewater to ground at the site, and therefore there is no potential to impact groundwater or surface water quality.

4.3.3 DECOMMISSIONING PHASE

The potential impacts associated with decommissioning of the Prospective 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.

The wind turbines proposed as part of the Prospective Development are expected to operate for a period of 25 years. At the end of this period, the operation of the wind farm may be extended or the equipment may be replaced with a new technology, subject to planning permission being obtained, or the turbines and associated above ground components of the wind farm may be decommissioned.

Upon decommissioning of the Prospective Development, the wind turbines will be disassembled in reverse order to how they were erected. The turbines will be disassembled with a similar model of crane that was used for their erection. The turbine components will be separated and removed offsite. The turbine materials will be transferred to a suitable recycling or recovery facility. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in unnecessary environment emissions.

The underground electrical cabling connecting the turbines to the onsite 110kV substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.

Site roadways will be in use for purposes other than the operation of the Prospective Development by the decommissioning phase of the Prospective Development, and therefore it will be more appropriate to leave the Wind Farm Site roads in situ for future use. It is

envisaged that the roads will serve as agricultural or forestry access roads for local landowners.

The Grid Connection underground cabling route and onsite 110kV substation will remain in place as it will be under the ownership and control of the ESB and Eirgrid.

A Decommissioning Plan has been prepared (Appendix 4-7) the detail of which will be agreed with the local authority prior to any decommissioning. The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time.

As noted in the Scottish Natural Heritage report (SNH) Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the Prospective Development, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:

"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".

No significant effects on the hydrological and hydrogeological environment are envisaged during the decommissioning phase of the Prospective Development.

4.3.4 POTENTIAL EFFECTS ON QUALITY ELEMENTS WITH THE IMPLEMENTATION OF MITIGATION

A summary of potential effects on SWB quality elements is provided in **Table J**, and a summary of potential status change to SWBs arising from potential surface water quality element impacts of the Prospective Development are presented in **Table L**.

Table J: Potential Impacts on receiving SWB Quality Elements

SWB Quality Element	Post Mitigation Potential Risk To Downstream Receptors	Reasoning
Hydromorphology	No	Refer to Sections 4.3.1.7 and 4.3.2.1
Water Quality	No	Refer to Sections 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.1.6, and 4.3.1.8, and Sections 4.3.2.2, 4.3.2.3, and 4.3.2.4.
Biology/Habitats	No	Refer to Sections 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.1.6, and 4.3.1.8, and Sections 4.3.2.2, 4.3.2.3, and 4.3.2.4.
Biology/Fish	No	Refer to Sections 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.1.6, and 4.3.1.8, and Sections 4.3.2.2, 4.3.2.3, and 4.3.2.4.
Protected Areas	No	Refer to Section 4.3.1.9 and 4.3.1.12

A summary of potential effects on GWB quality elements is provided in **Table K**, and a summary of potential status change to GWB Status arising from potential groundwater quality element impacts of the Prospective Development is presented in **Table L**.

Table K: Potential Impacts on receiving GWB Quality Elements

GWB Quality Element	Post Mitigation Potential Risk To Downstream Receptors	Reasoning
Saline Intrusion	No	Perspective Development will not affect salinity of groundwater, and there is no proximity to the sea that could cause saline intrusion.
Surface Water Quality	No	Refer to Sections 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.1.6, and 4.3.1.8, and Sections 4.3.2.2, 4.3.2.3, and 4.3.2.4.
GWDTE	No	All the downstream designated sites are associated with Rivers, please refer to Section 4.3.1.9.
Water Balance Test	No	No long-term groundwater abstraction proposed, so no potential to effect GWB water balance.
DWPAs	No	Refer to Sections 4.3.1.10, 4.3.1.11, and 4.3.1.13.

4.3.5 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.

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

SWB	WFD Waterbody Code	Current Status (2019-2024)	Assessed Status - Unmitigated	Assessed Status with Mitigation Measures	Will Status Change Occur?
Surface Water Bodies					
Bunadaowen_010	IE_NW_01B010100	Good	Good	Good	No
Mournebeg_010	IE_NW_01M010200	Poor	Poor	Poor	No
Mourne Beg River (Derrygoonan)	UKGBNI1NW010102066	Poor	Poor	Poor	No
Mourne Beg River (Lisnacloone)	UKGBNI1NW010102064	Moderate	Moderate	Moderate	No
Derg River (Millbrook)	UKGBNI1NW010102095	Poor	Poor	Poor	No
Lowerymore_020	IE_NW_37L010300	High	High	High	No
Lowerymore_030	IE_NW_37L010400	High	High	High	No
Glendergan River	UKGBNI1NW010102067	Moderate	Moderate	Moderate	No
Groundwater Bodies					
Castlederg	IEGBNI_NW_G_005	Good	Good	Good	No
Donegal South	IE_NW_G_047	Good	Good	Good	No

4.4 CUMULATIVE EFFECTS

4.4.1 CONSTRUCTION PHASE

4.4.1.1 Cumulative Effects with Forestry

The Prospective Development and the wider hydrological cumulative study area includes coniferous forestry plantations.

The most common water quality problems arising from forestry relate to the release of sediment and nutrients to the aquatic environment and impacts from acidification. Forestry felling may also give rise to modified stream flow regimes caused by associated land drainage.

Given the occurrence of several forestry blocks within the Prospective Development site and in the surrounding lands, and given that they drain to the Mourne Beg, Glendergan and Lowerymore rivers, the potential cumulative effects on downstream water quality and quantity need to be assessed.

However, the mitigation measures detailed above in Section 4.3.1, 4.3.2 and 4.3.3 for the construction, operation and decommissioning phases of the Prospective Development will ensure the protection of downstream surface water quality.

For these reasons it is considered that there will not be a significant cumulative effect associated with commercial forestry activities.

4.4.1.2 Cumulative Effects with Agriculture

The delineated cumulative study areas contained agricultural lands at lower elevations downstream of the Prospective Development site within the catchments of the Mourne Beg, Glendergan and Lowerymore rivers.

Agriculture is the largest pressure on water quality in Ireland. Agricultural practices such as the movement of soil and the addition of fertilizers and pesticides can lead to nutrient losses and the entrainment of suspended solids in local surface watercourses. This can have a negative impact on local and downstream surface water quality.

The Prospective Development was assessed for its potential to interact cumulatively with existing agricultural activities, which may contribute to elevated concentrations of suspended solids and ammonia in downstream surface waters.

However, the mitigation measures detailed in Section 4.3.1, 4.3.2 and 4.3.3 for the construction, operation and decommissioning phases of the Prospective Development will ensure the protection of downstream surface water quality.

For these reasons outlined above we consider that there will not be a significant cumulative effect associated with agricultural activities.

4.4.1.3 Cumulative Effects with Turbary Peat Cutting

The delineated cumulative study areas contained peatlands within the catchments of the Mourne Beg, Glendergan and Lowerymore rivers. There may be small private peat cutting activities in some of these peatland areas.

The construction phase of the Prospective Development may interact with these turbary activities and result in a deterioration of downstream surface water quality through the emissions of elevated concentrations of suspended solids and ammonia.

However, the areas of private peat cutting will be infinitely small, significantly limiting the potential for cumulative effects to arise with the Prospective Development. Nevertheless, the mitigation measures detailed in Section 4.3.1, 4.3.2 and 4.3.3 for the construction, operation and decommissioning phases of the Prospective Development will ensure the protection of downstream surface water quality.

For these reasons outlined above we consider that there will not be a significant cumulative effect associated with turbary activities.

4.4.1.4 Cumulative Effects with Other Wind Farm Developments

A total of 10 no. existing, / permitted and/or proposed wind farms have been identified within the cumulative hydrological study area.

- The existing Seegroan Wind Farm (9 no. turbines);
- The existing Tievenamenta Wind Farm (15 no. turbines);
- The existing Crighshane Wind Farm (14 no. turbines);
- The existing Church Hill Wind Farm (8 no. turbines) and a permitted additional turbine at Church Hill Wind Farm;
- The permitted repowering of Barnesmore Wind Farm (13 no. turbines);
- The existing Gronan Wind Farm (4 no. turbines);
- The proposed Meenakeeran Wind Farm (4 no. turbines);
- The proposed Meenamullan Wind Farm (6 no. turbines);
- The proposed Pullyteam Wind Farm (6 no. turbines); and,
- The existing Slieveglass Wind Farm (3 no. turbines).

The greatest potential for cumulative effects to occur would be if the construction phase of the permitted wind farms and the Prospective Development overlapped. In an unmitigated scenario, there may be some cumulative effects on downstream watercourses.

However, the EIARs for the above wind farm developments detail potential hydrological and hydrogeological issues relating to the construction, operation and decommissioning phases of these developments and propose a suite of best practice mitigation measures designed to ensure that the developments do not in any way have a negative effect on downstream surface water quality and quantity. Similarly, the mitigation and best practice measures proposed in this EIAR chapter will ensure that the Prospective Development does not have the potential to result in significant effects on the hydrological/hydrogeological environment.

Therefore, with the implementation of the proposed mitigation measures (both for the Prospective Development and for the other wind farms) there will be no cumulative effects associated with the construction, operational or decommissioning phases of the Prospective Development and other wind farms within the cumulative study area.

4.5 IN-CUMULATION EFFECTS

As detailed in this WFD Compliance Assessment, with the implementation of the prescribed mitigation measures the Prospective Development will not result in any significant effects on the hydrological and hydrogeological environment. There will be no residual effect on the WFD status of any SWB or GWB as a result of the Prospective Development.

The WFD Compliance Assessment completed for the Existing Development concluded that the Existing Development did not have any long-term significant effects on the receiving hydrological and hydrogeological environment. The Existing Development did result in some

significant, short-term effects on downstream surface water quality and designated sites as a consequence of the November 2020 Peat Slide. However, the rEIAR states that water quality has since returned to baseline levels. The Existing Development did not result in any effect on WFD status of any SWB or GWB.

Therefore, there is no potential for significant In-Cumulation effects from the Subject Development on the WFD status of any downstream SWB or the underlying GWBs.

4.6 CUMULATIVE EFFECTS – SUBJECT DEVELOPMENT

As stated previously, with the implementation of the proposed mitigation measures (both for the Prospective Development and for the other wind farms) there will be no cumulative effects associated with the construction, operational or decommissioning phases of the Prospective Development and other wind farms within the cumulative study area. As stated in the WFD assessment for the Existing Development there were no hydrological cumulative effects with respect to the Existing Development and therefore, no potential cumulative effects. On this basis there will be no cumulative effects associated with the Subject Development.

5. SUMMARY AND CONCLUSION

5.1 CONCLUDING WFD COMPLIANCE STATEMENT

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

The Prospective Development does not involve any abstraction of groundwater or significant 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 Prospective Development.

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

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

Furthermore, mitigation measures during the construction, operation and decommissioning phases of the Prospective Development will ensure that there will be no significant effects on any of the protected areas in the vicinity of the Prospective Development.

As such, the Prospective Development:

- Will not cause a deterioration in the status of any surface and groundwater bodies;
- Will not jeopardise the objectives to achieve 'Good' surface water/groundwater status;
- Will not jeopardise the attainment of 'Good' surface water/groundwater chemical status;
- Will not jeopardise the attainment of 'Good' surface water/groundwater quantity status;
- 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 9.1.5 of this EIAR Chapter 9).

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6. REFERENCES

DoHLG (2024): Water Action Plan: River Basin Management Plan for Ireland (2022-2027).

EPA (2024): 3rd Cycle Foyle Catchment Report (HA 01).

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GSI (2004): Castlederg GWB: Summary of Initial Characterisation.

GSI (2004): Donegal South GWB: Summary of Initial Characterisation.

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Directives and Legislation

Council Directive (76/160/EEC) Bathing Water and revised (2006/7/EC).

Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources (Nitrates Directive).

Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, amending Directive 2011/92/EU of the European Parliament and the Council of 13 December 2011 on the assessment of the impacts of certain public and private projects on the environment.

S.I. No. 293/1988: Quality of Salmon Water Regulations.

S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003.

S.I. No. 268/2006 - European Communities (Quality of Shellfish Waters) Regulations 2006.

S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended.

S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.

S.I. No. 350/2014 - European Union (Water Policy) Regulations 2014.

S.I. No. 351/2011 - Bathing Water Quality (Amendment) Regulations 2011.

S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011.