



Panther Ecology Ltd,
Units 3 & 4, Innovation Centre,
S.E.T.U Carlow Campus,
Green Road, Carlow, Ireland.
R93 W248

Telephone 059-9134222

Email: info@pantherwms.com
Website: www.pantherwms.com

Natura Impact Statement

PROPOSED DESILTING ACTIVITY AT CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

2024

REPORT NO:	PES_NIS_10146	AUTHOR:	Paula Farrell, BSc.
DATE:	23 rd May 2024	REVIEWED:	Martin O’Looney, BSc

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1.0 INTRODUCTION	5
2.0 LEGISLATIVE CONTEXT	5
3.0 METHODOLOGY	7
3.1 METHODOLOGY BACKGROUND	8
3.2 DESKTOP RESEARCH	9
3.3 SITE SURVEY	9
4.0 DESCRIPTION OF PROPOSED ACTIVITY AND EXISTING SITE	10
4.1 PROPOSED ACTIVITY	10
4.2 EXISTING ENVIRONMENT	14
4.3 WATER QUALITY.....	25
5.0 EUROPEAN SITES (NATURA 2000 SITES) WITHIN ZONE OF INFLUENCE	27
6.0 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS	50
6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES	50
6.2 INVASIVE SPECIES	53
6.3 POTENTIAL IMPACTS ON WATER QUALITY.....	54
6.4 SCREENING CONCLUSION	55
7.0 ASSESSMENT OF ADVERSE EFFECTS: STAGE 2 APPROPRIATE ASSESSMENT	55
8.0 MITIGATION MEASURES.....	66
8.1 MANAGEMENT OF ACTIVITY	66
8.2 MITIGATION MEASURES DURING THE PROPOSED ACTIVITY	68
8.3 MITIGATION MEASURES AFTER THE PROPOSED ACTIVITY HAS CEASED	70
9.0 IN-COMBINATION EFFECTS	71
9.1 HABITAT LOSS / FRAGMENTATION	72
9.2 DISTURBANCE TO SPECIES.....	73
9.3 DETERIORATION IN WATER QUALITY	74
10.0 CONCLUSION.....	74
11.0 REFERENCES	75
APPENDIX A PROPOSED ACTIVITY LAYOUT	79
APPENDIX B PROTECTED SITE MAPS.....	83
APPENDIX C PHOTO LOG.....	85

LIST OF FIGURES		
FIGURE		PAGE
Figure 4.1	Location of Proposed Activity within the River Dinin	10
Figure 4.2	Location of Proposed Activity map	13
Figure 4.3	Proposed Activity Relative to the Natura 2000 Network	13
Figure 4.4	Habitat Map	16
Figure 4.5	Evidence of Otter	18
Figure 4.6	Freshwater Habitat Map	19
Figure 4.7	Monitoring Point 1	21
Figure 4.8	Monitoring Point 1	23
Figure 4.9	Mapped watercourses surrounding the proposed activity	25
Figure 4.10	EPA Ecological Monitoring of the River Dinin from 2007-2022	26
Figure 5.1	River Barrow and River Nore SAC	31
Figure 5.2	River Nore SPA	49

LIST OF TABLES		
TABLE		PAGE
Table 4.1	Summary of Habitats Identified at and Adjacent the Proposed Activity	16
Table 4.2	Results of the on-site macroinvertebrate survey	22
Table 4.3	Active Monitoring Stations of the River Dinin from 2007-2022	26
Table 5.1.1	Summary of Protected European Sites	27
Table 5.1.2	Annex I Habitats of River Barrow and River Nore SAC	28
Table 5.1.3	Annex II Species of River Barrow and River Nore SAC	28
Table 5.1.4	Conservation Objectives: River Barrow and River Nore SAC	32
Table 5.1.5	Conservation status for qualifying interest of the River Barrow and River Nore SAC	47
Table 5.2.1	Qualifying Interests River Nore SPA	48
Table 5.2.2	Conservation status for qualifying interest of the River Nore SPA	49
Table 6.1	Third Schedule invasive species within 10km square	53
Table 7.1	River Barrow and River Nore SAC Potential Impacts	57
Table 9.1	Recent Planning Applications Close to the Proposed Site	71

EXECUTIVE SUMMARY

Panther Ecology Ltd. was commissioned by Uisce Éireann to prepare a Natura Impact Statement (NIS) as part of due diligence and oversight for the proposed project which involves the removal of accumulated silt and gravel from the River Dinin adjacent and parallel to the existing infiltration gallery at Clogh, Castlecomer, Co. Kilkenny. The proposed activity would be located within the boundary of the River Barrow and River Nore SAC (Site Code: 002162). The River Dinin provides a direct hydrological connection to the River Nore SPA (Site Code: 004233) downstream of the proposed activity.

This report identified the presence of European sites within the potential zone of influence of the proposed activity, the River Barrow and River Nore SAC (Site Code: 002162) and River Nore (SPA). The potential for Likely Significant Effects (LSE) to European sites as a result of the proposed activity such as potential surface water quality impacts, introduction of invasive species, habitat destruction and impacts from noise and dust were considered and the level of risk posed assessed.

During Stage 1 Screening for Appropriate Assessment, it was considered that there may be potential for a significant impact upon the qualifying interests / special conservation interests of the River Barrow and River Nore SAC and the River Nore SPA due to a potential deterioration in water quality during the de-silting activity. Therefore, a Natura Impact Statement (NIS) was prepared.

Due to the mitigation measures outlined within the NIS which will be implemented during the de-silting activity, it is considered that there will be no adverse effects on the integrity of the habitats and species for which the aforementioned designated sites have been designated. It is considered that there will be no adverse effect or negative impact, either alone or in combination with other plans or projects, to the integrity of the Natura 2000 network.

1.0 INTRODUCTION

Panther Ecology Ltd was commissioned by Uisce Éireann to prepare a Natura Impact Statement (NIS) Report for the proposed activity which involves the removal of accumulated silt and gravel from the River Dinin adjacent and parallel to the existing infiltration gallery at Clogh, Castlecomer, Co. Kilkenny (ITM Coordinates: 6564649.66, 676079.60).

The principal aim of this study is to assess for Likely Significant Effects (LSE)/adverse impacts to European sites (the Natura 2000 network) as a result of this project in accordance with Article 6(3) of the Habitats Directive. This report has been prepared with regards to the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997), and the later amendment regulations (S.I. No. 233 of 1998; S.I. No. 237 of 2005, S.I. No. 477 of 2011).

A study was undertaken by Ms Paula Farrell of Panther Ecology Ltd who has a BSc in Wildlife Biology from Munster Technological University (formerly IT Tralee) and has experience in elasmobranch, amphibian, bird, invertebrate and floral surveys and Martin O’Looney of Panther Environmental Solutions who has a BSc Degree in Environmental Science and Technology from Atlantic Technological University Sligo (formerly IT Sligo). This survey was supervised by Martin O’Looney who has over 10 years’ experience in environmental consultancy and environmental impact assessment. This comprised a review of the project, site visits on the 15th December 2023 and 26th April 2024 to examine the ecological context of the proposed activity, a desk study of the information on European sites within the potential zone of influence of the site and an analysis of the information in the context of the guidance to determine if a Natura Impact Statement is required.

The Appropriate Assessment and Natura Impact Statement shall be undertaken in accordance with the guidance outlined in “*Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*” (DoEHLG, Dec 2010) and “*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites*” (EC, Nov 2001) (Revised 2021) and “*Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive*” (EC, 2019).

- DoEHLG (2010) “*Appropriate Assessment of Plans & Projects in Ireland*”
- Environment DG, European Commission (2021) “*Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*”, Part 1 and 2.
- Department of the Environment Heritage and Local Government (DoEHLG) Circular Letter SEA 1/08 and NPWS 1/08.
- Department of the Environment Heritage and Local Government (DoEHLG) Circular letter NPWS 1/10 and PSSP 2/10
- OPR Practice Note PN01 (2021) “*Appropriate Assessment Screening for Development Management*”

2.0 LEGISLATIVE CONTEXT

The EU Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora, as amended by council directive 97/62/EC, 2006/105/EC, and Regulation EC1882/2003 of September 2003, as transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/11), provides the framework for legal protection for habitats and species of European importance. The Natura 2000 network provides

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

an ecological infrastructure for the protection of sites that are of particular importance for rare, endangered or vulnerable habitats and species within the EU. The Natura 2000 network in Ireland is made up of European Sites which include:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)

Article 6(3) of the Habitats Directive establishes the requirement for appropriate assessment when planning new interventions that might affect a Natura 2000 site. Article 6(3) of the Habitats Directive states;

Any plan or project not directly connected with, or necessary to the management of the site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the 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.

Stage 1: Screening for Appropriate Assessment (AA)

This stage involves an initial screening assessment of the potential impacts of the project, either alone or in combination with other projects, upon a Natura 2000 site. If it can be concluded that there would be no significant impacts upon Natura 2000 sites, the assessment stops at this stage. If not, or if further assessment is required, the assessment proceeds to Stage 2.

Stage 2: Appropriate Assessment / Natura Impact Statement (NIS)

This stage assesses the impact of the project, alone or in combination with other projects or plans, on the integrity of the Natura 2000 site, with respect to the site's conservation objectives, the site's ecological structure and function and its overall integrity. The output of this stage is an NIS, which also includes any mitigation measures required to avoid, reduce or offset negative impacts of the project. If this stage determines that adverse effects on the Natura 2000 site cannot be excluded, then the plan or project should proceed to Stage 3 or be abandoned.

The proposed removal of accumulated silt and gravel from the River Dinan at Clogh, Castlecomer, Co Kilkenny is not considered to constitute “works” or “development” within the meaning of the Planning and Development Act, 2000, as amended. As such, notwithstanding that the proposed activity will require Appropriate Assessment, it does not require planning permission. The activity will be subject to the Appropriate Assessment process and Uisce Éireann will conduct an Appropriate Assessment, whereby a Natura Impact Statement (NIS) will be prepared and submitted to NPWS pursuant to Regulation 42 of the EC (Birds and Natural Habitats) Regulations 2011, as amended.

3.0 METHODOLOGY

Stage 1 - Screening

Screening is the first stage in the Appropriate Assessment process, and is carried out to determine whether a Stage 2 Appropriate Assessment and a Natura Impact Statement (NIS) is required. Screening addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3);

1. Whether a plan or project is directly connected to or necessary for the management of the European (Natura 2000) site; and
2. Whether a plan or project, alone or in combination with other plans or projects, is likely to have significant effects on a European (Natura 2000) site, in view of its conservation objectives.

Screening should be undertaken without the inclusion of mitigation measures. If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 AA and an NIS.

The findings and conclusions of the screening process should be documented, with the necessary supporting evidence and objective criteria. This is of particular importance in the cases where the Appropriate Assessment process ends at the screening stage because the conclusion is that no significant effects are likely.

Following Stage 1 Screening, it was considered that there may be potential for an indirect impact upon the qualifying interests of a European site, therefore, the assessment progressed to Stage 2.

As per Regulation 42(9) of the Habitats Regulations 2011, where a public authority, i.e. UÉ, is required to conduct Appropriate Assessment, it shall prepare a Natura Impact Statement (NIS), compile any other information and evidence, and submit the NIS to the Minister not later than six weeks before it proposes to adopt or undertake the activity to which the NIS relates. Therefore, UÉ will conduct an Appropriate Assessment, whereby an NIS will be prepared and submitted to NPWS pursuant to Regulation 42(9) of the Habitats Regulations. UÉ will not conclude the Appropriate Assessment earlier than six weeks after the date on which the NIS was submitted, as per Regulation 42(10) of the Habitats Regulations. UÉ will prepare an Appropriate Assessment Determination, pursuant to Article 6(3) of the Habitats Directive and Regulation 42(11) of the Habitats Regulations.

Stage 2 – Natura Impact Assessment

The scope of this assessment follows the appropriate assessment statement methodology as defined within the European Commission guidance document “*Assessment of plans and projects significantly affecting Natura 2000 sites*” (2001), Section 3, Part 2. Guidance from the Department of the Environment, Heritage and Local Government “*Appropriate Assessment of Plans and Projects in Ireland*” (2010) “*Assessment of plans and projects in relation to Natura 2000 sites: A Summary*” (2022) and “*Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive*” (2018), “*Appropriate Assessment Screening for Development*

Management” OPR Practice Note PN01 (2021) have also been used in the preparation of this report. In accordance with this guidance, the following methodology has been used to produce this Natura Impact Statement:

Step 1: Information Required

Identifying the conservation objectives of the Natura 2000 site and the aspects of the project, alone or in combination with other projects or plans, which have the potential to affect those conservation objectives.

This process involves gathering information for the Natura 2000 site, including the conservation objectives of the site, factors contributing to conservation value, aspects sensitive to change and the existing baseline condition of the site. The principal source of information used for Natura 2000 sites, their qualifying interests and conservation objectives is the National Parks and Wildlife Service (NPWS). Information is also required for the project including the size and scale of the project, the relationship (distance, connectivity etc.) of the project to the Natura 2000 site and the characteristics of existing, proposed or other projects which have the potential to affect the Natura 2000 site.

Step 2: Impact Prediction

This process predicts and identifies the likely impacts of the project on the Natura 2000 site. Potential impacts are identified as; direct and indirect; short or long-term duration; construction, operational or decommissioning; and isolated, interactive and cumulative effects.

Step 3: Conservation Objectives

Once the potential impacts of the project have been predicted and identified, it will be necessary to assess whether these impacts will adversely impact upon the integrity of the Natura 2000 site, as defined by the site’s conservation objectives and status of the site. Where it cannot be demonstrated that there will be no adverse impacts upon the Natura 2000 site, mitigation measures must be proposed for the project.

Step 4: Mitigation Measures

Upon the identification of potential impacts, the project will have on the Natura 2000 site (alone or in combination with other projects or plans), mitigation measures will be proposed to eliminate, reduce or offset these negative impacts. Mitigation measures should be considered with preference to the hierarchy of preferred options outlined in the guidance document “*Assessment of plans and projects significantly affecting Natura 2000 sites*”.

3.1 METHODOLOGY BACKGROUND

This Appropriate Assessment has been carried with reference to the following guidelines:

- Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities. DoEHLG, 2010.
- Circular NPWS 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

- Managing Natura 2000 sites – The Provisions of Article 6 of The Habitats Directive 92/43/EEC. European Commission, 2000.
- Appropriate Assessment Screening for Development Management OPR Practice Note PN01 March 2021
- Circular L8/08 Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments 2 September 2008
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites. Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission, 2021.
- Commission Notice “Managing Natura 200 sites The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission, 21.11.2018
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

3.2 DESKTOP RESEARCH

Desktop research was carried out to gather information on the ecology of the site and surrounding areas. The locations of the Natura 2000 sites within the zone of influence of Clogh Castlecomer Water Treatment Plant (WTP), Co. Kilkenny identified from National Parks and Wildlife Service (NPWS) online map viewer. Other Natura sites beyond were also reviewed and considered for the potential for the project to have a negative effect.

Water quality data from the EPA was reviewed for the assessment of biological and environmental data collected on waterbodies in Ireland as per the Water Framework Directive (WFD) Monitoring Programme of River Ecology Monitoring Results (2021).

Information on the characteristics of the Natura 2000 sites within the potential zone of influence was reviewed from the conservation objectives documents, site synopses and Standard Natura 2000 data forms available on the NPWS website.

3.3 SITE SURVEY

Site characterisation assessments were undertaken on the 15th December 2023 and 26th April 2024 to examine the ecological context of the proposed activity area, by systematically walking the site, adjacent land and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt’s “*A Guide to Habitats in Ireland*”, a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, “*Best Practice Guidance for Habitat Survey and Mapping*”, (Smith *et al.*, 2011). Bird species and signs of fauna activity were also noted. Particular

attention was given to the possible presence of habitats and/or species, which are legally protected under Irish and European legislation and to assessing any potential ecological connectivity with Natura 2000 sites or supplementary or stepping stone habitats of relevance to Natura 2000 sites.

4.0 DESCRIPTION OF PROPOSED ACTIVITY AND EXISTING SITE

4.1 PROPOSED ACTIVITY



Figure 4.1: Location of the proposed activity within the River Dinin (Refer to Appendix C)

The proposed activity will involve the removal of accumulated silt and gravel from the River Dinin adjacent and parallel to the existing infiltration gallery at Clogh, Castlecomer, Co. Kilkenny (ITM Coordinates: 6564649.66, 676079.60) as shown in the location map Figure 4.2. Maps included within Appendix A show the process of the proposed activity. The proposed activity area is located within the boundary of the River Barrow and River Nore SAC (Site Code: 002162). Further imagery of the proposed activity area is provided in Appendix C. The River Dinin also provides a hydrological connection downstream to the River Nore SPA (Site Code: 004233) located at its closest approximately 10.6km to the west as shown in Figure 4.3 below. The site will be accessed via an existing private lane off the R426 to the Clogh Castlecomer Water Treatment Plant and via adjacent agricultural land.

An infiltration gallery is a subsurface source of water used for the collection of ground water with a structure similar to a horizontal drain in some cases. The infiltration gallery is constructed in combination with other water supplies to meet the demand of a large population such as surface water features. The Clogh Castlecomer Water Treatment Plant infiltration gallery is located adjacent to the River Dinin. Deposited material has accumulated within the River Dinin adjacent the infiltration gallery as a result of the weir located downstream. The purpose of the weir is to maintain the river level at the infiltration gallery. This accumulated material has reduced inflow of water into the infiltration gallery causing reduced drinking water quality and manganese issues. Therefore, removal of the accumulated material must be undertaken to increase the ability of water to reach the infiltration gallery. To complete the de-silting activity, maintenance will be required within the watercourse which is also located within the boundary of the River Barrow and River Nore SAC.

The estimated duration for the proposed activity is 3-5 days. De-silting activity would be confined to the immediate intervention area and would not necessitate any activity outside of this area. All removed materials will be exported offsite to a licensed facility. There is no hazardous material within the site boundary. The proposed activity will not require the importation of any materials.

METHODOLOGY OF PROPOSED ACTIVITY

- The proposed activity will be carried out for c. 3-5 days during the summer period - July 1st to September 30th inclusive, or as otherwise agreed with Inland Fisheries Ireland. The activity will not be undertaken during high river flows or prior to the forecast of heavy rainfall, i.e. Orange, Yellow or Red rainfall warnings issued by Met Éireann.
- Access and egress by personnel and machinery to and from the infiltration gallery will be via the existing access lane to the Clogh-Castlecomer Water Treatment Plant (WTP) and, in turn, through the adjacent agricultural grassland field that lies between the WTP and the infiltration gallery.
- Straw bales, wrapped in a geotextile membrane, will be placed at the upstream and downstream extents of the channel between the infiltration gallery and the accumulated material deposits, thereby isolating the area from the main river channel. The straw bales will be put in place using heavy machinery or tractor and grab arm attachment.
- Water within the isolated area will be pumped from this area into the river, until the water level in the isolated area is just above the bed level. The pump will be situated on the infiltration gallery, set back approximately 10m from the top of the riverbank.
- The isolated area will be electro-fished by Inland Fisheries Ireland personnel in order to remove all crayfish, fish and lamprey species (including lamprey ammocoetes) from the isolated area.
- Pumping of water from the isolated area may be required during electro-fishing in order to maintain water levels to facilitate electro-fishing. Due to the electro-fishing activity, the accumulated silt within the isolated area may be disturbed and suspended.

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

Therefore, water will be pumped from the isolated area to the hedgerow that runs along the western boundary of the infiltration gallery and allowed to soak to ground.

- Immediately after electro-fishing has been carried out, accumulated silt within the isolated area will be removed using a 13 tonne 360 track machine. After the removal of accumulated silt, the deposited silt and gravel material bounding the isolated area will be topped to just above the level of the water level in the main river channel on the day of the proposed activity. Therefore, the deposited sand and gravel material will be reduced in height such that it does not result in an influx of water to the isolated area.
- The heavy machinery will be situated on the riverbank of the infiltration gallery adjacent to the isolated area from where the accumulated silt will be removed. No access to the river channel or benching-down the riverbank will be required to carry out the activity. The proposed activity will not deepen the riverbed or alter the riverbanks of the channel.
- Accumulated material will be removed from the isolated area and stored temporarily to the west of the River Dinin directly over the infiltration gallery within an agricultural grassland. The material will then be removed off site to a licensed waste facility.
- Upon completion of the activity, the straw bales will be removed and disposed of at a licensed waste facility.

The following project elements of the proposed activity have been examined for relevance to possible effects on the Natura 2000 sites;

- | | |
|------------------------------------|--------------------------------|
| • Disturbance to Protected Species | • Impact on Protected Habitats |
| • Sediment & Hydrocarbon Runoff | • Dust and Noise |
| • Stormwater & Waste Water | • Invasive Species |

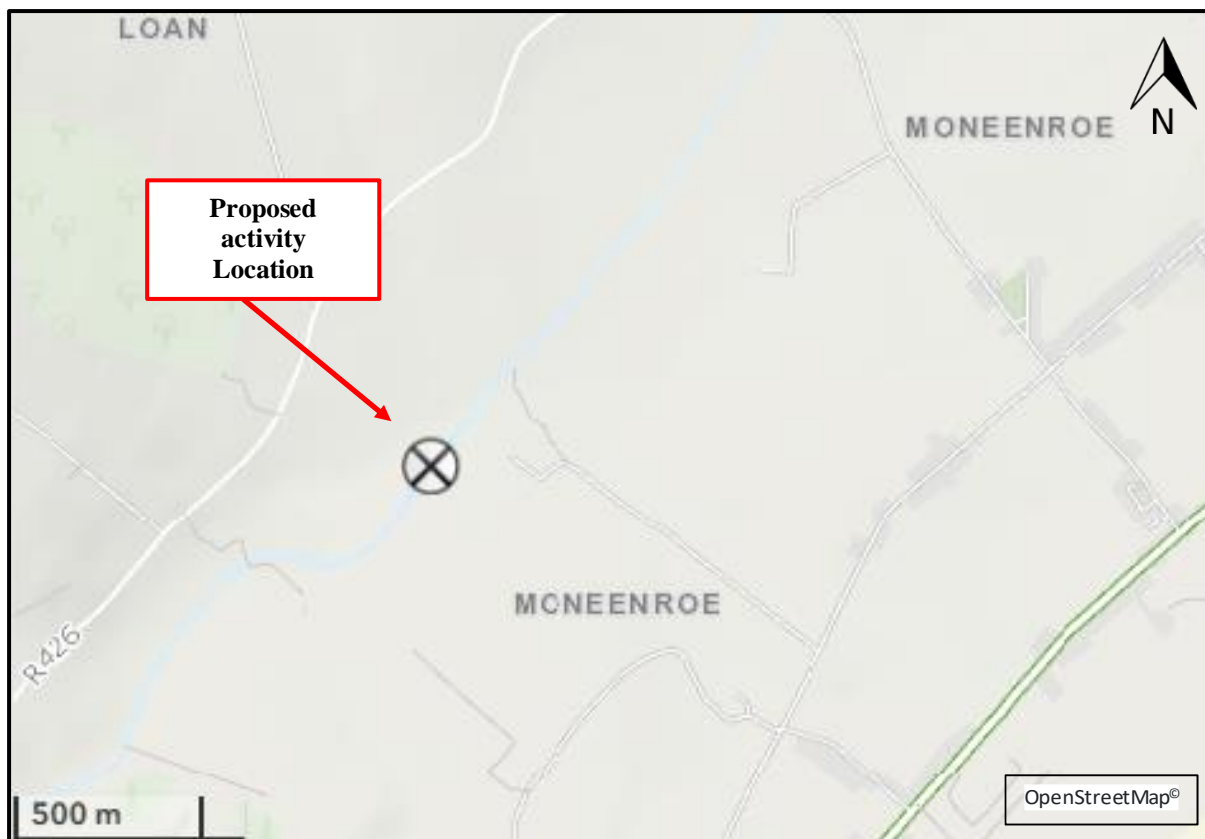


Figure 4.2: Location of Proposed Site at Clogh Castlecomer WTP, Castlecomer. Co. Kilkenny

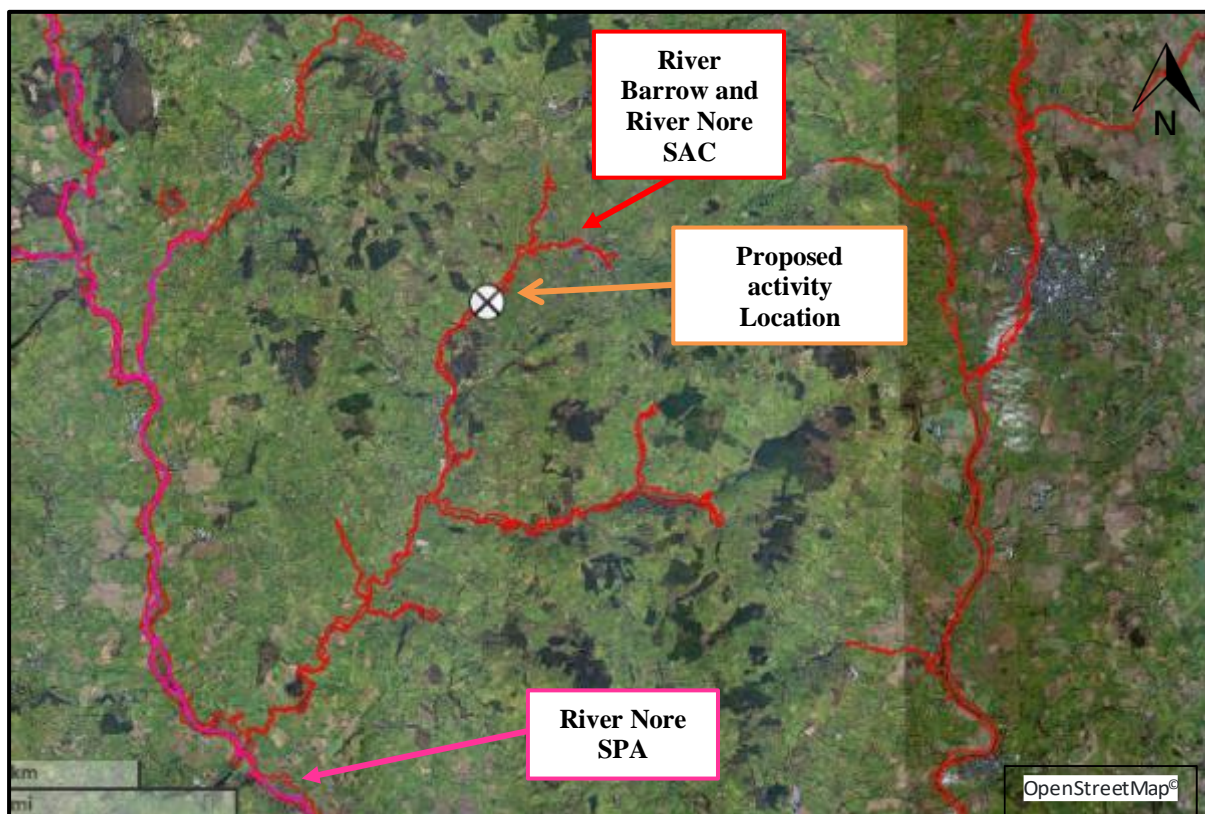


Figure 4.3: Location of Proposed Activity and Protected Habitats

4.2 EXISTING ENVIRONMENT

Habitats

A site characterisation assessment was undertaken on the 15th December 2023 and 26th April 2024 to examine the ecological context of the project site, by systematically walking the site and boundaries and determining the habitats present. During the site assessment the following habitats were observed.

The dominant grassland is **improved agricultural grassland (GA1)** located to the west of the River Dinin. The plant species composition comprised of Perennial Ryegrass (*Lolium perenne*), Bent Grass (*Agrostis* spp.), Annual Meadow Grass (*Poa annua*), Dandelion (*Taraxacum* spp.), Clover (*Trifolium* spp.), Dock (*Rumex* spp.), Ragwort (*Jacobaea vulgaris*), Rush (*Juncus* spp.), Moss (Bryophyta), Ribwort Plantain (*Plantago lanceolata*) Common Chickweed (*Stellaria media*) and Spear Thistle (*Cirsium vulgare*). This grassland was evidently managed and grazed, typical of this habitat classification.

The River Dinin is classified as a **depositing/lowland river (FW2)**. It was approximately 6m+ wide in parts with a regular sluggish flow. The water was slightly turbid during the first assessment in December 2023. Some areas of deposition were evident along the margins. On the second site visit (26th April 2024), the turbidity of the water had reduced significantly. Given the time of year (December 2023), the plant species within was relatively poor. Plant species within and close to the rivers edge included Yellow Flag Iris (*Iris pseudacorus*), Common Reed (*Phragmites australis*), Willow (*Salix* spp.) and Rosebay Willowherb (*Chamaenerion angustifolium*). Additional in-stream vegetation observed in April 2024 includes Canadian Waterweed (*Elodea canadensis*), Lesser Celandine (*Ficaria verna ssp verna*) and Bur-reed (*Sparganium* spp.). Down further at the southern end of the proposed activity and close to the rivers edge Watercress (*Nasturtium officinale*) and Brooklime (*Veronica beccabunga*) is present. From this end of the River Dinin, the watercourse cascades over a weir constructed of large boulders, intended to maintain the water depth within the area of the abstraction.

Dry meadows and grassy verges (GS2) habitat with a width of approximately 1-2m borders the improved agricultural grassland to the north and east adjacent the existing watercourses. This area was outside the fence and outside the reach of grazing animals. The vegetation was taller and tussocky and evidently ungrazed. Species include Cocksfoot Grass (*Dactylis glomerata*), False-oat Grass (*Arrhenatherum elatius*), Vetch (*Vicia* spp.), Creeping Cinquefoil (*Potentilla reptans*), Creeping Buttercup (*Ranunculus repens*), Dandelion (*Taraxacum* spp.), Yarrow (*Achillea millefolium*), Clover (*Trifolium* spp.), Dock (*Rumex* spp.), Moss (Bryophyta), Cuckoo Flower (*Cardamine pratensis*), Meadow Buttercup (*Ranunculus acris*), Common Hogweed (*Heracleum sphondylium*), Cow Parsley (*Anthriscus sylvestris*), Cleavers (*Galium aparine*), Rosebay Willowherb (*Chamaenerion angustifolium*), Nettle (*Urtica dioica*), Lesser Celandine (*Ficaria verna ssp verna*) and areas with encroaching Bramble (*Rubus fruticosus*). This habitat has links to the Lowland Hay Meadows (*Alcopecurus pratensis*, *Sanquisorba officinalis*) [6510] however, it is absent of the characteristic high quality and positive indicator species.

A **hedgerow (WL1)** borders part of the western and southern boundaries of the grassland. It is dominated by Hawthorn (*Crataegus monogyna*) with Willow (*Salix* spp.), Ash (*Fraxinus* spp.), Alder (*Alnus* spp.), Dog Rose (*Rosa canina*) and Bramble (*Rubus fruticosus*). The understory

comprised of Nettle (*Urtica dioica*), Cow Parsley (*Anthriscus sylvestris*), Ivy (*Hedera helix*) and Cleavers (*Galium aparine*).

Some small sections of **scrub (WS1)** habitat occur along the north-western boundary and merge partly with the hedgerow habitat and along the east. Species recorded include Bramble (*Rubus fruticosus*) and Gorse (*Ulex* spp.) with Nettle (*Urtica dioica*), Thistle (*Cirsium* spp.) and Rose (*Rosa* spp.). Scrub comprised of Bramble (*Rubus fruticosus*) and Gorse (*Ulex* spp.) were also found along the banks of the Dinin watercourse to the east.

Spoil and bare ground (ED2) habitat is found to the south adjacent the River Dinin and between two adjoining agricultural fields. Vegetation cover is less than 50% and evidently trampled, most likely from cattle moving from one field to the next. The materials consisted of exposed soil with larger rock. It was species poor but included Annual Meadow Grass (*Poa annua*), Pineappleweed (*Matricaria discoidea*), Thistle (*Cirsium* spp.), Creeping Buttercup (*Ranunculus repens*), Bent grasses (*Agrostis* spp.) and Dock (*Rumex* spp.).

Buildings and artificial surfaces (BL3) includes a galvanized shed and concrete blockwork pump pad within the grassland habitat. Species within include Creeping Buttercup (*Ranunculus repens*) and Dock (*Rumex* spp.)

Habitats of note outside the proposed activity area include **improved agricultural grassland (GA1)** to the west and south-west, **hedgerow (WL1)** bordering the watercourse to the east and a watercourse classified as a **depositing lowland river (FW2)** located outside the northern boundary. It is approximately 2-3m in width with a regular fast flow. During the first site assessment in December 2023, the water was clear and the substrate is comprised of cobbles, sand and some finer sediments. During the second site visit in April 2024, the water was slightly turbid. This watercourse flows directly into the River Dinin. There were no plants observed within this watercourse however, plants observed along the northern bank include Rosebay Willowherb (*Chamaenerion angustifolium*), Sedge (Cyperaceae), Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*) and Dock (*Rumex* spp.) while plants along the southern bank are those of the dry meadows and grassy verges (GS2) habitat described above.

See Appendix C for photo log of the site.

NATURA IMPACT STATEMENT
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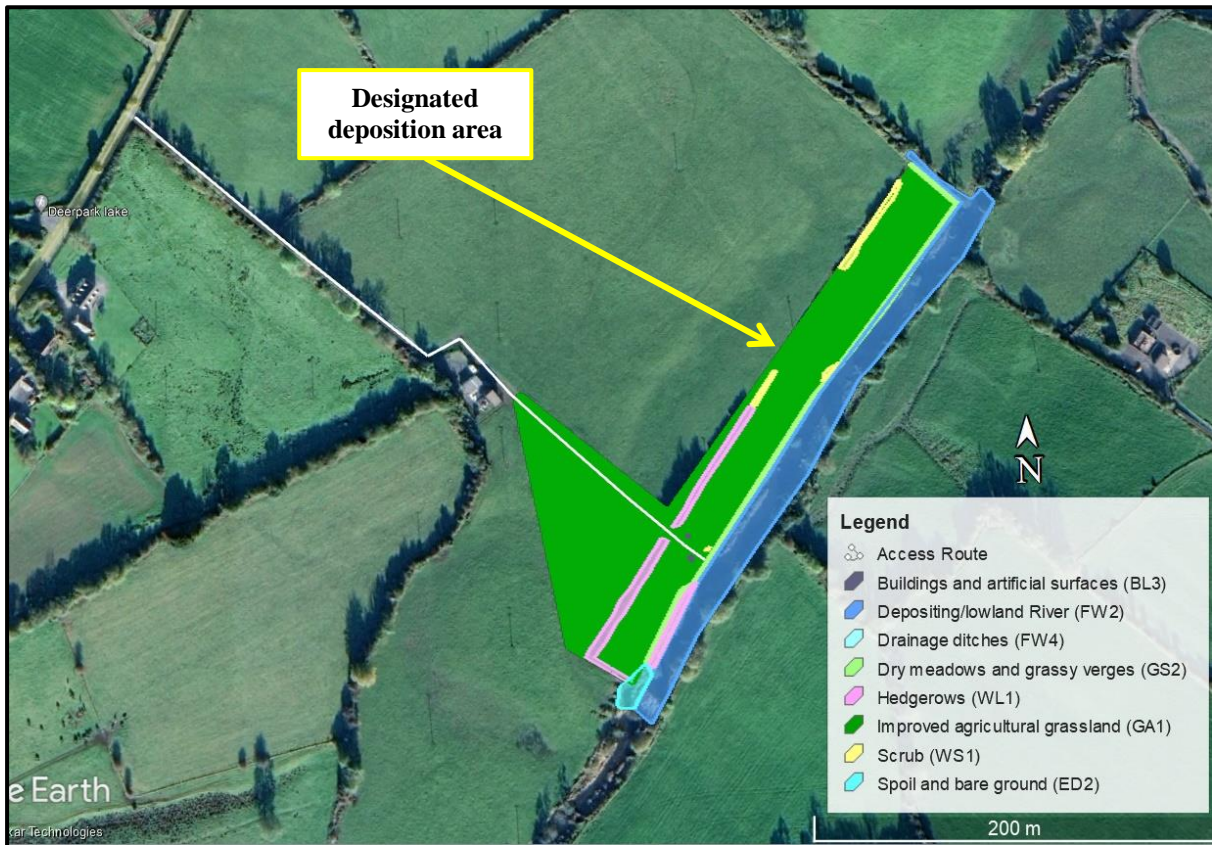


Figure 4.4: Habitat Map

Table 4.1 Summary of Habitats Identified at and Adjacent the Proposed Project Site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	LEVEL 2	LEVEL 3
F - Freshwater	FW - Watercourses	FW2 – Depositing/lowland rivers
G – Grassland and marsh	GA – Improved grassland	GA1– Improved agricultural grassland
	GS – Semi-improved grassland	GS2 – Dry meadows and grassy verges
W – Woodland and scrub	WL- Linear woodland/scrub	WL1– Hedgerows
	WS – Scrub/transitional woodland	WS1 - Scrub
E – Exposed rock and disturbed ground	ED – Disturbed ground	ED2 – Spoil and bare ground

Fauna

Bird species noted during both site walkovers include Long-tailed Tit (*Aegithalus caudatus*), Robin (*Erithacus rubecula*), Coal Tit (*Periparus ater*), Blackbird (*Turdus merula*),

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

Woodpigeon (*Columbus palumbus*), Grey Heron (*Ardea cinerea*), Magpie (*Pica pica*), Hooded Crow (*Corvus cornix*), Great tit (*Parus major*), Chaffinch (*Fringilla coelebs*), Raven (*Corvus corax*), Goldfinch (*Carduelis carduelis*), Buzzard (*Buteo buteo*), Song Thrush (*Turdus philomelos*), Grey Wagtail (*Motacilla cinerea*), Willow Warbler (*Phylloscopus trochilus*), Wren (*Troglodytes troglodytes*), Goldcrest (*Regulus regulus*) and Rook (*Corvus frugilegus*).

Grey Wagtail are Red listed under the BoCCI classification (Gilbert *et al*, 2021). Willow Warbler and Goldcrest are Amber listed. None of the bird species recorded at the proposed activity site are listed under Annex I of the E.U. Birds Directive.

During the site assessment on the 15th December 2023, it was noted that the banks within the immediate activity area were heavily vegetated. According to Cummins *et al* (2020), Kingfisher require “*tall vertical banks with soft material which they can dig their burrows*”. Differential methods may provide bias for potential suitable habitat as a survey covered on foot has limitations however, using binoculars to view the banks on the opposite sides, it is unlikely they would be suitable for nesting Kingfisher. During the site assessment on the 24th April 2024, some exposed muddy banksides were observed on the far side of the River Dinin as vegetation begins to recolonise. This recolonisation of vegetation would limit the availability of suitable Kingfisher habitat, particularly as the growing season coincides with the breeding season of this bird. However, Kingfisher are known to perch on tall vegetation within and along watercourses. Given that the proposed activity is located a significant distance upstream (21km hydrologically) from the River Nore SPA, it is not anticipated that there would be an impact to the Natura 2000 site itself. That being said, Kingfisher are not fixed to one location and may be found outside the reaches of a protected site. The banks of the River Dinin outside the proposed construction area and River Nore downstream could offer more suitable habitat for the Kingfisher. No proposed activity will take place outside of the project area. There was no evidence of or signs of Kingfisher within the immediate area of the site. Therefore, it is not anticipated that the proposed activity would have any direct impacts upon Kingfisher, however, an indirect impact could occur due to a deterioration in water quality.

During the initial site visit on the 15th December 2023, evidence of fauna movement was observed along the banks of the River Dinin to the east and along the banks of the Loan to the north. No scat or footprints were observed. There was no evidence of any other fauna noted during the survey other than cattle. No evidence of otter (including holts, slides, spraints and tracks) was recorded during this initial ecological site assessment. During the site assessment on the 26th April 2024, additional evidence of mammals (footprints) was observed in muddy areas along the River Dinin and on the silt bar within the proposed activity area. The muddy areas were quite soft skewing most of the prints found. Fortunately, one good footprint was identified as being that of an Otter due to the size and shape. Mink and Pine Martin have a similar footprint however, it is significantly smaller than that of an Otter. The footprints observed were greater than 5cm in length, some revealing claws close to the waters edge where the Otter would have emerged from the River. Given the size of the footprints, Pine Martin and Mink can be ruled out. Given the arrangement of the foot structure, with five toes arranged in an arc around the interdigital pad, the size of the footprint and location within and along a watercourse, the footprints would be that of an Otter. As the proposed activity is located within the River Dinin that is hydrologically connected to the River Nore, it is likely that otter are present within the general area. No evidence of feeding, spraints, holts or couches were observed within the proposed activity area. It is not considered that Otter would reside within the proposed activity area but may use the area for hunting and/or feeding. The removal of accumulated silt within the proposed activity area would not be considered to have a direct

impact on Otter. However, an indirect impact may occur due to a deterioration in water quality via the release of suspended solids.



Figure 4.5: Evidence of Otter on sand bar within the proposed activity area

Limitations of the survey along the River Dinin were confined to terrestrial survey methods due to the depth of the watercourse. Binoculars were used to assess the river banks for signs of otter and protected fauna from afar. Otter have two basic requirements; prey and suitable safe refuges to rest. Otter typically maintain couches above ground in reed beds or dense scrub and holts underground. Scrub habitat was recorded during the site assessment on the near side of the proposed activity area however, these scrub areas are not extensive. Common Reed (*Phragmites australis*) was recorded along the nearside and far side of the River Dinin and could potentially offer suitable habitat for Otter couches, however it was also not an extensive area. In terms of Otter holts, due to the overhanging vegetation along the river margins, the survey was limited in the initial site assessment to visual using binoculars given the depth and flow of the water. During the second site assessment, some overhanging vegetation was still obstructing complete view of the banks of the River from afar. Otter holts could potentially be within the area however, no Otter holts were observed within the immediate activity area. Outside the proposed activity area was evidence of human and potentially a domestic animal such as a dog (prints).

As mentioned below, the river bed is absent of hard substrates and is primarily comprised of muddy substrates. White-clawed Crayfish are known to burrow into earth banks or muddy substrates. Due to the depth and turbidity of the water, the identification of any Crayfish burrows was not possible during the initial site assessment in December 2023. The muddy substrate and siltation occurring within the area would make this activity area unsuitable for Freshwater Pearl Mussel. No evidence of Crayfish burrows or Freshwater Pearl Mussel were recorded during the second site assessment in April 2024. Silt beds could provide habitat suitable for juvenile lamprey species within the proposed activity area. Lamprey species have been recorded throughout the Nore Catchment. Lamprey Sp. have also been recorded both upstream and downstream of the proposed activity area on the River Dinin [North] according to Gordon et al (2021). As no areas of gravel substrates were found, there is no optimal salmonid spawning habitat within the study area. The relatively fast flow within this stretch and the absence of significant pool areas would make this unattractive as a holding place for salmonids. Artificial barriers block Twaite Shad from migrating upstream and therefore it is confined to the lower stretches.

However, other fauna typical of that found throughout the rest of Ireland, which may be found in the area include Bat species and Common Frog (*Rana temporaria*). The wider area where the proposed activity is to take place includes a number of trees that could potentially support bat roosts while Common Frog may utilise the dry meadows and grassy verges habitat during the winter times. The proposed activity will not include any tree or hedgerow removal. Frog breed in ponds, wetlands and drainage ditches. It is therefore unlikely that the Dinin would offer suitable freshwater habitat during the breeding season.

Aquatic Ecology Assessment of the River Dinin

The site characterisation assessment included surveying of aquatic habitats and species. The survey of MP1 and a limited survey of habitats was undertaken on 15th December 2023. Lower water levels on 26th April 2024 allowed for a broader survey of subject activity area aquatic habitats and sampling at MP2.

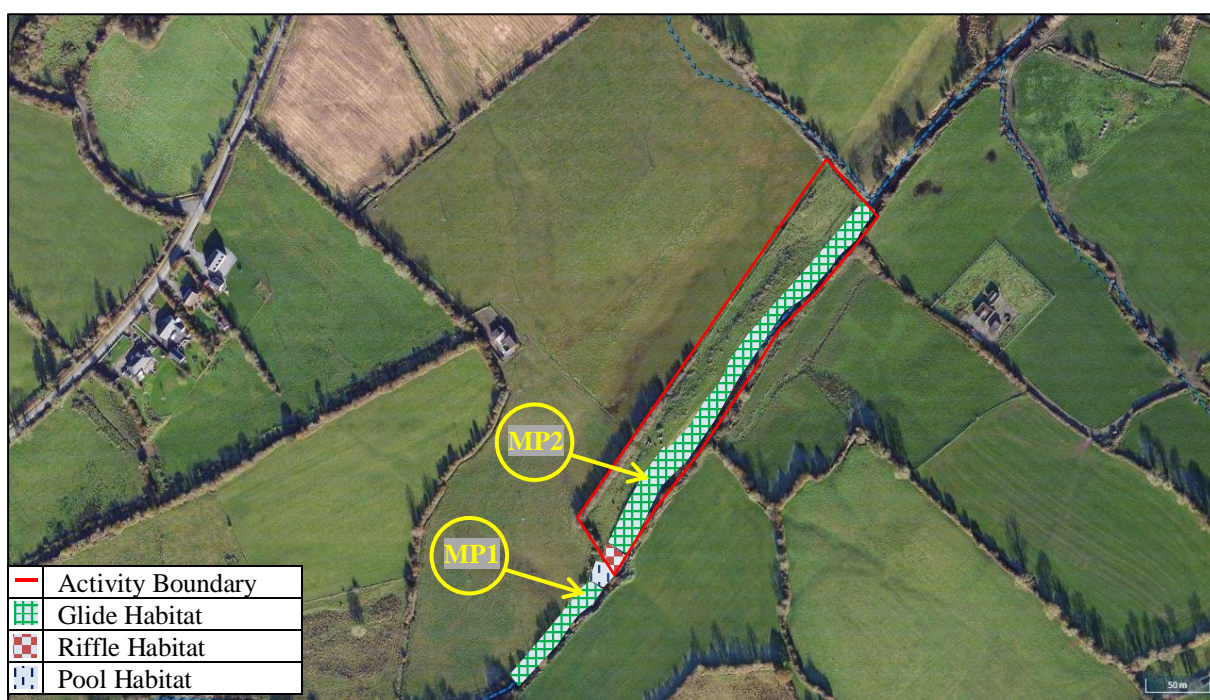


Figure 4.6: Freshwater Habitat Map

The subject extent of the River Dinin is c. 450m in length. The width of the river throughout is 10 to 14m. The habitat here is Depositing/lowland rivers (FW2). River depth ranged from 1 to 2 metres.

The majority of the activity area is classified as a glide habitat (intermediate between still pool and turbulent riffle). At the southern boundary of the activity area there is a weir constructed of large boulders, concreted in place, intended to maintain the water depth within the area of the abstraction. This provided riffle habitat, transitioning to deeper areas of pool habitat downstream of the weir, and returning to glide habitat further on.

The study area consists primarily of sand/mud overlain by small stones (32-128mm). Siltation is light to moderate outside of the immediate influence of the infiltration gallery and weir. Areas of deep muddy substrates, with thin sand sections in deeper areas are present in the

vicinity of the infiltration gallery and upstream and downstream of the rock weir. The formation of the instream island beside the infiltration gallery is comprised of the build up of silts.

The sand and stone habitat within the majority of the study area would provide suitable spawning habitat for river lamprey (*Lampetra fluviatilis*) and brook lamprey (*Lampetra planeri*). Spawning occurs in April to July, however, no redds were found during the surveys of the proposed activity area. Silt beds would provide habitat suitable for juvenile lamprey.

There is no optimal salmonid spawning habitat within the study area, with no significant areas of gravel substrates. The relatively fast flow within this stretch and the absence of significant pool areas would make this unattractive as a holding place for salmonids. While larger White-clawed Crayfish (*Austropotamobius pallipes*) hide under stones, they are known to burrow into earth banks or muddy substrates. There was no evidence of crayfish or crayfish-burrows within the study area.

The siltation occurring within the area would make this proposed activity area unsuitable for freshwater pearl mussel (*Margaritifera margaritifera*). No pearl mussel (*Margaritifera margaritifera*) was noted during the instream survey of the activity area.

Throughout the entire survey stretch there is very low canopy cover of c. 0-5%, with Willow (*Salix* spp.) Alder (*Alnus* spp.) and Ash (*Fraxinus* spp.). At riparian areas and within the river edges there is dense vegetation, including Yellow Flag Iris (*Iris pseudacorus*), Common Reed (*Phragmites australis*), Rosebay Willowherb (*Chamaenerion angustifolium*), Canadian Waterweed (*Elodea canadensis*), Lesser (*Celandine Ficaria verna ssp verna*) and Bur-reed (*Sparganium* spp.). At the time of the initial survey in December 2023, there was no evidence of floating river vegetation within the majority of the area, with small areas of Watercress (*Nasturtium officinale*) on the shallow verge of the pool downstream of the riffle area. Common Water-starwort (*Callitriche stagnalis*) was observed on the surface of the water during the second site visit in April 2024.

Overall, 21 species of macroinvertebrates were recorded within the study area.

Monitoring Point Site 1 was deep glide habitat downstream of the artificial weir, with a sand / silt substrate. As the conditions at the site are sub-optimal the Q-rating assigned is tentative. This site was located c. 100m downstream of the proposed instream activity location. The sample was taken in December 2023.



Figure 4.7: Monitoring Point 1

There was a total of 11 species of macroinvertebrates recorded at this location. There were no pollutant sensitive Group A species recorded. Group B macroinvertebrates are also pollutant sensitive and the caddisfly species *Lepidostoma hirtum* was recorded. Group C was the highest represented group with 8 of the 11 taxa recorded and were generally in common numbers. Species included the mayfly nymph *Ephemerella ignita*, crustacean *Gammarus dubeni*, Riffle beetles *Elmis aenea* and *Limnius volckmari*, and Jenkins Spire Snail *Potamopyrgus antipodarum*. There was one pollutant tolerant Group D species of alderfly *Sialidae spp.*

Table 4.2: Results of the on-site macroinvertebrate survey

	Sensitivity Group	Stations	
		MP1	MP2
PLECOPTERA – Stonefly			
Chloroperlidae			
<i>Chloroperla sp.</i>	A		***
EPHEMEROPTERA – Mayfly			
Baëtidae			
<i>Baetis muticus</i>	B		*
Heptageniidae			
<i>Electrogena lateralis</i>	A		****
Ephemerellidae			
<i>Serratella ignita</i>	C	*****	*****
TRICHOPTERA – Caddisfly			
Polycentropodidae			
<i>Polycentropus sp.</i>	C		*

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

	Sensitivity Group	Stations	
		MP1	MP2
Limnephilidae			
<i>Lepidostoma hirtum</i>	B	**	
MEGALOPTERA – Alderfly			
Sialidae spp.	D	*	
CRUSTACEA – Crustaceans			
Gammarus			
<i>Gammarus duebeni</i>	C	*****	*****
Asellus			
<i>Asellus aquaticus</i>	D		****
COLEOPTERA – Beetles			
Elminthidae			
<i>Elmis aenea</i>	C	****	****
<i>Limnius volckmari</i>	C	****	
Dytiscidae			
<i>Hygrotus impressopunctatus</i>	C		*****
Haliplidae			
<i>Brychius elevatus</i>	C		*
PLANARIIDAE – Flatworms			
Polycelis sp.	C	*	
HIRUDINEA – Leeches			
Piscicolidae	C	*	*
DIPTERA – True Flies			
Tipulidae	C	**	*
Chironomidae	C	****	***
<i>Chironomous sp.</i>	E		
Ceratopogonidae	N/A		***
Dicranota	N/A	***	
OLIGOCHAETE			
Tubificidae	E		*
MOLLUSCA			
Hydrobiidae			
<i>Potamopyrgus antipodarum</i>	C	*****	*
Q-RATING		3 (t)	4
TAXON RICHNESS		11	17
TOTAL ABUNDANCE		99	95
*= Present	** = Scarce/Few	*** = Small Numbers	**** = Fair Numbers
***** = Common	***** = Numerous	***** = Dominant	***** = Excessive
(t) = sample taken in sub-optimal conditions and must be taken as tentative.			

Monitoring Point Site 2 was deep glide habitat downstream of the infiltration gallery, with a sand and stone substrate. This site was located c. 30m downstream of the proposed instream activity location. The sample was taken in April 2024.



Figure 4.8: Monitoring Point 2

There was a total of 17 species of macroinvertebrates recorded at this location. Two pollutant sensitive Group A species were recorded, being the stonefly *Chloroperla sp.* and mayfly *Electrogena lateralis* in small to fair numbers. Group B macroinvertebrates are also pollutant sensitive and the mayfly species *Baetis muticus* was recorded. The Group C taxa present in common to numerous abundance were the crustacean *Gammarus dubeni*, diving beetle *Hygrotus impressopunctatus* and mayfly nymph *Ephemerella ignita*. The pollutant tolerant species *Asellus* was noted in fair numbers and tubifex worm was noted as present.

With regard to the macroinvertebrate assemblage recorded at the proposed activity area;

- The macroinvertebrate fauna recorded at MP1 would classify the site with a Q-rating of Q3, equivalent to WFD status “Poor”. However, the sample location characteristics were sub-optimal, therefore this rating is tentative. The macroinvertebrate fauna recorded are considered to be consistent with the nature of the substrates and flow regime at the survey site, rather than indicative of pollution effects.
- MP2 was assigned a Q-rating of Q4, equivalent to WFD status “Good”. While the flow regime and substrates, including slight to moderate siltation, were not ideal, the ecological community indicates no significant water pollution effects immediately downstream of the infiltration gallery.

The principal direct risk to freshwater ecology would be potential loss of lamprey ammocoetes during the removal of accumulated materials and the capturing of fish species within silt defences during the proposed activity preparations. The appropriate removal of fish and lamprey species from the project area by trained personnel would be effective to prevent losses.

The principal indirect risk to freshwater ecology would be potential suspended solids concentrations and siltation downstream of the works. It is noted that, while siltation is evident downstream of the proposed activity area, this does not appear to be having a significant effect on the Q rating of the river or availability of prey species for fish in free flowing areas. Potential additional siltation from the project would be expected to add to existing siltation mainly in depositing areas. As the proposed activity would be relatively minor and limited in timeframe, it is not considered that the project would have a significant impact on water quality provided that appropriate mitigation is in place.

Additional NBDC Records

In addition to the site walkover, flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed activity area and vicinity. No protected plant species under the Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) were recorded within the 10km square (Tetrad – S57) in which the proposed activity area is located.

Endangered or threatened flora within this tetrad are: Nettle-leaved Bellflower (*Campanula trachelium*).

One invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) as amended (2015) were recorded within the 10km square (Tetrad – S57: Japanese Knotweed (*Fallopia japonica*).

Protected fauna species of note recorded within the NBDC 10km square (Tetrad – S57) include the protected species: Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*), Marsh Fritillary (*Euphydryas aurinia*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*), Eurasian Pygmy Shrew (*Sorex minutus*), Eurasian Red Squirrel (*Sciurus vulgaris*), European Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Pine Marten (*Martes martes*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and West European Hedgehog (*Erinaceus europaeus*).

High impact invasive species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) include American Mink (*Mustela vison*), Eastern Grey Squirrel (*Sciurus carolinensis*) and Fallow Deer (*Dama dama*).

Bird species of note include Barn Owl (*Tyto alba*), Swallow (*Hirundo rustica*), Kestrel (*Falco tinnunculus*), Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Pheasant (*Phasianus colchicus*), Common Snipe (*Gallinago gallinago*), Starling (*Sturnus vulgaris*), Swift (*Apus apus*), Wood Pigeon (*Columba palumbus*), Eurasian Teal (*Anas crecca*), Eurasian Woodcock (*Scolopax rusticola*), Great Cormorant (*Phalacrocorax carbo*), Greylag Goose (*Anser anser*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Little Egret (*Egretta garzetta*), Little Grebe (*Tachybaptus ruficollis*), Mallard (*Anas platyrhynchos*), Merlin (*Falco columbarius*), Mute Swan (*Cygnus olor*), Northern Lapwing (*Vanellus vanellus*), Peregrine Falcon (*Falco peregrinus*), Rock Pigeon (*Columba livia*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Flycatcher (*Muscicapa striata*) and the Yellowhammer (*Emberiza citrinella*).

4.3 WATER QUALITY

The proposed activity is located within the Nore Catchment (ID 15), Sub Catchment Dinin [North]_SC_010. The proposed activity is located within the River Dinin (EPA Code: 15D07 – Order 4). This river is also located within the boundary of the River Barrow and River Nore SAC (Site Code: 002162). The Loan (EPA Code: 15L11 – Order 2) runs along the northern boundary in an easterly direction joining the Dinin confluence. Other watercourses in the area include the Moneenroe (EPA Code: 15M26 – Order 1) located approximately 124m to the north-east. The Ballylinnen (EPA Code: 15B64 – Order 2) is located approximately 940m to the south-west of the proposed activity. See figure 4.7 for mapped watercourses.

The Conservation Objectives document for the River Barrow and River Nore Special Area of Conservation shows that water quality objectives have been set for White-clawed Crayfish (*Austropotamobius pallipes*) and Atlantic Salmon (*Salmo salar*), with a Q3-4 (moderate status) and Q4 (good status) values set as objectives in freshwater. While water quality objectives have also been set for Twaite Shad (*Alosa fallax*) with a target of oxygen levels no lower than 5mg/l, it is unlikely they are present within the River Dinin. According to *The Status of EU Protected Habitats and Species in Ireland* (NPWS 2019b), “the navigation weir on the River Barrow at its upper tidal limit prevents upriver migration”.

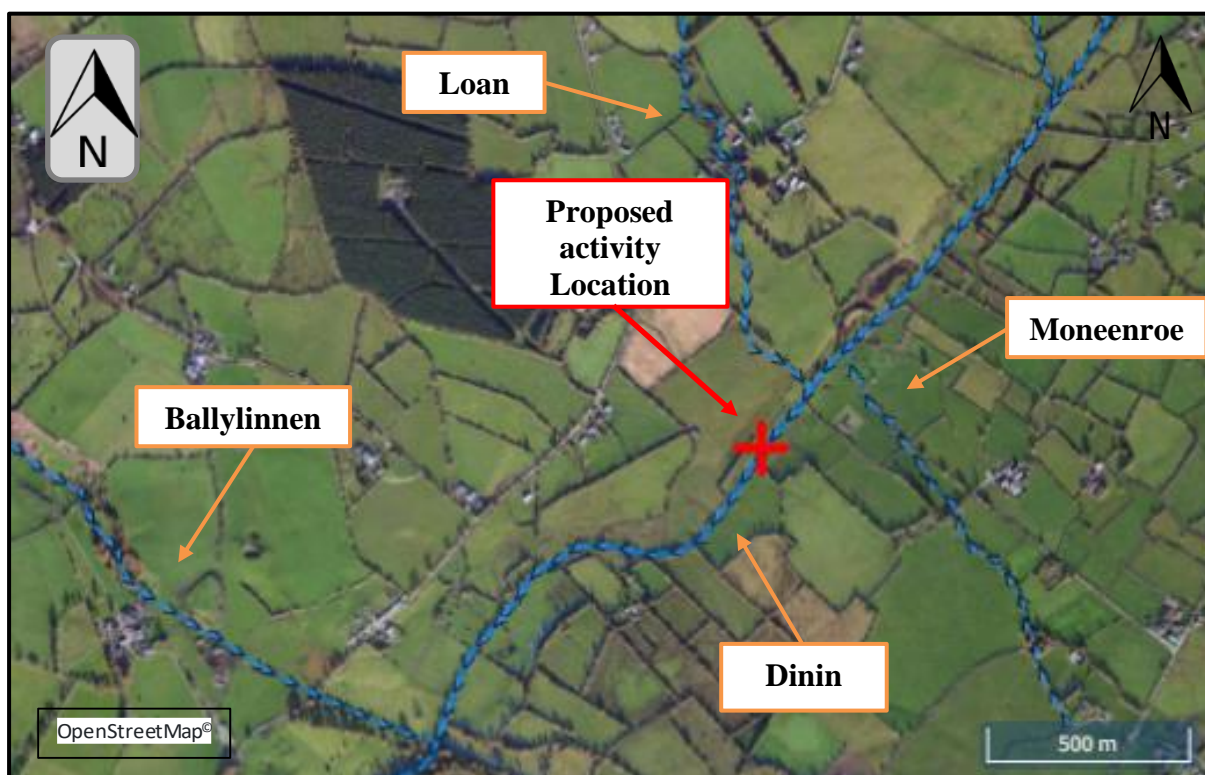


Figure 4.9: Watercourses close to the proposed activity area

The Environmental Protection Agency (EPA) undertakes surface water monitoring along the River Dinin. The results for the nearest monitoring stations with available information (as per Table 4.3) for the period 2007 – 2022 are summarised in Figure 4.6 below for indicative purposes. As can be seen in Figure 4.8, the River Nore is mainly achieving a water quality status of between Q3-4 (Moderate) and Q4 (High) in recent years

Table 4.3: Water Monitoring Stations on the River Dinin in proximity to the activity

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION RELATIVE TO PROPOSED ACTIVITY
RS15D070200	Massford Br	255682	177325	1.4km Upstream
RS15D070400	Dysart Br (North Channel)	253137	170031	7.5km downstream
RS15D020700	Lisnafunshion	252180	168082	9.9km downstream

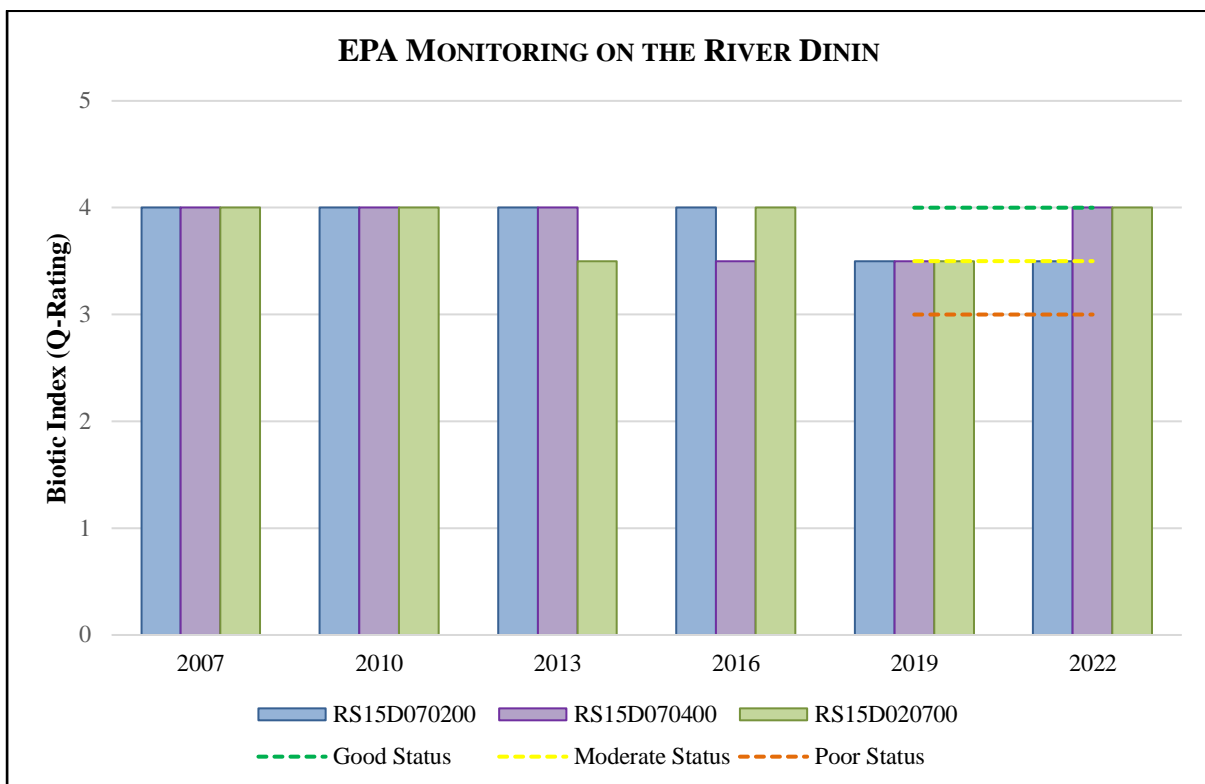


Figure 4.10: EPA Ecological Monitoring of the River Dinin from 2007 – 2022

EPA comments on the most recent monitoring results for the River Dinin are as follows: “*In 2022 the upper station (0700) improved to Good ecological condition. Nevertheless station 0800 remained Moderate with nutrient enrichment still an issue and an unbalanced biological community.*”

According to the Preliminary Flood Risk Assessment (PFRA) Mapping tool by the OPW, the north-west area of the activity area is located within an area of low to medium fluvial or pluvial flood, indicative of 10% AEP (10-yr) event, 1% AEP (100-yr) event or 0.1% AEP (1000-yr) event. It should be noted that this map is based on broad-scale simple analysis and may not be accurate for a specific location. There is no history of flooding within section along the River Dinin where the proposed activity is to occur. The proposed activity will take place between 1st July and 30th September during dry conditions, outside of and not after periods of heavy rainfall. Therefore, given the short duration, and cognisance of weather conditions, it is not anticipated that the proposed activity would have a significant impact on a protected site due to flooding.

5.0 EUROPEAN SITES (NATURA 2000 SITES) WITHIN ZONE OF INFLUENCE

In assessing the zone of influence of this project upon European sites, the following factors must be considered:

- Potential impacts arising from the project,
- The location and nature of European sites,
- Pathways between the activity and European sites.

There is no standard radius that can be used to select which European sites are to be analysed. This can only be determined by looking at the zone of influence of the project at hand.

Table 5.1.1: One Special Protection Area (SPA) site occurs within the potential zone of influence from the proposed activity. Two Special Area of Conservation (SAC) sites occur within the potential zone of influence of the proposed activity.

SITE NAME	DESIGNATION	SITE CODE	DISTANCE
River Barrow and River Nore	SAC	002162	Within
River Nore	SPA	004233	10.6km W
Lisbigney Bog	SAC	000869	9.9km NW

Maps detailing European sites within the potential zone of influence of the proposed activity area are included as Appendix B below. For this assessment, the sites considered to be within the potential zone of influence of the proposed activity was the River Barrow and River Nore SAC (Site Code: 002162) and the River Nore SPA (Site Code: 004233), due to the close proximity and hydrological connection with the proposed activity area.

The proposed activity is located approximately 9.9km from Lisbigney Bog SAC (Site Code: 000869). The proposed activity area does not contain the habitats Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7120] or would not support suitable habitat for the *Vertigo moulinsiana* [1016] for which the SAC has been designated. Therefore, in the absence of a source-pathway-receptor relationship, absence of associated habitat and given the distances from the activity, this SAC has been screened out.

The proposed activity area is not hydrologically connected to any other Natura 2000 site. Therefore, it is not anticipated that the proposed activity would have a significant impact upon any other Natura 2000 site.

5.1 RIVER BARROW AND RIVER NORE SAC (SITE CODE: 002162)

This SAC is composed of the freshwater stretches of the Barrow and Nore catchments, as far upstream as the Slieve Bloom Mountains, and the tidal elements and estuary as far downstream as Creadun Head in Waterford. The larger tributaries include the Lerr, Fushoge, Mountain, Aughnavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore. The site is an SAC selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive:

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.2: ANNEX I HABITATS	
CODE	DESCRIPTION
1130	Estuaries
1140	Tidal Mudflats and Sandflats
1170	Reefs
1310	<i>Salicornia</i> Mud
1330	Atlantic Salt Meadows (<i>Glauco-Puccinellietalia maritimae</i>)
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
3260	Floating River Vegetation
4030	Dry Heath
6430	Hydrophilous Tall Herb Communities
7220	Petrifying Springs*
91A0	Old Oak Woodlands
91E0	Alluvial Forests*

* denotes a priority habitat

TABLE 5.1.3: ANNEX II SPECIES		
CODE	COMMON NAME	SCIENTIFIC NAME
1016	Desmoulin's Whorl Snail	<i>Vertigo moulinsiana</i>
1029	Freshwater Pearl Mussel	<i>Margaritifera margaritifera</i>
1092	White-clawed Crayfish	<i>Austropotamobius pallipes</i>
1095	Sea Lamprey	<i>Petromyzon marinus</i>
1096	Brook Lamprey	<i>Lampetra planeri</i>
1099	River Lamprey	<i>Lampetra fluviatilis</i>
1103	Twaite Shad	<i>Alosa fallax</i>
1106	Atlantic Salmon	<i>Salmo salar</i>
1355	Otter	<i>Lutra lutra</i>
1421	Killarney Fern	<i>Trichomanes speciosum</i>
1990	Nore Freshwater Pearl Mussel	<i>Margaritifera durrovensis</i>

An excerpt from the site synopsis for River Barrow and River Nore SAC (2016) is included below;

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlinton, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughnavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King’s Rivers on the Nore.

Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The upper reaches of the Barrow runs through limestone, with the middle reaches and many of the eastern tributaries running through Leinster Granite. The southern end runs over intrusive rocks poor in silica. Good examples of

alluvial forest are seen at Rathsnagadan, Murphy's of the River and along other shorter stretches of both the tidal and freshwater elements of the site. Typical species include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*). Good examples of old oak woodlands include those at Cloghristic Wood, Drummond Wood and Borris Demesne. Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition, with a high degree of natural regeneration of oak and ash. Drummond Wood consists of three blocks of deciduous woods situated on steep slopes. The deciduous trees are mostly oak species. The woods have a well-established understorey of Holly, and the herb layer is varied.

Eutrophic tall herb vegetation occurs within various areas of alluvial forest and where the river floodplain is intact. Characteristic species include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*) and Hedge Bindweed (*Calystegia sepium*). The invasive Indian Balsam (*Impatiens glandulifera*) is abundant in places. Floating river vegetation is well represented in the Barrow and many of its tributaries. Species include water-starworts (*Callitriche* spp.), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), pondweeds (*Potamogeton* spp.) and crowfoots (*Ranunculus* spp.). Dry heath occurs in pockets along the steep valley sides of the rivers. Dry heath vegetation consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove (*Digitalis purpurea*), Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). Dry heath generally grades into wet woodland or wet swamp vegetation lower down the slopes on the riverbank. In the foothills associated with the Aughnabrisky, Aughnavaud and Mountain Rivers there are wet heath areas dominated by Purple Moor-grass (*Molinia caerulea*) with Heather (*Calluna vulgaris*) and Bell Heather (*Erica cinerea*). Salt meadows occur at the site's southern section. In the larger salt meadow areas, the Atlantic and Mediterranean sub types are generally intermixed. At the salt meadow's upper edge, the legally protected Borrer's Saltmarsh-grass (*Puccinellia fasciculata*), Meadow Barley (*Hordeum secalinum*) and Divided Sedge (*Carex divisa*) are found. Other flora present includes Sea Rush (*Juncus maritimus*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*) and Sea Arrowgrass (*Triglochin maritima*). Glassworts (*Salicornia* spp.) and other annuals colonising mud / sand are found in the saltmarsh creeks and at seaward edges.

The estuary and the other Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats are present. Good quality intertidal sand and mudflats have developed on a linear shelf on the western side of Waterford Harbour. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina*, *Nephtys hombergii*, *Scoloplos armiger*, *Lanice conchilega* and *Cerastoderma edule*. An extensive area of honey-comb reefs, formed by the polychaete worm *Sabellaria alveolata*, occur adjacent to Duncannon, Co. Wexford. A range of species are reported from these reefs including: *Enteromorpha* sp., *Ulva* sp., *Fucus* spp., *Polysiphonia* sp., *Chondrus crispus*, *Palmaria palmate*, *Nemertea* sp., *Actinia equine*, *Patella vulgate*, *Littorina* spp. and *Mytilus edulis*. The dunes at Duncannon are dominated by Marram (*Ammophila arenaria*) with the Red Data Book species Wild Clary/Sage (*Salvia verbenaca*) also present. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

exposed shore and the cliffs support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*).

Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds. Seventeen Red Data Book plant species have been recorded within the site; Killarney Fern, Divided Sedge, Clustered Clover (*Trifolium glomeratum*), Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry (*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobanche hederæ*) and Greater Broomrape (*Orobanche rapum-genistæ*). Of these, the first nine are protected under the Flora (Protection) Order, 2015. Plants which do not have a wide distribution in Ireland are also found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (both *M. margaritifera* and *M. durrovensis*), White-clawed Crayfish, Salmon, Twaite Shad, the three lamprey species, Desmoulin's whorl snail and Otter. This is the only site in the world for the hard water form of the Freshwater Pearl Mussel, *M. durrovensis*, and one of only a handful of spawning grounds in the country for Twaite Shad. The upper stretches of the Barrow and Nore are very important for spawning. The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Frog. In addition to Freshwater Pearl Mussel, the site also supports two other mussel species, *Anodonta anatina* and *A. cygnea*.

Land use at the site consists mainly of agricultural activities. The spreading of slurry and fertiliser poses a threat to the water quality and to the populations of Annex II species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries, with both commercial and leisure fishing taking place. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within woodland areas and invasion by non-native species. The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore, it is of high conservation value for the populations of bird species that use it.

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

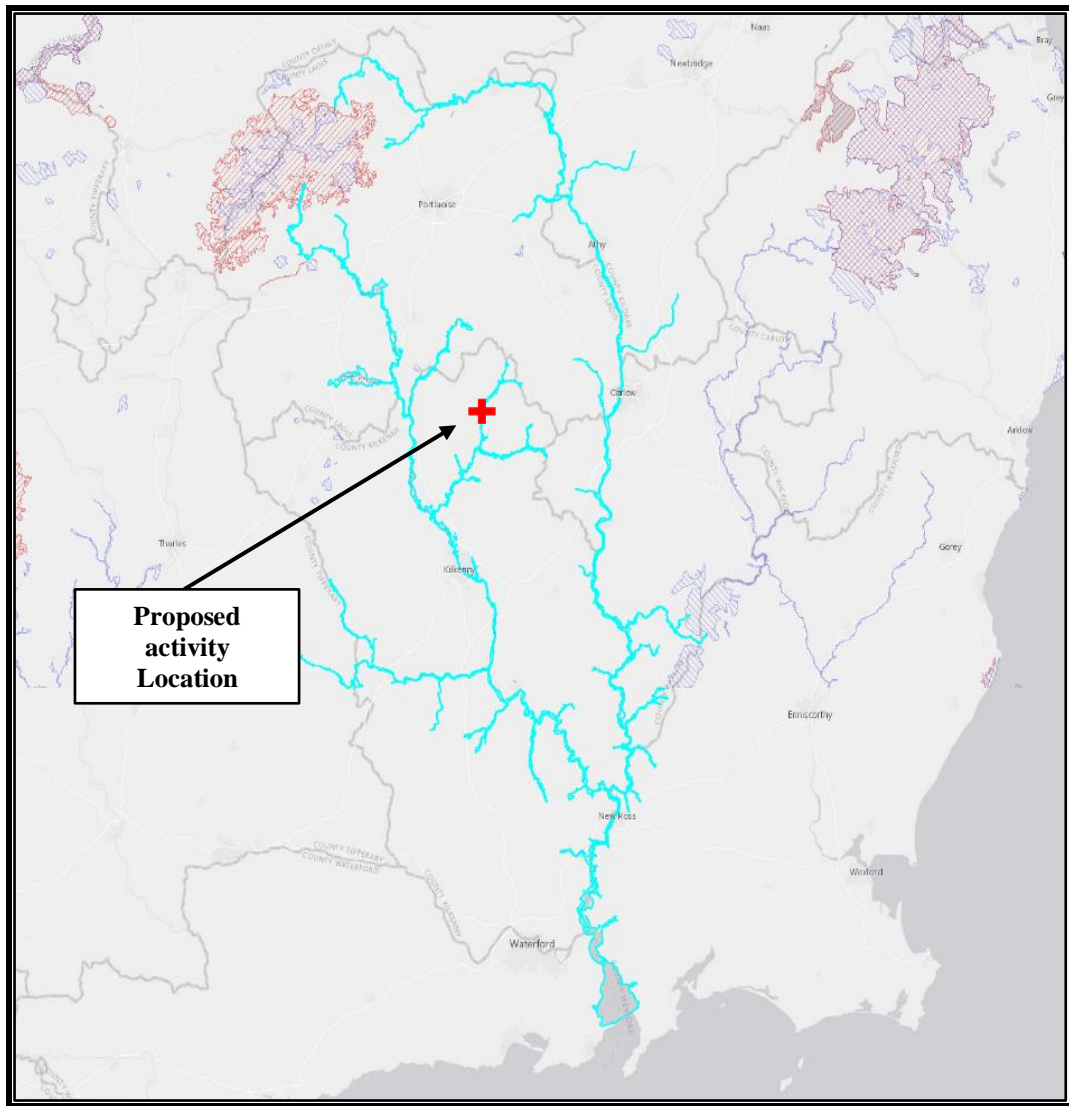


Figure 5.1: River Barrow and River Nore SAC

The conservation objectives for the SAC site are to maintain or restore the favourable conservation condition of the qualifying interests. Site specific conservation objectives (SSCOs) for the qualifying interests of the River Barrow and River Nore SAC are provided in the table below, where available from the NPWS document “Conservation Objectives: River Barrow and River Nore SAC 002162” (NPWS, 2021).

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
[1130] Estuaries			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	Habitat area was estimated using OSI data and the defined Transitional Water Body area under the Water Framework Directive as 3,856ha
Community distribution	Hectares	The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex; Fine sand with <i>Fabulina fabula</i> community.	
Community extent	Hectares	Maintain the natural extent of the <i>Sabellaria alveolata</i> reef, subject to natural process	
[1140] Tidal Mudflats and Sandflats			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	Habitat area was estimated using OSI data as 926ha
Community distribution	Hectares	The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex	
[1170] Reefs			
None Specified	-	-	
[1310] Salicornia Mud			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	The Ringville sub-site was mapped and no additional areas of potential Salicornia mudflat were identified from an examination of aerial photographs, giving a total estimated area of 0.03ha. Note further unsurveyed areas maybe present within the site
Habitat distribution	Occurrence	No decline, subject to natural processes	
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated.	
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project	
Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	
[1330] Atlantic Salt Meadows			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	Four sub-sites were mapped and additional areas of potential saltmarsh were identified from an examination of aerial photographs, giving a total estimated area of Atlantic salt meadow of 35.07ha. Note further unsurveyed areas maybe present within the site
Habitat distribution	Occurrence	No decline, subject to natural processes	
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project	
Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	
[1410] Mediterranean Salt Meadows			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey - 0.08ha, Rochestown - 0.04ha, Ringville - 6.70ha	Three sub-sites were mapped and no additional areas of potential saltmarsh were identified from an examination of aerial photographs, giving a total estimated area of Mediterranean salt meadow of 6.82ha. Note further unsurveyed areas maybe present within the site
Habitat distribution	Occurrence	No decline, subject to natural processes	
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
Vegetation structure: vegetation cover	% cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated.	
Vegetation composition: typical species and sub-communities	% cover at a representative sample of monitoring stops	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	
[3260] Floating River Vegetation			
Habitat distribution	Occurrence	No decline, subject to natural processes	<p>The full distribution of this habitat and its sub-types in this site is currently unknown. The basis of the selection of the SAC for the habitat is the presence of an excellent example of the vegetation assemblage associated with tidal reaches of large rivers between Enniscorthy and Polladerg townland.</p> <p>Due to regular disturbance (through variations in flow), river macrophytes rarely reach a climax condition but frequently occur as transient communities. A natural (relatively unmodified) flow regime is required for both plant communities and channel geomorphology to be in favourable condition, exhibiting typical dynamics for the river type</p>
Habitat area	Kilometres	Area stable or increasing, subject to natural processes	
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes	
Hydrological regime: groundwater discharge	Metres per second	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation	
Substratum composition: particle size range	Millimetres	The substratum should be dominated by large particles and free from fine sediments	
Water chemistry: minerals	Milligrammes per litre	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits	
Water quality: suspended sediment	Milligrammes per litre	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments	
Water quality: nutrients	Milligrammes per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	
Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition	
Floodplain connectivity	Area	The area of active floodplain at and upstream of the habitat should be maintained	
[4030] Dry Heath			
Habitat distribution	Occurrence	No decline from current habitat distribution, subject to natural processes	<p>Spatial extent currently unmapped but indicated as occurring on the steep, free-draining, river valley sides especially the Barrow and tributaries in the foothills of</p>
Habitat area	Hectares	Area stable or increasing, subject to natural processes. Habitat area is not known but estimated	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
		as less than 400ha of the area of the SAC, occurring in dispersed locations	the Blackstairs Mountains.
Physical structure: free-draining, acid, low nutrient soil; rock outcrops	Occurrence	No significant change in soil nutrient status, subject to natural processes. No increase or decrease in area of natural rock outcrop	<p>Dry heath in this SAC occurs on free-draining nutrient poor soils and is often characterised by gorse and open acid grassland areas. And locally bilberry and woodrush.</p> <p>Bracken appears to be quite dense in places and before any management action is considered its rate of spread needs to be established as well as its threat, if any, to other dry heath species and its potential value to important fauna (e.g. Twite).</p> <p>Broomrape is dependent on gorse at this site as it is parasitic on gorse roots. It is recorded as occurring on steep slopes above New Ross. A small area of excellent dry coastal heath at Ballyhack is interspersed with patches rock and of dry lowland grassland and has a high species diversity. Notably there is an excellent range of Clover (<i>Trifolium</i>) species including the legally protected clustered clover, a species known only from one other site in Ireland. Also <i>T. ornithopodiodes</i>, <i>T. striatum</i> and <i>Torilus nodosa</i>.</p>
Vegetation structure: sub- shrub indicator species	Percentage cover	Cover of characteristic sub- shrub indicator species at least 25%: gorse (<i>Ulex europaeus</i>) and where rocky outcrops occur bilberry (<i>Vaccinium myrtillus</i>) and woodrush (<i>Luzula sylvatica</i>). Some rock outcrops support English stonecrop (<i>Sedum anglicum</i>), sheep's bit (<i>Jasione montana</i>) and wild madder (<i>Rubia peregrina</i>) as well as important moss and lichen assemblages	
Vegetation structure: senescent gorse	Percentage cover	Cover of senescent gorse less than 50%	
Vegetation structure: browsing	Percentage cover	Long shoots of bilberry with signs of browsing collectively less than 33%	
Vegetation structure: native trees and shrubs	Percentage cover	Cover of scattered native trees and shrub less than 20%	
Vegetation composition: positive indicator species	Number	Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora	
Vegetation structure: positive indicator species	Percentage cover	Cover of positive indicator species at least 60%. This should include plant species characteristic of dry heath in this SAC including gorse, bilberry and associated acid grassland flora	
Vegetation composition: bryophyte and non-crustose lichen species	Number	Number of bryophyte or non- crustose lichen species present at least 2	
Vegetation composition: bracken (<i>Pteridium aquilinum</i>)	Percentage cover	Cover of bracken less than 10%	
Vegetation structure: weedy negative indicator species	Percentage cover	Cover of agricultural weed species (negative indicator species) less than 1%	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Vegetation composition: non-native species	Percentage cover	Cover of non-native species less than 1%.	
Vegetation composition: rare/scarce heath species	Location, area and number	No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (<i>Orobanche rapum-genistae</i>) and the legally protected clustered clover (<i>Trifolium glomeratum</i>)	
Vegetation structure: disturbed bare ground	Percentage cover	Cover of disturbed bare ground less than 10% (but if peat soil less than 5%)	
Vegetation structure: burning	Occurrence	No signs of burning within sensitive areas	
[6430] Hydrophilous Tall Herb Communities			
Habitat distribution	Occurrence	No decline, subject to natural processes	<p>Distribution of this habitat in this site is currently unknown. Considered to occur in association with some riverside woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of river.</p> <p>This habitat requires winter inundation, which results in deposition of naturally nutrient-rich sediment.</p> <p>Bare ground, due to natural inundation processes may often be present. Attribute and target based on the Irish Semi-natural Grassland Survey (O'Neill et al., 2010)</p>
Habitat area	Hectares	Area stable or increasing, subject to natural processes	
Hydrological regime: Flooding depth/height of water table	Metres	Maintain appropriate hydrological regimes	
Vegetation structure: sward height	Centimetres	30-70% of sward is between 40 and 150cm in height	
Vegetation composition: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%	
Vegetation composition: typical species	Number	At least 5 positive indicator species present	
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (<i>Impatiens glandulifera</i>), monkeyflower (<i>Mimulus guttatus</i>), Japanese knotweed (<i>Fallopia japonica</i>) and giant hogweed (<i>Heracleum mantegazzianum</i>)	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
[7220] Petrifying Springs			
Habitat area	Square metres	Area stable or increasing, subject to natural processes	<p>Full distribution of this habitat in this site is currently unknown. It has been described in woodlands at Dysart, between Thomastown and Inistioge.</p> <p>Current hydrological regimes are unknown. Petrifying springs rely on permanent irrigation, usually from upwelling groundwater sources or seepage sources.</p> <p>Water chemistry is currently unknown. Water supply to petrifying springs is characteristically oligotrophic and calcareous</p> <p>The bryophytes <i>Cratoneuron commutatum</i> and <i>Eucladium verticillatum</i> are diagnostic of this habitat.</p>
Habitat distribution	Occurrence	No decline	
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes	
Water quality	Water chemistry measures	Maintain oligotrophic and calcareous conditions	
Vegetation composition: typical species	Occurrence	Maintain typical species	
[91A0] Old Oak Woodlands			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 85.08ha for sub-sites surveyed	<p>The sizes of at least some of the existing woodlands need to be increased in order to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions.</p> <p>Oak regenerates poorly. In suitable sites ash can regenerate in large numbers although few seedlings reach pole size.</p> <p>Mature and veteran trees are important habitats for bryophytes, lichens, saproxylic</p>
Habitat distribution	Occurrence	No decline.	
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer	
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	<p>organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources.</p> <p>Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem.</p> <p>The following are the most common invasive species in this woodland type: Beech (<i>Fagus sylvatica</i>), Rhododendron (<i>Rhododendron ponticum</i>), Cherry laurel (<i>Prunus laurocerasus</i>)</p>
Woodland structure: dead wood	m ³ per hectare; number per hectare	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter	
Woodland structure: veteran trees	Number per hectare	No decline	
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including oak (<i>Quercus petraea</i>) and birch (<i>Betula pubescens</i>)	
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	
[91E0] Alluvial Forests			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed	<p>The sizes of at least some of the existing woodlands need to be increased in order to reduce habitat fragmentation and benefit those species requiring ‘deep’ woodland conditions.</p> <p>Alder and oak regenerate poorly. Ash often regenerates in large numbers although few seedlings reach pole size.</p> <p>Dead wood is a valuable resource and an integral part of a healthy, functioning</p>
Habitat distribution	Occurrence	No decline.	
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer	
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	<p>woodland ecosystem.</p> <p>Mature and veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources.</p> <p>The following are the most common invasive species in this woodland type: Sycamore (<i>Acer pseudoplatanus</i>), Beech (<i>Fagus sylvatica</i>), Rhododendron (<i>Rhododendron ponticum</i>), Cherry laurel (<i>Prunus laurocerasus</i>), Dogwood (<i>Cornus sericea</i>), Himalayan honeysuckle (<i>Leycesteria formosa</i>) and Himalayan balsam (<i>Impatiens grandiflora</i>).</p>
Hydrological regime: Flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	
Woodland structure: dead wood	m ³ per hectare; number per hectare	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)	
Woodland structure: veteran trees	Number per hectare	No decline	
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including ash (<i>Fraxinus excelsior</i>) alder (<i>Alnus glutinosa</i>), willows (<i>Salix</i> spp) and locally, oak (<i>Quercus robur</i>)	
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	
[1016] Desmoulin's Whorl Snail			
Distribution: occupied sites	Number	No decline. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois.	
Population size: adults	Number per positive sample	At least 5 adults snails in at least 50% of samples	
Population density	Percentage positive samples	Adult snails present in at least 60% of samples per site	
Area of occupancy	Hectares	Minimum of 1ha of suitable habitat per site	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Habitat quality: vegetation	Percentage of samples with suitable vegetation	90% of samples in habitat classes I and II	
Habitat quality: soil moisture levels	Percentage of samples with appropriate soil moisture levels	90% of samples in moisture class 3-4	
[1029] Freshwater Pearl Mussel			
The status of the FPM as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review			
[1092] White-clawed Crayfish			
Distribution	Occurrence	No reduction from baseline	<p>The crayfish is present almost throughout this SAC. The records extend as far downstream as Thomastown on the Nore and Graiguenamanagh on the Barrow.</p> <p>Alien crayfish species are identified as major direct threat to this species and as disease vector.</p> <p>Crayfish need high habitat heterogeneity. Larger crayfish must have stones to hide under, or an earthen bank in which to burrow. Hatchlings shelter in vegetation, gravel and among fine tree-roots. Smaller crayfish are typically found among weeds and debris in shallow water. Larger juveniles in particular may also be found among cobbles and detritus such as leaf litter. These conditions must be available on the whole length of occupied habitat</p>
Population structure: recruitment	% occurrence of juveniles and females with eggs	Juveniles and/or females with eggs in at least 50% of positive samples	
Negative indicator species	Occurrence	No alien crayfish species	
Disease	Occurrence	No instances of disease	
Water quality	EPA Q value	At least Q3-4 at all sites sampled by EPA	
Habitat quality: heterogeneity	Occurrence of positive habitat features	No decline in heterogeneity or habitat quality	
[1095] Sea Lamprey			
Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	Artificial barriers can block or cause difficulties to lampreys' upstream

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Population structure of juveniles	Number of age/size groups	At least three age/size groups present	migration, thereby limiting species to lower stretches and restricting access to spawning areas. Juveniles burrow in areas of fine sediment in still water. Lampreys spawn in clean gravels.
Juvenile density in fine sediment	Juveniles/m ²	Juvenile density at least 1/m ²	
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	
[1096] Brook Lamprey			
Distribution	% of river accessible	Access to all water courses down to first order streams	Artificial barriers can block lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. It is impossible to distinguish between brook and river lamprey juveniles in the field. Juveniles burrow in areas of fine sediment in still water. Lampreys spawn in clean gravels.
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	
Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density of brook/river lamprey at least 2/m ²	
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	
[1099] River Lamprey			
Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem and major tributaries down to second order accessible from estuary	Artificial barriers can block lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. It is impossible to distinguish between brook and river lamprey
Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present	
Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density of brook/river lamprey at least 2/m ²	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds	juveniles in the field.
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Juveniles burrow in areas of fine sediment in still water. Lampreys spawn in clean gravels.
[1103] Twaite Shad			
Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	In some catchments, artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Regular breeding has been confirmed in the River Barrow in recent years, but not in the Nore.
Population structure- age classes	Number of age classes	More than one age class present	
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning habitats	
Water quality- oxygen levels	Milligrammes per litre	No lower than 5mg/l	
Spawning habitat quality: Filamentous algae; macrophytes; sediment	Occurrence	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth	
[1106] Atlantic Salmon			
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (<i>Lepeophtheirus salmonis</i>). Salmon spawn in clean gravels.
Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded	
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 min sampling	
Out-migrating smolt abundance	Number	No significant decline	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Q values based on triennial water quality surveys carried out by the EPA.
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	
[1355] Otter			
Distribution	% positive survey sites	No significant decline	<p>Otters need lying up areas throughout their territory where they are secure from disturbance.</p> <p>Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater and wrasse and rockling in coastal waters</p> <p>Otters will utilise freshwater habitats from estuary to headwaters within 80m of the shoreline.</p>
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds	
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 857.7ha	
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 616.6km	
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 2.6ha	
Couching sites and holts	Number	No significant decline	
Fish biomass available	Kilograms	No significant decline	
[1421] Killarney Fern			
Distribution	Location	No decline. Three locations known, with three colonies of gametophyte and one sporophyte colony	'Juvenile' sporophytes, which appear as small entire fronds, are known from this site. However, it is unknown whether they are due to apogamous growth or sexual reproduction.
Population size	Number	Maintain at least three colonies of gametophyte, and at least one sporophyte colony of over 35 fronds	
Population structure: juvenile fronds	Occurrence	At least one of the locations to have a population structure comprising sporophyte, unfurling fronds, 'juvenile' sporophyte and gametophyte generations	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Habitat extent	m ²	No loss of suitable habitat, such as shaded rock crevices, caves or gullies in or near to, known colonies. No loss of woodland canopy at or near to known locations	
Hydrological conditions: visible water	Occurrence	Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats, and water is visible at all locations	
Hydrological conditions: humidity	Number of dessicated fronds	No increase. Presence of dessicated sporophyte fronds or gametophyte mats indicates conditions are unsuitable	
Light levels: shading	Percentage	No changes due to anthropogenic impacts	
Invasive species	Occurrence	Absent or under control	
[1990] Nore Freshwater Pearl Mussel			
Distribution	Kilometres	Maintain at 15.5km.	<p>The population stretches from Poorman's Bridge (S407859) to Lismaine Bridge (S442660), with most of the population found between Poorman's Bridge and the Avonmore Creamery above Ballyragget (S 440 722).</p> <p>The extant wild population of Nore freshwater pearl mussel is estimated as 300 adult individuals.</p> <p>Mussels of no more than 65mm are considered 'young mussels' and may be found buried in the substratum and/or beneath adult mussels. Mussels of no more than 30mm are 'juvenile mussels' and are always buried in the substratum.</p> <p>This species is known not to have reproduced successfully in the River Nore</p>
Population size: adult mussels	Number	Restore to 5,000 adult mussels	
Population structure: recruitment	Percentage per size class	Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length	
Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution	
Habitat extent	Kilometres	Restore suitable habitat in length of river corresponding to distribution target (15.5km) and any additional stretches necessary for salmonid spawning	
Water quality: Macroinvertebrates and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	

NATURA IMPACT STATEMENT
CLOGH/CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 5.1.4 CONSERVATION OBJECTIVES: RIVER BARROW AND RIVER NORE SAC			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Substratum quality: Filamentous algae (macroalgae), macrophytes (rooted higher plants)	Percentage	Restore substratum quality- filamentous algae: absent or trace (<5%)	<p style="text-align: center;">since 1970.</p> <p style="text-align: center;">Juvenile mussels require full oxygenation while buried in gravel.</p> <p>Salmonid fish are host to the larval form of freshwater pearl mussels and thus, they are essential to the completion of the life cycle.</p> <p style="text-align: center;">As native brown trout appear to be favoured by the Nore freshwater pearl mussel, it is particularly important that these are not outcompeted by stocked fish.</p>
Substratum quality: sediment	Occurrence	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.	
Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate	
Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regimes	
Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae	

River Barrow and River Nore SAC Conservation Status

According to the Habitat's Directive, favourable conservation status of a habitat is achieved when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which 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 as defined below.

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is 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.

The conservation statuses for the qualifying interests of the River Barrow and River Nore SAC site are outlined below.

Table 5.1.5: Conservation Status: River Barrow and River Nore SAC

CODE	QUALIFYING INTEREST	NATIONAL CONSERVATION STATUS*
1130	Estuaries	Inadequate
1140	Tidal Mudflats and Sandflats	Inadequate
1170	Reefs	Inadequate
1310	<i>Salicornia</i> Mud	Favourable
1330	Atlantic Salt Meadows	Inadequate
1410	Mediterranean Salt Meadows	Inadequate
3260	Floating River Vegetation	Inadequate
4030	Dry Heath	Bad
6430	Hydrophilous Tall Herb Communities	Bad
7220	Petrifying Springs	Inadequate
91A0	Old Oak Woodlands	Bad
91E0	Alluvial Forests	Bad
1016	Desmoulin's Whorl Snail	Inadequate
1029	Freshwater Pearl Mussel	Bad
1092	White-clawed Crayfish	Bad
1095	Sea Lamprey	Bad
1096	Brook Lamprey	Favourable
1099	River Lamprey	Unknown
1103	Twaite Shad	Bad
1106	Atlantic Salmon	Inadequate
1355	Otter	Favourable
1421	Killarney Fern	Favourable

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

CODE	QUALIFYING INTEREST	NATIONAL CONSERVATION STATUS*
1990	Nore Freshwater Pearl Mussel	Bad

*Sourced from the Status of EU Protected Habitats and Species in Ireland (NPWS, 2019b and 2019c).

5.2 RIVER NORE SPA (SITE CODE: 004233)

The River Nore SPA is a long, linear site that includes the following river sections: the River Nore from the bridge at Townparks, (north-west of Borris in Ossory) to Coolnamuck (approximately 3 km south of Inistioge) in Co. Kilkenny; the Delour River from its junction with the River Nore to Derrynaseera bridge (west of Castletown) in Co. Laois; the Erkina River from its junction with the River Nore at Durrow Mills to Boston Bridge in Co. Laois; a 1.5 km stretch of the River Goul upstream of its junction with the Erkina River; the Kings River from its junction with the River Nore to a bridge at Mill Island, Co. Kilkenny. The site includes the river channel and marginal vegetation.

TABLE 5.2.1: QUALIFYING INTERESTS		
CODE	COMMON NAME	SCIENTIFIC NAME
A229	Kingfisher	<i>Alcedo atthis</i>

For a large part of its course the River Nore traverses Carboniferous limestone plains; it passes over a narrow band of Old Red Sandstone rocks below Thomastown. The site is a Special Protection Area (SPA) under the E.U. Birds Directive of special conservation interest for the following species: Kingfisher. A survey in 2010 recorded 22 pairs of Kingfisher (based on 16 probable and 6 possible territories) within the SPA. Other species which occur within the site include Mute Swan (35), Mallard (267), Cormorant (14), Grey Heron (45), Moorhen (14), Snipe (17) and Sand Martin (1,029) – all figures are peak counts recorded during the 2010 survey. The River Nore SPA is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive.

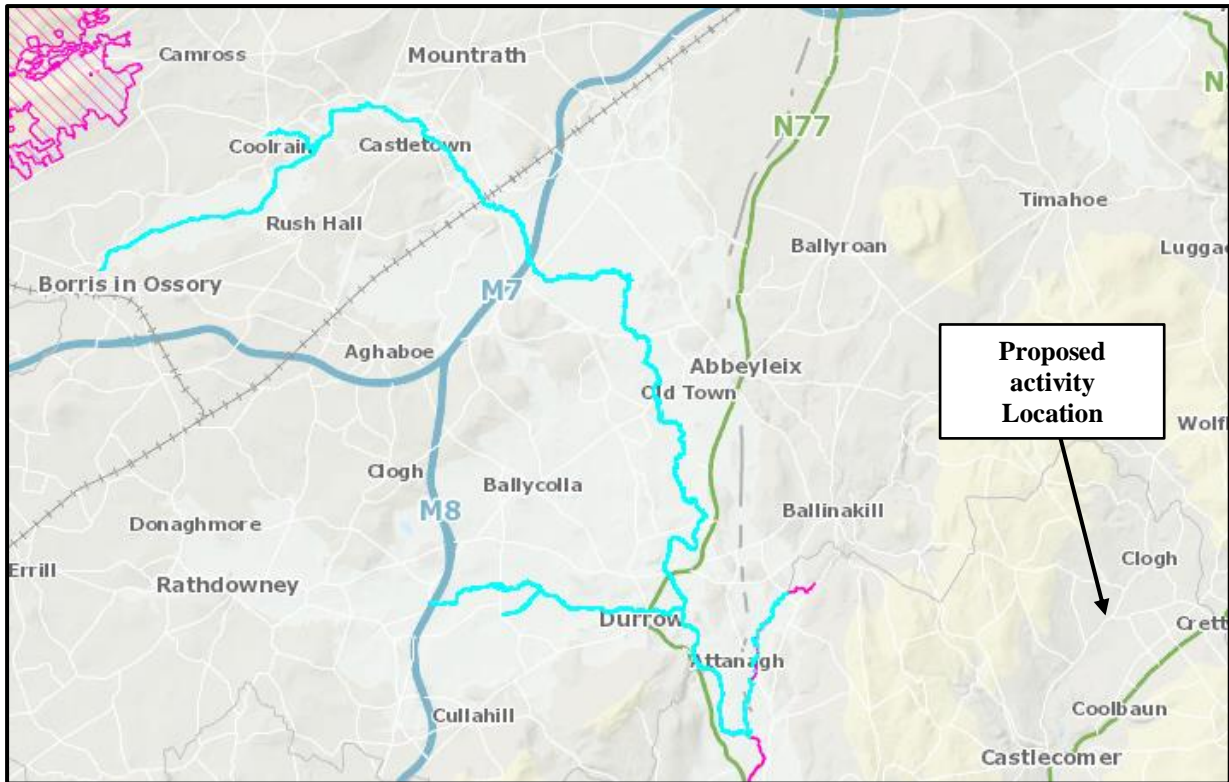


Figure 5.2: River Nore SPA

The River Nore SPA Conservation Status

According to the Habitat’s Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is 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.

TABLE 5.2.2: CONSERVATION STATUS: RIVER NORE SPA		
CODE	SPECIAL CONSERVATION INTEREST	NATIONAL CONSERVATION STATUS*
A229	Kingfisher	Amber list

* *Birds of Conservation Concern in Ireland 2020-2026 (Gilbert et al, 2021) and Bird Atlas 2007 - 2011*

6.0 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The proposed activity area is located within the boundary of the European site, River Barrow and River Nore SAC (Site Code: 002162). Due to this activity there is the potential for likely significant effects upon a protected site through loss or destruction of habitat, fragmentation of habitat, disturbance of habitat and/or direct reduction in species density. The activity area is also hydrologically connected to the River Nore SPA (Site Code: 004233) downstream via the River Dinin.

There is no woodland habitat within the project area nor will any trees/hedgerows be removed to facilitate the activity. Therefore, the proposed activity would not have any links to habitats of interest such as Old Oak Woodlands [91A0] or Alluvial Forests [91E0] that could potentially be impacted. The closest Old Oak Woodlands is approximately 35.3km to the south-east (53.5km hydrologically downstream) and the closest Alluvial Forests is approximately 21.3km to the south (34km hydrologically downstream) of the proposed activity. Given the significant distance of these habitats downstream of the activity area, it is not anticipated that there would be a likely significant effect on them due to a deterioration in water quality.

No areas of heath or marsh / swamp habitats occur on the activity area; therefore, the proposed activity area does not contain any habitat which would have potential links to Dry Heath [4030] or Hydrophilous Tall Herb Communities [6430]. Dry Heath is currently unmapped however it is known to occur on steep-free draining valley sides especially along the River Barrow and tributaries in the Blackstairs Mountains. This habitat is not within or adjacent the activity area boundary and the proposed activity would not impact on this habitat.

Hydrophilous Tall Herb Communities distribution is currently unknown. Considered to occur in association with some riverside woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of river. The project area lacks the indicator species of this habitat. No evidence of this habitat was identified within the immediate activity area. The focus of the activity is to remove deposited silt and sedimentation rather than removing the existing vegetation both within the watercourse and along the banks.

The tidal stretches of the River Nore are located 62km downstream from the proposed activity area, thus qualifying interests associated with saltwater and tidal conditions would not be present adjacent to the proposed activity. The River Nore and River Dinin would likely contain aquatic freshwater species of conservation value. The project will require the proposed activity within the watercourse.

During the site assessment, no Killarney Fern [1421] was present with the closest records approximately 42.8km south-east (68km hydrologically downstream) near Inistioge. In the absence of swamp, fen and marsh habitat within the proposed activity area, and in the absence of historic records, it is not considered that the proposed activity would be suitable to support populations of Desmoulin's Whorl Snail. According to the Conservation Objectives report for the River Barrow and River Nore SAC, the closest records for this species are approximately 20.8km north-west (upstream) from the activity area.

The proposed activity area is located within the River Dinin. The banks of the River Dinin and River Nore downstream could offer potential suitable habitat for the Kingfisher. Although, the

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

banks within the immediate activity area are heavily vegetated. According to Cummins et al (2020), Kingfisher require “*tall vertical banks with soft material which they can dig their burrows*”. Differential methods may provide bias for potential suitable habitat as a survey covered on foot has limitations however, using binoculars to view the banks on the opposite sides, it is unlikely they would be suitable for nesting Kingfisher. Kingfisher are known to perch on tall vegetation within and along watercourses. Given that the proposed activity is located a significant distance upstream (21km hydrologically) from the River Nore SPA, it is not anticipated that there would be an impact to the Natura 2000 site itself. That being said, Kingfisher are not fixed to one location and may be found outside the reaches of a protected site. No proposed activity will take place outside of the proposed activity area. There was no evidence of or signs of Kingfisher within the immediate area of the proposed activity area. Therefore, it is not anticipated that the proposed activity would have any direct impacts upon Kingfisher, however, an indirect impact could occur due to a deterioration in water quality.

No evidence of otter (including holts, slides, spraints and tracks) was recorded during the first site assessment in December 2023. During the second site assessment in April 2024, evidence of Otter (prints) was observed on muddy substrates along the banks of the River Dinin and the margins of the silt bar in the proposed activity area. No holts or couches were located within the immediate activity area however, there may be suitable couch and holt habitat outside the activity area, given that the proposed activity is located within the River Dinin that is hydrologically connected to the River Nore. No evidence of feeding or remains of prey items or spraints were found indicating that the Otter may have only been in the area for a short period of time. Limitations of the surveys along the River Dinin were confined to terrestrial survey methods due to the depth of the watercourse. Binoculars were used to assess the river banks for signs of otter and protected fauna from afar. Areas of reed within the project area could support Otter couches and the overhanging vegetation could obscure Otter holts from view. The nearest NBDC records for otter are located approximately 1.5km to the south-east (Scott, 2023). The proposed activity will not be undertaken outside of daylight hours so as to not impact nocturnal fauna. Otter are not sedentary and would move if disturbed. Given the small area, absence of holts or couches, with no proposed activity to the River banks and short duration, it is not anticipated that the proposed activity would have a direct impact upon otter due to habitat loss or disturbance however, there may be an indirect impact associated with a deterioration in water quality that could impact upon otter prey.

During the enactment of the proposed activity, the release of sediments could have an impact on filter feeding freshwater species such as Freshwater Pearl Mussel. While the status of this species is currently under review within the Conservation Objectives report for the River Barrow and River Nore SAC, it is known that this critically endangered species is at risk of morphological and hydrological changes caused by sedimentation and enrichment. Riverbeds that have become clogged with silt and vegetation are unsuitable for the survival of young mussels (NPWS, 2019c). The larvae use a temporary salmonid host such as Atlantic Salmon. There are no records of Freshwater Pearl Mussel within the NBDC tetrad S57 however, this mollusc has been recorded downstream within the River Nore. Changes to the hydrological conditions or physical alteration could also have an impact to this species. It was determined during the site assessments, that the activity area would not offer suitable habitat for Freshwater Pearl Mussel. Therefore, it is not considered that a direct impact would occur due to the proposed activity. However, an indirect impact could occur during the proposed activity due to a deterioration in water quality and the release of suspended solids which could impact this species if located downstream.

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

In terms of Salmon, the site assessment determined that there is no optimal salmonid spawning habitat within the study area. However, Salmon were noted upstream and downstream of the proposed activity area on the Dinin [North] River (Gordon *et al*, 2021). Therefore, there is potential for this species to be present within the proposed activity area and as a result, a direct impact could occur due to physical disturbance. Salmon are sensitive to alterations in waterbodies. The release of sediments could also have a direct impact upon Salmon spawning grounds. An indirect impact could occur if present downstream due to a deterioration in water quality, the release of suspended solids and an impact to prey species. Artificial barriers block Twaite Shad from migrating upstream and therefore it is confined to the lower stretches. It is therefore, not anticipated that an impact would occur to this species.

The proposed activity also poses a potential risk to Lamprey sp. if present within immediate activity area or within watercourses downstream. During the initial site assessment, suitable supporting habitat for Lamprey ammocoetes was noted. As a result of the proposed activity, there is a potential risk of suitable habitat loss, sedimentation, release of suspended solids and a deterioration in water quality and mortality. A direct impact could occur due to a direct physical disturbance if present within the activity area. An indirect impact could occur due to the release of sediments, an impact to prey species and a deterioration in water quality downstream.

The proposed activity could pose a risk to Freshwater Crayfish. According to *The Status of EU protected habitats and Species in Ireland Species Assessment Report* (2019), Freshwater White-clawed crayfish are most often found in first order streams however, it uses a broader spectrum of habitats where there is sufficient lime. It is also known to thrive in hard water with a typical pH of 7 or above and calcium concentrations of at least 5mg/l. Data obtained from catchments.ie show pH >7 and Calcium of 23-58 mg/l for the River Dinin over several years. However, crayfish prefer firmer substrates. Therefore the proposed activity area would be less attractive to the species, although presence cannot be ruled out. It is associated with good quality status rivers but has been recorded in watercourses with a Q value of 3. Juveniles live among gravel or submerged tree roots, larger Crayfish hide under stones or dig burrows in banks and brooding females require undisturbed shelter over a prolonged winter/spring period. Due to the methodology involving electrofishing and removal of deposited material, if the aforementioned species are located within the proposed activity area, there could be a direct significant impact as a result. An indirect impact could occur due to the release of sediments and a deterioration in water quality downstream.

It is not envisaged that protected species would be adversely impacted upon by the activity due to noise generated as the surrounding area is located within a rural setting. Fauna in the area would be accustomed to human generated noise from vehicular and agricultural activities commonly audible within rural areas. While there would be increased noise emissions during the proposed activity, these would not be considered to pose a significant risk owing to the transient nature of activity and the small scale of proposed activity. The proposed activity will be carried out during daylight hours, therefore would not cause significant disturbance to nocturnal species foraging at the river.

The proposed activity would be confined to the immediate area around the infiltration gallery with the main activity being the removal of accumulated sediment within the river bed and the topping of a sand bar to the level of the water within the Dinin. This will prevent any influx of water within the activity area. This proposed activity will help to increase the flow of water into the infiltration gallery and will be carried out directly after electro-fishing. The removal of

the deposited material within the isolated area will be kept to the immediate activity area. Inland Fisheries will electro fish the immediate activity area to remove any protected freshwater species. An ecologist will be onsite during the activity to check removed materials for protected species. Once all removed materials have been checked and a period of 24 hours has elapsed, the materials will be transported offsite to a licensed waste facility.

The potential disturbance on protected habitats and species due to dust during the activity would not be considered significant, given the temporary nature of the activity and the scale of the project. It is not considered that the operational phase of the activity would have the potential to have a likely significant effect upon designated sites due to air emissions given the nature of the activity (infiltration gallery).

Due to this proposed activity within the River Dinin and the potential for protected species and habitats within the area, it is not considered that the proposed activity would have a likely significant effect on the protected habitats and species of the River Barrow and River Nore SAC and River Nore SPA due to habitat fragmentation or loss. However, it is considered that due to the proposal of isolating the area between the infiltration gallery and the silt/gravel bar, de-watering and removing accumulated material, there is potential for the loss/ direct disturbance to freshwater species and a deterioration in water quality . It is therefore considered that mitigation measures would need to be implemented during the project to ensure there is no significant impact upon the SAC or SPA.

6.2 INVASIVE SPECIES

Under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to any plant which is included in Part 1 of the Third Schedule shall be guilty of an offence. Materials containing invasive species such Japanese Knotweed are considered “controlled waste”, and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011, it is a legal requirement to obtain a license to move “vector materials” listed in the Third Schedule, Part 3.

Table 6.1: National Biodiversity Data Centre records of Third Schedule invasive species within 10km square (Tetrad – S57) of the proposed activity.

THIRD SCHEDULE INVASIVE FLORA
Japanese Knotweed (<i>Fallopia japonica</i>)

The spread of invasive plant and animal species can negatively impact on the conservation objectives of certain Annex I habitats and species designated within River Barrow and River Nore SAC and River Nore SPA.

No third schedule invasive species were noted within the proposed activity boundary during the site assessment.

The risk of invasive species being introduced to the proposed activity area during the project is considered to be low, with no import of materials with the potential to contain invasive flora species. Materials removed during the project would be stored onsite for approximately 24 hours and will then be exported offsite to a licensed facility.

Given the nature of the proposed activity, there would be no significant risk of introducing invasive species during the operational phase. Therefore, it is considered that there would be no significant risk to protected habitats and species as a result of invasive species from the proposed activity.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

The proposed activity are located within the Nore Catchment and within the boundaries of the River Barrow SAC. The location of the proposed activity within the River Dinin would be hydrologically linked to the River Nore SPA downstream. However, the proposed activity would not be considered to impact upon the listed habitats and species of the SAC or SPA during the operational phase due to deleterious effects on water quality as the infiltration gallery is already in operation and while sediments may be released as a result, it is unlikely that these will travel downstream but rather deposit in the immediate area.

Although the proposed activity is located within a low to medium fluvial flood area (Floodmaps, 2023), the modelled flood risk is for a 1 in 100 year event. The proposed activity will be undertaken between 1st July and 30th September or when agreed with IFI during dry conditions and outside periods of heavy rainfall. Therefore, the risk of an impact due to flooding is unlikely. Also, it should be noted that the estimated duration of the proposed activity will be approximately 3-5 days, further preventing an impact due to flooding. Therefore, it is not anticipated that the proposed activity will have any likely significant impact on the River Barrow and River Nore SAC and River Nore SPA due to a deterioration in water quality in terms of flooding during the maintenance activity or continued operation.

In the event of suspended solids becoming entrained in surface water run-off on land, there is considered to be no significant risk of impact on water quality as suspended solids would likely be retained at the proposed activity area as run-off percolates to the ground. Freshwater will be pumped to land from the proposed activity area to the area along the hedgerow to the west and allowed to soak to ground. The land slopes in part from east to west with an earth bank bordering the watercourse along the east. Sediments within the pumped freshwater will naturally settle to the bottom. Given that the project footprint would be small in scale and the limited plant and equipment required, the risk of the activity impacting significantly upon water quality would be greatly reduced. The use of straw-bales with a geo-textile membrane would allow the water to filter through while capturing sediments during the proposed activity. As stated previously, the activity will be undertaken during dry conditions and the water within will be pumped out. It is not envisaged that a significant volume of water will remain within the activity area.

During electro-fishing, the accumulated silt may become suspended within the area. Therefore, water will be pumped from the isolated area to the hedgerow that runs along the western boundary of the infiltration gallery and allowed to soak to ground.

During the proposed activity, a deterioration in water quality can arise through the release of suspended solids during the removal of accumulated material within the isolated area of the channel. A deterioration in water quality has the potential to have a likely significant impact upon the qualifying interests of the River Barrow and River Nore SAC and River Nore SPA, particularly qualifying interests which have conservation objectives relating to water quality, such as aquatic fauna; Lamprey Sp. and Atlantic Salmon. As the water within the immediate proposed activity area will be pumped out, it is not considered that there would be a significant volume of water within during the activity. While the risk of a deterioration in water quality is considered low, a likely significant impact ultimately cannot be ruled out. It is therefore considered that control measures would need to be implemented during the activity phase to ensure there is no likely significant impact upon the SAC.

6.4 SCREENING CONCLUSION

In order for an effect to occur, there must be a pathway between the source and the receptor (the SAC/SPA). Where a pathway does not exist, an impact cannot occur.

The proposed activity are located within the boundary of the River Barrow and River Nore SAC (Site Code: 002162) located approximately 21km upstream of the River Nore SPA (Site Code: 004233).

As detailed above, it is considered that the proposed activity could result in a likely significant impact to the protected habitats and species of the River Barrow and River Nore SAC and River Nore SPA due to a deterioration in water quality, disturbance, reduction in species density or species diversity. Therefore, a Natura Impact Statement is required.

7.0 ASSESSMENT OF ADVERSE EFFECTS: STAGE 2 APPROPRIATE ASSESSMENT

The proposed activity has the potential to impact upon the qualifying interests of the River Barrow and River Nore SAC and River Nore SPA due to a potential deterioration in water quality and disturbance, reduction in species density or species diversity during the proposed activity.

During this activity, there is potential for water quality deterioration through the release of suspended solids during the removal of accumulated material in the isolated area of the channel. Suspended solids could become entrained in surface water run-off and could affect aquatic qualifying interests / special conservation interests through deposition. Nutrients can be bound in suspended solids, therefore, a significant increase in suspended solids can result in excessive eutrophication, leading to the deoxygenation of waters and subsequent asphyxia of aquatic species. An increase in sediments has the potential to impact upon fish species by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. An increase in suspended solids also has the potential to reduce water clarity, which can impact the light penetration of water and may also affect certain behaviours of aquatic fauna such as foraging success.

Runoff entering a watercourse has the potential to cause an impact on water quality and lead to eutrophication. A potential source of chemical contamination would be from the release of hydrocarbons (oils, fuels) from machinery, equipment. Hydrocarbons can affect water quality,

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

potentially resulting in toxic conditions for aquatic flora and fauna. Oil films on the water surface can disrupt oxygen diffusion from the atmosphere, resulting in de-oxygen of waters.

While every effort will be made to prevent an impact upon any protected species, there is still a risk of potential mortality of protected freshwater species listed within the River Barrow and River Nore SAC during the project.

The tables below briefly outline the occurrence of the qualifying interests of the River Barrow and River Nore SAC in relation to the proposed activity area, taking cognisance of the NPWS “*Conservation Objectives: River Barrow and River Nore SAC Site Code: 002162*” and the River Nore SPA “*Conservation Objectives: River Nore SPA Site Code: 004233*”, in addition to Volumes 1, 2 and 3 of the 2019 NPWS Reports, “*The Status of EU Protected Habitats and Species in Ireland*”. The following tables also outline which of the qualifying interests and special conservation interests may be impacted upon by a potential deterioration in water quality from the project.

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
[1140] Tidal Mudflats and Sandflats [1170] Reefs [1310] Salicornia Mud [1330] Atlantic Salt Meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 1140] Tidal Mudflats and Sandflats [1130] Estuaries	The proposed activity is located outside the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests (estuaries) are located approximately 62km (hydrologically) downstream of the proposed activity (NPWS, 2011). Given the distance, it is not anticipated that the proposed activity would have the potential to negatively impact upon these qualifying interests either directly or indirectly.	No
[3260] Floating River Vegetation	The proposed activity area is located within the current distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). The Conservation Objectives for this qualifying interest include water quality attributes. Therefore, there is potential for the proposed activity to have an indirect impact upon this qualifying interest due to a potential deterioration in water quality during the proposed activity.	Yes
[4030] Dry Heath	The proposed activity is located outside the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). The SAC Conservation Objectives report notes that the spatial extent of this habitat is currently unmapped, but is indicated as occurring on steep, free-draining river valley sides. Dry heath is a terrestrial habitat, therefore a potential deterioration in water quality during proposed activity would not be anticipated to have a significant adverse direct or indirect impact upon this qualifying interest should it be present adjacent the River Dinin.	No
[6430] Hydrophilous Tall Herb Communities	The proposed activity is located outside the current known distribution, the current range and favourable reference range of this qualifying interest (NPWS, 2019b). The SAC Conservation Objectives report notes that the distribution of this habitat within the SAC site is currently unknown, but is considered to occur at some riverside woodlands, river islands and in narrow bands along the floodplain of slow-flowing river stretches. Water quality is not listed as a conservation objective for this qualifying interest either directly or indirectly.	No
[7220] Petrifying Springs*	The proposed activity is located within the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). The nearest example of this qualifying interest is located approximately 36.8km south-east (55km hydrologically downstream) of the activity area, in the Nore catchment (NPWS, 2011). Given the distance, nature, scale and extent of the proposed activity, it is	No

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
	not anticipated that the proposed activity would have direct or indirect negative impacts upon this qualifying interest either directly or indirectly.	
[91A0] Old Oak Woodlands	The proposed activity is located outside the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). According to the SAC Conservation Objectives report, old oak woodlands are located approximately 35.3km south-east (53.5km hydrologically downstream) the proposed activity area. However, the report notes that further unsurveyed areas may be present within the SAC. Old oak woodlands are a terrestrial habitat, therefore a potential deterioration in water quality during proposed activity would not be anticipated to have a significant adverse impact upon this qualifying interest either directly or indirectly.	No
[91E0] Alluvial Forests*	The proposed activity is located outside the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). According to the SAC Conservation Objectives report, alluvial forests are located approximately 21.3km south (34km hydrologically downstream) the proposed activity area. However, the report notes that further unsurveyed areas may be present within the SAC. A potential deterioration in water quality would not be anticipated to have a significant adverse impact upon this qualifying interest either directly or indirectly.	No
[1016] Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>)	The Desmoulin's whorl snail is the largest of the whorl snail species occurring in wetlands in Ireland. It favours damp or wet habitats such as swamps, fens and marshes, where it lives mostly in moss, leaves and decaying vegetation (NPWS, 2019c). Desmoulin's whorl snail feeds on living and dead stems and leaves of tall plants in wetland habitats. The proposed activity is located outside the current known distribution, current range and the favourable reference range of this qualifying interest (NPWS, 2019c). According to the SAC Conservation Objectives report, the nearest record of Desmoulin's whorl snail is located approximately 20.8km north-west (upstream) from the proposed activity. Given the distance of this qualifying interest upstream from the activity area and given that water quality is not listed as a conservation objective for this qualifying interest, it is not anticipated that the project would have the potential to have a direct or indirect adverse impact upon the Desmoulin's whorl snail.	No
[1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)	Freshwater pearl mussels (both <i>Margaritifera margaritifera</i> and <i>M. m. durrovensis</i>) are long-lived, bivalve molluscs found in clean, fast-flowing rivers. <i>M. margaritifera</i> is widespread in Ireland, however, the population has been in decline for a long time, with the current decline attributed to a combination of hydrological and morphological changes, sedimentation and enrichment of its habitat (NPWS, 2019a). The Nore pearl mussel (<i>M. m. durrovensis</i>) is a hard-water form of the freshwater pearl mussel and is only found	Yes
[1990] Nore Freshwater Pearl Mussel (<i>Margaritifera durrovensis</i>)		Yes

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
	<p>within the River Nore’s main channel. Previously, the Nore pearl mussel was reported separately as taxon 1990 (<i>M. durrovensis</i>), however genetic research has since placed the Nore population within the <i>Margaritifera margaritifera</i> taxon (NPWS, 2019c).</p> <p>The species has an unusual life cycle. Eggs develop into the larval stage (glochidia), which are brooded in the female gills before being released into open water. A small number are inhaled by passing salmonid fish, which act as the mussels’ temporary hosts. Once mature enough to exist independently, they fall off their hosts and bury into gravel where they filter feed (Moorkens, 2000).</p> <p>The proposed activity is not located within the current known distribution, current range and favourable reference range of the freshwater pearl mussel (NPWS, 2019c). The SAC Conservation Objectives report notes that the status of <i>Margaritifera margaritifera</i> as a qualifying interest for the activity area is currently under review, while <i>M. m. durrovensis</i> is confined to a 15km (approximate) stretch of the River Nore located downstream of the proposed activity. The Conservation Objectives for this qualifying interest notes Salmonid fish are host to the larval form of freshwater pearl mussels. A deterioration in water quality could impact on Salmonid fish thereby impact on Freshwater Pearl Mussel.</p> <p>Freshwater Pearl Mussel are sensitive to sedimentation and nutrient enrichment. Furthermore, as the larval stages rely on salmonid fish hosts, any potential impact on salmonid fish can have an impact upon the Pearl Mussel. Water quality within and downstream of the proposed activity could have a direct impact on the populations that exist within the River Nore, also there remains a possibility that water quality could impact on salmonid fish. It is not considered that the proposed activity area would support suitable habitat for this species and therefore no direct impacts would be anticipated. However, there is potential for the proposed activity to have an indirect impact on this qualifying interest due to a potential deterioration in water quality via the release of suspended solids.</p>	
[1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)s	The White-clawed Crayfish is the only native crayfish species found in Ireland and is a relatively long-lived species with a maximum life of 10 years. It occurs in both streams and lakes in Ireland and requires relatively hard water with a pH of 7 or above and calcium concentrations of at least 5mg/l. White-clawed crayfish are omnivorous, with young crayfish more reliant than adults on animal foods.	Yes

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
	<p>The activity area is located within the distribution, the current range and the favourable reference range of this qualifying interest (NPWS, 2019c). The SAC Conservation Objectives report notes that crayfish are present almost throughout the SAC. The Conservation Objectives for this qualifying interest include water quality attributes.</p> <p>There are current records of White Clawed Crayfish throughout the Nore Catchment. According to the Conservation Objectives report, Crayfish have been recorded approximately 16.6km downstream from the proposed activity within the River Dinin [North]. The closest NBDC records for White Clawed Crayfish are located approximately 4.1m (hydrologically) downstream of the proposed activity within the River Dinin [North]. The Conservation Objectives for this qualifying interest include water quality attributes. As there is potential for this species to be found within the proposed activity area or downstream, there is potential for the activity to have a direct impact upon this qualifying interest due direct physical disturbance and an indirect impact due to a potential deterioration in water quality during proposed activity.</p>	
[1095] Sea Lamprey (<i>Petromyzon marinus</i>)	<p>Lamprey can play an important role in processing nutrients, nutrient storage, and nutrient cycling in streams. In addition, they aid in creating spawning beds for salmonid species by altering the river channel and bed. Sea lamprey are an anadromous species, with adults living at sea and migrating to freshwater for spawning in late May or June. The fertilised eggs hatch within days, with the larvae burrowing into fine sediment where they filter feed for a number of years. Transformation to young adults occurs in summer and young adults can be found migrating downriver to estuarine waters in autumn – winter.</p> <p>The proposed activity is located outside the current known distribution, current range and favourable reference range of the Sea Lamprey (NPWS, 2019c). The SAC Conservation Objectives report notes that upstream migration may be inhibited by artificial barriers, and that artificial barriers are currently preventing juvenile lampreys from accessing the full extent of suitable habitat. Lamprey species have been recorded throughout the Nore Catchment. Lamprey Sp. have been recorded both upstream and downstream of the proposed activity area on the River Dinin [North] according to Gordon et al (2021). Changes in water quality have the potential to impact on the population of Sea Lamprey, the main water quality impacts are from agricultural runoff; however, potential pollutants from proposed activity cannot be ruled out. As there is potential for this species to be found within the proposed activity area or downstream, there is potential for the activity to have a direct impact upon this qualifying interest due direct physical disturbance and an</p>	Yes

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
	indirect impact due to a potential deterioration in water quality during proposed activity. Therefore, <u>mitigation measures must be put in place to prevent changes in water quality.</u>	
[1096] Brook Lamprey (<i>Lampetra planeri</i>)	The brook lamprey is the smallest of the three lampreys native to Ireland and is the only species that is non-parasitic and spends all its life in freshwater. Adults spawn in spring, excavating shallow nests in gravel areas of reduced flow. Adult fish die after spawning. After hatching, larvae drift/swim downstream to areas with a fine silt composition. They burrow into this bed material and live as filter feeders for years before transforming into young adult fish. The young adults overwinter before migrating short distances upstream to gravelled areas where they spawn.	Yes
[1099] River Lamprey (<i>Lampetra fluviatilis</i>)	<p>River lamprey are an anadromous species, with adults living at sea and migrating to freshwater for spawning in March and April. The adult fish die after spawning. The fertilised eggs hatch within days, with the larvae burrowing into fine sediment where they filter feed for a number of years before transforming into adult fish. The young river lamprey then migrate downriver to estuarine waters.</p> <p>River and brook lamprey are indistinguishable as larvae. The mature adult forms are distinguishable on the basis of body size. Lamprey surveys have necessarily focussed on juvenile lamprey. Consequently, the vast majority of available data relates to “<i>Lampetra</i> sp.” and cannot be assigned to one species or the other.</p> <p>The proposed activity area is located within the current known distribution, current range and favourable reference range of brook lamprey, but outside of the current known distribution, current range and favourable reference range of River lamprey (NPWS, 2019c). Lamprey species have been recorded throughout the Nore Catchment. Lamprey Sp. have been recorded both upstream and downstream of the proposed activity area on the River Dinin [North] according to Gordon et al (2021).</p> <p>The SAC Conservation Objectives report notes that diffuse source pollution maybe having localised impacts on populations of <i>L. fluviatilis</i>. Water quality impacts from runoff have the potential to impact on the populations of both species. As there is potential for this species to be found within the proposed activity area or downstream, there is potential for the activity to have a direct impact upon this qualifying interest due direct physical disturbance and an indirect impact due to a potential deterioration in water quality during proposed activity.</p>	

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
[1103] Twaite Shad (<i>Alosa fallax</i>)	<p>Twaite Shad spend most of their life in estuaries and coastal waters but migrate upriver to spawn in late spring. Following spawning, adult Twaite Shad return to estuaries. Limited knowledge indicates that Irish Twaite Shad may live in estuarine waters for at least two full years prior to going to sea.</p> <p>The proposed activity is located outside the current known distribution, current range and favourable reference range of the Twaite Shad (NPWS, 2019c). There are no NBDC records for this species within the vicinity of the activity. The Conservation Objectives for this qualifying interest include water quality attributes however, due to its significant distance and location along the river Barrow, it is not anticipated that the proposed activity would have the potential to adversely impact upon this qualifying interest either directly or indirectly.</p>	No
[1106] Atlantic Salmon (<i>Salmo salar</i>)	<p>Atlantic Salmon use rivers to reproduce and as nursery areas. Eggs are deposited during winter in river gravels. The eggs hatch into alevins in spring, which in turn develop into fry. The fry feed for the summer and autumn, gradually becoming parr. Fry and parr feed primarily upon invertebrates. The Irish population generally comprises fish that spend two winters in freshwater before going to sea in spring as smolts. Adults spend 1-3 years at sea, feeding upon crustaceans and fish as they migrate to feeding grounds in the North Atlantic. The majority of Irish fish spend one winter at sea before returning to their natal rivers, mainly during the summer, as grilse.</p> <p>The proposed activity is located within the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019c). Salmon were noted upstream and downstream of the proposed activity area on the Dinin [North]River (Gordon <i>et al</i>, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.</p> <p>As there is potential for this species to be found within the proposed activity area or downstream, there is potential for the activity to have a direct impact upon this qualifying interest due direct physical disturbance and an indirect impact due to a potential deterioration in water quality during proposed activity.</p>	Yes
[1355] Otter (<i>Lutra lutra</i>)	<p>Otters have two basic requirements: aquatic prey and safe refuges where they can rest. Otters are opportunistic predators with a broad and varied diet. In freshwater areas, a variety of fish will be taken, while crayfish and frogs can be important locally or seasonally.</p>	Yes

NATURA IMPACT STATEMENT
CLOUGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.1 RIVER BARROW AND RIVER NORE SAC POTENTIAL IMPACTS

QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
	<p>The proposed activity is located within the current distribution, current range and favourable reference range of otter (NPWS, 2019c). Potentially located within the River Dinin [North]. A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability.</p> <p>The National Otter Survey of Ireland 2010/12 (Reid <i>et al.</i>, 2013) report noted that the occurrence of otter within survey sites for the south-eastern river basin district was 70.8%. Evidence of otter (prints) were recorded during the site assessment in April 2024, indicating their presence within the general area. The most recent NBDC records for Otter as part of the Atlas of Mammals in Ireland 2016-2025 was recorded approximately 1.5km to the south-east (Scott, 2023). It is not anticipated that the proposed activity would have a direct impact on otter however, a significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability. Therefore, there is potential for the proposed activity to have an indirect impact upon this qualifying interest due to a potential deterioration in water quality.</p>	
[6985] Killarney Fern (<i>Vandenboschia speciosa</i>)	<p>The Killarney fern is a type of filmy fern, with characteristically thin, membranous, translucent fronds. This fern grows in deeply shaded, humid areas such as dripping caves, crevices and overhangs of cliffs, within stream gullies, by waterfalls and on the floor of damp woodlands (NPWS, 2019c).</p> <p>The proposed activity is located outside the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019c). According to the SAC Conservation Objectives report, the nearest record of Killarney fern to the proposed activity area is located approximately 42.8km south-east (68km hydrologically downstream) near Inistioge but none within the vicinity of the proposed activity area. It is therefore not anticipated that the proposed activity would have any adverse impacts upon this qualifying interest either directly or indirectly.</p>	No

NATURA IMPACT STATEMENT
CLOUGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

TABLE 7.2 RIVER NORE SPA POTENTIAL IMPACTS		
QUALIFYING INTEREST	OCCURRENCE / ASSESSMENT	POTENTIAL IMPACT
[A229] Kingfisher	<p>The Kingfisher is a species of European significant with a number of sites designated for its protection. Resident species on streams, rivers and canals throughout Ireland. Its diet consists of small fish including Stickleback, Chun and Minnows and larger aquatic insects. Water quality would have an impact on this species. Kingfisher have been recorded throughout the River Nore Catchment which include the Nore (main channel), Strade and Mullaghanoe river. According to Cummins, et al, (2010), Kingfisher have been recorded between Borris in Ossory and Abbeyleix downstream from the proposed activity on the River Nore, with current nesting spots identified. Kingfisher were also recorded on the Erkina River approximately 12km to the west. The report had estimated total of 100 Kingfisher territories, with the greatest number recorded on the Nore system. The Nore also had the highest number of active nests. A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability.</p>	Yes

River Barrow and River Nore SAC and River Nore SPA Conservation Objectives

The relevant site-specific conservation objectives for the qualifying interests which have been identified as being potentially impacted upon by the activity are outlined below.

Floating River Vegetation

The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments. Concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition.

Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The status of this species as a qualifying species for this site is currently under review and no conservation objectives are available. There is potential for an indirect impact due a deterioration in water quality.

White-clawed Crayfish (*Austropotamobius pallipes*)

Indirect impact via Water quality (EPA Q value): At least Q3-4 at all sites sampled by EPA.

Sea Lamprey (*Petromyzon marinus*)

There is a potential for a direct impact to this species due to direct physical disturbance and a deterioration in water quality.

Brook Lamprey (*Lampetra planeri*) and River Lamprey (*Lampetra fluviatilis*)

None in relation to water quality. There is a potential for a direct impact to this species due to direct physical disturbance and a deterioration in water quality.

Atlantic Salmon (*Salmo salar*)

Water quality (EPA Q value): At least Q4 at all sites sampled by EPA. There is a potential for a direct impact to this species due to direct physical disturbance and a deterioration in water quality.

Otter (*Lutra lutra*)

Fish biomass available: A potential deterioration in water quality may affect fish populations and availability, therefore an indirect impact may occur.

Kingfisher (*Alcedo atthis*)

Fish biomass available: A potential deterioration in water quality may affect fish populations and availability, therefore an indirect impact may occur.

Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)

Water quality: Restore water quality to an ecological quality ratio of greater than 0.90 for macroinvertebrates and greater than 0.93 for phytobenthos. Host Fish: Maintain sufficient juvenile salmonids to host glochidial larvae. A potential deterioration in water quality may affect fish (Salmon) populations therefore, an indirect impact may occur.

8.0 MITIGATION MEASURES

This assessment has determined that the proposed activity has the potential to impact upon the River Barrow and River Nore SAC and River Nore SPA due to a potential deterioration in water quality and physical disturbance due to the removal of accumulated material immediately adjacent to the infiltration gallery.

As discussed in Section 7.0, it is considered that the project has the potential to impact upon the following qualifying interests of the River Barrow and River Nore SAC and River Nore SPA:

- [3260] Floating River Vegetation
- [1029] Freshwater Pearl Mussel
- [1092] White-clawed Crayfish
- [1095] Sea Lamprey
- [1096] Brook Lamprey
- [1099] River Lamprey
- [1106] Atlantic Salmon
- [1355] Otter
- [1990] Nore Freshwater Pearl Mussel

8.1 MANAGEMENT OF ACTIVITY



Figure 8.1: Location of the proposed activity area

Mitigation measures prior to commencement of the proposed activity

- The proposed activity shall take place between 1st July and 30th September unless otherwise agreed upon by Inland Fisheries Ireland;
- The proposed activity will not be undertaken during periods of heavy rainfall, high river flows or orange/yellow/red rainfall warnings issued by Met Eireann;
- The contractor will schedule the proposed works after and during a period of dry weather;
- A toolbox talk will be given at the proposed activity area by an ecologist to all relevant personnel on the monitoring and mitigation measure requirements to be implemented prior to commencement of the proposed activity;
- The contractor will maintain effective communication with the operating foremen through the toolbox talk to ensure there would be no risk of water pollution and all measures are enacted during the proposed activity;
- The contractor will effectively communicate the tasks to be completed prior to commencement of the proposed activity through the toolbox talk;
- Record of all visual inspections to be kept on file and available for review by relevant authorities;
- No proposed activity will be undertaken within the ESB exclusion zone (See Appendix A). The operating foremen will be made aware of the ESB exclusion zone.
- An ecologist will undertake a preliminary survey of the proposed activity area to confirm if an Otter holt has become established prior to the commencement of any activity on the day. If an otter holt is found, all proposed activity will immediately cease. Further investigation will be undertaken by an ecologist to determine if the holt is active or inactive. If active, no proposed activity will be undertaken within 150m of holts containing breeding females or cubs. NPWS will be consulted to determine if and when the proposed activity can commence. No wheeled or tracked machinery will be used within 20m of an active but non-breeding Otter holt. No digging or vegetation clearance will take place within 15m of such holts unless granted under a licence;
- Where an active Otter holt is found within the proposed activity area and it is determined by an ecologist that the proposed activity may cause a negative impact to the holt, a derogation licensed will be sought from NPWS.

Biosecurity Measures

During all phases of the proposed activity, biosecurity protocols must be followed to ensure non-native invasive species and diseases such as crayfish plague are not introduced to the proposed activity area;

- All personnel must implement the ‘Clean – Check – Dry’ principles, ensuring that all personal protective equipment (PPE), and equipment and machinery is clean and dry upon arrival at the proposed activity area;
- Upon completion of the proposed activity, the contractor must check and clean all PPE, equipment and machinery visually by inspecting all equipment that has come into contact with the water for evidence of attached plant or animal material, or adherent mud or debris. This should be done before leaving the proposed activity area. Remove any attached or adherent material (vegetation and debris) before leaving the activity area of operation;
- High-pressure steam cleaning, with water > 40 degrees C, is recommended for machinery that will be moved from one watercourse to another. Many roadside garages provide these facilities. After cleaning, visually inspect the equipment to ensure that all adherent material and debris has been removed;
- It is recommended to apply disinfectant to the undercarriage and wheels of the vehicle/machine after steam cleaning or power hosing;
- Wet or live wells and other water retaining compartments in machinery must be cleaned, rinsed or flushed with a 1% solution of Virkon Aquatic or another proprietary disinfection product. Alternatively, a 5% solution (100 ml / 20 litre solution) of chlorine bleach should be used. Rinse thoroughly with clean water;
- Prior to commencement of any new activity, the contractor must ensure that all PPE, equipment and machinery are dry.
- If drying out of PPE, equipment and machinery is not feasible, disinfection using Virkon Aquatic must be carried out, as per the manufacturer’s instructions.

8.2 MITIGATION MEASURES DURING THE PROPOSED ACTIVITY

Measures that will be employed to ensure that there will be no adverse effect to the listed habitats or species, as listed above, of the River Barrow and River Nore SAC and River Nore SPA, due to a potential deterioration in water quality:

- The contractor will liaise with Inland Fisheries Ireland and will undertake the proposed activity during the allowed timeframe as above;
- Heavy machinery will only operate within a 6m access strip from the top of the bank of the River Dinin (Refer to appendix A);
- The proposed activity area will be isolated using straw bales wrapped in a geo-textile membrane. A double row (x2 bales high) of standard 1.2m DIA x 1.2. straw bales will be placed around the immediate activity area (upstream and downstream extents of the channel between the infiltration gallery and the accumulated material deposited) and will not be removed until the activity has been completed.
- Water within the isolated area will be pumped into the river, until the water level in the isolated area is just above the bed level. The pump will be situated on the infiltration gallery, set back approximately 10m from the top of the riverbank.
- Pumping operations will be supervised at all times by the contractor;
- Daily visual inspection of proposed activity and pumping operations will be completed and signed by the contractor;

- Electrofishing of the immediate activity area will be undertaken to remove all Lamprey species including Lamprey ammocoetes. The electro-fishing undertaken by Inland Fisheries Ireland will also involve the removal of any Crayfish potentially in the area. This method uses direct current electricity to stun fish allowing for their safe removal from the activity area. During electro-fishing, additional pumping of water may be required. This will be pumped from the isolated area to the hedgerow that runs along the western boundary of the infiltration gallery;
- The contractor will work in collaboration with Inland Fisheries Ireland who will undertake electrofishing within the proposed activity area to capture and safely remove fish, crayfish and lamprey;
- The removal of accumulated silt within the proposed activity area will be undertaken immediately after electro-fishing; Accumulated material on the sand bar will be removed to above the surface level of the water on the day of the proposed activity to ensure no ingress of water into the isolated area;
- The accumulated materials will be deposited within a designated area on the grassland directly above the infiltration gallery (refer to drawing: IE2866-004) and stored temporarily at an approximate distance of >5m from the banks of the River Dinin;
- Removed materials will not be allowed to fall into the watercourse and will not be stored or placed near the top of the bank of the River Dinin..
- The contractor will monitor changes in weather and will not undertake any of the proposed activity during periods of heavy rainfall or status orange, yellow or red rainfall warnings issued by Met Eireann, to limit the potential for suspended solids to become entrained within surface water run-off;
- An ecologist will remain at the location of the activity during the proposed activity to check for protected species within the removed materials. If any protected species are found, these will be returned to the River Dinin;
- Where required, removed materials from the sand bar will be used to form a small mound along the eastern margin of the deposition area to prevent any potential sediment run-off entering the River Dinin. The removed materials will be investigated for the presence of protected species prior;
- Once 24 hours has elapsed, all removed materials will be exported offsite to a licensed waste facility;
- All plant machinery will be monitored daily for leaks by the operators and contractor;
- All plant machinery and equipment will be maintained in good working order and will be visually inspected every day;
- All small plants such as generators and pumps will be stood in drip trays capable of holding 110% of their tank contents;
- Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, would be readily available at the proposed activity area;
- The contractor will ensure the relevant site personnel are trained in spillage control;
- Materials such as hydrocarbons will be stored in designated areas on hardstanding at the existing water treatment plant away from a watercourse. Chemicals / fuels /

generators at storage areas will be either banded or set on appropriately sized drip trays which are regularly checked (at least daily) and emptied appropriately when required;

- Re-fuelling will not be undertaken within the proposed activity area;
- In the unlikely event of a suspected deterioration in water quality within the River Dinin [North] due to de-silting activity at the activity area, the activity will immediately cease, an investigation into the cause and source of the deterioration in water quality will be undertaken and the relevant NPWS and Inland Fisheries Ireland personnel informed. The cause/source of the deterioration in water quality will be addressed and fixed to stop the source of such deterioration in water quality. In the event of leakage of hydrocarbons, typically a rainbow-like sheen would be observed on top of the water. This may result in a fish kill downstream and daily inspections should be undertaken. A cloudy plume within the water could indicate the release of sediments outside of the proposed activity area. This could impact freshwater species downstream. If such an impact was to occur, the proposed activity will only commence when agreed to by Inland Fisheries Ireland and/or the NPWS.
- Should a protected fauna species such as Otter (*Lutra lutra*) be found during the project either hunting or swimming in or near the isolated area, the proposed works will immediately cease. Works will only commence once it has been confirmed by an onsite ecologist that the Otter is no longer present.

8.3 MITIGATION MEASURES AFTER THE PROPOSED ACTIVITY HAS CEASED

- The straw bales will be taken from the proposed activity area to a licensed facility once the proposed activity has ceased;
- Any excess sediment accumulation shall be removed from the activity area to a licensed facility;
- The contractor will ensure all machinery and equipment has been taken from the activity area and that no materials associated with the proposed activity remain.

Reference documents:

- *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*” 2001;
- Construction Industry Research and Information Association (CIRIA) guidelines “*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*” 2001
- *Guidelines for the treatment of Otters prior to the construction of national road schemes*, (National Roads Authority, 2008)

It is therefore considered that due to the proposed mitigation measures, there will be no adverse effect to water quality and the protected habitats and species of the River Barrow and River Nore SAC and River Nore SPA as a result of the proposed activity.

9.0 IN-COMBINATION EFFECTS

The following plans and projects were reviewed and considered for in-combination effects with the proposed activity:

- Kilkenny City and County Development Plan 2021-2027
- Proposed and permitted developments in the area available on Kilkenny County Council planning system.

The proposed activity area is located on 3.2km from the town of Castlecomer, Co. Kilkenny. According to the Kilkenny City and County Development Plan 2021-2027, Castlecomer is considered a district town. The proposed activity area will be accessed via an existing road off the R426 and through neighbouring agricultural land. The immediate vicinity is rural in nature with a ribbon of housing along the R426 to the north.

Table 9.1: Recent planning applications close to the proposed activity area

APPLICATION No.	DEVELOPMENT TYPE	OUTCOME	APPROXIMATE DISTANCE
20159	Permission for ten-year permission for development. The development will consist of the provision of a temporary prefabricated welfare unit on the site of Loon Water Treatment Plant, including associated site works.	Granted - Conditional	110m NE
16173	Permission to demolish part of an existing storage shed and to construct 2 no. dry stock sheds to the front and rear of an existing haybarn together with all other associated site works.	Granted - Conditional	596m W
22612	Permission to construct a storey and a half dwelling house, detached garage, wastewater treatment system and polishing filter, new vehicular entrance which will be shared with entrances approved under 16/276 and 20/511, landscaping and all associated site works.	Granted - Conditional	770m N
16276	Permission for a 5MW solar farm consisting of photovoltaic panels on ground mounted galvanised steel frames, 4 no. transformers, 4 no. auxiliary transformers, 4 no. invertors, 1 no. Distributor Network Operator building, 1 no. communications building, 1 no. storage building, 1 no. substation, a new site access road onto the R426, internal access roads, site access gate, security fencing, cctv and all associated ancillary development works.	Granted - Conditional	770m N
19324	Permission for the erection of a cow cubicle house, slatted slurry tank, milking parlour and cattle handling area, dairy, machine room, farm office, meal bin, new entrance, concrete yards and ancillary works.	Granted - Conditional	771m SE
18807	Permission is hereby sought for demolition of existing kitchen and construction of single storey self-contained extension (Granny Flat) consisting of living accommodation and bedrooms connection to existing water supply and public	Granted - Conditional	893m SW

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY

APPLICATION No.	DEVELOPMENT TYPE	OUTCOME	APPROXIMATE DISTANCE
	sewerage and all associated site works. The existing dwelling to be used as a 'granny flat' with through access to new section.		
17782	Permission the proposed development will consist of a single storey extension and alterations to an existing single storey dwelling; the upgrading of an existing vehicular entrance (including associated works to achieve sightlines, gates, piers and railings); and the provision of all other associated site excavation, infrastructural and site development works above and below ground and landscaping.	Granted - Conditional	823m NE
18147	The development will consist/consists of: change of use of existing playschool & crèche to dwelling and construction of a new window in a place of two existing windows at the front elevation of the building.	Granted - Conditional	933m SW
23229	Permission for the following (a) Erection of Dwelling House (b) Erection of Garage (c) New entrance from Public Road (d) Associated Works.	Granted - Conditional	1.3km NE
21512	Permission for the following: A) Erection of Dwelling House, B) Erection of Garage, C) New entrance from Public Road, D) Associated works.	Granted - Conditional	1.4km NE

Potential in-combination effects are discussed under the following headings.

9.1 HABITAT LOSS / FRAGMENTATION

As discussed, the proposed activity is located within a European site (River Barrow and River Nore SAC) and is hydrologically connected to the River Nore SPA located downstream, however, as stated previous the proposed activity would not be expected to have any direct effects upon a protected site through loss or destruction of protected habitats or fragmentation of habitats listed. While located within the boundary of a Natura 2000 Site, the immediate activity area would be considered as having been modified due the release of sediments and silt during the operation of the infiltration gallery. No live protected habitats listed within the River Barrow and River Nore SAC were found within the immediate activity area however, this does not rule out their presence within the surrounding area. Evidence of Otter was discovered during the second site assessment in April 2024 however, no holts or couches were found. Therefore, it is not considered that there would be a direct impact to this species. The proposed activity will involve the removal of silt on the riverbed and the topping of a silt bar only. The proposed activity will be undertaken over a 3–5-day period, thereby limiting further disturbance to protected species in the area. No hedgerows or trees will be removed.

The surrounding land-use of the proposed activity area is mainly rural with agricultural land which can be considered modified and of lower biodiversity value. Developments were identified on the Kilkenny County Councils planning site within the vicinity of the applicants proposed activity area are mostly residential that were all granted subject to conditions. Should future planning applications be submitted for the area, it is likely that they would also be located within the limit of Castlecomer on land identified for commercial/residential use.

Therefore, it is unlikely that future proposed developments would result in the loss or fragmentation of designated habitats of the River Barrow and River Nore SAC and River Nore SPA. Therefore, no in-combination effects on habitat loss / fragmentation are anticipated.

9.2 DISTURBANCE TO SPECIES

Disturbance to species may arise through noise emissions and human activity, particularly during the maintenance activity. The main in-combination noise and human activity effects would be from any residential, agricultural activity and traffic along the R426 within the area. The proposed maintenance activity area is located within the boundary of the River Barrow and River Nore SAC and 21km (hydrologically) upstream from the River Nore SPA. This section of the River Dinin [North] is also designated as part of the River Barrow and River Nore SAC. Fauna within the SAC and the general area around the proposed activity area would be accustomed to human and agricultural noise.

Given the nature of the proposed activity and short duration (3-5 days) there will be no additional cumulative noise impacts, or other disturbance effects due to human activity, which would pose an adverse effect to designated sites or species.

With regards to protected freshwater fauna and qualifying interests of the River Barrow and River Nore SAC, the proposed activity will have a direct impact due to direct physical disturbance on some of the qualifying interests. Electrofishing will be undertaken to remove protected species within the immediate activity area however, protected species may still be present within the sedimentation to be removed. The removed materials will be inspected by an ecologist prior to its exportation from the proposed activity area to a licensed waste facility.

The presence of humans and heavy machinery has the potential to cause disturbance to protected mammals during the course of the proposed activity. Given that evidence of Otter was found during the second site assessment, there is a potential risk that this species may be impacted due to disturbance however, given that no otter holts or couches were found within the proposed activity area, the risk of disturbance is considered low. If Otter are present in the area, they would likely move further away from the disturbance. Disturbance would only be for a short duration. It should also be noted that Otter would be accustomed to some disturbance from cattle within the adjacent field as evidence of cattle accessing the River Dinin was observed.

Tree and hedgerow removals are not proposed as part of the project. Some vegetation within the immediate activity area and on the silt bar may be removed during the de-silting activity however, as stated previously, this is a modified habitat caused by the release of sediments during the operation of the proposed activity area.

During the proposed activity, waste material (consisting of materials removed using heavy machinery) would be removed to a licenced waste facility. Therefore, owing to the surrounding rural/agricultural land use and close proximity to the local road network, it is considered that the proposed activity will not significantly increase cumulative noise impacts, or other disturbance effects due to human activity, which would pose an adverse risk to designated sites or species and habitats within the River Barrow and River Nore SAC and River Nore SPA.

9.3 DETERIORATION IN WATER QUALITY

Continued implementation of the Water Framework Directive would result in achieving, or maintaining, improvements to water quality in the Nore Catchment. Activities such as this could act in combination with existing environmental pressures on the Nore Catchment, including agriculture, anthropogenic, domestic and urban wastewater, urban run-off, industry and forestry. However, as noted in Section 6.3, it is not considered that the proposed activity could pose a risk upon a Natura 2000 site due to a deleterious effect on water quality, during the operational phase. The infiltration gallery is already in operation and is considered an ongoing activity. The Clogh - Moneenroe waste water treatment plant (wwtp) provides secondary treatment and is located approximately 127m east of the proposed activity. The discharge location for primary effluent is located approximately 75m downstream of the activity area. This waste water treatment plant would be subject to controls within its license agreement. Given the nature of the surrounding environmental (agriculture) and the location of the wwtp, it is not anticipated that there would be any cumulative impacts on water quality from the proposed activity.

During the proposed activity, it is considered that potential impact on water quality would be effectively managed by the proposed mitigation measures. Therefore, in-combination effects would not be expected. The project footprint would be small in scale with limited plant and equipment required. The proposed duration will be 3-5 days during dry conditions. Therefore, it is not anticipated that there would be much water remaining in the immediate area during the removal. The minimal volume of water and placement of straw bales with a geo-textile membrane to capture any sediments released during the construction phase will prevent a significant impact however, to ensure no significant impact to water quality within the River Barrow and River Nore SAC and the River Nore SPA, water quality mitigation measures have been included.

Mitigation measures will be also put in place to protect against spills and runoff during the proposed activity. This will mitigate any adverse effect on the water quality of the River Barrow and River Nore SAC and River Nore SPA.

10.0 CONCLUSION

It is not anticipated that the proposed activity, subject to recommended mitigation measures, by itself or in combination with other developments, would impact negatively upon the Natura 2000 network during the proposed activity preparation or operational phases of the project.

The proposed activity area is located within the River Barrow and River Nore SAC (Site Code: 002162) and 21km upstream from the River Nore SPA (Site Code 004233). It is considered that there would be no potential risk of an adverse effect upon the qualifying interests / special conservation interests of the River Barrow and River Nore SAC and River Nore SPA due to the proposed mitigation measures to be employed.

It is the conclusion of this Natura Impact Statement that, subject to mitigation measures, there would be no potential for an adverse effect on European sites as a result of the proposed activity and mitigation measures to be employed. This conclusion refers to the project by itself or in combination with other projects, developments or activity.

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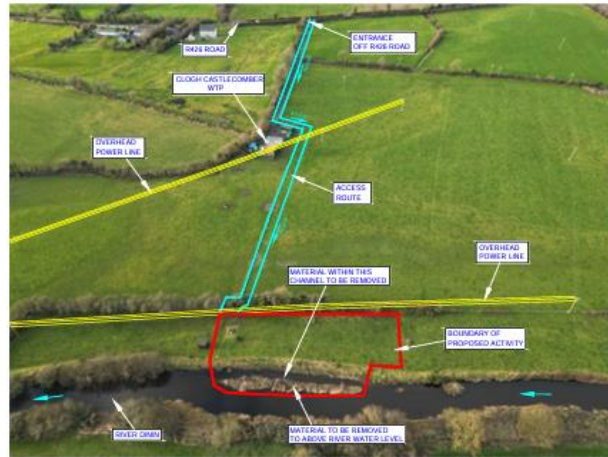
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APPENDIX A

PROPOSED ACTIVITY LAYOUT

NATURA IMPACT STATEMENT

CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY



ACTIVITY LOCATION - EAST TO WEST VIEW
SCALE - NTS



ACTIVITY LOCATION - PLAN VIEW
SCALE - NTS



ACTIVITY LOCATION - NORTH TO SOUTH VIEW
SCALE - NTS



ACTIVITY LOCATION - SOUTH TO NORTH VIEW
SCALE - NTS

LEGEND

- NOTES:
1. DO NOT SCALE FOR THE DRAWING. USE FIGURED DIMENSIONS ONLY.
 2. MATERIAL TO BE REMOVED JUST ABOVE WATER LEVEL - DENOTES EXISTING DEPOSITED SANDBAR MATERIAL TO BE REMOVED TO A LEVEL OF APPROXIMATELY 0.1M ABOVE THE RIVER WATER LEVEL ON THE DATES THAT THE PROPOSED ACTIVITIES ARE UNDERTAKEN.

2	24.03.24	UPDATED DETAILS	LM	PH
3	21.03.24	UPDATED DETAILS	LM	PH
4	19.03.24	UPDATED DETAILS	LM	PH
5	20.03.24	FINAL ISSUE	LM	PH
REV	DATE	DESCRIPTION	BY	CHECKED



PROPOSED WATERCOURSE CHANNEL
DESILTING ACTIVITY AT CLOGH CASTLECOMER
WATER TREATMENT PLANT

ACCESS & LOCATION DETAILS



ie
CONSULTING
WATER-ENVIRONMENTAL-CIVIL

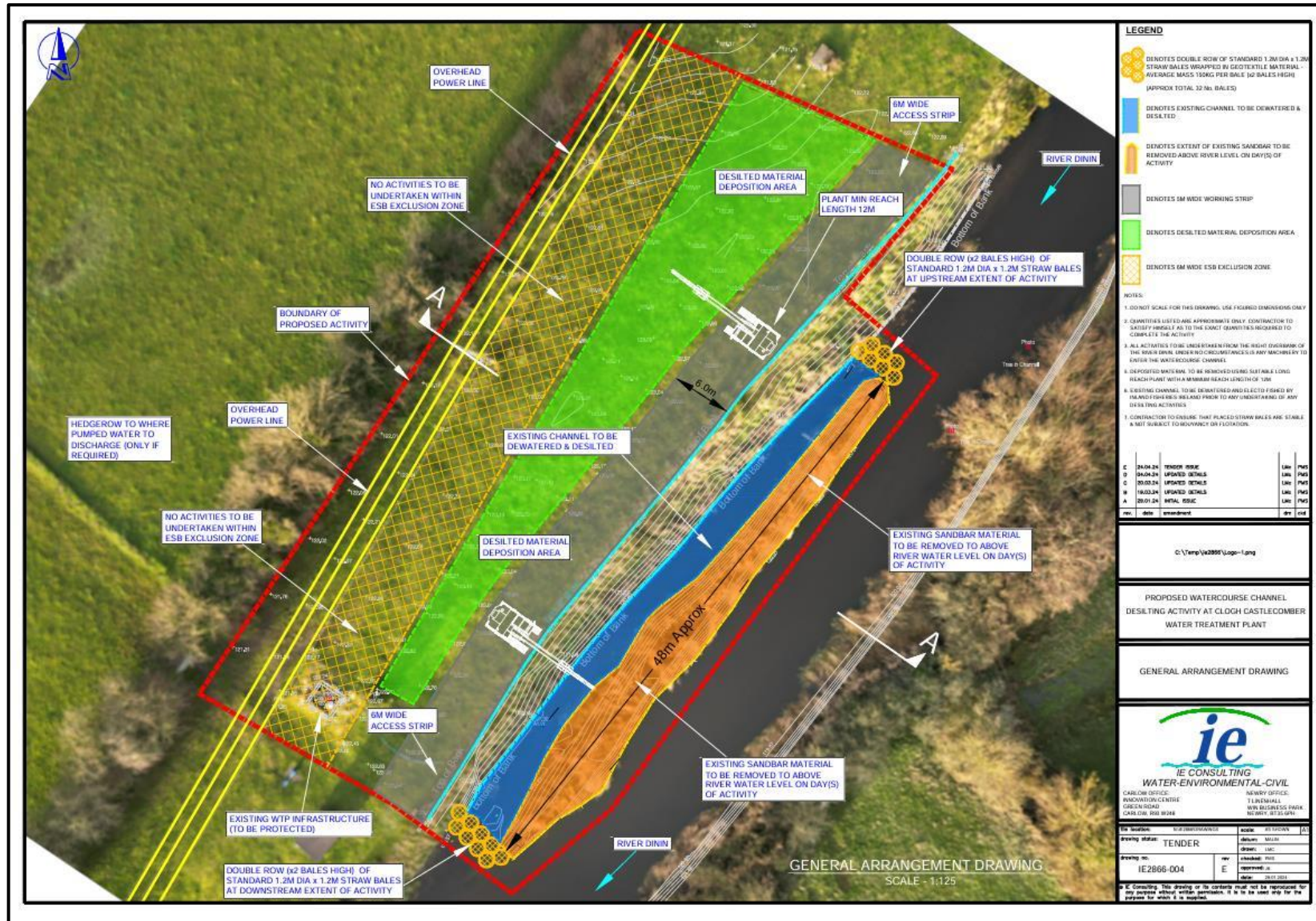
CARLOW OFFICE: BROADWAY CENTRE, GREEN ROAD, CARLOW, CO. KILKenny
 MAYNOOTH OFFICE: TULLINSHALL, WINDYBUSH PARK, MAYNOOTH, CO. DUBLIN

Project Name:	WATERCOURSE CHANNEL	Scale:	AS SHOWN
Drawing No:	IE2866-002	Client:	Uisce Éireann
Project Status:	TENDER	Drawn:	LMC
Working on:		Checked:	PH
		Approved:	LM
		Date:	20/03/24

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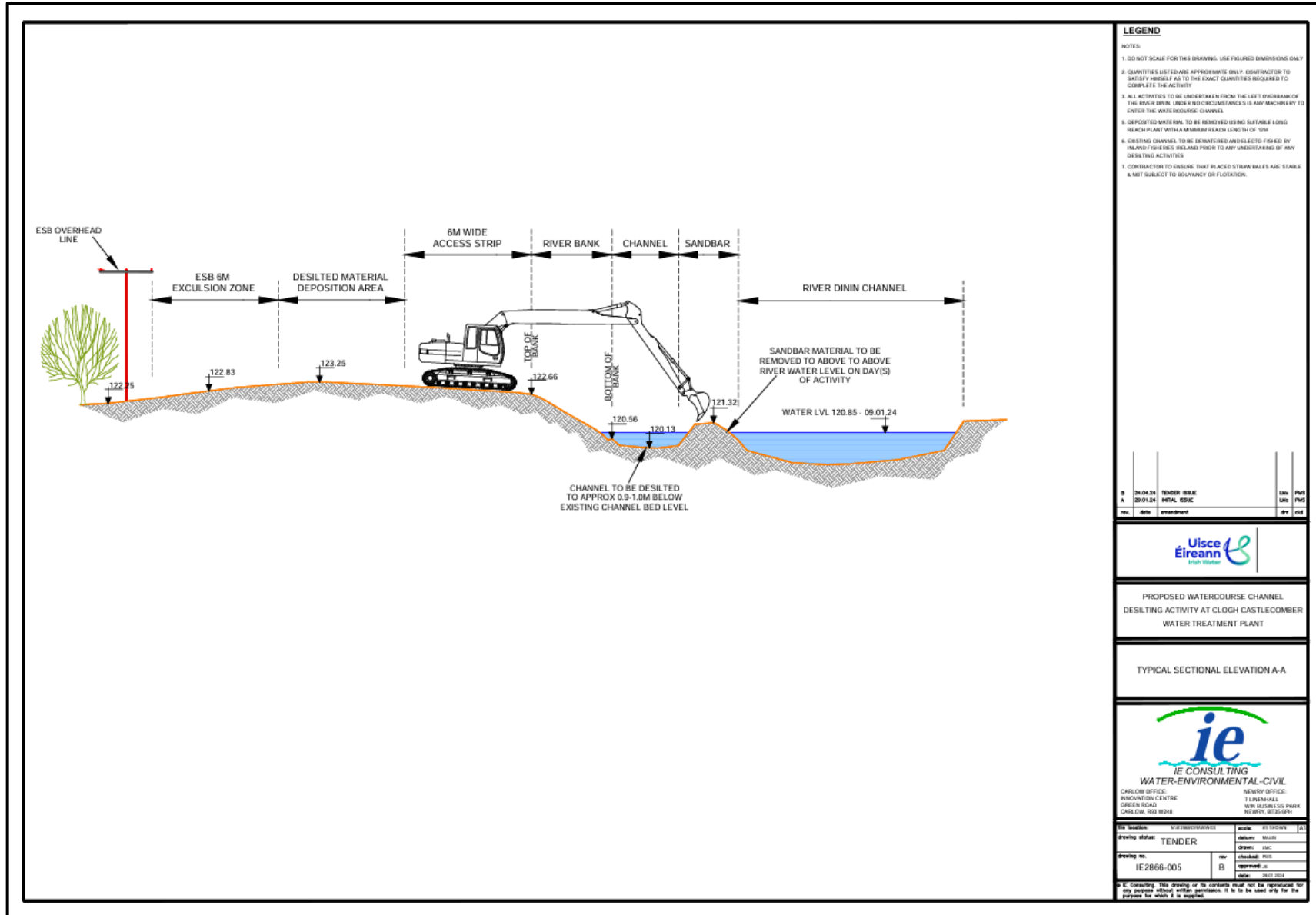
NATURA IMPACT STATEMENT

CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY



NATURA IMPACT STATEMENT

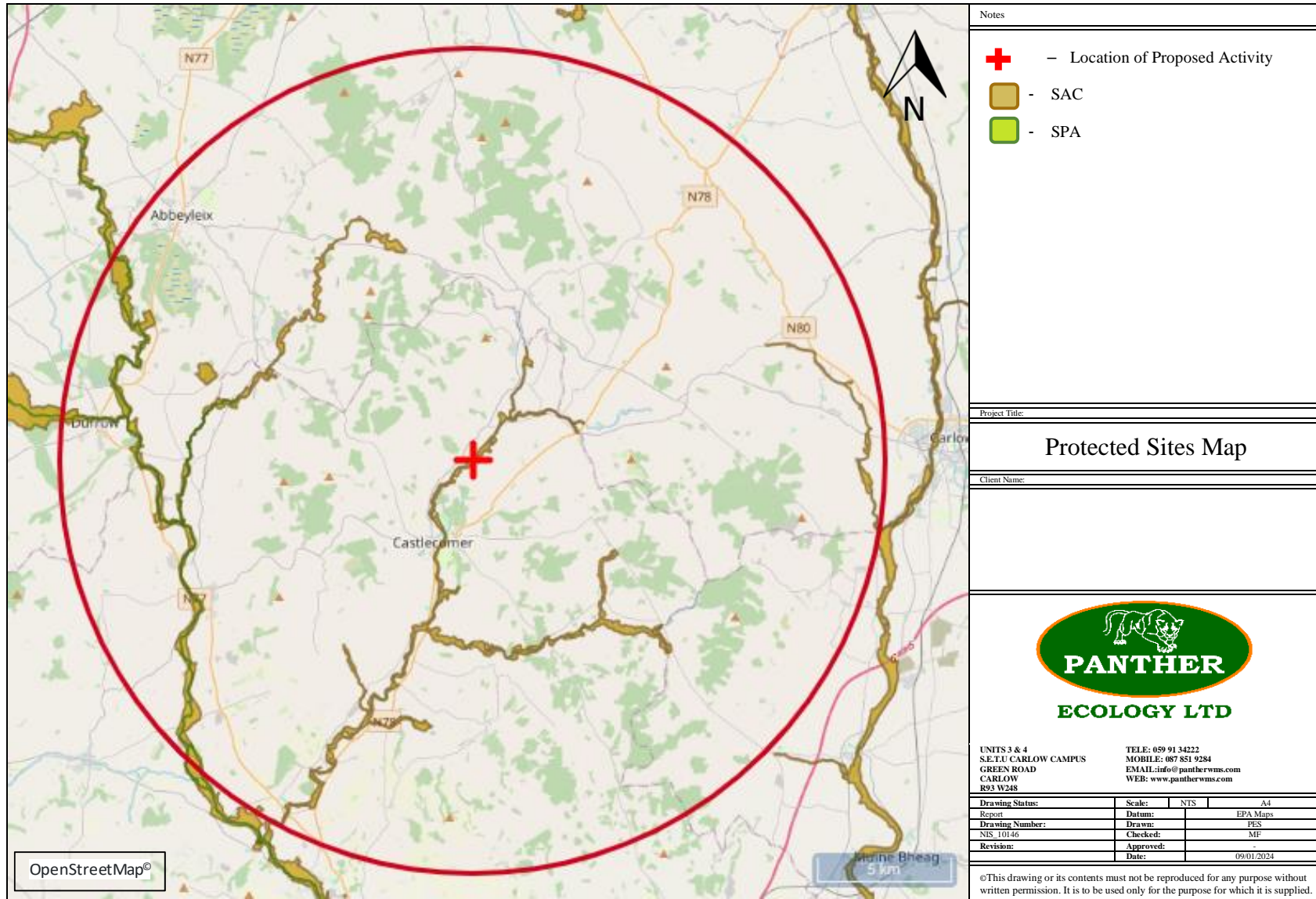
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APPENDIX B

PROTECTED SITE MAPS

NATURA IMPACT STATEMENT
CLOGH CASTLECOMER WATER TREATMENT PLANT, CO. KILKENNY



Notes	
+	- Location of Proposed Activity
	- SAC
	- SPA

Project Title:
Protected Sites Map

Client Name:



UNITS 3 & 4
 S.E.T.U CARLOW CAMPUS
 GREEN ROAD
 CARLOW
 R93 W248

TELE: 059 91 34222
 MOBILE: 087 851 9284
 EMAIL: info@pantherwms.com
 WEB: www.pantherwms.com

Drawing Status:	Scale:	NTS	A4
Report	Datum:	EPA Maps	
Drawing Number:	Drawn:	PES	
NIS: 10146	Checked:	MF	
Revision:	Approved:		
	Date:	09/01/2024	

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APPENDIX C

PHOTO LOG

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Plate 1: Access through neighbouring agri-land



Plate 2: Improved agricultural grassland (GA1) and location of designation deposition area



Plate 3: Hedgerows (WL1)



Plate 4: Scrub (WS1) habitat

Notes:

APPENDIX D
PHOTO LOG



UNITS 3 & 4
 S.E.T.U CARLOW
 CAMPUS
 GREEN ROAD
 CARLOW

TELEPHONE: 059 91 34222
 MOBILE: 087 851 9284
 EMAIL: info@pantherwms.com
 WEB: www.pantherwms.com

file location:	scale:	N/A	A4
drawing status:	REPORT	datum:	N/A
drawing no.	rev	drawn:	PES
NIS_10146	A	checked:	MF
		approved:	-
		date:	15/12/2023 & 26/04/2024

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Plate 5: Depositing/lowland river north (Loan)



Plate 6: Depositing/lowland river east (Dinin)



Plate 7: Dry meadows and grassy verges (GS2) east



Plate 8: Proposed activity area

Notes:

APPENDIX D
PHOTO LOG



UNITS 3 & 4
 S.E.T.U CARLOW
 CAMPUS
 GREEN ROAD
 CARLOW

TELEPHONE: 059 91 34222
 MOBILE: 087 851 9284
 EMAIL: info@pantherwms.com
 WEB: www.pantherwms.com

file location:	scale: N/A	A4
drawing status: REPORT	datum: N/A	drawn: PES
drawing no.	rev	checked: MF
		approved: -
NIS_10146	A	date: 15/12/2023 & 26/04/2024

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