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GLENLARA POWER RESERVE PROJECT
CURRADUFF, GLENLARA, NEWMARKET, CO. CORK

WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT

FINAL REPORT

Prepared for:

GALETECH ENERGY SERVICES

Prepared by:

HYDRO-ENVIRONMENTAL SERVICES

DOCUMENT INFORMATION

Document Title:	**GLENLARA POWER RESERVE PROJECT, CURRADUFF, GLENLARA, NEWMARKET, CO. CORK** **WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT**
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1. INTRODUCTION

1.1 BACKGROUND

Hydro-Environmental Services (HES) was requested by Galetech Energy Services (GES) to prepare a Water Framework Directive (WFD) Compliance Assessment for the proposed Glenlara Power Reserve Project ('the project'), Curraduff, Glenlara, Newmarket, Co. Cork.

The project includes an Energy Storage System ('ESS') and associated infrastructure on lands at Curraduff, Glenlara, Newmarket, Co. Cork. Refer to Section 4.1 below for a summary of the project.

The purpose of this WFD assessment is to determine if any specific components or activities associated with the project 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 and/or protected areas with the potential to be impacted, describe the proposed mitigation measures, and determine if the project is in compliance with the objectives of the WFD.

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 assessment was prepared by Nitesh Dalal, David Broderick and Michael Gill.

Michael Gill P.Geo (BA, BAI, Dip Geol., MSc, MIEI) is an Environmental Engineer, Hydrologist and Hydrogeologist with 24 years of environmental consultancy experience in Ireland. Michael has an MSc in Engineering Hydrology from TCD (peatland hydrology) and an MSc in Applied Hydrogeology from Newcastle University, UK. He has completed numerous (100+) hydrological and hydrogeological assessments relating to renewable energy developments such as wind farms, grid connections and substations.

David Broderick P.Geo (BSc, H. Dip Env Eng, MSc) is a Hydrogeologist with 19 years of environmental consultancy experience in Ireland. David has completed numerous hydrological and hydrogeological assessments for various developments across Ireland. David has significant experience in groundwater and surface water drainage issues, SUDs design, flood risk assessment, flood modelling and construction phase water management.

Nitesh Dalal (B.Tech, PG Dip., MSc) is an Environmental Scientist with over 8 years' experience in environmental consultancy and environmental management. 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 project 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,
- 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.

[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.

2. WATERBODY IDENTIFICATION AND CLASSIFICATION

2.1 INTRODUCTION

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

2.2 SURFACE WATERBODY IDENTIFICATION

On a regional scale, the project site is located within Hydrometric Area 18 of the South Western River Basin District (SWRBD). The project site is located in the Blackwater (Munster) Water Framework Directive (WFD) Catchment and within the Dalua_SC_010 sub-catchment.

Locally, the project site is located in the Dalua_020 WFD river sub-basin. The River Dalua is located approximately 1km southeast of the project site, where it flows in a southeasterly direction towards the River Allow.

The River Dalua confluences with the River Allow approximately 12km downstream of the project site, before flowing into the River Blackwater a further 5km downstream.

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

Due to the small scale of the project site relative to the River Blackwater catchment, there is no potential for significant hydrological effects in the River Blackwater waterbody and therefore the WFD assessment only considers the river waterbodies within the River Dalua and River Allow sub-catchments.

Table A presents the catchment area of each waterbody downstream of the project site as far as the Blackwater (Munster)_120 river waterbody. The catchment area for the waterbodies increases progressively downstream. Therefore, those river waterbodies which are immediately downstream of the project site are more susceptible to water quality effects as a result of activities associated with the project.

The potential for the project to impact on a waterbody decreases further downstream due to the increasing catchment area to the surface waterbody and resulting increase in flow volumes.

Due to the small scale of the project site relative to the River Blackwater catchment, there is no potential for significant hydrological effects in the River Blackwater waterbody and therefore the WFD assessment only considers the river waterbodies within the River Dalua and River Allow sub-catchments.

Table A: Catchment Area of River Waterbodies Downstream of the Project Site

WFD River Sub-Basin	Total Upstream Catchment Area (km²)
Dalua_020	~57
Dalua_030	~87
Dalua_040	~134
Allow_060	~266
Allow_070	~311
Blackwater (Munster)_090	~950
Blackwater (Munster)_100	~980
Blackwater (Munster)_110	~1044
Blackwater (Munster)_120	~1176

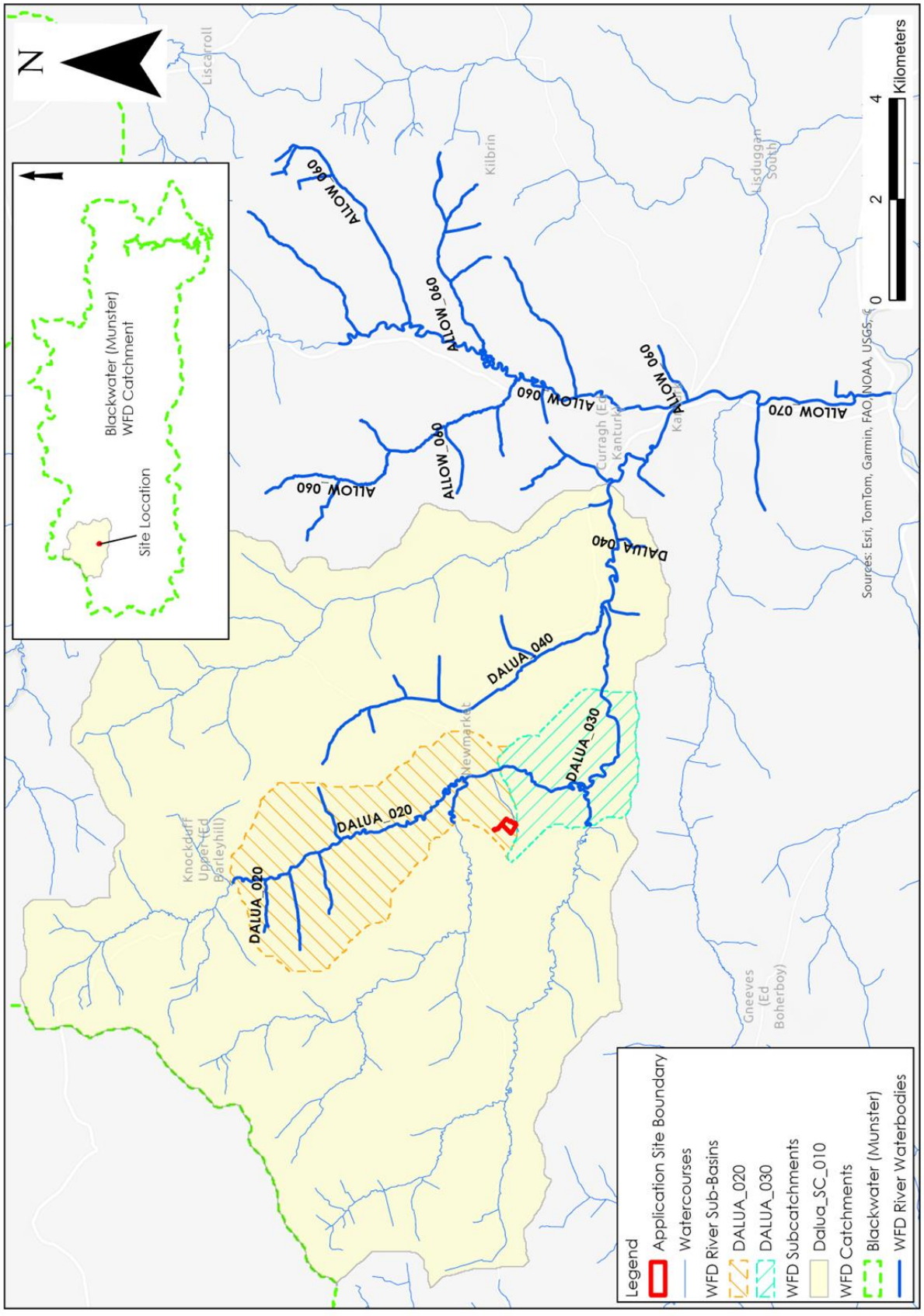

Figure A: Local Hydrology Map

2.3 SURFACE WATER BODY CLASSIFICATION

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

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

As described in **Section 2.2** above, the project site initially drains to the River Dalua. The Dalua_020 SWB achieved "Moderate" status in the latest WFD cycle (2019-2024) and is currently 'not at risk' of failing to achieve its WFD objectives.

Downstream of the Dalua_020, the Dalua_030 achieved "Good" status in the latest WFD cycle and is 'at risk' of failing to achieve its WFD objectives with anthropogenic sources identified as a significant pressure. Finally, the Dalua_040 achieved "High" status and is 'not at risk'.

Downstream of the River Dalua, the Allow_060 and Allow_070 SWBs both achieved "Good" status in the latest WFD cycle. The Allow_060 is 'at risk' of failing to achieve its WFD objectives while the Allow_070 is 'not at risk'. Agriculture, Hydromorphology, Abstraction, Urban Wastewater and Industry are the identified significant pressures on the Allow_060.

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

Table B: Summary WFD Information for River Water Bodies

SWB	Overall Status 2013-2018	Overall Status 2016-2021	Overall Status 2019-2024	Risk Status 3rd Cycle	Pressures
Dalua_020	Good	Good	Moderate	Not at risk	None
Dalua_030	Good	Good	Good	At Risk	Anthropogenic
Dalua_040	High	High	High	Not at risk	None
Allow_060	Poor	Moderate	Good	At risk	Agriculture, Hydromorphology, Abstraction, Urban Wastewater and Industry
Allow_070	Good	Good	Good	Not at risk	None

2.4 GROUNDWATER BODY IDENTIFICATION

The project site is underlain by Namurian (undifferentiated) bedrock described as Shale and sandstone and classified as a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (Ll) by the GSI (www.gsi.ie).

In terms of Ground Waterbodies (GWB), the project site is underlain by the Rathmore West GWB (IE_SW_G_070) which is classified as 'poorly productive bedrock' by the WFD.

2.5 GROUNDWATER BODY CLASSIFICATION

The Rathmore West GWB is assigned a status based on the assessment of groundwater chemical and quantitative figures. A summary of the WFD status and risk result for the Rathmore West GWB are shown in **Table C.**

The Rathmore West GWB has been assigned 'Good' status in all 3 WFD cycles. The Rathmore West GWB has been deemed to be 'Not at risk' of failing to meet its WFD objectives. No significant pressures have been identified to be impacting this GWB.

The GWB status for the 2019-2024 WFD cycle 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	Risk Status 3rd Cycle	Pressures
Rathmore West	Good	Good	Good	Not at risk	-

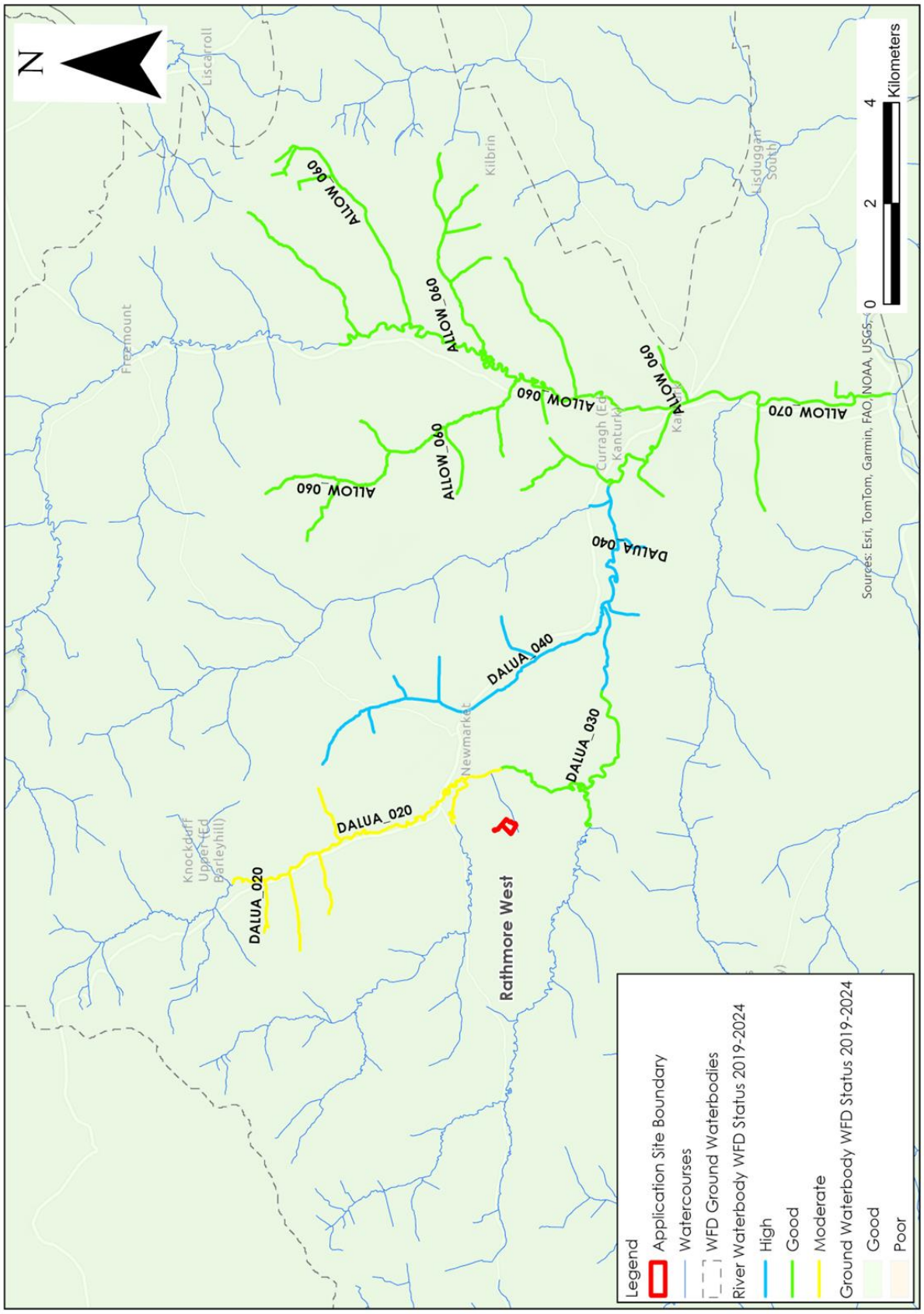

Figure B: WFD Groundwater and Surface Waterbody Status (2019-2024)

2.6 ZONE OF INFLUENCE

The potential Zone of Influence (ZOI) for the project extends to the following SWBs and GWBs:

- River waterbodies: Dalua (020 to 040), Allow (060 and 070);
- River waterbodies downstream of the River Allow are scoped out as there is no potential for significant hydrological effects due to downstream distance (>17km), large catchment area (>950km^2) and increasingly large flows in the Blackwater River; and,
- GWBs – Rathmore West GWB.

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) and shellfish waters are looked at 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).

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

The project site is not located within a Ramsar site or a designated site. The closest designated site is Blackwater River (Cork/Waterford) SAC (Site Code: 002170) which includes the River Dalua and is located approximately 1km downstream of the project site.

The following designated sites located further downstream of the project site are scoped out due to large downstream distance:

- Blackwater Valley (Killavullen) pNHA (Site Code: 001080) is located ~35.7km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater Valley (Ballincurrig Wood) pNHA (Site Code: 001793) is located ~37.8km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater Valley (Kilcummer) pNHA (Site Code: 001794) is located ~39.6km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater Valley (Killathy Wood) pNHA (Site Code: 001795) is located ~45km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater Valley (Cregg) pNHA (Site Code: 001796) is located ~47.5km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater Valley (The Beech Wood) pNHA (Site Code: 001797) is located ~49.2km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater River Callows pNHA (Site Code: 000073) is located ~52.3km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;

- Blackwater Callows SPA (Site Code: 004094) is located ~52.9km east-southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers;
- Blackwater River And Estuary pNHA (Site Code: 000072) is located ~75.3km east of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers; and,
- Blackwater Estuary SPA (Site Code: 004028) is located ~82.7km southeast of the project site and hydrologically connected via Dalua, Allow and Blackwater (Munster) rivers.

Other designated sites within 10km of the project site but not connected hydrologically are:

- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161) is located ~2.7km west of the project site; and,
- Priory Wood, Lismire pNHA (Site Code: 001072) is located ~4.9km northeast of the project site.

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 water areas located in the vicinity or downstream of the project site. The project is located ~85km east of Fenit (IESHBWC040_0000_0250), the nearest coastline/ bathing water site (as the crow flies).

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 Nutrient Sensitive Areas (NSAs) mapped within the River Dalua or River Allow sub-catchments.

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 sites within the River Dalua or River Allow sub-catchments.

2.7.5 Salmonid Waters

The River Dalua or River Allow sub-catchments are not mapped as Salmonid Waters.

2.7.6 Drinking Water

According to the Cycle 3 Blackwater (Munster) Catchment Report (EPA, 2024), there no Drinking Water Protected Areas (DWPAs) located in the within the River Dalua or River Allow sub-catchments.

Meanwhile, all GWBs are typically listed as DWPAs due to the possibility of local domestic supplies.

3. WFD SCREENING

As discussed in **Section 2**, a total of 5 no. surface waterbodies located in the vicinity and further downstream of the project site are considered in the WFD assessment.

In addition, 1 no. groundwater body underlies the project site. Furthermore, there is 1 no. protected area downstream of the project site within the River Dalua and River Allow sub-catchments.

3.1 SURFACE WATER BODIES

The river waterbodies in the immediate vicinity and downstream of the project are shown in **Figure A** and described in **Section 2.2** above.

With consideration for the construction, operational and decommissioning phases of the project, it is considered that the Dalua_020, Dalua_030, Dalua_040, Allow_060 and Allow_070 are carried through into the WFD Compliance Assessment. The project must not in any way result in a deterioration in the status of these SWBS and/or prevent them from meeting the biological and chemical characteristics for Good status in the future.

River waterbodies downstream of the Allow River (i.e. Blackwater River) have been screened out due to their distal location from the project site and due to the large catchment sizes. The project has no potential to cause a deterioration in status of these SWBs and/or jeopardise the attainment of good surface water status in the future.

3.2 GROUNDWATER BODIES

With respect to groundwater bodies, the Rathmore West GWB is carried through to the WFD Compliance Assessment due to its location directly underlying the project site. The project must not in any way result in a deterioration in the status of this GWB and/or prevent it from meeting the characteristics for good status in the future.

3.3 PROTECTED AREAS

The project site drains to the River Dalua which forms part of the Blackwater River (Cork/Waterford) SAC. The Blackwater River (Cork/Waterford) SAC has been screened in for the assessment. All other designated sites have been screened out due to distant location, increased volume of water or lack of hydrological connection. The project has no potential to cause a deterioration in status of these designated sites due to its relatively small size.

3.4 WFD SCREENING SUMMARY

A summary of WFD Screening discussed above 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	River	Dalua_020	**Yes**	The project is located within the Dalua_020 river sub basin. An assessment is required to consider the potential impacts of the project on this SWB.
	River	Dalua_030	**Yes**	The Dalua_030 is mapped directly downstream of the Dalua_020. An assessment is required to consider the potential impacts of the project on this SWB.
	River	Dalua_040	**Yes**	The Dalua_040 is mapped directly downstream of the Dalua_030. An assessment is required to consider the potential impacts of the project on this SWB.
	River	Allow_060	**Yes**	The Allow_060 is mapped directly downstream of the Dalua_040. An assessment is required to consider the potential impacts of the project on this SWB.
	River	Allow_070	**Yes**	The Allow_070 is mapped directly downstream of the Allow_060. An assessment is required to consider the potential impacts of the project on this SWB.
	River	Blackwater (Munster)_090 to 220	No	The Blackwater (Munster)_090 to 220 have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of this SWB.
Groundwater Body	Groundwater Bodies			
	Groundwater	Rathmore West	**Yes**	The project directly overlies the Rathmore West GWB. An assessment is required to consider the potential impacts of the project on this GWB.
Protected Areas	Protected Areas			
	Nature Conservation Designations	Blackwater River (Cork/Waterford) SAC	**Yes**	The Blackwater River (Cork/Waterford) SAC is mapped 1km downstream of the project. An assessment is required to consider the potential impacts of the project on this SAC.
		Blackwater Valley (Killavullen) pNHA	No	The Blackwater Valley (Killavullen) pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Valley (Ballincurrig Wood) pNHA	No	The Blackwater Valley (Ballincurrig Wood) pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Valley (Kilcummer) pNHA	No	The Blackwater Valley (Kilcummer) pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Valley (Killathy Wood) pNHA	No	The Blackwater Valley (Killathy Wood) pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Valley (Cregg) pNHA	No	The Blackwater Valley (Cregg) pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Valley (The Beech Wood) pNHA	No	The Blackwater Valley (The Beech Wood) pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project

				has no potential to impact the status of this pNHA.
		Blackwater River Callows pNHA	No	The Blackwater River Callows pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Callows SPA	No	The Blackwater Callows SPA has been screened out due to its distal location from the Proposed Project and the large volume of water within the SPA. The project has no potential to impact the status of this SPA.
		Blackwater River And Estuary pNHA	No	The Blackwater River And Estuary pNHA has been screened out due to its distal location from the project and the large volume of water within the pNHA. The project has no potential to impact the status of this pNHA.
		Blackwater Estuary SPA	No	The Blackwater Estuary SPA has been screened out due to its distal location from the project and the large volume of water within the SPA. The project has no potential to impact the status of this SPA.
		Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	No	The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA has been screened out due lack of hydrological connection between this SPA and the project. The project has no potential to impact the status of this SPA.
		Priory Wood, Lismire pNHA	No	The Priory Wood, Lismire pNHA has been screened out due lack of hydrological connection between this pNHA and the project. The project has no potential to impact the status of this pNHA.
	Bathing Waters	Fenit	No	The Fenit bathing waters has been screened out due lack of hydrological connection between this bathing waters and the project. The project has no potential to impact the status of this bathing waters.
	Nutrient Sensitive Areas	Blackwater (Munster)_130, 140, 160, 170, 190 to 220	No	The Blackwater (Munster)_130, 140, 160, 170, 190 to 220 NSAs have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of these NSAs.
		Upper Blackwater M Estuary	No	The Upper Blackwater M Estuary NSA have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of this NSA.
		Lower Blackwater M Estuary / Youghal Harbour	No	The Lower Blackwater M Estuary / Youghal Harbour NSA have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of this NSA.
		Youghal Bay	No	The Youghal Bay NSA have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of this NSA.
	Shellfish Waters	Youghal Bay	No	The Youghal Bay shellfish waters have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of this shellfish waters.
	Salmonid Waters	Blackwater (Munster)_090 to 220	No	The Blackwater (Munster)_090 to 220 salmonid waters have been screened out due to distant location and large volume of water associated with increase upstream

				catchment area. The project has no potential to impact the status of these salmonid waters.
	Drinking Water Protected Areas	Blackwater (Munster)_150 and 180	No	The Blackwater (Munster)_150 and 180 DWPA have been screened out due to distant location and large volume of water associated with increase upstream catchment area. The project has no potential to impact the status of these DWPA.

4. WFD COMPLIANCE ASSESSMENT

4.1 PROPOSALS

The project includes the following components:

- Energy storage containers installed on concrete plinths;
- Associated electrical inverters and transformers;
- Electrical and communications cabling;
- Upgrade of an existing agricultural access point;
- Access track;
- Boundary security fencing and gates;
- Pole-mounted security cameras;
- Firefighting water supply and delivery infrastructure;
- Firefighting water containment infrastructure;
- Stormwater control and attenuation (SuDs);
- Bridge crossing and pipe culvert install in a field drain; and,
- All associated site development, landscaping and reinstatement works.

4.2 POTENTIAL EFFECTS

4.2.1 Construction Phase (Unmitigated)

4.2.1.1 Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Water

Construction phase activities including site levelling (i.e. excavation/cut and fill) and excavations for underground services and attenuation systems will require earthworks resulting in the removal of vegetation cover where present and excavation of soil and subsoils. An existing field drain will also be culverted. The main risk will be from surface water runoff from bare soil and spoil storage areas during construction works.

These activities can result in the release of suspended solids to surface watercourses. This could result in an increase in the suspended sediment load, which in turn could affect the water quality of the downstream River Dalua and River Allow.

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

Table E: Surface Water Quality Impacts during Construction Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Dalua_020	IE_SW_18D010200	Moderate	Poor
Dalua_030	IE_SW_18D010300	Good	Moderate
Dalua_040	IE_SW_18D010500	High	Good
Allow_060	IE_SW_18A020490	Good	Good
Allow_070	IE_SW_18A020600	Good	Good

4.2.1.2 Surface Water Quality Impacts from leakages, Spillages of Hydrocarbons and Cement

Hydrocarbons and cement-based compounds will be used during the construction phase of the project. Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a common 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 significant negative impacts on water quality. Entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to aquatic species and habitats.

The washing out of transport and placement machinery is the activity most likely to generate a risk of cement-based pollution.

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

Table F: Surface Water Quality Impacts during Construction Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Dalua_020	IE_SW_18D010200	Moderate	Poor
Dalua_030	IE_SW_18D010300	Good	Moderate
Dalua_040	IE_SW_18D010500	High	Good
Allow_060	IE_SW_18A020490	Good	Good
Allow_070	IE_SW_18A020600	Good	Good

4.2.1.3 Potential Groundwater Quality Effects

The project site is mapped to overlie the Rathmore West GWB which is a poorly productive bedrock GWB.

Hydrocarbon spills and leaks along with cement-based compounds also pose a threat to the groundwater environment.

These sources of contamination have the potential to impact on groundwater quality in the underlying groundwater body.

However, due to poorly productive bedrock aquifers and localised groundwater flow paths within the Rathmore West GWB, there is no potential for significant negative effects on the overall GWB WFD status.

A summary of potential status change to the GWB arising from potential groundwater quality impacts during the construction phase of the project in the unmitigated scenario are outlined in **Table G**.

Table G: Groundwater Quality Impacts during Construction Phase (Unmitigated)

GWB	WFD Code	Current Status	Assessed Potential Status Change
Rathmore West	IE_SW_G_070	Good	Good

4.2.1.4 Potential Impacts on Protected Areas

Blackwater River (Cork/Waterford) SAC

The project site is located 1km upstream of the Blackwater River (Cork/Waterford) SAC. The construction activities could result in the release of suspended solids and pollutants to surface water watercourses. This could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could significantly affect the water quality within the Blackwater River (Cork/Waterford) SAC.

All other downstream designated sites are scoped out of the WFD assessment due to distant location, increased volume of water or lack of hydrological connection between these designated sites and the project site.

4.2.2 Operational Phase (Unmitigated)

The operation of the ESS facility will involve stationary plant operating with intermittent repair and maintenance checks. As such, the daily operation of the site is will not have any effect on the status of downstream SWBs, protected areas or the underlying GWB.

Design measures will be in place for stormwater control/attenuation/pollution control (i.e. hydrocarbons) and for firefighting water containment in the unlikely event of fire at the facility.

Please refer to the McCloy Consulting Drainage Strategy report (M02206-08_DG01/May 2026) for design details on stormwater control/attenuation and firefighting water containment.

In addition to regular stormwater storage, the ESS compound attenuation pond is sized for firefighting water containment in accordance with the UK's National Fire Chiefs Council (NFCC) guidance document 'Grid Scale Battery Energy Storage System (BESS) planning in December 2025 to support Fire and Rescue Services (FRSs)'.

The design incorporates dedicated firefighting water storage with a capacity of approximately 271m³. The water will either be sourced from an Uisce Éireann connection (application pending) or a proposed on-site well. The water supply (either well or Uisce Éireann) will fill the required storage volume over several days (~43m³/day). Once the storage tank is filled, the daily water demand from the proposed well or Uisce Éireann will be very small (<10m³/day).

4.2.2.1 Surface Water Quality Effects from Storm Water Discharge

During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase as works will be completed and therefore poor-quality runoff from exposed soil will not be an issue once the battery facility has been constructed.

In addition, all permanent stormwater drainage controls will be in place and surface water runoff from the compound will be discharged via check dams, filter drains, bypass oil interceptor (substation) and an attenuation ponds.

Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads and hardstand areas. These works would be of a very minor scale and would be very infrequent. Potential sources of sediment laden water would only arise from surface water runoff from small areas where new material is added during maintenance works.

Runoff from the substation compound will be discharged via a bypass oil interceptor for removal of potential hydrocarbons spills and leaks.

In the unlikely event of a battery leak or fire, any contaminated water will be contained in the attenuation pond which will be fitted with an automated shut off value to ensure there is no discharge to the local watercourse during a fire event or similar emergency scenario.

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

Table H: Surface Water Quality Impacts during Operational Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Dalua_020	IE_SW_18D010200	Moderate	Moderate
Dalua_030	IE_SW_18D010300	Good	Good
Dalua_040	IE_SW_18D010500	High	High
Allow_060	IE_SW_18A020490	Good	Good
Allow_070	IE_SW_18A020600	Good	Good

4.2.2.2 River Waterbody Morphological Effects from Storm Water Discharge

Comprehensive drainage surveys and site investigations have been completed to inform the proposed drainage strategy for the project site.

The project drainage strategy mimics as closely as possible, the greenfield drainage regime of the project site, which is predominately a surface water drainage regime. Discharge from the project site will be limited to the greenfield rate (Q_{bar}) using an appropriately designed attenuation pond.

The proposed approach is an interconnected SuDs treatment train which includes source controls, site controls, and treatment with no direct discharges to drains or natural surface watercourses.

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

Table I: Surface Water Quality Impacts during Operational Phase (Unmitigated)

SWB	WFD Code	Current Status	Assessed Potential Status Change
Dalua_020	IE_SW_18D010200	Moderate	Moderate
Dalua_030	IE_SW_18D010300	Good	Good
Dalua_040	IE_SW_18D010500	High	High
Allow_060	IE_SW_18A020490	Good	Good
Allow_070	IE_SW_18A020600	Good	Good

4.2.2.3 Groundwater Quality Impacts from Site Drainage

The risks to groundwater quality are the same as those described in **Section 4.2.1.3** but of a lesser extent than during the construction phase due to the limited activity at the facility with only minor maintenance required during the operational phase.

Also, an impermeable liner/barrier will be placed beneath the ESS compound as a design measure. This will provide a barrier to vertical infiltration and ensure that groundwater is protected from spills and leaks and also in the unlikely event of a battery leak or from contaminated firefighting water.

In the unlikely event of a battery leak or fire, any contaminated water will then be contained and directed to the attenuation pond which will be fully sealed and sized in accordance with the UK National Fire Chiefs Council (NFCC) guidance document.

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

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

GWB	WFD Code	Current Status	Assessed Potential Status Change
Rathmore West	IE_SW_G_070	Good	Good

4.2.2.4 Potential Impacts 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.

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

4.2.3 Decommissioning Phase (Unmitigated)

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

Some of the potential impacts of water bodies will be avoided by leaving elements of the proposed development in place where appropriate.

4.3 MITIGATION MEASURES

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

4.3.1 Construction Phase

4.3.1.1 Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Water

Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work using the temporary drainage control measures outlined below.

The key component of the construction drainage management will be utilizing the proposed ESS attenuation pond as a temporary settlement pond. There will be no outfall present from the pond to the watercourse to the south of the project site when its being utilised as a construction phase settlement pond; with water being discharged across vegetated ground via a silt bag.

Therefore, excavation of the attenuation pond will be part of the pre-commencement works.

Construction phase drainage controls are as follows:

- Prior to the commencement of any earthworks a silt fence perimeter will be placed down-gradient of all construction areas that drain towards the watercourse to the south;
- This fencing will be embedded into the local soils to ensure all site water is captured and filtered;
- All existing field drains adjacent to the earthworks/construction area will be blocked temporarily;
- As construction advances there will likely be a requirement to collect and treat surface water runoff from the site works area itself. This will be completed using a temporary collector drain that will feed into the settlement pond on the south of the site;
- Intermittent pumping from the settlement pond will be required, discharge onto vegetated ground will be via a silt bag which will filter any remaining sediment from the pumped water before reaching the watercourse. The entire discharge area will be enclosed by a perimeter of temporary double silt fencing;
- No pumped construction water will be discharged directly into any drain or watercourse;
- Daily monitoring of the excavation/earthworks, the water treatment and pumping system and the discharge area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter will enter drains;
- If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the issue is resolved and the cause of the elevated source is remedied;
- Any diverted surface water runoff or pumped water will not be permitted to leave the site unattenuated;

- All temporary stockpiles will be sealed/damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation;
- A perimeter of silt fencing will be placed around all temporary stockpiles;
- Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of drainage routes; and,
- Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of demolition and construction activities will contain minimum sediment.

Drain bridge/culvert install drainage controls are as follows:

During the construction of the bridge culvert and pipe culvert install, surface water flows in the field drain will be controlled by damming and over-pumping to maintain a dry drain. The clean pumped water will be released back into the drain downstream of the proposed pipe culvert outfall.

A small volume of water may continually arise from the drain channel in the area of the bridge crossing as a result of seepage from the drain substrate and also from possible leaks from the upstream dam. A containment area will be created between the upstream dam and downstream dam for control of this potentially silt laden and cement contaminated dirty water due to the works.

To treat the potentially silt laden dirty water from the containment area, a temporary settlement zone will be created within the drain channel immediately downstream of the second (downstream) dam.

The settlement zone will be created by covering the bed and banks of the drain channel with sedimats (Sedimat TM or similar). Sedimat™ is a bio-degradable disturbed sediment entrapment matting designed for use in waterways during in-stream construction such as pipe laying or dredging. It effectively traps any disturbed sediment to prevent pollution of aquatic habitats downstream).

4.3.1.2 Surface Water Quality Impacts from leakages, Spillages of Hydrocarbons and Cement-Based Products

Proposed Mitigation Measures:

Fuels/Hydrocarbons:

- Mobile plant required during construction will be refuelled using a mobile fuel bowser.
- Spill kits and drip trays will be available on site.

In the event of a spill an emergency plan will be put in place in accordance with 'Pollution Prevention Guidelines Incident Response Planning: PPG 21' (UK Environment Agency, 2009). The Emergency Response Plan will detail actions to be taken in the event of accidental spillage of fuel, chemicals or other hazardous material. Suitable training will be provided to relevant personnel detailed within the Emergency Response Plan to ensure that appropriate and timely actions will be taken should an incident occur.

General Spill control procedures will include:

1. Protect yourself first;
2. Stop the source of the spill where possible;
3. Use appropriate PPE;
4. Use absorbent pads/nappies and booms to contain or soak the spill:
    a. Place the booms/snakes at the forward edge of the spilt fluid in the direction it is moving to contain it.
5. Dispose of used materials correctly
    a. Saturated / Used contents must be disposed of in the disposal bags provided in the spill kit and then placed in the 'Contaminated Spill Kit' bin.
6. Report incident to Construction Manager; and,
7. Construction manager to determine if further remedial works are required.

Cement Based Compounds:

- Care will be taken when completing concrete works on site to ensure no discharges occur;
- No concrete wash water or waste concrete will be disposed of onsite;
- A dedicated wash out skip will be provided, and its contents will be disposed of off-site at an appropriate licensed facility;
- The pour site will be kept free of standing water, and plastic covers will be ready in case of a sudden rainfall event.
- No batching of wet cement is proposed at the development site, and therefore significant volumes will not be present on-site at any one time;
- Cement and possible runoff will be contained/diverted within the proposed works by nature of shallow excavations, and therefore the risk to local surface water bodies is low;
- Prior to importing cement, all existing roadside drains and other drainage pathways will be temporarily blocked;
- All cement placed will be backfilled before the next section of the works commence and therefore is low risk of cement washout;
- Therefore, impacts that do arise (worst case) will largely be limited to small, isolated, low volume spills during emplacement of the cement within the works;
- pH levels in all discharge waters will be monitored on a daily basis; and,
- Any effects that do occur will be very localised to the source / works activity are.

Wastewater

Wastewater from the construction stage will be managed using self-contained Portaloos. These will be maintained by the providing contractor and removed from the site on completion of construction works. No wastewater will be discharged on-site during the construction phase.

4.3.1.3 Mitigation Measures to Protect Groundwater Quality

Mitigation measures designed to avoid the release of hydrocarbons, cement-based products and wastewater at the project site are outlined in **Section 4.3.1.2** above. These mitigation measures will ensure that the project does not affect local groundwater quality.

The grounds will be excavated in a sequential manner as far as practicable to minimise the amount of exposed ground open at any one time.

4.3.1.4 Mitigation Measures for Protected Areas

The potential for material to enter the local rivers is negligible as mitigation controls as described in **Sections 4.3.1.1**& **4.3.1.2** above will be implemented.

Emphasis will also be placed on prevention of hydrocarbon and cement releases to local watercourses as described in **Section 4.3.1.2.**

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

4.3.2 Operational Phase

The proposed SuDs drainage system incorporated into the engineering design of the site are drainage systems that are commonly used in development sites.

The proposed surface water drainage system will provide hydrocarbon and TSS reduction/treatment and flow attenuation which is aimed at enhancing the quality/quantity of stormwater runoff prior to discharge.

To mitigate against any very minor potential increased runoff, a site specific drainage system will be used to ensure that runoff is contained and attenuated within the proposed site, as it will be stored/attenuated then released at greenfield rates.

The proposed drainage system will be managed and maintained throughout the operational phase of the project. The regular maintenance and cleaning of the SuDS features will ensure that adequate performance is maintained.

These standard drainage design controls will ensure the project site will not give rise to any significant surface water or groundwater quality impacts at or downstream of the site.

In the unlikely event of a battery leak or fire, any contaminated water will be contained in the attenuation pond which will be fitted with an automated shut off value to ensure there is no discharge to the local watercourse during a fire event or similar emergency scenario.

4.3.3 Decommissioning Phase

Potential impacts on nearby water bodies will be minimised through the careful management of site restoration activities and the retention of certain existing features where considered appropriate. With the implementation of the mitigation measures outlined in **Section 4.3.1** above no significant effects on the hydrological and hydrogeological environment will occur during the decommissioning stage of the project.

4.3.4 Potential Effects with the Implementation of Mitigation

In all instances, the mitigation measures and project design 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 K** below.

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

SWB	WFD Code	Current Status	Assessed Status - Unmitigated	Assessed Status with Mitigation Measures
Dalua_020	IE_SW_18D010200	Moderate	Poor	Moderate
Dalua_030	IE_SW_18D010300	Good	Moderate	Good
Dalua_040	IE_SW_18D010500	High	Good	High
Allow_060	IE_SW_18A020490	Good	Good	Good
Allow_070	IE_SW_18A020600	Good	Good	Good
GWB	**WFD Code**	**Current Status**	**Assessed Status - Unmitigated**	**Assessed Status with Mitigation Measures**
Rathmore West	IE_SW_G_070	Good	Good	Good

5. SUMMARY AND CONCLUSIONS

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

The project does not involve long-term dewatering, large groundwater abstraction requirements 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, operation and decommissioning phases of the project.

The small-scale nature of the project and the requirement for very limited quantities of potentially polluting material on-site during construction phase works will only result in localised effects in the unmitigated scenario.

During the operational phase, the potential for generation of contaminated surface water runoff on a day to day basis is very low.

The provision of containment measures for firefighting water during an unlikely emergency fire scenario will prevent significant surface water and groundwater quality effects.

Nevertheless, site management proposals are intended to ensure complete protection for the designated sites and against surface water and groundwater pollution, and siltation. Mitigation for the protection of surface water during the construction, operation and decommissioning phases of the project will ensure the qualitative status of the receiving waters will not be altered by the project.

There is also mitigation proposed to protect groundwater quality during the construction, operational and decommissioning phases of the project.

As such, the project:

- 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 jeopardised the attainment of 'Good' surface water/groundwater chemical status;
- Will not jeopardised 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).

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