



NATURA IMPACT STATEMENT:

Appropriate Assessment on Instream Soft Engineering Works on the Cummirk River

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 on behalf of four landowners (referred to in this document as Landowner 1, Landowner 2, Landowner 3 & Landowner 4 in accordance with GDPR Regulations) has been tasked with producing this Natura Impact Statement (NIS), under Article 6 of the EU Habitats Directive, on the proposal to carry out soft engineering instream works including pinning of woody material and installation and pinning of brushwood fascine and brash in order to alleviate erosion of land at two areas of the Cummirk River north of Cloghan located at the following co-ordinates for Engineering Site 1 (54.873211 N, -8.020453 W (Irish Grid: 198736 E 402813 N) and 54.872524 N -8.02004 W (Irish Grid: 198762 E 402737 N) for Engineering Site2 . Installation of a drainage pipe adjacent to the location of the soft engineering works at Engineering Site 1 will also be carried out to ensure that the integrity of the soft engineering at this site is maintained. The pipe will be installed between the co-ordinates 54.873734 N -8.020521 W (Irish Grid Ref: 198732 E 402871 N) and 54.873032 N -8.020291 W (Irish Grid Ref: 198747 E 402793 N).

Additional works pertaining to fencing and riparian tree planting are also anticipated, however they are to be conducted as a separate component of the overall works and are addressed in an independent NIS document entitled Natura Impact Statement: Appropriate Assessment on Proposed Fencing & Riparian Works on the Cummirk River.

The aim of this NIS is to assess any likely significant impacts on the River Finn Special Area of Conservation (SAC) Site Code 002031 associated with the proposed works.

1.1. Background

This Natura Impact Statement pertains to proposed soft engineering instream works including pinning of woody material and installation and pinning of brushwood fascine and brash in order to alleviate erosion of land in two areas of the Cummirk River north of Cloghan located at the following co-ordinates 198736 E 402813 N & 198762 E 402737 N (Irish Grid Reference). A drainage pipe will also be installed in a gully situated adjacent to Engineering Site 1 to help maintain the integrity of the soft engineering works at this site. The pipe will be installed between the co-ordinates 54.873734 N - 8.020521 W (Irish Grid Ref: 198732 E 402871 N) and 54.873032 N -8.020291 W (Irish Grid Ref: 198747 E 402793 N).

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 current baseline is 32% with the Catchment CARE project contributing to achieving the target for 2023 of 65%” through 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).

The Finn River Catchment has been surveyed by the Loughs Agency for 20 years. Parameters such as fish populations and spawning habitats have been monitored since 1999 whilst water quality, macroinvertebrate populations and habitat assessments have been carried out routinely every year at pre-selected sites since 2008. In addition the Loughs Agency, as part of the CatchmentCARE initiative, have carried out additional surveys of these parameters at 55 locations throughout the Catchment in 2019 and intend to continue annual surveys until October 2022 which is the lifetime of the CatchmentCARE project.

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 in to the freshwater environment from agricultural and forestry practices is a concern in the catchment (WFD 2009). Inadequate buffer zoning on agricultural land and forestry plantations increases the risk of accidental introduction of pesticides, herbicides and fertilisers to the aquatic environment. Additionally, lack of sufficient buffers facilitates poaching by livestock in the riparian zone and carries the risk of introducing faecal coliforms to the waterbody.

Using recently collected data, in addition to historical Loughs Agency data, the area of the Cummirk indicated above was selected for implementation of soft engineering works. This soft engineering works at the Cummirk site would eliminate any further erosion of two portions of land which are adjacent to a stretch of the Cummirk River which has historically supported several Salmon Redds. This erosion is believed to be caused by anthropogenic modifications made historically to the river. Additionally, a drainage pipe will be installed in a pre-existing drainage gully to help direct the flow of run off water away from the back end of the soft engineering works at Engineering Site 1. This will help preserve the integrity of the works at this site.

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.

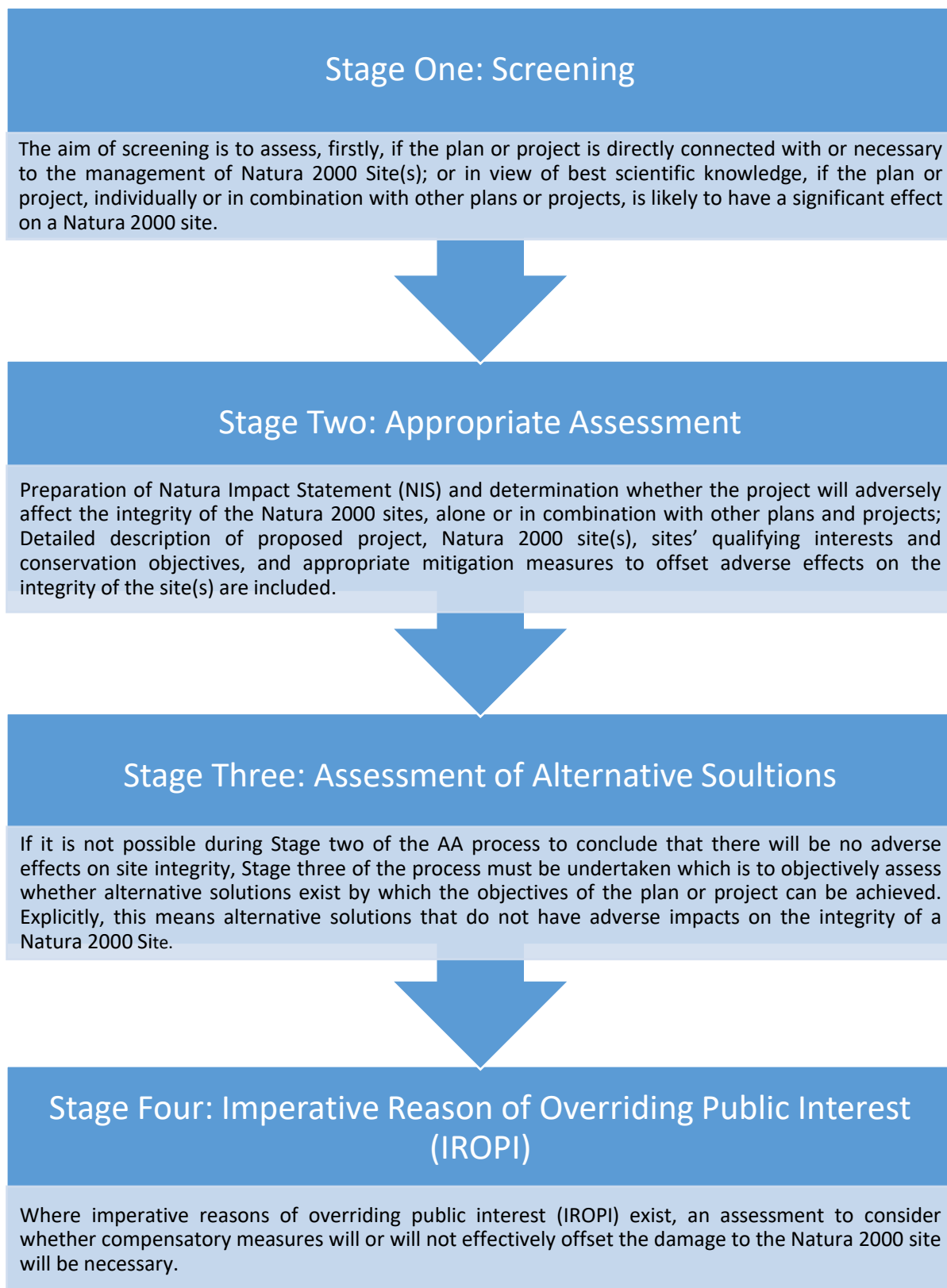
In Ireland, Natura 2000 sites include candidate Special Areas of Conservation (cSAC), Special Protection Areas (SPA), and proposed Special Protection Areas (pSPA). cSACs pertain to qualifying interests which are habitats in Annex I and species listed in Annex II of the Habitats Directive, while SPAs 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:



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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:

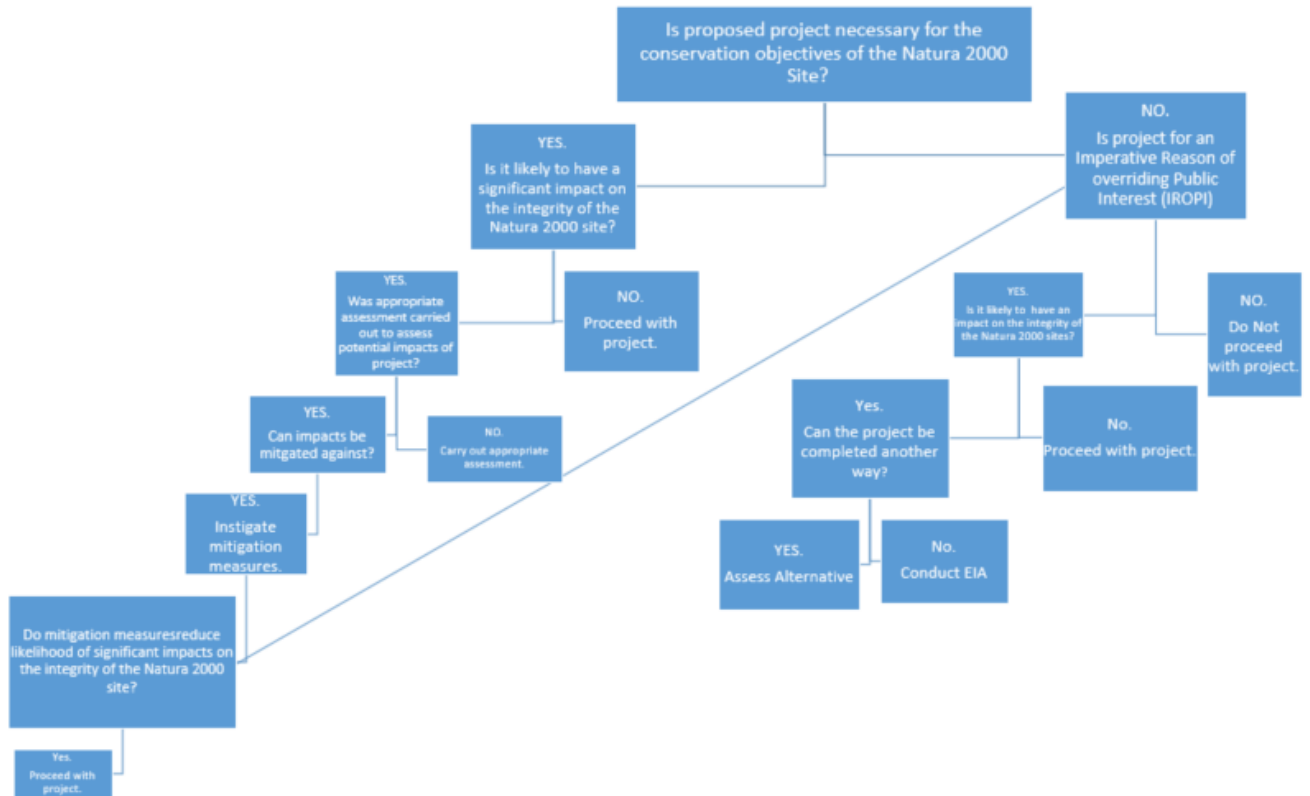


Figure 1, Decision Matrix used to determine what steps were needed for the Appropriate Assessment process.

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.

However, as the proposed works are to take place within the boundaries of the Natura 2000 site, the Loughs Agency was advised by representatives of both the Donegal County Council and of the NPWS to proceed to Stage 2: Appropriate Assessment to ensure that the integrity of the Natura 2000 site was maintained.

2.3. Description of proposed project and “alone and in combination” plans and projects

2.3.1. Description of Project

The proposed project is the installation of instream soft engineering works at two locations on the northern banks of the River Cummirk at the following Co-Ordinates: 198736 E 402813 N & 198762 E 402737 N (Irish Grid Reference). A drainage pipe will also be installed between the co-ordinates 198732 E 402871 N & 198747 E 402793 N (Irish Grid Ref) to help direct run off water from an existing gully past the back face of the proposed soft engineering works at Engineering Site 1.

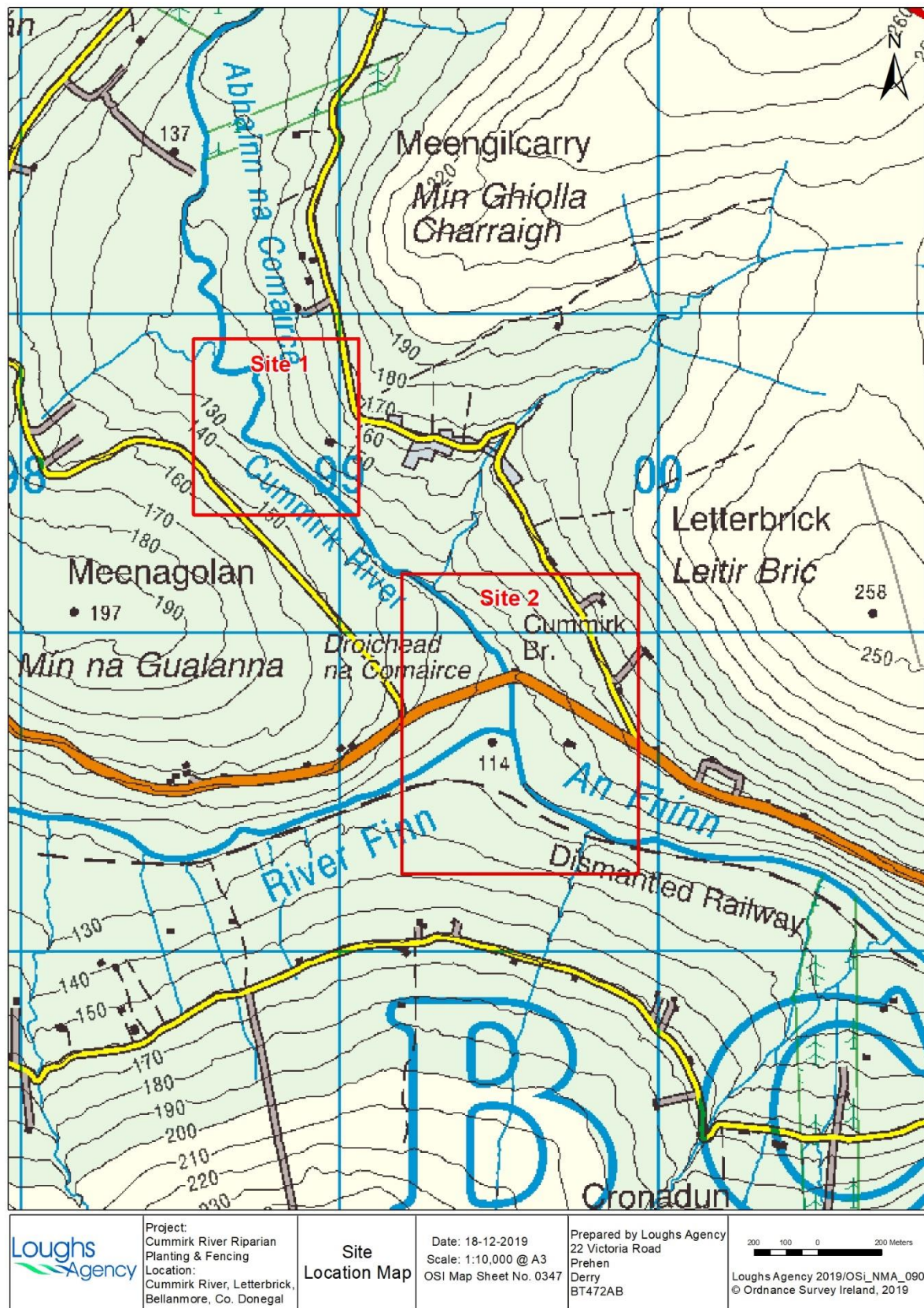


Figure 2: OSI Map showing proposed work area on Cummirk River. (Site 1. Site 2 will not have any soft engineering works.)

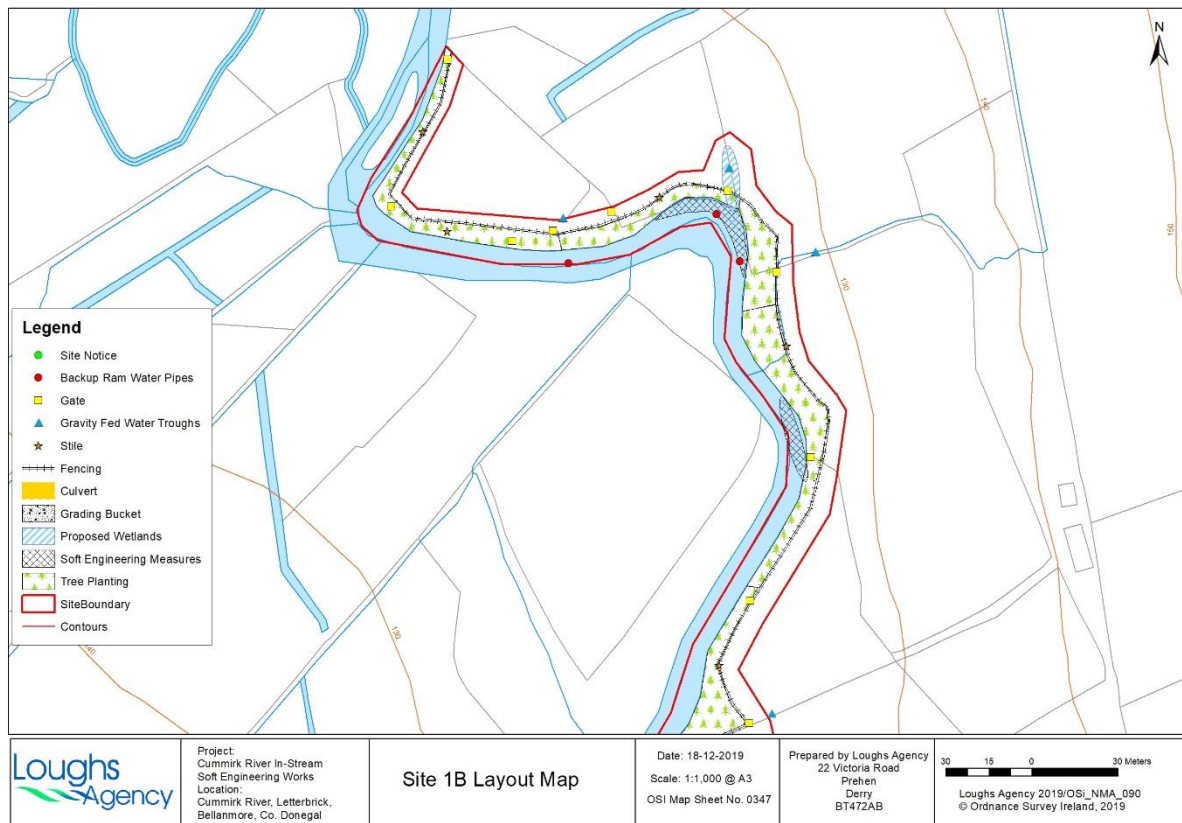


Figure 3: Site plan showing location of Engineering Site 1 (Top) and Engineering Site 2 (Middle) soft engineering works and drainage pipe location (map also details fencing and planting associated with partner project)

2.3.1.1. Instream Soft Engineering Works

Soft engineering works at the site located at 198736 E 402813 N (Engineering Site 1) will be carried out as follows:

Several stands of old dead trees adjacent to the site will be cut down as these will be used as woody material which will be pinned to the bank. Root structures will be left in place to help bind the bankside sediments.

As the site is quite deep (approx. 3.5 m) it is envisioned that the installation of a single walled coffer dam will be required which will allow access to the submerged bank face which is to be rehabilitated.



Figure 4: Photo looking across river at location of Engineering Site 1 ('Beach' area is located on opposite bank on the centre left of the photo)

Once the coffer dam is in place enough water will be pumped out to allow trained aquatic biologists to conduct back pack electrofishing in the drained area to remove any fish trapped there. Electrofishing will continue until no fish have been captured for a period of 15 minutes. All fish caught will be temporarily stored in containers on the river bank until they recover. Once recovered they will be returned to the river at a location downstream. Once all fish have been removed the dammed area will be completely drained which will allow soft engineering on the bank to commence.

Rock rolls/ coir rolls will be installed at the bottom of the eastern/ north eastern embankment face to a height of 1 m to alleviate erosion pressure and undercutting of the bank. Above and in front of this, woody material will be pinned to the bank face using wooden posts and natural coir fibre rope.

Posts will be driven in to the stream bed roughly 1 m apart in a crescent moon shape, starting at the northwestern most edge of the site close to the bank and gradually moving around in an arc with posts up to 2 m from the eroding bank face.

The 'beach' area (See Figure 4) on the northern bank edge will be packed with brushwood fascine from the northwestern edge up to the start of the main eroding bank face, increasing the depth of brushwood used with increasing slope.

The main Eastern/ north eastern eroding face will then be packed with brash made up of old Christmas trees. These will be installed with the tree bases facing in an upstream direction (north) and driven in to the bank face beginning at the northern most side of the eastern/ north eastern eroding face. Brash will be interlaced and packed underneath each layer (similar to a birds feathers) as they are installed,

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moving downstream (south). Interstitial spaces in the brush material will be packed with smaller brush debris so that the structure is dense enough to deflect the rivers flow and can easily support the weight of several people standing on it without sinking. This brush will be tied down using natural coir fibre rope.

As brush will be in limited supply it may be necessary to include brushwood fascine to further shore up the stability of the soft engineering brush structure. Brush should be installed all along the eastern eroding bank face to the point where the river continues as a glide/ run. Live willow cuttings will be incorporated in the soft engineering structure which will take root and eventually add strength to it.

The second site (Engineering Site 2) earmarked for soft engineering erosion control measures is situated downstream (southwest) of the above described structure. In order to carry out soft engineering works in this area a second coffer dam will need to be installed in a similar manner to that described above. All fish in the cordoned off area will be removed in the same manner as described before.



Figure 5: Photograph looking upstream at Engineering Site 2 soft engineering works site (Curved bank area on right)

Once dammed and drained, posts should be driven in to the stream bed all along the face of the proposed soft engineering area at a distance of approximately 2m from the bank at distances of 1 m

between each other. Corresponding posts must be driven in to the stream bed along the face of the eroding bank face. Once the posts are in place, the area in between must be packed with brushwood fascine from the river bed to the height of bank. The brushwood must be packed tight enough that it actively deflects the rivers flow and is sturdy enough to support the weight of several people standing on it without sinking. Once this is complete the top of the brushwood must be tied down using natural coir fibre rope.

1.1.1.1. Drainage pipe installation

A pipe will be installed between the coordinates 198732 E 402871 N & 198747 E 402793 N to convey water run off from an existing gully at the north end of the soft engineering works at Engineering Site 1 to an area downstream of these proposed works.

The run off from the land currently flows in to the area where the soft engineering works are planned and there are concerns that this will affect the integrity of the works in this area. Therefore it has been decided that the drainage pipe will be installed to bypass the soft engineering works in the area.

A 375mm diameter single socket twin wall pipe of length *circa* 100 m will be buried to a depth of 1 ft in the existing drainage gully at the site. The outflow will be situated downstream of Engineering Site 1 at co-ordinates 198747 E 402793 N therefore additional excavations outside of the existing gully must be carried out to convey the pipe around the planned soft engineering works.

It is recommended that this is carried out while the coffer dam is in place for the adjacent soft engineering works to avoid any sediment run off to the river.

All the works described above will be carried out in dry conditions when the river level is low.

Single Socket Pipe



Figure 6: Example of single socket twin wall pipe

1.1.1.2. Biosecurity

As the spread of invasive species is a priority concern throughout Ireland at present, careful consideration has been given to eliminating the spread of any of these within the work site. All machinery and equipment will be checked prior to accessing the site for any potential invasive species attached to them and these will be removed and disposed of in an appropriate manner. Additionally, all plant and equipment that is to be used in the work area will be treated with 'Virkon' before entering the work area and after it is retrieved from the work area.

Additionally, all personnel working on site will be required to have their clothing and footwear sprayed with Virkon before and after accessing the work site, ensuring that all surfaces are carefully disinfected i.e the soles of boots.



Figure 7: Example of brush soft engineering – Photo 1



Figure 8: Example of brush soft engineering works – Photo 2



Figure 9: Example of brashwood fascine soft engineering works – Photo 1



Figure 10: Example of brashwood fascine soft engineering works – Photo 2

Access points for plant machinery and workers have been designated by discussions with the landowners concerned. They are located in the following locations:

Irish Grid Reference: 199102E 402646N – Access point to land owned by Landowner 4 (Northern Bank);

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Irish Grid Reference: 199588E 402345N – Access point to land owned by Landowner 1 (Northern Bank);

Irish Grid Reference: 199647E 401883N – Access Point to land owned by Landowner 2 (Northern Bank, North of the Cummirk Bridge). Note: In order to gain proper access to this section of land, a section of fencing must be removed and a 14 ft gate must be installed at this location. As the ground is quite boggy at this location a layer of crushed stone will be spread to a depth of 20cm at the entrance and for a distance of 25 meters in to the field. In addition to this a drainage gully needs to be crossed in order to convey plant machinery to the work area. In order to achieve this a 6m length of Solid Twinwall Drainage Pipe of diameter 600 mm will be placed within the gully. Above the pipe will be placed drainage Geotextile 150gsm High Tenacity Polypropylene sheeting. Once in place they will be covered in earth with at least one meter of the Twinwall pipe on both the inflow and outflow left uncovered. Cobble and boulder will be placed on the edges of the earth covering on the upstream and downstream side of the gully to provide additional support to the earth covering. A layer of crushed gravel will be placed as surfacing over the earth covering and rolled for stability;

Irish Grid Reference: 199828E 401700N – Access point to land owned by Landowner 2 (Northern Bank, South of the Cummirk Bridge).

As stated in Section 1 above, fencing and riparian tree planting are covered in a separate NIS entitled *Natura Impact Statement: Appropriate Assessment on Proposed Fencing & Riparian Works on the Cummirk River* and do not form part of this proposed works.

2.3.2. 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.

The above plans have been 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.

2.4. 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 site that had the potential to be affected by the proposed works is 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.

This 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 site considered for the purpose of this assessment and also provides data on its qualifying interests.

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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 (<i>Salmo salar</i>)
			[1355] Otter (<i>Lutra lutra</i>)

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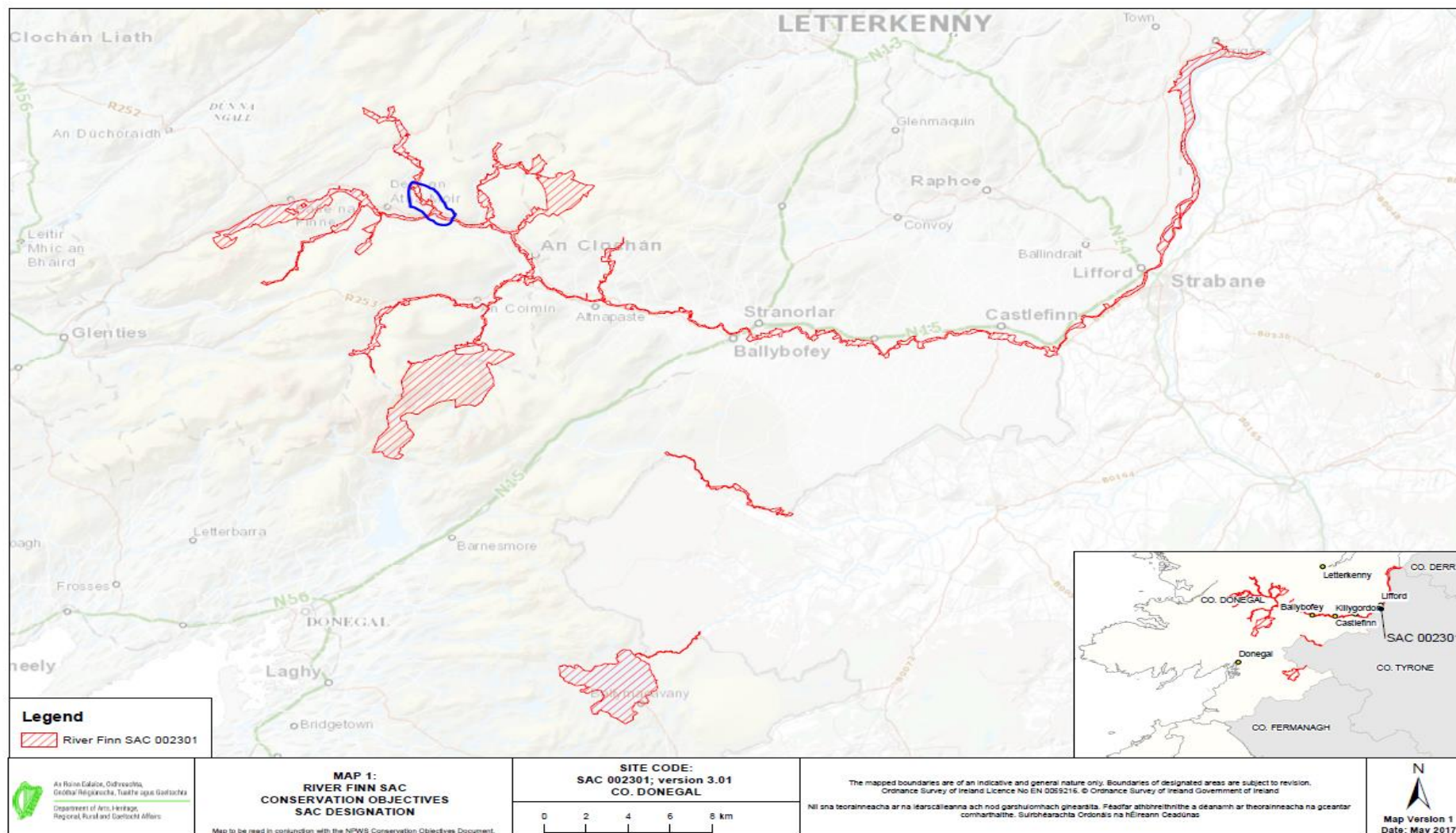


Figure 11: Map showing location of the River Finn SAC (Site Code 002301) with the proposed work area circled in blue (Map taken from NPWS Conservation Objective Series)

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 Reelin sub-catchment, the Sruhamboy, Elatagh, Cummirk, 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 only recorded 2,715 which is just over 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*), Deergass (*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 capillifolium* and *S. papillosum*), 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 magellanicum* 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 trifoliata*). 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).

2.5. 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.

3. Assessment of Likely Effects

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

Table 2 &

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.

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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.	Good	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 as there are no blanket bogs situated on or near the proposed work area.
Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) (EU Habitat Code 3110)	Surface and ground water dependant. Moderately sensitive to hydromorphological change. Moderate sensitivity to pollution.	Good	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 Cummirk River does not have any connectivity with any Oligotrophic lakes for which the Natura 2000 site is designated
North Atlantic wet heaths with <i>Erica tetralix</i> (EU Habitat Code 4010)	Sensitive to mechanical damage of habitat and change to ground water levels. Also sensitive to habitat invasion by scrub.	Excellent	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 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	Good	The main threat to this habitat is from changes to the ground water level associated with land	The proposed development does not pose a significant threat to this qualifying interest as it does not occur

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	sensitive to habitat invasion by scrub.		reclamation and drainage works.	within or adjacent to the proposed work area
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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 <i>Cygnus clumbianus bewickii</i> (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 <i>Cygnus cygnus</i> (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 <i>Falco peregrinus</i> (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 <i>Falco columbarius</i> (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 <i>Pluvialis apricaria</i> (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
Common Goldeneye Duck <i>Bucephala clangula</i> (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, commercial or domestic
Greylag Goose <i>Anser anser</i> (A043)		Good	The proposed development does not pose a significant threat to this qualifying interest	

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Common Teal <i>Anas crecca</i> (A052)		Good	development activities and recreational activities including hunting.	The proposed development does not pose a significant threat to this qualifying interest
Mallard Duck <i>Anas platyrhynchos</i> (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 <i>Aythya fuligula</i> (A061)		Good		The proposed development does not pose a significant threat to this qualifying interest
Red Breasted Merganser <i>Mergus serrator</i> (A069)		Good		The proposed development does not pose a significant threat to this qualifying interest
Northern Lapwing <i>Vanellus vanellus</i> (A142)		Good		The proposed development does not pose a significant threat to this qualifying interest
Curlew <i>Numenius arquata</i> (A160)		Good		The proposed development does not pose a significant threat to this qualifying interest
Common Redshank <i>Tringa totanus</i> (A162)		Good		The proposed development does not pose a significant threat to this qualifying interest
Lesser Blacked Back Gull <i>Larus fuscus</i> (A183)		Excellent		The proposed development does not pose a significant threat to this qualifying interest

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Ring Ouzel <i>Turdus torquatus</i> (A282)		Good		The proposed development does not pose a significant threat to this qualifying interest
Otter <i>Lutra lutra</i> (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 with individual waste water treatment systems may also	Due to the proposed works being carried out within the Cummirk River it was acknowledged that there could be a threat to the water quality in the immediate vicinity of the project and therefore to these qualifying interests. This risk is deemed unlikely however, as 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
Salmon <i>Salmo salar</i> (A1106)	River habitat	Excellent		

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			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.	working on site do not risk the spread of invasive species in to the area. All works will be routinely inspected by Loughs Agency personnel to ensure that environmental precautions are adhered to.
Sword-leaved helleborine (<i>Cephalanthera longifolia</i>), Mountain Hare (<i>Lepus timidus hibernicus</i>), Badger (<i>Meles meles</i>), Common Frog (<i>Rana temporaria</i>), Common Lizard (<i>Lacerta vivipara</i>), Arctic Char (<i>Salvelinus alpinus</i>), Red Grouse (<i>Lagopus lagopus</i>), Herron (<i>Ardea cinerea</i>), Mute Swan (<i>Cygnus olor</i>).	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 & 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 works being carried out instream at the Cummirk River.

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 decrease levels of erosion of the river bank and thus reduce the amount of sediment introduced to the river, which would have detrimental effects on the spawning grounds of salmonids. Additionally, it is hoped that the soft engineering works will provide habitat for populations of otter in the area, as well as fish and macroinvertebrates. Therefore there are no operational phase impacts anticipated which would negatively affect the conservation status of the SAC.

3.1.1. 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 River Cummirk which the proposed works is located has been surveyed for salmon spawning grounds (Redds) yearly by the Loughs Agency. Annual surveys between 2015 and 2019 show that the area has supported at least 14 Redds in this period however no Redds were recorded for the 2018 – 2019 survey season (URL 4).

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.

3.1.2. Otter (*Lutra lutra*)

National Biodiversity Data Centre maps do not have any records of Otter occurring in the immediate vicinity of the proposed works however there have been recorded sightings as close as 1 km downstream from the proposed works.

Site visits of the proposed work area did not identify any potential breeding holt sites for Otter however there is believed to be adequate feeding grounds in the vicinity.

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

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

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

3.2.1. Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The freshwater pearl mussel is listed on 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 mussel 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.

In light of this NPWS staff were happy for the Loughs Agency to treat the area of the Cummirk River, on which the proposed works are planned, as not supporting populations of freshwater pearl mussel (*Pers. comm.*).

3.2.2. Lamprey Species

Surveys were conducted by the Loughs Agency in 2010 in to 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.

3.3. Precautionary measures to be implemented

During the assessment of likely effects 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 include:

- Use of heavy plant machinery on the edge of the river bank and instream;
- Cofferdam installation, drainage and refilling;
- Removal of fish fauna from cofferdam area;
- Risk of fuel/ oil/ hydraulic fluid spills from machinery;
- Increased sedimentation from proposed instream works;
- Possibility of introduction of invasive species attached to machinery and personnel;

Each of these potential threats have been addressed below and include precautionary measures which must be implemented to alleviate any threats posed:

3.3.1. Heavy plant on the river bank and instream

The proposed works will involve the use of a digger/ excavator/ mini-digger to facilitate the installation of the cofferdam and to move materials to the bank of the river for the soft engineering works. A silt screen must be placed downstream of the proposed work area to ensure that any sediment disturbed by machinery is trapped and kept separate from the main water column. Access to Engineering Site 1 must only be allowed by machinery from the 'beach' at the north of the work site. Machinery mats must be placed on the 'beach' before any plant access the stream. This will reduce the amount of sediment suspended from the river bank. Engineering Site 2 will not require plant machinery to enter the water as work can be conducted from the river bank. These machinery mats must be free of any and all potentially invasive species as well as any soil from previous work and must be pre-treated with a Virkon solution before being used in the work area.

Plant machinery must aim to work from the bank as much as physically possible when installing the cofferdam. Use of a long reach machinery arm is recommended to achieve this. Once the cofferdam is in place and drained, plant machinery may move within the drained area more freely to facilitate the soft engineering works.

A bund must also be installed downstream of the work site to mitigate against the potential spill of fuel, oil or hydraulic fluid from plant machinery. The contractor must ensure that the machinery is free from leaks before attempting any instream works. A sonde will be placed downstream of the sediment screen/ bund to monitor turbidity, conductivity and dissolved oxygen levels. If these deviate significantly from expected levels, work will be halted until the screen/ bund is inspected and fixed. During the installation of the cofferdam, a trained environmental scientist will be onsite to monitor the works and ensure that no negative effects will impact upon the integrity of the SAC.

To minimise any disturbance to the grazing quality of the landowners land, it is advised that a single direct track be used to access the soft engineering sites and that the plant machinery should move parallel along fencing to reduce the effect of any track marks on the land.

All works described above will be carried out in dry conditions when the river has a low flow to reduce the possibility of transference of sediment an accidental spillages of fuel, oil or hydraulic fluid.

Proposed precautionary measures:

- Make sure plant machinery remains out of the water body as much as possible until the coffer dam has been put in place;
- Install sediment screens and bunds downstream of work area to trap any suspended sediments or accidental spills of fuel, oil or hydraulic fluid;
- Use of a long reach machinery arm on plant to minimise the use of machinery instream;
- Installation of machinery mats on the river bank to avoid the unnecessary suspension of sediment;
- 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;
- Water parameters such as turbidity, conductivity and dissolved oxygen will be monitored by an in-situ sonde below the sediment screen/ bund. If expected readings deviate significantly, works will be halted until the integrity of the screen/ bund can be examined and fixed;
- A trained environmental scientist to remain onsite during the construction of the coffer dam.
- All works to be carried out in dry conditions when river is at low flow.

3.3.2. Cofferdam installation, drainage and refilling

In order to minimise the impact on the main water body during instream work processes, as well as to facilitate access to the bank face of the proposed work sites, a coffer dam must be put in place to separate the main river from the area of work.

Installation of the coffer dam will require the use of plant machinery to lift the dam materials in to place. It is recommended that a long reach machinery arm is used so that the machinery can work from the river bank as much as possible.

A machinery mat should be put in place on the bank to avoid any unnecessary disturbance of sediments which could be introduced to the water column. As stated in Section 3.3.1, this machinery mat should be free of all potentially invasive species and soil and must be pre-treated with a Virkon solution before use in the work area. A silt screen should be fitted downstream of the work area to trap any suspended sediment during the installation of the coffer dam. Additionally, a bund should be installed downstream to ensure that any accidental spills of fuel, oil or hydraulic fluid are contained.

A sonde will be installed downstream of the silt screen and bund to monitor any changes in water quality. If a significant deviation from the expected readings is detected, works will be ceased immediately and will not recommence until the integrity of the silt screen/ bund have been investigated and fixed.

A trained environmental scientist will be on site at all times while the coffer dam is being installed and they will have the ability to stop the works if they feel that the integrity of the aquatic habitat is not being adequately protected.

Once the coffer dam has been put in place, the work area will be partially drained to allow two trained aquatic biologists access to the area to conduct back pack electrofishing. The biologists will continue electrofishing and removing fish from the work area until electrofishing does not locate a fish for a period of 15 minutes.

Once the work area has been cleared of all fish it can be fully drained, however the biologists should remain close by in case any missed fish fauna are found and they need to be removed.

Upon completion of the soft engineering works in each work area, the dammed off site must be cleared of all debris and excess construction materials. Once all refuse has been cleared, the dammed area may be slowly flooded with river water. Once the area is flooded, it should be left overnight until all suspended sediment has settled out of the water column. Once sediment has settled, the process of removing the coffer dam may begin. This will be facilitated by the use of plant machinery which should use a long reach arm and attempt to complete as much of this as possible from the river bank.

All works described above will be carried out in dry conditions when the river has a low flow to reduce the possibility of transference of sediment and accidental spillages of fuel, oil or hydraulic fluid.

Proposed precautionary measures:

- Make sure plant machinery remains out of the water body as much as possible until the coffer dam has been put in place;
- Install sediment screens and bunds downstream of work area to trap any suspended sediments or accidental spills of fuel, oil or hydraulic fluid;
- Use of a long reach machinery arm on plant to minimise the use of machinery instream;
- Installation of machinery mats on the river bank to avoid the unnecessary suspension of sediment;
- 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;
- Removal of all fish fauna from the drained work area by two trained aquatic biologists using back pack electrofisher – biologists to remain on site until area is completely drained to ensure all fish have been successfully removed;
- Water parameters such as turbidity, conductivity and dissolved oxygen will be monitored by an in-situ sonde below the sediment screen/ bund. If expected readings deviate significantly, works will be halted until the integrity of the screen/ bund can be examined and fixed;
- A trained environmental scientist to remain onsite during the construction of the coffer dam.
- All works to be carried out in dry conditions when river is at low flow.

3.3.3. Removal of fish fauna from coffer dam area

As stated above, two aquatic biologists will be responsible for the removal of any fish fauna present in the work area by back pack electrofishing.

The work area will be partially drained to allow the biologists access to the deeper areas of the site. Repeated passes with the electrofisher will be made until a time period of 15 minutes has elapsed without the capture of additional fauna.

All captured fish fauna will be stored in containers on the river bank until they have fully recovered from capture and then will be released in a suitable area downstream from the work area.

Once the work area has been cleared of fish fauna, the process of completely draining and caulking it may proceed. The biologists will remain until the work area is drained in case any missed fish fauna are located and need to be removed.

All works described above will be carried out in dry conditions when the river has a low flow.

Proposed precautionary measures:

- Electrofishing to continue until no fish fauna are caught for a period of 15 mins;
- Electrofished fish to be kept in containers on the river bank until they have fully recovered from capture;
- All storage containers to be fitted with aerators and fish visually monitored by aquatic biologist;
- Once recovered, fish are to be returned to the river at suitable locations downstream of the work area, silt screen and bund – If large numbers of fish, dispersal should be spread out over wide area;
- Biologists should remain on site as coffer dam is drained to ensure that no fish fauna were missed by the electrofishing depletion survey.

3.3.4. Risk of fuel/oil/hydraulic spills

During the works the plant machinery will have to be periodically refuelled to continue operation. An accidental fuel spill adjacent to the proposed work area could introduce petrochemical pollution to the water body, resulting in unacceptable negative effects to the stream biota.

In order to avoid this it is advised that a dedicated refuelling area be designated close the entrance to the landowners land, at least 50 m from the work area. This area must be fitted with adequate bunds and sumps to trap any spilled fuel so that it can be safely removed from the area upon completion of the works.

Additionally, the potential for fuel, oil and/ or hydraulic fluid leaking from plant machinery should be avoided as this could also have negative effects on stream biota if it is introduced to the watercourse. The contractor should ensure that the machinery used does not have any leak points for these chemicals and, if any top up of these must be carried out, then it should be completed in the dedicated refuelling area described above.

When instream works on the coffer dam are being carried out, a bund should be installed (along with a silt screen) downstream of the work area to ensure that any accidental spills of fuel, oil or hydraulic are contained and do not disperse in to the surrounding ecosystem.

All instream works described above will be carried out in dry conditions when the river has a low flow to reduce the possibility of transference of sediment an accidental spillages of fuel, oil or hydraulic fluid.

Proposed precautionary measures:

- Dedicated refuelling 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;
- 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.

3.3.5. Invasive Species/ Biosecurity measures

Invasive species are of increasing concern throughout Ireland and slowing their spread is crucial to the wellbeing of aquatic ecosystems of the island. There are no invasive species recorded in the work area however it is prudent to implement adequate biosecurity measures during the proposed works as a precautionary measure.

In order to ensure that no invasive species are introduced to the proposed work area, a biosecurity station must be set up at least 50 m from the water's edge. All personnel working in the area must spray their clothing with Virkon disinfectant formulation at this station each time they access and leave the site. A sump and bund should be in place to collect all excess Virkon and this should be removed from the site and properly disposed of at the end of the project.

Additionally, all plant machinery accessing the site must be sprayed with an adequate disinfectant prior to accessing the site and again when it is retrieved from the site. Additionally all plant and equipment must be free of any soil transferred from previous work areas and must be inspected to ensure that there are no potential invasive species present.

These are the two main avenues which could cause the spread of invasive species. Materials such as posts, fencing, trees and other such materials are not deemed as a risk factor for invasive species and will not have to undergo treatment prior to being brought on site.

A before and after assessment of any invasive species within or adjacent to the work area will be conducted by the Loughs Agency to ensure that no non-natives become established in the area.

Proposed precautionary measures:

- 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;
- 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.

4. Conclusion of NIS

It should be emphasised that the proposed works on the Cummirk 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.

The main potential impacts associated with the proposed works are related to degradation of water quality due to increased levels of sediment introduced to the river as well as the potential for introduction of hydrocarbons by plant machinery. 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 introduction of invasive species to the area as this would impact the floral diversity of the riparian habitats of the river.

Although no Otters have been documented in the immediate vicinity of the proposed works, and there are no suitable breeding locations within the area, it was deemed prudent to instigate precautionary measures to avoid any potential negative impacts to breeding populations of Otter. Therefore no works will be carried out during the Otter breeding season which takes place in the Spring and early Summer.

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 project itself is designed to protect the water quality of the Cummirk River and contribute to the water body reaching at least "Good" status as stipulated by the water framework directive. Therefore there will be no significant adverse effects on any Annex I and Annex II habitats and species during the operational phase of the project either directly, indirectly or cumulatively.

It is therefore concluded that the proposed project, alone or in combination with other plans and/ or projects will not give rise to any significant effects on the integrity of the River Finn SAC, as long as the proposed precautionary measures listed in Section 3.3 are implemented in full. This concludes the Appropriate Assessment of the Cummirk River Instream Soft Engineering works.

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