SCREENING FOR APPROPRIATE ASSESSMENT:

Integrated Constructed Wetland at a site at Ballykerrigan, Co Donegal.

In accordance with Article 6(3) and 6(4) of the Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (Habitats Directive)

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1. Introduction

The Loughs Agency, as a partner of the CatchmentCARE Initiative, and under the authority awarded to the Agency through the Foyle and Carlingford Fisheries Act 2007 has been tasked with producing this Screening for Appropriate Assessment Document, under Article 6 of the EU Habitats Directive, on the proposal to install Integrated Constructed Wetlands (ICWs) in an area near Ballykerrigan, Co Donegal which is hydrologically linked to the Clougher Finn River. The Catchment care project identified 103 sheep dipping facilities across the Finn SAC catchment area during a recent survey. There are at least 35 of these located in rural areas with no access to slatted tanks as they are found on rural roads and outside of farmyards. Mixing of spent dip with the contents of a slatted tank and land spreading is part of the guidance given by Teagasc to help eliminate introduction of pesticides to the aquatic environment. The evidence shows that the Macroinvertebrate population of the Finn SAC is declining in certain watercourses and this is thought to be as a result of spent sheep dip escaping into drains and ending up in the River Finn SAC. The project has decided to pilot 3 sites on the Finn Catchment using Integrated Constructed Wetlands as a way of intercepting and treating this spent dip so that it does not reach the watercourses. The Integrated constructed wetlands to be implemented will be shallow surface flow wetlands which mimic the biological functions of naturally occurring wetlands. These vegetated wetland systems are extremely effective at treating nutrient/pollutant contaminated water sources (VESI Environmental ICW report, April 2022). The retention time of the effluent in the wetland ponds allows for the target pollutants to be broken down by the microbial action of the microorganisms inhabiting the Rhizosphere of the wetland plants. This action, in combination with UV light from the Sun and the binding of pollutants to wetland soils will eliminate any pollutants in the water and will allow clean freshwater to return to the River Finn SAC. Each wetland is designed to be self-sufficient and will need little to no maintenance.

These measures will contribute to addressing identified issues on the Clougher Finn River which include Poor fish EQR, poor macroinvertebrate Q-scores and poor water quality according to EPA data 2020. The Clougher Finn System is defined as having poor water quality and at risk of further decline status as outlined in the Water Framework Directive. Installation of the above described ICW will help contribute to the achievement of the Conservation Objectives outlined for the site as documented in the NPWS Conservation Objectives Series (DHLGH 2017) by protecting aquatic macroinvertebrate communities and the water quality of the receiving river which will have positive impacts on populations of Atlantic Salmon and Otter, both of which are designated priority species for the Finn River SAC.

The installation of this wetland is fully supported by the Loughs Agency, who are the competent authority in charge of the conservation of the environmental health of the Finn River and its tributaries, awarded this authority under the Foyle and Carlingford Fisheries Act 2007, as the installation will help protect the integrity of the Finn River SAC and it's qualifying interests.

The area proposed for the installation of an ICW is located 10.1 km southwest of Lough Muck, Co Donegal. The R253 runs in an east to west direction approximately 2.5km north of the proposed development. The proposed development is within the Finn River Catchment of which the Finn River is a designated SAC. The River Finn SAC is within 230m south of the proposed development and there is a drain to the left and the right of the proposed ICW location that is hydrologically linked to the Clougher Finn River which is a part of the River Finn SAC.

These works will be conducted at the co-ordinates 54.795231N, -7.989369W (Irish Grid Ref: 00733E 94133N)

The aim of this screening document is to assess any likely significant impacts on the River Finn Special Area of Conservation (SAC) (Site Code 002031).

1.1. Background

This Screening for Appropriate Assessment document pertains to proposed Integrated Constructed Wetlands at co-ordinates 54.795231N, -7.989369W (Irish Grid Ref: 00733E 94133N) (Indicated in Figure 1**Error! Reference source not found.**).

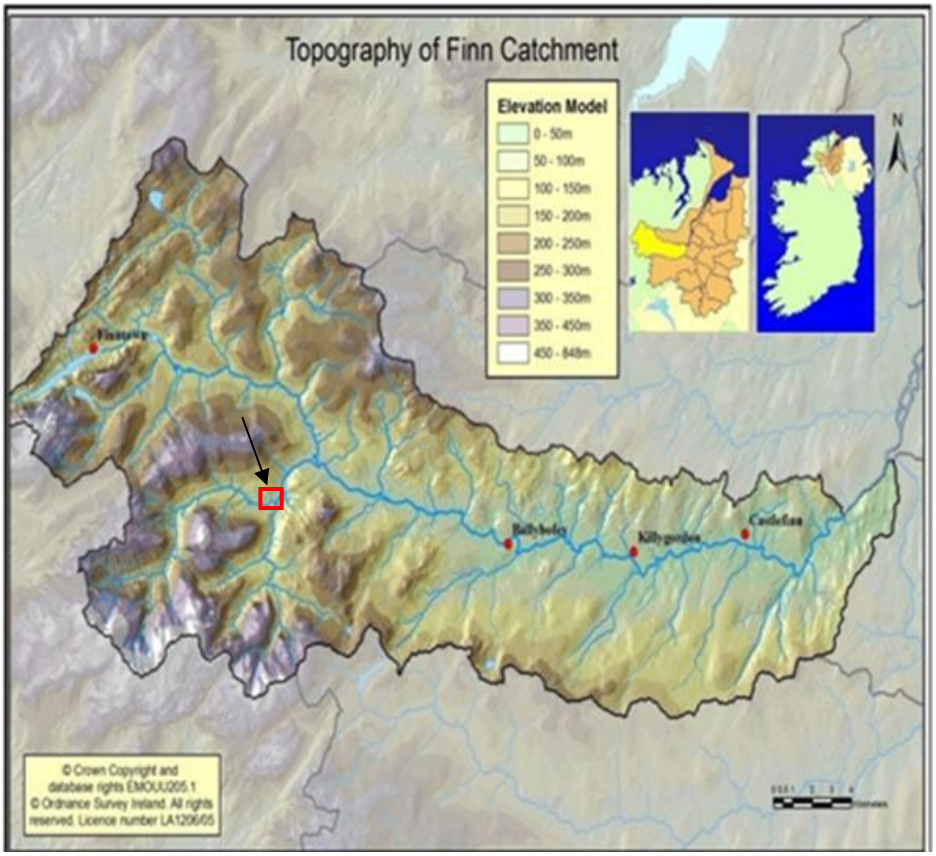

Figure 1: Location of ICW near River Finn SAC Ballykerrigan, Co Donegal

These works are proposed as part of the CatchmentCARE initiative, funded by INTERREG VA. The aim of CatchmentCARE is to establish 3 ecosystem/water quality improvement projects in the Finn, Blackwater and Arney Catchments. It will contribute to the INTERREG VA programme specific result "Percentage of cross-border fresh water bodies in cross-border river basins with good or high quality". The Catchment CARE project is tasked with the delivery of two programme specific outputs; (1) Establish 3 water quality improvement projects; (2) Develop and implement 50 cross-border groundwater monitoring wells.

The initiative involves several cross border partners including Donegal County Council (DCC), Loughs Agency (LA), Inland Fisheries Ireland (IFI), Agri-food and Biosciences Institute (AFBI), Armagh City, Banbridge & Craigavon Borough Council (ABC), Ulster University (UU), British Geological Survey (BGS) and Irish Geological Survey (IGS).

Historical and recent data collected on macroinvertebrate populations in the Finn indicate a decline in diversity and abundance of these fauna, which is suspected of causing negative impacts on fish populations in the catchment, including the Annex II species North Atlantic Salmon (*Salmo salar*).

It is also recognised that chemical export into the freshwater environment from agricultural and forestry practises is a concern in the catchment (WFD 2009). Extensive research has been carried out by the CatchmentCARE project to date on the impacts of sheep dipping activity on the Finn catchment including a literature review, an extensive sheep dip survey, best practice guidance documents, YouTube video and engagement with the farming community at Marts, through social media and by conducting a Passive Sampling survey to detect the presence of Cypermethrin, Diazinon, Acetamiprid and MCPA in the waterways of the Finn Catchment. These activities have all been completed or are still underway and the next phase is to pilot alternative methods of dealing with the by-product chemicals used in sheep dipping practices in particular in rural areas where there is no access to slatted tanks. The CatchmentCARE project has engaged with VESI Environmental who have expertise in creating wetlands for dealing with industrial waste. These vegetated wetlands are extremely effective at treating nutrient/pollutant–contaminated water sources. The ICW system uses physical, chemical and biological processes. Integrated constructed wetlands differ from other wetlands in that they are designed to facilitate the widest possible of ecological conditions typically found in natural wetlands. The system strives to fit into the landscape and encourages habitat restoration and biodiversity. The larger scale of ICWs also allows for associated hydraulic resistance time resulting in optimal management (VESI Environmental Report, April 2022).

1.2 Legislative Context for Appropriate Assessment

The Habitats Directive provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community Interest through the establishment and conservation of an EU-wide network of sites known as the Natura 2000 Network. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC) as codified by Directive 2009/147/EC (hereafter referred to as the Birds Directive).

Articles 6(3) and 6(4) of the Habitats Directive sets out the decision-making tests for plans and projects likely to affect European Sites (Annex 1.1).

Article 6(3) establishes the requirement for Appropriate Assessment (AA):

"Any plan or project not directly connected with or necessary to the management of the [European] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

Article 6(4) states:

"If, in spite of a negative assessment of the implications for the [European] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted."

The Habitats Directive was transposed into Irish legislation by the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94/1997) and subsequently amended in 1998 and 2005.

However, in order to address transposition issues raised in judgements of the ECJ against Ireland in 2008 and to clarify the obligations of planning authorities under the Birds and Habitats Directives, the European Communities (Birds and Natural Habitats) Regulations, 2011 were introduced and now provide the legislative framework in Ireland on the protection of designated habitats and species.

The designation or classification of sites are done so under the provision of the Natura 2000 network; a list of sites which are deemed of particular importance in terms of rare, endangered or vulnerable habitats and / or species.

In Ireland, Natura 2000 sites include candidate Special Areas of Conservation (cSAC), Special Protection Areas (SPA), and proposed Special Protection Areas (pSPA). cSACs pertain to qualifying interests which are habitats in Annex I and species listed in Annex II of the Habitats Directive, while SPAs are selected for special conservation interests including regularly occurring migratory bird species and Annex, I bird species and their habitats.

The conservation objectives of particular Natura 2000 sites have been assigned by the National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs; these are the objectives or aims which have been put in place in order to maintain or restore the favourable conservation status or condition of the Annex I habitat or Annex I or II species for which the designated or classified site has been selected.

From the viewpoint of appropriate assessment, Articles 6(3) and 6(4) of the Habitats Directive subsumes assessment responsibility for the Birds Directive (2009/147/EC) under the umbrella of Natura 2000 sites (European sites or sites within the Natura 2000 network), which include both Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), while nationally, appropriate assessment is dealt with in Part 5 of the European Communities (Birds and Natural Habitats) Regulations, 2011.

1.3 Stages of the Habitat Directive Assessment

The following Flow Diagram shows the stages involved in the Appropriate Assessment, which follows the commission's guidance promoting a four stage process:

Stage One: Screening

The aim of screening is to assess, firstly, if the plan or project is directly connected with or necessary to the management of Natura 2000 Site(s); or in view of best scientific knowledge, if the plan or project, individually or in combination with other plans or projects, is likely to have a significant effect on a Natura 2000 site.

Stage Two: Appropriate Assessment

Preparation of Natura Impact Statement (NIS) and determination whether the project will adversely affect the integrity of the Natura 2000 sites, alone or in combination with other plans and projects; Detailed description of proposed project, Natura 2000 site(s), sites' qualifying interests and conservation objectives, and appropriate mitigation measures to offset adverse effects on the integrity of the site(s) are included.

Stage Three: Assessment of Alternative Soultions

If it is not possible during Stage two of the AA process to conclude that there will be no adverse effects on site integrity, Stage three of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. Explicitly, this means alternative solutions that do not have adverse impacts on the integrity of a Natura 2000 Site.

Stage Four: Imperative Reason of Overriding Public Interest (IROPI)

Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura 2000 site will be necessary.

The Loughs Agency used the Decision Matrix below to help guide the Appropriate Assessment process and determine what steps needed to be taken in order to retain the integrity of the Finn SAC Natura 2000 site:

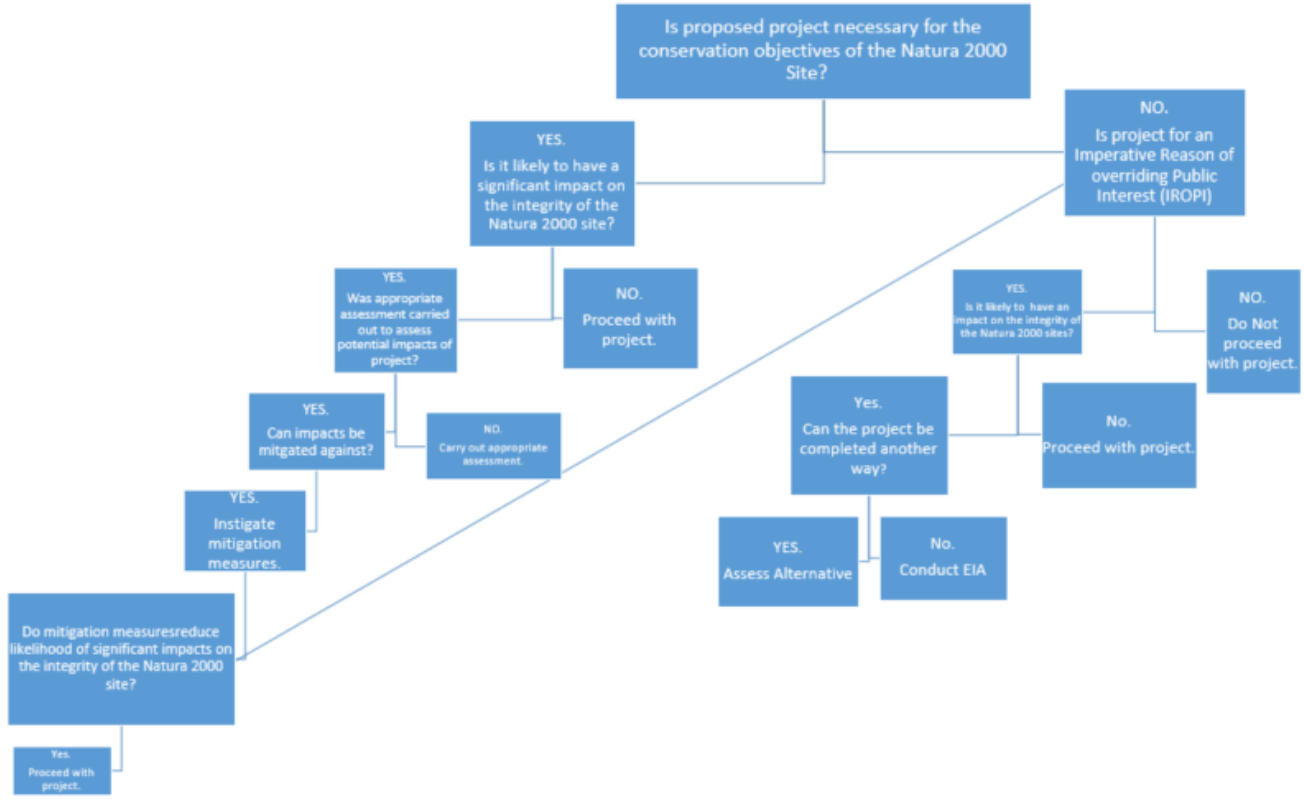

Figure 2: Decision Matrix used to determine what steps were needed for the Screening for Appropriate Assessment process.

2 Appropriate Assessment Screening

2.1 Stages of Screening

Forming the basis of an Appropriate Assessment (AA), screening is the introductory stage which yields important information regarding the project in question and whether it, on its own or in combination with other plans or projects, has implications for Natura 2000 site(s) in view of the sites' conservation objectives.

Screening, then, is an integral part of the AA process since it, applying the precautionary principle and utilising existing information, in addition to advice from relevant statutory bodies, is the decision stage for continuation with a full appropriate assessment and Natura Impact Statement (NIS) due to the likelihood, uncertainty or certainty of significant effects or termination of the process at the screening stage due to a finding of no significant effects.

The screening process in this document consists of four separate steps, with each following in to the next. The steps include:

1. A determination of whether the project or plan is directly connected with or necessary to the management of the site;
2. Description of the proposed project and the description and characterisation of other projects or plans that in combination have the potential for having significant effects on the Natura 2000 site(s);
3. Identification of the potential effects on the Natura 2000 site(s); and
4. Assessment of the significance of the effects on the Natura 2000 site(s).

2.2. Is the proposed project directly connected to the Natura 2000 site(s)

The proposed project is considered to be directly related to and necessary to the management of the Finn River Natura 2000 site (Site Code IE0002301). It will include management measures specifically for conservation purposes that are solely conceived for the conservation management of the Natura 2000 site (IE0002301 – Further information can be found at: https://eunis.eea.europa.eu/sites/IE0002301). The Loughs Agency are the competent authority in charge of the conservation of the environmental health of the Finn River and its tributaries, awarded this authority under the Foyle and Carlingford Fisheries Act 2007, and they fully support the installation of this wetland which will safeguard the integrity of the River Finn SAC and its qualifying interests.

Therefore it is concluded that an Appropriate Assessment is not necessary for the above described works. However a detailed description of the works and measures to mitigate against any potential impacts during the construction phase are given below in Appendix I to highlight the importance of protecting the integrity of the Natura 2000 sites and the Loughs Agency's awareness of this.

3. Detailed assessment of the proposed works and measures to be implemented to address potential impacts from the construction phase of the project

3.1.1. Description of Project

3.1.1.1 Construction of Integrated Constructed Wetlands at a site near Balykerrigan, Co Donegal

The area of land required at Ballykerrigan is 640 m².

The sheep dip located at the proposed development site is currently used 1-2 times per annum by several landowners at a maximum and the anticipated volume of spent dip has been calculated and used to design the ICW which will be installed. Allowances have also been implemented in the ICW design to take in to account seasonal variations in dipping intensity as well as increases in increased annual loadings. Initial dilution of sheep dip will occur in the dip bath and a significant amount of this dip will be removed on the sheep dipped although the contents of the bath will need to be emptied and refilled after dipping of 500 sheep.

The ICW design has spent dip flowing from the dip bath into an initial receiving open water cell which will allow for further dilution of the effluent with collected rainwater/ run off and will also allow for organic binding. This will then flow into the subsequent treatment cells, of which there are 3 and will be heavily vegetated, slow flowing and quite shallow allowing for microbial and UV action to take place and facilitate breakdown of the target pollutants.

The treatment cells have been designed to ensure that the effluent remains within them for the longest time possible to ensure complete treatment before being discharged into the receiving watercourse.

An ICW is a shallow surface-flow wetland which mimics the biological functions of a naturally occurring wetland. This type of wetland system is an effective way of dealing with contaminated water as it utilises physical, chemical and biological processes. The wetlands are designed to fit in with the landscape. The existing site layout can be found in Figure 3 and the Integrated Constructed Wetland is designed to be site specific due to the size and scale of use and land surrounding the wetland (see Figure 4 for the Lough Muck ICW design).

The main part of the construction is the formation of the treatment cells and the placing of interconnecting pipework. The cells have an initial receiving cell which flows towards a final cell. Planting will occur as soon as the first cell is ready. Stockproof fencing will be erected to prevent access from livestock and members of the public. The construction of the cells will use onsite material where possible and may incorporate outside soil where necessary from a local source. Falling head tests will be carried out after construction.

The construction of the cells will be focused on stripping and stockpiling topsoils, excavating subsoils to form treatment cells embankments and any excess material will be distributed to form access pathways for access across the site for monitoring and maintenance. The stockpiled topsoils are then reintroduced to the ICW cells as a bedding medium for emergent vegetation. (VESI Environmental Sheep Dip ICW Report, April 2022).

The planting of the wetland cells provides the following functions; treatment of influent waters, mitigating potential odours, slowing the hydraulic flows, increasing the evapotranspiration from the site, reinforcement of wetland soils, Oxygenation of the soil substrate to help breakdown organic pollutants, creating and enhancing biodiversity, reduce maintenance and deter access (VESI Environmental Sheep Dip ICW Report, April 2022).

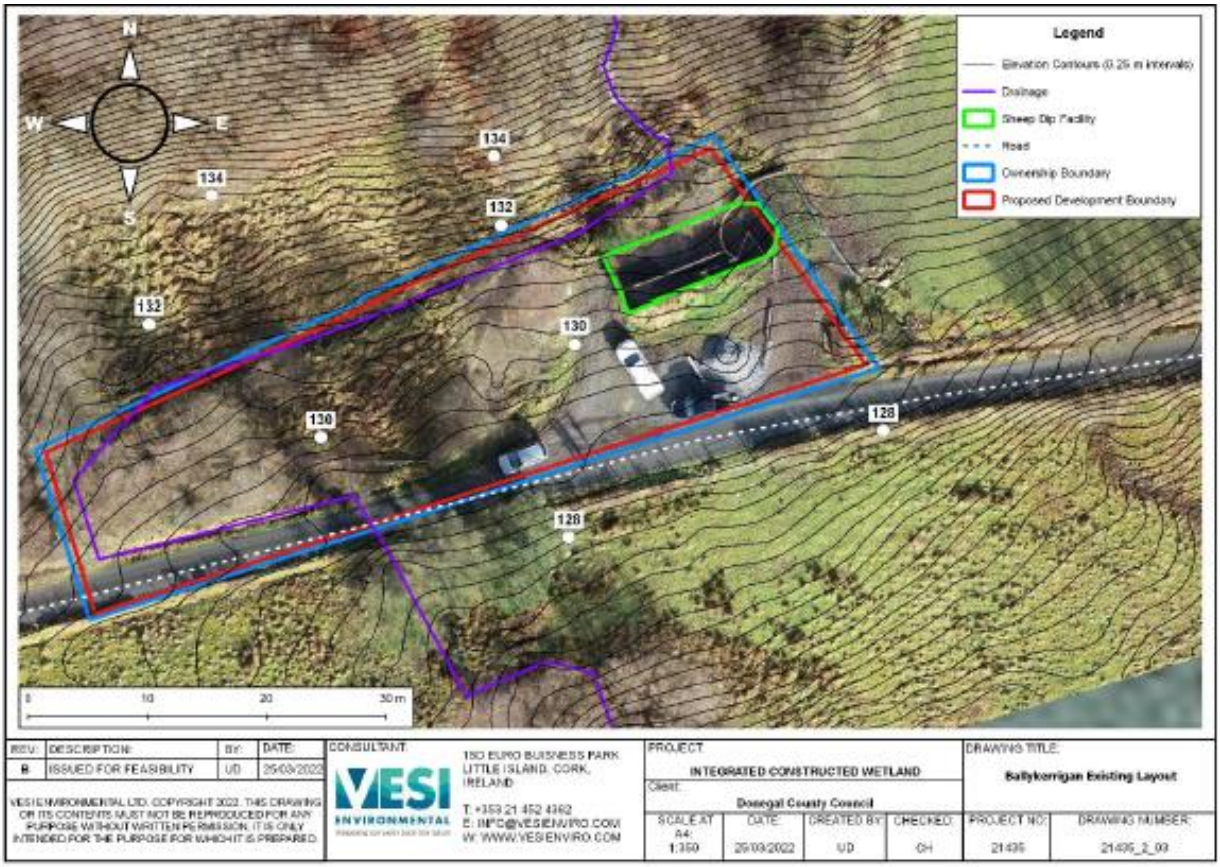

Figure 3: Site Layout and ponds

Figure 4: Details of the ICW and ponds at Ballykerrigan

The proposed site is partially up-gradient of the sheep dip facility making gravity flow potentially problematic. Gravity flow is ideal in all cases, as such construction work may result in slight changes during excavation works to achieve this. The site visit by VESI environmental suggested unfavourable/ difficult ground conditions (exposed boulder, site bisected by surface water) which may require importation of soils for treatment cell construction. Although restricted in available area, a preliminary design has been developed where a receiving cell is constructed to the west of the sheep dip facility, a dividing embankment will separate it from an adjacent treatment cell. Spent solution will flow by gravity via a 150mm uPVC pipe underground to the receiving cell. Here, as with the other sites, it will be stored and diluted before flowing via connecting pipework to the next cell. This next cell will be densely vegetated with emergent vegetation. Final discharge from this cell will be to the adjacent surface water stream which runs to the northwest of the treatment cell (VESI environmental Sheep Dip ICW Report, April 2022).

The following has been taken into account during the design phase; Hydraulic Loading, Concentration of contaminants and influent, average rainfall, topography and site ground conditions.

The concentration of chemicals used when dipping sheep can be estimated based on Chemical Datasheets on sheep dip concentrate. On average these facilities are used 1 to 2 times per annum and on average a sheep dip bath will hold 1000 Litres of clean water before dip product is added based on average flock numbers of 500 sheep.

There will be a receiving open water cell (see Figure 4) that will allow for the dilution of influent with intercepted rainfall and surface water and the organic binding of an active solution to the soil in the cell. This cell then transfers to the treatment cells which are typically shallow (100-200mm) and densely vegetated to allow for a shallow surface water flow. This cell will be diluted with rainfall that is collected through natural attenuation.

These works will be conducted at the co-ordinates 54.795231N, -7.989369W (Irish Grid Ref: 00733E 94133N)

The design of these types of wetlands requires low maintenance as they naturally vegetate themselves over time.

The site will be inspected regularly, and the water quality and macroinvertebrate surveys will be carried out as part of the normal monitoring for the Finn Catchment.

The type of planting suggested by VESI environmental can be found below:

						
Glyceria maxima	*Carex riparia*	*Typha latifolia*	*Iris pseudacorus*	*Typha angustafolia*	*Ranunculus lingua*	*Lythrum salicaria*

Figure 5: Sheep Dipping facility at Ballykerrigan.

Figure 6: *Location of ICW at Ballykerrigan*

3.1.2. Assessment of "in combination" effects

In combination effects from other plans and projects were also assessed.

Existing plans and projects examined included:

- The County Donegal Development Plan 2018 – 2024;
- North Western River Basin Management Plan (2009-2015);
- The Biodiversity Action Plan 2017-2021; and
- A search for existing Individual Planning Applications.

Assuming the processes laid out as part of an Appropriate Assessment as a guideline for assessing potential impacts on a Natura 2000 site, the above plans were assessed in accordance with Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act, 2000 and are not envisaged to result in significant effects on the integrity of the Natura 2000 network.

In accordance with legislative requirements and the objectives of the County Donegal Development Plan, all local applications are assessed on a case by case basis for their potential to result in significant effects on the environment and the integrity of the Natura 2000 network and whenever necessary, mitigation measures are proposed to prevent/ offset significant effects. Their assessment also examines in-combination effects from other plans or projects on one or more Natura 2000 site(s) and projects including proposed infrastructural projects, residential housing and other small scale projects/ works.

It was determined that none of the existing plans above, in combination with the proposed works, would lead to an increase in any significant effects on the Natura 2000 site.

However, as the proposed works are to be carried out within the SAC, and applying the precautionary principle, it was decided that a detailed analysis of the proposed works individually was warranted.

3.2. Description of Natura 2000 Site in vicinity of proposed works

By consulting NPWS online GIS mapping system it was ascertained that the only Natura 2000 sites that had the potential to be affected by the proposed works were the Finn River SAC (Site Code 002301). This has been designated in consideration of the EU Habitats Directive Annex I Habitats and Annex II Species.

The Finn SAC site comprises almost the entire freshwater element of the Finn and its tributaries and it is contained within the county of Donegal. The river rises in Lough Finn and flows to Lifford where it joins with the River Mourne and becomes the River Foyle, flowing in to Lough Foyle.

The following table illustrates the Natura 2000 sites considered for the purpose of this assessment and also provides data on their qualifying interests.

Table 1: Table showing qualifying interests of the Finn River SAC

Site Code	Natura 2000 Site Name	Date of Designation (as SCI)	Qualifying interests (qualifying interest code in square brackets [ ], * denotes priority habitat)
002301	River Finn SAC	June 2006	[3110] Oligotrophic Waters containing very few minerals
			[4010] Wet Heath
			[7130] Blanket Bogs (Active)*
			[7140] Transition Mires
			[1106] Atlantic Salmon (*Salmo salar*)
			[1355] Otter (*Lutra lutra*)

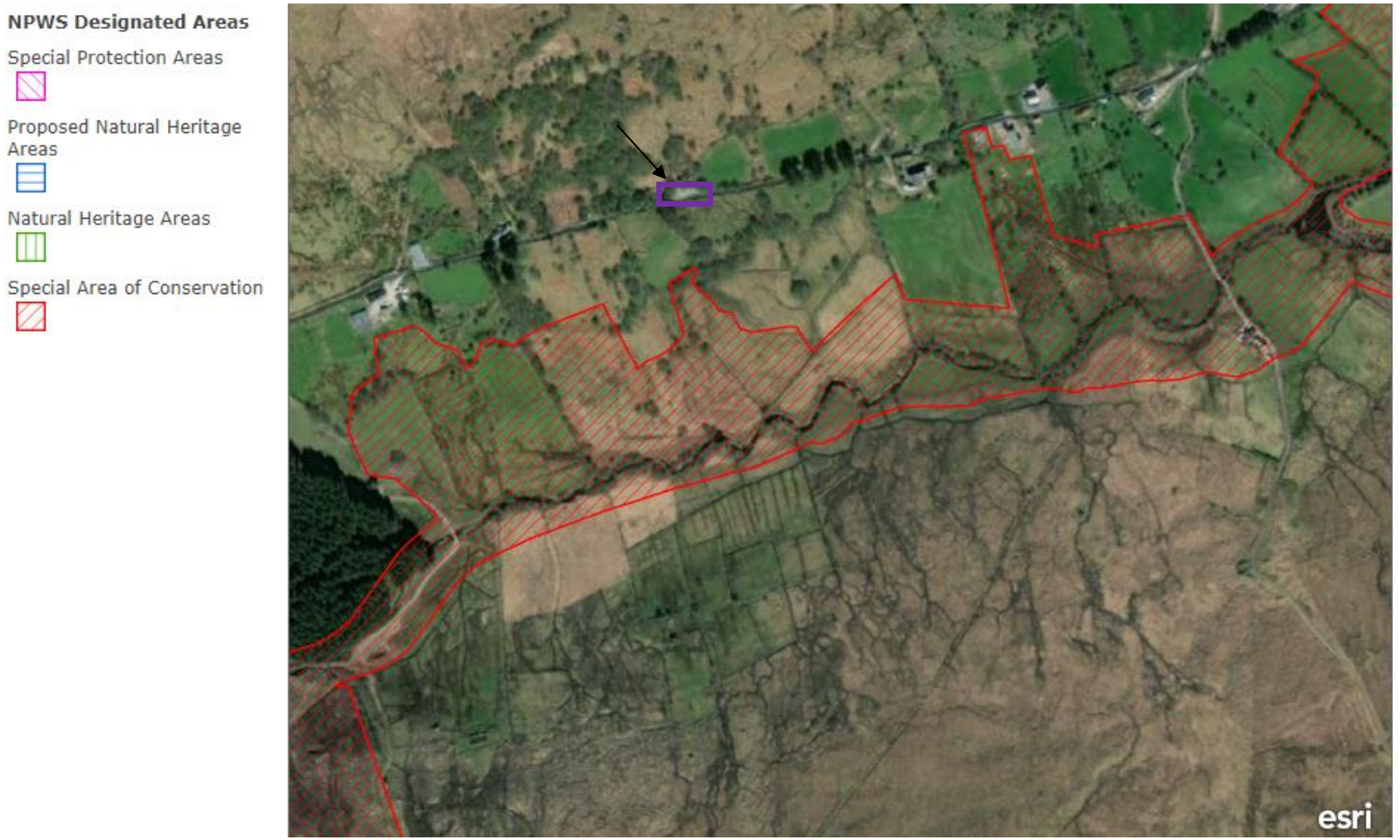

Figure 7: Designated Sites near Ballykerrigan and proposed ICW site in purple source @NPWS

River Finn SAC – Site Code 002301

The Finn River is one of Ireland's premier salmon rivers and can now only be fished by licenses awarded by the Loughs Agency. The site comprises of the entire freshwater element of the River Finn, as well as its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Elatagh, Glasagh and Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford are also part of the SAC (DEHLG 2014).

The underlying geology is Dalradian Schists and Gneiss for the most part though Quartzites and Carboniferous Limestone are present in the vicinity of Castlefinn. The hills around Lough Finn are also made of Quartzite. The mountains of Owendoo and Cloghervaddy are Granite Felsite and other intrusive rocks rich in Silicia (DEHLG 2014).

The Loughs Agency has a management scheme in place entitled "The control of fishing regulations" which stipulates that, if a certain number of salmon do not pass a given fish counter by the end of the calendar year, in two years out of the preceding five, then the fishery will be changed to catch and release for both commercial fishing and anglers. The target for the Finn River is 5,410 fish past the counter at Killygordon by the end of the calendar year. In 2019 the Finn recorded 4,247 which is below the threshold and in 2020 only 2,302 fish were recorded which is under half the number needed.

The River Finn is a designated Salmonid River under the EU Freshwater Fish Directive and angling is one of the main tourist attractions of the catchment. It is designated as one of Ireland's premier salmon waters. The Atlantic Salmon (*Salmo salar*), although still fished, is considered to be endangered or locally threatened elsewhere in Europe and is listed in Annex II of the EU Habitats Directive. The Finn is important in an international context as its populations of spring salmon appear to be stable, while they are declining in many areas of Ireland and Europe. The salmon fishing season in the Finn is 1st of March to the 15th September. The estimated rod catch for the Finn is approximately 500-800 spring salmon and 4,000 grilse annually, producing about 40% of the Foyle count (DEHLG 2014).

The Finn Catchment is also important for Otter (*Lutra lutra*) which is another species listed in Annex II of the EU Habitats Directive. It is widespread throughout the system and one of the two fauna species for which the SAC is designated (the other being the Atlantic Salmon) (DEHLG 2014).

In addition, the catchment also supports several other important animal species including badger (*Meles meles*), Irish Hare (*Lepus timidus*) and common frog (*Rana temporaria*), all of which are listed in the Irish Red Data Book (DEHLG 2014).

Bird species such as Golden Plover (*Pluvialis apricaria*), Peregrine (*Falco peregrinus*) and Merlin (*Falco columbarius*), which are listed in Annex I of the EU Birds Directive, breed in the upland areas of the catchment. Red Grouse (*Lagopus lagopus scoticus*) and the Ring Ouzel (*Turdus torquatus*), which are listed in the Irish Red Data Book, also occur in the area (DEHLG 2014).

Lough Finn supports a population of Arctic Charr (*Salvelinus alpinus*) which represents an arctic-alpine element in the Irish fauna and is a relative of the salmon and trout. In Ireland it only occurs in cold, stony, oligotrophic lakes. It is listed as 'Lower Risk', least concern in the IUCN Red List however it is listed as 'threatened' in the Irish Red Data Book. They are also a UK Priority Action Plan priority species and a Northern Ireland action plan was published in 2008. They are very sensitive to changes in water quality (DEHLG 2014).

Lowland Oligotrophic lakes are found at Loughs Finn, Belshade and Derg, as well as in many smaller lakes within the Finn Catchment. Lough Derg is a large oligotrophic lake situated north of Pettigo. An

extensive area of blanket bogs and conifer plantations make up the lake catchment. Oligotrophic waters containing very few minerals is one of the parameters for which the site is designated an SAC (DEHLG 2014).

Other SAC designation parameters are Wet Heath, Blanket Bog and Transition Mires (Active), the last of which is a priority habitat.

Upland blanket bog occurs throughout much of the upland area of the catchment along the edges of the river. However, more extensive examples are found at Tullytresna and the Owendoo, Cloghervaddy bogs. The blanket bog is dominated by Common Cotton grass (*Eriophorum angustifolium*), Deergrass (*Scirpus cespitosus*), Purple Moor-grass (*Molinia caerulea*) and bog mosses (*Sphagnum* spp.). Pool and hummock systems are a feature of the flatter areas, with Heather (*Calluna vulgaris*), mosses (*Racomitrium lanuginosum*, *Sphagnum cappillifolium* and *S. pappilosum*), lichens (e.g. *Cladonia portentosa*) and the liverwort (*Pleurozia purpurea*) occurring abundantly in the hummocks. The scarce bog moss *Sphagnum imbricatum* is a component of some of the hummocks. *Sphagnum magellinicum* is found in wet flats by pools, while *S. cuspidatum* occurs abundantly within the pools themselves (DEHLG 2014).

Transition Mires (or quaking bogs or scraws) occur at several locations, usually at the interface between bog and lake or stream. In Owendoo/ Cloghervaddy there are many examples of small lakes south of Belshade. Some of the lakes contain floating scraws of the bog moss *S. recurvum*, Bottle Sedge (*Carex rostrata*), Bog-sedge (*C. limosa*) and Bogbean (*Menyanthes trifoliate*). West of Owendoo River there is an extensive area of scraw with a similar suite of species but of different abundances. Quaking areas are also associated with blanket bog at Cronamuck and Cronakerny. At Cronamuck, a small, level flushed area occurs at the base of a slope leading into a flushed stream. Diversity, including diagnostic species, is good (DEHLG 2014).

Wet Heath is associated with the blanket bog throughout the catchment and is found on the shallow peats and better drained slopes. In Owendoo/ Cloghervaddy this is mostly characterised by Cross-leaved Heath (*Erica tetralix*), Heather, Mat-grass (*Nardus stricta*), Heath Rush (*Juncus squarrosus*) and Tormentil (*Potentilla erecta*). The heath often grades into flush vegetation dominated by Black Bog-rush (*Scoenus nigricans*) (DEHLG 2014).

Agriculture, with particular emphasis on grazing, is the main land use along the Finn and its tributaries. Much of the grassland is unimproved but improved grassland and silage are also present, particularly east of Ballybofey. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river, particularly as the river is prone to extensive flooding. Additionally, pesticide use in forestry and in livestock management is of concern as, if these chemicals come in contact with local waterways, they have the potential to reduce macroinvertebrate populations in the vicinity, which are a staple food of salmonids (DEHLG 2014).

Afforestation is ongoing, particularly along the western sections of the site adjacent to the headwaters and around the shores of Lough Derg. Planting has also been carried out on the Cronamuck River. Forestry poses a threat in that sedimentation and acidification can occur in local watercourses. Sedimentation can cover the gravel beds resulting in the loss of suitable spawning habitat for salmonids (DEHLG 2014).

In conclusion, the Finn Catchment supports important populations of a number of species listed in Annex II of the EU Habitats Directive and several habitats listed in Annex I of this directive, as well as examples of other important habitats. Blanket bog is a rare habitat in Europe and receives priority status in Annex I of the EU Habitats Directive. The overall diversity and ecological value of the

catchment is increased by the presence of populations of several rare or threatened birds, mammals, fish and plants (DEHLG 2014).

3.3. Conservation Status

The overall aim of the Habitats Directive is to maintain or restore the favourable conditions of habitats and species of community interest listed in the Habitats Directive and Birds Directive. Special Areas of Conservation (SAC) are designated to afford protection to the most vulnerable of them and are a part of the Natura 2000 network (along with Special Protection Areas for Birds).

European and national legislation places an obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation conditions. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these areas.

The Finn River Catchment (and thus the SAC) is monitored and maintained by the Loughs Agency, which is a cross border body and the competent authority responsible for all rivers that flow in to Lough Foyle and Carlingford Lough. Cross Border co-operation is vital to the maintenance of the quality of river catchments on the Island of Ireland as these water bodies frequently cross political borders and cross border agreements must be in place to sufficiently manage such waters. The maintenance of habitats and species within Natura 2000 sites at favourable conservation conditions will contribute to the overall maintenance of favourable conservation status of those species and habitats at a national level.

The favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, is stable or increasing;
- The ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- Population data on the species concerned indicates that it is sustaining itself;
- The natural range of the species is neither being reduced or likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis.

4. Assessment of Likely Effects

4.1 Likely effects on the River Finn SAC (Site Code 002301)

Table 2 and Table 3 provide information on the following elements associated with the River Finn SAC site

a) Qualifying interests;
b) Site sensitivity and vulnerability based on sensitivity of principal supporting habitat;
c) Current Conservation Status;
d) General Threats; and
e) Specific threats from proposed development.

4 (a): The qualifying interests are the features for which the site has been designated as a Natura 2000 site under the Habitats Regulations and covers listed habitats, species and bird populations as detailed in the site synopsis and the Natura 2000 Standard Data Form;

4 (b): Site sensitivity and vulnerability is based on the sensitivity of the principal supporting habitat as detailed in the Natura 2000 Standard Data Form and the specific published Site Conservation Objectives;

4 (c): The conservation status of the qualifying interest is listed as detailed in the Natura 2000 Standard Data Form and the published Site Conservation Plan (July 2005);

4 (d): The general threats are based on information contained within the site synopsis, the Natura 2000 Standard Data Form, Published Site Conservation Plan (July 2005), field visits and information obtained from Loughs Agency Inspectors; and

4 (e): The screening of potential threats from the proposed project to the qualifying interests is based on field studies and analysis of all information available to the Loughs Agency.

Table 2: River Finn SAC (Site Code 002301) Site Description and Screening Matrix - Habitats

Qualifying Interest	Site Sensitivity	Conservation Status	General Threats	Potential threat from proposed development
Blanket bogs (active only) (EU Habitat 7130)	Sensitive to mechanical damage of habitat and change to ground water levels. Also sensitive to habitat invasion by scrub.	Average or Reduced Conservation	Main threats come from land reclamation and drainage. Active peat cutting, overgrazing and localised damage caused by supplementary feeding of livestock also represent real threats.	The proposed development does not pose a significant threat to this qualifying interest. There is a blanket bog within <5km of the proposed works but it lies on the opposite side of the Clougher Finn river therefore there should be no major impact.
Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) (EU Habitat Code 3110)	Surface and ground water dependant. Moderately sensitive to hydromorphological change. Moderate sensitivity to pollution.	Good Conservation	The main threat to this habitat is from ground water contamination due to farming activity	The proposed development does not pose a significant threat to this qualifying interest as the Clougher Finn River does not have any connectivity with any Oligotrophic lakes for which the Natura 2000 site is designated
North Atlantic wet heaths with *Erica tetralix* (EU Habitat Code 4010)	Sensitive to mechanical damage of habitat and change to ground water levels. Also sensitive to habitat invasion by scrub.	Average or Reduced Conservation	Main threats come from land reclamation and drainage. Active peat cutting, overgrazing and localised damage caused by supplementary feeding of livestock also represent real threats.	There is wet heath within <5km of the proposed work area but the proposed development does not pose a significant threat to this qualifying interest as it does not occur within or adjacent to the proposed work area
Transition mires and quaking bogs (EU Habitat Code 7140)	Sensitive to mechanical damage of habitat and change to ground water levels. Also sensitive to habitat invasion by scrub.	Good Conservation	The main threat to this habitat is from changes to the ground water level associated with land reclamation and drainage works.	The proposed development does not pose a significant threat to this qualifying interest as it does not occur within or adjacent to the proposed work area

Table 3: River Finn SAC (Site Code 002301) Site Description and Screening Matrix - Species

Qualifying Interests	Principal Supporting Habitat within SAC Site	Conservation Status of Species	General Threats	Potential Threat from Proposed Development
Berwick's Swan *Cygnus clumbianus bewickii* (A037)	This Annex I bird is supported by coastal and inland habitats for overwintering purposes.	Good	These winter migratory birds listed in Annex I of Council Directive 79/409/EEC are threatened by damage or pollution to supporting habitat caused by agricultural practices, commercial and residential development and recreational activities including hunting.	The proposed development does not pose a significant threat to this qualifying interest
Whooper Swan *Cygnus cygnus* (A038)	This Annex I bird is supported by coastal and inland habitats for overwintering purposes.	Good		The proposed development does not pose a significant threat to this qualifying interest
Peregrin Falcon *Falco peregrinus* (A103)	This Annex I bird is supported by inland habitats for overwintering purposes.	Good		The proposed development does not pose a significant threat to this qualifying interest
Merlin *Falco columbarius* (A098)	This Annex I bird is supported by inland habitats for overwintering purposes.	Good		The proposed development does not pose a significant threat to this qualifying interest
Golden Plover *Pluvialis apricaria* (A140)	This Annex I bird is supported by inland habitats for overwintering purposes.	Good		The proposed development does not pose a significant threat to this qualifying interest. There are records of Golden Plover in the area (Bird sensitivity Map, EPA)
Common Goldeneye Duck *Bucephala clangula* (A067)	Coastal and inland habitats.	Good	These regulatory occurring migratory birds not listed on Annex I of Council Directive 79/409/EEC are threatened by damage or pollution to supporting habitat caused by agricultural practices,	The proposed development does not pose a significant threat to this qualifying interest
Greylag Goose *Anser anser* (A043)		Good		The proposed development does not pose a significant

			commercial or domestic development activities and recreational activities including hunting.	threat to this qualifying interest
Common Teal *Anas crecca* (A052)		Good		The proposed development does not pose a significant threat to this qualifying interest
Mallard Duck *Anas platyrhynchos* (A053)	Coastal and inland habitats.	Good	These regulatory occurring migratory birds not listed on Annex I of Council Directive 79/409/EEC are threatened by damage or pollution to supporting habitat caused by agricultural practices, commercial or domestic development activities and recreational activities including hunting.	The proposed development does not pose a significant threat to this qualifying interest
Tufted Duck *Aythya fuligula* (A061)		Good		The proposed development does not pose a significant threat to this qualifying interest
Red Breasted Merganser *Mergus serrator* (A069)		Good		The proposed development does not pose a significant threat to this qualifying interest
Northern Lapwing *Vanellus vanellus* (A142)		Good		The proposed development does not pose a significant threat to this qualifying interest
Curlew *Numenius arquata* (A160)		Good		The proposed development does not pose a significant threat to this qualifying interest
Common Redshank *Tringa totanus* (A162)		Good		The proposed development does not pose a significant threat to this qualifying interest
Lesser Blacked Back Gull *Larus fuscus* (A183)		Excellent		The proposed development does not pose a significant

				threat to this qualifying interest
Ring Ouzel *Turdus torquatus* (A282)		Good		The proposed development does not pose a significant threat to this qualifying interest
Otter *Lutra lutra* (A1355)	River habitats	Excellent	Both qualifying interests are listed in Annex II of Council Directive 92/43/EEC. The main threat to both comes from local agricultural activity. Water pollution and eutrophication from the inappropriate application of fertilisers, both organic and inorganic, on land adjacent to the river is the greatest threat to both species. Storage of bailed silage adjacent to the river may also cause pollution. Access to the river and river bank by grazing animals will also cause erosion of natural habitat and pollution. Removal of gravel from the river bed is a threat to the salmon as these are used as spawning habitats. Removal of natural habitat such as wet lands is also a threat to the otter. Once off housing	The works are being carried out away from the Clougher Finn River and This risk is deemed highly unlikely however, precautionary measures will be put in place to ensure that no foreign materials, detrimental to the aquatic environment, will be introduced to the water course. Refuelling stations, bunding where appropriate to protect against increased sedimentation and distance buffers from the water's edge for machinery will be implemented to further reduce any potential threat. Additionally, biosecurity measures will be implemented to ensure that all plant and personnel working on site do not risk the spread of invasive species in to the area. All works will be routinely
Salmon *Salmo salar* (A1106)	River habitat	Excellent		

			with individual waste water treatment systems may also pose a threat to water quality if the treatment systems are not operating correctly. Hunting of otter is also a threat as is the unauthorised fishing and poaching of salmon.	inspected by Loughs Agency personnel to ensure that environmental precautions are adhered to.
Sword-leaved helleborine (*Cephalanthera longifolia*), Mountain Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*), Commen Frog (*Rana temporariia*), Common Lizard (*Lacerta vivipara*), Arctic Char (*Salvelinus alpinus*), Red Grouse (*Lagopus lagopus*), Herron (*Ardea cinerea*), Mute Swan (*Cygnus olor*).	Coastal and inland habitats	Good	Range of threats associated with loss of habitat, agricultural activity and recreational activity including hunting and fishing.	The proposed development does not pose a significant threat to this qualifying interest

Table 2 and Table 3 outline that the potential significant effects of the proposed works on the River Finn SAC are to populations of Otter and Atlantic Salmon due to the proximity of the works to the Clougher Finn River and the instream components.

A significant effect of a project on a Natura 2000 Site according to national guidance on Appropriate Assessment (DoEHLG, 2009) has been described as one which is likely to undermine any of the sites conservation objectives and typical examples of significant effects include:

- Loss of Annex I habitat area;
- Disturbance to species population density;
- Direct/ indirect damage to the physical quality of the environment;
- Causing serious/ ongoing disturbance to habitats for which the Natura 2000 site was selected; and
- Reduction/ fragmentation of the habitat area.

The habitat of these Annex II listed species will not be disturbed, fragmented or reduced as a consequence of the proposed works. However it should be noted that both Annex II species are water quality dependent and, as such, consideration should be given to any potential impacts that could be caused during the construction phase of the works on the river and what steps can be taken to alleviate these.

The works themselves are designed to protect the water quality of the Clougher Finn River from accidental introduction of harmful pesticides used during sheep dipping activities. Ensuring that these chemicals are not introduced to the aquatic environment will contribute to maintaining a pristine freshwater environment for the priority species Atlantic Salmon and Otter. Furthermore, eliminating the introduction of these chemicals to the local watercourse will ensure that aquatic macroinvertebrate populations remain healthy and available as a food source for Atlantic Salmon. Therefore there are no operational phase impacts anticipated which would negatively affect the conservation status of the SACs.

4.1.1 Atlantic Salmon (*Salmo salar*)

Atlantic Salmon are one of the candidate species for which the Finn River SAC was nominated and, as such, all due consideration must be given to their protection during the implementation and operational phases of the proposed works.

The area of the Clougher Finn which the proposed works is hydrogically linked has been surveyed for salmon spawning grounds (Redds) yearly by the Loughs Agency. The most recent Loughs Agency Survey for Salmonids recorded 34 Redds along the stretch of river below the proposed works area.

In light of this it is prudent that every effort be made to ensure that the spawning suitability of the area is not affected due to the works. It is believed that the two potential negative impacts that the proposed works could have on the adjacent spawning habitat include the introduction of suspended solids and accidental spills of hydrocarbons from plant machinery. However, mitigating measures have been suggested in this document which will ensure that these potential threats are prevented.

Table 3 below lists the Conservation Objectives for Atlantic Salmon as devised by the NPWS in their Conservation Objective Series for the Finn River SAC (Site Code 002301). Also listed is how the proposed works will impact on each of the conservation objectives of the site:

Table 3: Conservation Objectives for Salmon (Salmo salar) in the Finn and related impacts from the proposed works

Attribute	Measure	Target	Link to works
Distribution: Extent of Anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	These works will help improve the water and habitat quality of the Clougher Finn which currently is sub-optimal for supporting populations of Atlantic Salmon. Improving conditions at the site will allow this stream to be utilised fully by salmonids, increasing the extent of river channel available to them
Adult Spawning Fish	Number	Conservation Limit (CL) for each system consistently exceeded	Improving the water quality of the Clougher Finn will increase the amount of healthy habitat available for Atlantic Salmon for feeding and spawning which will help increase overall population numbers in the Finn Catchment
Salmon Fry Abundance	Number of fry/ 5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minute sampling	Improving the water quality of the Clougher Finn will increase the amount of healthy habitat available for Atlantic Salmon for feeding and spawning which will help increase overall population numbers in the Finn Catchment
Out-migrating Smolt Abundance	Number	No significant decline	Improving the water quality of the Clogher Finn will increase the amount of healthy habitat available for Atlantic Salmon for feeding and spawning which will help

			increase overall population numbers in the Finn Catchment
Number and Distribution of Redds	Number and occurance	No decline in number and distribution of spawning redds due to anthropogenic causes	Improving the water quality of the Clogher Finn will increase the amount of healthy habitat available for Atlantic Salmon for feeding and spawning which will help increase overall population numbers in the Finn Catchment
Water Quality	EPA Q Value	At least Q4 at all sites sampled by EPA	The integrated constructed wetland is designed specifically to reduce the introduction of harmful pesticides in to the Clogher Finn which will lead to an improvement in water quality. This will lead to an increase in species diversity and abundance of aquatic macroinvertebrate species which are the indicators used for the Q-Value assessment

4.1.2 Otter (*Lutra lutra*)

National Biodiversity Data Centre maps have a record of Otter to the west of the proposed works area <5km away in a stream west of Letterkillew where 2 droppings were found. The record was recorded by the Otter Survey of Ireland 1982 (Vincent Wildlife Trust).

Site visits of the proposed work area did not identify any potential breeding holt sites for Otter nor any signs of their presence (spraints, footprints etc.) however there is believed to be adequate feeding grounds in the vicinity.

It is believed that increased sedimentation and accidental introduction of hydrocarbons into the aquatic environment would have significant direct and indirect impacts on otter populations in their area and their potential to feed.

Additionally, concerns were raised about potential fragmentation of the habitat area due to the fencing as well as disturbance to these species if breeding occurred in the area.

However, it is believed that adequate mitigation measures have been proposed in this document to eliminate the possibility of any significant negative effects on Otter populations.

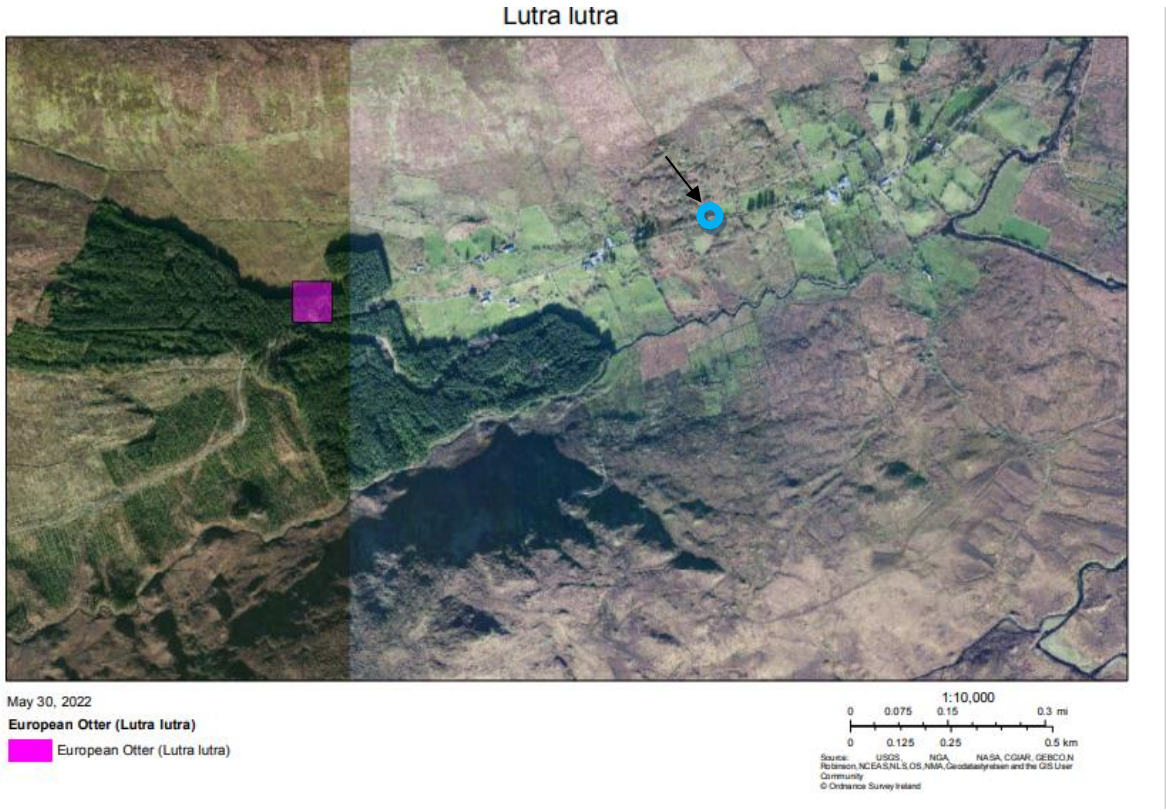

Figure 8: Screen Grab of National Biodiversity Centre maps showing location of reported Otter sightings in vicinity of proposed works (Work area is circled in blue)

5. Habitats Directive Annex Species (Non-Qualifying Interests)

5.1.1. Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The freshwater pearl mussel is listed in Annex II under the European Union's Habitats Directive and, according to the NPWS website, the Finn Catchment is classified as a *Margaritifera* sensitive area and as 'Catchments of other extant populations. The National Biodiversity Data Centre website indicates that there are no records of freshwater pearl mussels in the proposed work area.

Discussions with NPWS staff indicated that a contributing factor that the River Finn was designated as a *Margaritifera* sensitive area was due to the discovery of an old shell during a study by a PhD student in 1993 below Castlefinn. Subsequent surveys of the Finn Catchment were conducted however no other specimens of the pearl mussel were discovered. A report published by the EPA in 2013 supports this statement and concluded that the shell found was very eroded and that it was a significant time since the pearl mussel had been alive. The River Finn is not a designated pearl mussel habitat under the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009.

5.1.2. Lamprey Species

Surveys were conducted by the Loughs Agency in 2010 into the presence of lamprey species in the River Finn Catchment. It was determined that all three species (*Lamptera fluviatilis*, *Lampetra Planeri*, *Petramyzon Marinus*) occur in the Foyle Catchment and have the potential to occur further up the Finn. The 2010 study found populations of Lamprey in the area of Glenmore, however no other sites exhibited any Lamprey.

Although the Finn SAC is not designated for Lamprey, *Lampetra* Spp. Are designated under Annex II of the Habitats Directive and *Lampetra fluviatilis* is designated under Annex II and Annex V of the Habitats Directive.

Therefore these species will be assessed in addition to other aquatic species when proposing mitigation measures as they warrant special consideration.

5.2. Precautionary measures to be implemented

During the assessment of likely affects it was acknowledged that potential impacts on water quality during the construction phase of the proposed works could possibly be a potential threat to otter and salmon populations unless precautionary measures were implemented to alleviate this. Additionally, as the Annex II listed *Lampetra* Spp. Are known to occur in the Finn Catchment, any deterioration in water quality would likely have a negative impact on these species as well.

The main activities in the construction and operational phase which have the potential to impact on water quality are included in Table 4.

Table 4: Assessment of potential impacts and proposed mitigation measures

Activity	**Potential Impact before mitigation**	**Qualifying Interest (i.e. Otter, Salmon) potentially impacted**	**Likelihood of impact**	**Mitigation measures proposed**	**Likelihood of impact after mitigation**	**Comments**
Heavy Plant on the river bank and In stream;	Destabilisation of River Banks increasing sedimentation.	Salmon Otter *Lampetra* Spp	Low	5m buffer from the water's edge, with no access inside this area; Minimise track disturbance by digger by adhering to predefined track to work site and conducting works in parallel with fencing, where possible; Plant machinery will remain out of the water body as much as possible; Install sediment screens and bunds downstream of work area to trap any suspended sediments or accidental spills of fuel, oil or hydraulic fluid; Treatment of all machinery mats with a Virkon solution; The machinery will not enter any drains, streams or Rivers during the proposed works	Low	The proposed wetland is outside the Finn SAC designated area and is hydrologically linked through a drain that crosses underground. There should be no impact from this proposed development.
Risk of fuel/ oil/ hydraulic fluid spills from machinery;	Aquatic life disturbance to fish and other fauna potentially resulting in fatalities.	Salmon Otter *Lampetra* Spp	Medium	Dedicated refueling station to be designated at least 50 m from the work area, with adequate bunds and sumps in place to capture any spilled fuel/ oil/ hydraulic chemicals; Contractor must make sure plant machinery used is fit for purpose and free from any leak points for fuel, oil and hydraulic fluid; An effective spillage procedure must be implemented and adequate training must be provided to all site personnel in how to deal with an accidental spill;	Low	Provided the contractor implements all the measures in the mitigation table there should be no impacts from this proposed development

				All waste oils and hydraulic fluids collected must be stored in appropriate containers in the bunded area and removed from site for proper disposal at the completion of the works; Spill kits must be made available on site and sufficient to deal with any potential spills of waste oil, fuel or hydraulic fluids. Site personnel must be properly trained in the use of these kits. A bund and silt screen must be installed downstream from the work area to trap silt and to contain any accidental spills of fuel, oil or hydraulic fluid. All works to be carried out in dry conditions when river is at low flow.		
Possibility of introduction of invasive species attached to machinery and personnel;	Native Aquatic life and terrestrial plants could be at risk from invasive species.	Salmon Otter *Lampetra* Spp	Low	Set up of designated Virkon decontamination site with adequate sump and bund; All personnel must disinfect prior to and after accessing the site; Ensure that machinery mats are free from any potentially invasive species and any soil debris from use in previous work areas; Treatment of all machinery mats with a Virkon solution prior to use in the work area; All plant machinery must be disinfected prior to accessing the site and before they are retrieved from the site; and all plant and equipment must be free from soil from previous sites and they must be inspected to ensure that no potentially invasive species are present; and A non-native species survey will be conducted by the Loughs Agency before works commence and after work is complete to ensure that there are no risks presented by the introduction of invasive species.	Low	The proposed work area is 230m from the nearest river the Clougher Finn River. There is a road the R253 between the proposed development and the nearby fields that lead to the Clougher Finn River.
ICW construction and breeding Otter populations		Salmon Otter *Lampetra* Spp	Low	No otter have been recorded in the immediate vicinity of the works. There is a small stream running behind the site that will be checked for Otters and spraints prior to construction.	Low	There are records of Otters on the Stream to the west of Letterkillew (Vincent Wildlife Trust, 1982) Catchment Care and Loughs Agency will ensure that an Otter survey is conducted prior to any works taking place on the River. Mitigation will be implemented if evidence is found in conjunction with NPWS.
Fragmentation of terrestrial Otter habitat		Salmon Otter *Lampetra* Spp	Low	There will be no fragmentation of Otter habitat as there is no Otter habitat within the vicinity of the Proposed work area	Low	

6. Conclusion

It should be emphasised that the proposed works on the Sheep Dipper located nearby the Clougher Finn River which leads to the River Finn SAC are designed solely to help maintain the integrity of Finn River SAC, its water quality and the populations of flora and fauna inhabiting the area. It is directly related to and considered necessary to the management of the Finn River Natura 2000 site. It includes measures specifically for conservation purposes that are solely conceived for the conservation management of the site. Additionally, the works will contribute to the achievement of the Conservation Objectives of the site for Atlantic Salmon and European Otter as detailed in Section 4.1.2.

The main potential impacts associated with the proposed works are related to degradation of water quality due to potentially increased levels of sediment introduced to the river as well as the potential for introduction of hydrocarbons by plant machinery during the construction phase. If left unaddressed these would have the potential to decrease habitat quality for Atlantic Salmon, Otter and Lamprey species in the area. Consideration was also given to the possibility of the introduction of invasive species to the area as this would impact the floral diversity of the riparian habitats of the river. The current situation on the site with the potential for spent sheep dip entering into the nearby stream without intervention has the potential to cause toxic effects on the local fish and macroinvertebrate populations. The ICW proposed has been designed specifically to address this issue and eliminate the possibility of spent sheep dip entering the watercourse.

Records of Otters have been found to the west of the ICW work area <5km away. The Otter Survey of Ireland (1982) found 2 on the Stream west of Letterkillew (Vincent Wildlife Trust, 1982). There are no records of Otters in the stream adjacent to the works and the Catchment care project will survey for Otters before works are carried out however the Risk has been deemed low for any impacts on Otter populations.

When the precautionary measures stipulated are implemented in full during the construction phase of the proposed works, it is envisaged that there will be no significant adverse effects on the integrity of the Finn River SAC in view of the sites conservation objectives and that the conservation status of the Annex I and Annex II habitats and species will not be compromised by this proposed project either directly, indirectly or cumulatively.

The information provided in the this report provides the evidence based for the Loughs Agency to determine that the proposed project ' Integrated Constructed Wetland at Ballykerrigan, Co. Donegal' is directly connected with and necessary for the management of the River Finn Special Area of Conservation/ European site. Consequently, the Loughs Agency as a Public Authority listed in the second schedule of the European (Birds and Natural Habitats) Regulations 2011, as amended and established under the Foyle and Carlingford Fisheries Act 2007 grant consent for the project to proceed.

References

Sheep Dip Integrated Constructed Wetlands VESI Environmental, April 2022.

Council of the European Communities (1992) *Council Directive of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)*. OJL 206/35, 1992

Donegal County Council (2018). *County Donegal Development Plan 2018-2024*, Donegal County Council, 2018.

DEHLG (2017). *National Biodiversity Action Plan 2017-2021*. Department of Environment, Heritage and Local Government, Dublin

DEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*. Rev. Feb 2010. Department of Environment, Heritage and Local Government, Dublin.

European Parliament and European Council (2009). Directive 2009/147/EC of 30th November 2009 on the Conservation of Wild Birds (2009/147/EC). Official Journal L20/7, 2010.

European Communities (1997). Natural Habitats Regulations S.I. No. 94/1997.

European Commission (2000a) Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.

European Parliament and European Council (1992). EU Habitats Directive (92/43/EEC); Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal L206/7, 1992.

ISB (2000). *The Planning and Development Act 2000*. Irish Statute Book, Dublin

Loughs Agency (2010) *Lamprey Baseline Surveys: River Finn and River Deele, Co. Donegal*. LA/Lamprey/04&09/11, Prehen, Derry

NPWS (2016) *Site Synopsis for River Finn SAC (Site Code 002301)*. Available at: https://www.npws.ie/protected-sites/sac/002301

NPWS (2017) *Conservation Objectives: River Finn SAC 002301*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017) Natura 2000 – Standard Data Form for River Finn SAC (Site Code 002301). Available at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002301.pdf

WFD (2009) *North Western River Basin Management Plan (2009-2015)*. Water Framework Directive (Water Matters). Composed by Donegal, Cavan, Leitrim, Longford, Monaghan and Sligo County Councils

URL'S

URL 1 – http://www.sheep101.info/201/feedwaterequip.html

URL 2 – https://www.epa.ie/licensing/watwaste/watabs/

URL 3 – https://geo.loughs-agency.org/flexviewer/Freshwater/

URL 4- https://maps.biodiversityireland.ie/Map