COMHAIRLE CONTAE CHEATHARLACH
CARLOW COUNTY COUNCIL

Oifigí an Chontae,
Bóthar Átha Í,
Ceatharlach, R93E7R7

County Buildings,
Athy Road,
Carlow, R93E7R7

T: 059 9170300
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W: carlow.ie

R448 Royal Oak Junction Safety Enhancement Works, Muinebheag, Carlow

Carlow County Council

Section 38 of the Road Traffic Act, 1994 as amended by the Public Transportation Regulation Act, 2009 [Section 46].

Carlow County Council intend to carry out Safety Enhancement Works to improve pedestrian and cycle facilities, including junction modification at the junction between the R448 (Former National Road) and the R724 (Royal Oak Road) in County Carlow.

The details and particulars of the proposed works are available for inspection from **Wednesday 18th June 2025 until 16th July 2025**,

(i) online at www.carlow.ie
and
(ii) between the hours of 9:15am and 4:30pm, Monday to Friday, excluding Bank Holidays, at:

- County Buildings, Athy Road, Carlow. R93E7R7
- Municipal District Offices, McGrath Hall, Muinebheag, Co. Carlow. R21WR66
- Tullow Civic Offices, Inner Relief Rd., Tullow, Co. Carlow. R93XD93
- Borris Library, Lower Main St., Borris, Co. Carlow. R95HF25

Observations or representations in relation to the proposal may be made in writing on or before **4:00pm Wednesday 23rd July 2025** as follows:

By email, to roadsoffice@carlowcoco.ie

or

In writing, to Padraig O'Gorman, Director of Services, Carlow County Council, County Buildings, Athy Road, Carlow.

All submissions must be clearly titled "**R448 Royal Oak Junction Safety Enhancement Works"**

ACTIVITY: Construction & Commissioning	PUBLICATION TITLE: GATEWAY; TYPE C DESIGN - OVERALL DIMENSION 19.1m MINIMUM		
STREAM: STANDARD CONSTRUCTION DETAILS (SCD)	HISTORICAL REFERENCE: N/A	DOCUMENTATION SET: STANDARDS	PUBLICATION DATE: JULY 2021
			PUBLICATION NUMBER: CC SCD 05104

REV.	AMENDMENT	BY	DATE
P1	Minor amendments	KL	01.07.24

DRAWN:	KL	TECH. CHECK:	KF
SCALE @ A1:	1:500	ENG. CHECK:	SS
DATE:	01.11.2023	APPROVED:	FF
STAGE:	Preliminary		

JOB TITLE:	Road Safety Enhancement Study R448 & R724 Royal Oak Rd, Bagenalstown
DRAWING TITLE:	Proposed Site Layout Junction Tightening
CLIENT:	Carlow County Council

DRAWING No:	123109-3001	REV:	P1

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R448 Royal Oak Junction Safety Enhancement Works, Muinebheag, Carlow

Public Consultation

Section 38 of the Road Traffic Act, 1994 as amended by the Public Transportation Regulation Act, 2009 [Section 46].

June 2025

In accordance with Section 38 of the Road Traffic Act, 1994, Carlow County Council is proposing to upgrade the existing layout at the junction of the R448 (Former National Road) and the R724 (Royal Oak Road) in County Carlow to carry out Safety Enhancement Works to improve pedestrian and cycle facilities, including junction modification.

Location:

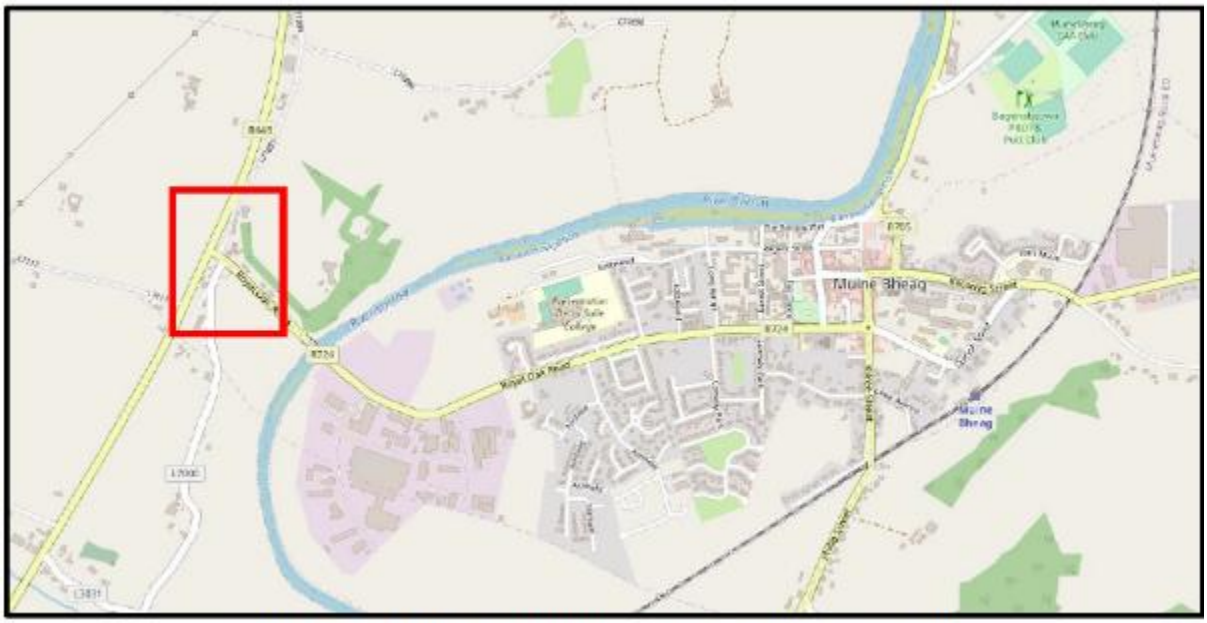


Figure 1: Site location in relation to Bagnelstown© *Openstreetmaps*

Existing layout:

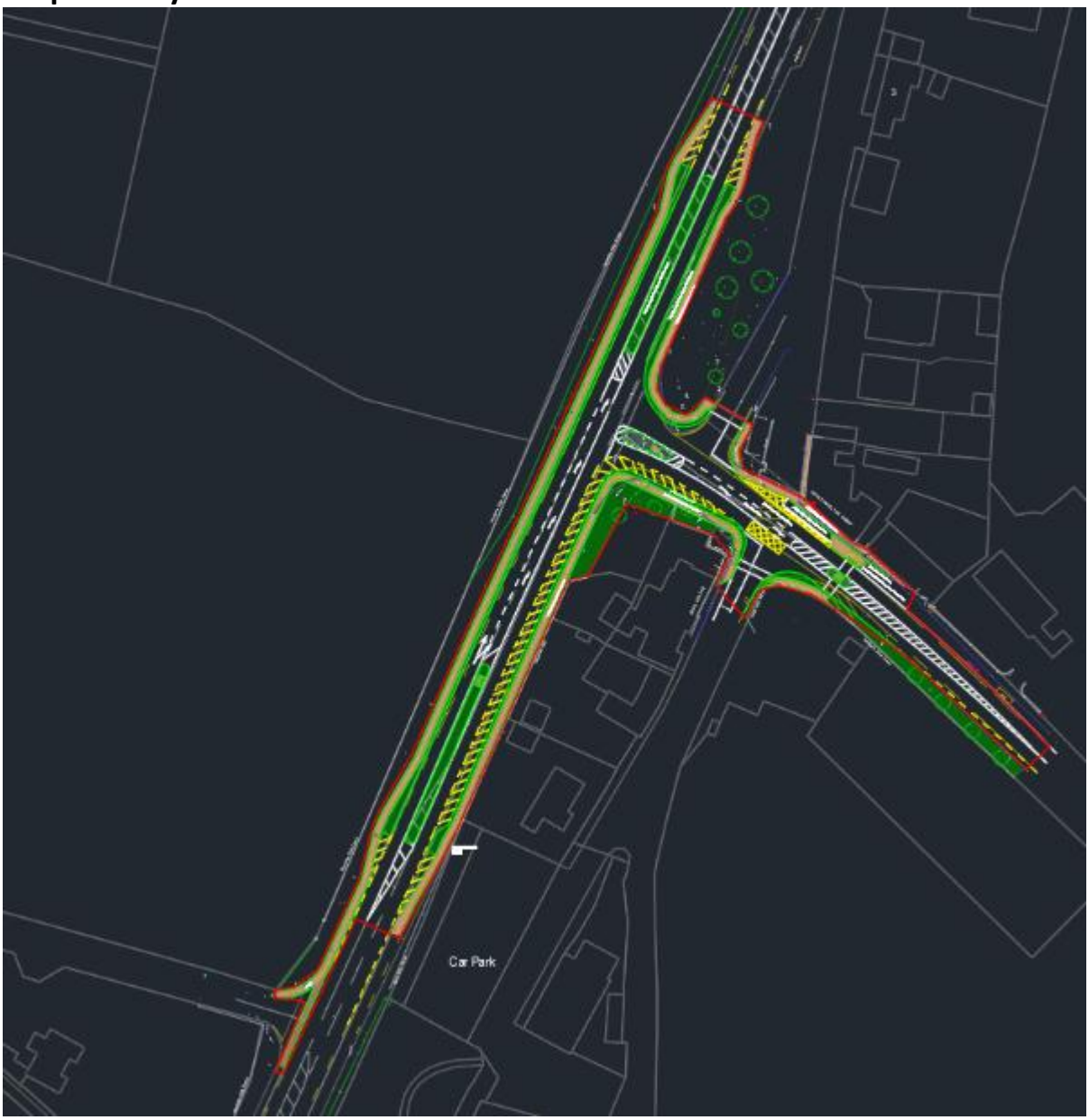
The area is located within a suburban environment at the fringe of Bagenalstown. This is a complicated junction layout serving the R448, R724, L7000 & L71095.

The R448 consists of a wide single-lane carriageway with a central hatched median and hard shoulders to both sides. There is a right-turning lane incorporated into the median for vehicles to turn into the R724, Royal Oak Road. The R448 is subject to a speed limit of 100kph. The southbound hard shoulder on approach to the R724 has been assigned for cyclists use and recently flexible wands have been installed to prevent vehicle access into the southbound shoulder to the north-east of the Royal Oak Road junction. The hard shoulder to the south of the R724 junction is regularly used as a merge lane for motorists who turn left out of the R724 junction. Survey data supplied by Carlow County Council records the AADT of this road at 9,000.

The R724 Royal Oak Road is a single-carriageway road with hard shoulders of varying width. There is development to both sides of this road including a busy local general store where regular short-term car parking occurs. There are two local road junction with the R724: the L71095 to the north and the L7000 to the south. The L71095 is on a Bus Éireann route and also conveys large vehicles to / from a local distillery. The L7000 to the south serves for access to a busy aggregates quarry and continues to Goresbridge further south. Survey data supplied by Carlow County Council records the AADT of this road at 8,000.

Notably, there is a high vehicle collision occurrence at the junction of the R724 (Royal Oak Road) with the R448 (former National Road), Bagenalstown.

Proposed layout:



The intended works involves the implementation of a number of improvements to the existing road layout, which include:

- Provision of Transition zone gateways, kerbing and landscaping.
- Improved pedestrian & cycling facilities, including an uncontrolled pedestrian crossing on the R724.
- Improved delineation (e.g. signs, road markings, etc).
- Accommodation works to the affected properties/businesses.

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APPROPRIATE ASSESSMENT SCREENING REPORT

R448 & R724 ROAD SCHEME AT ROYAL OAK ROAD, BAGNELSTOWN, CO. CARLOW

2024

REPORT NO:	PE_AA_10216	**AUTHOR:**	Paula Farrell, BSc.
DATE:	11th August 2024	**REVIEWED:**	Martin O'Looney, BSc.

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1.0 INTRODUCTION

Panther Ecology Ltd was commissioned by Carlow County Council to prepare an Appropriate Assessment Screening Report for a proposed re-development of an existing road along the R448 and R724 at the Royal Oak Road, Bagnelstown, Co. Carlow. The nearest Natura 2000 site is the River Barrow and River Nore SAC (Site Code: 002162) located approximately 241m to the south-east of the proposed development.

The screening programme shall be undertaken in accordance with the guidance outlined in "Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities" (DoEHLG, 2010) and "Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites" (EC, Nov 2001) (Revised 2021). Assessment of plans and projects significantly affecting Natura 2000 sites (November 2001) and Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive (2018).

The principal aim of this study is to assess for Likely Significant Effects (LSE) 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. This comprised a review of the proposed development, a site visit on 6th August 2024 to examine the ecological context of the development site, 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.

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 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 developments 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.*"

3.0 SCREENING FOR APPROPRIATE ASSESSMENT METHODOLOGY

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.

Screening for Appropriate Assessment involves:

- Description of the project and area characteristics (existing environment);
- Identification and description of Natura 2000 sites that could potentially be affected, and compilation of information on their qualifying interests and conservation objectives;
- Assessment of likely effects – direct, indirect and cumulative, undertaken on the basis of availability of objective information as necessary;
- Screening statement with conclusions.

3.1 METHODOLOGY GUIDELINES

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

- Appropriate Assessment Screening for Development Management OPR Practice Note PN01 March 2021
- *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
- *Managing Natura 2000 sites – The Provisions of Article 6 of The Habitats Directive 92/43/EEC.* European Commission, 2019.
- 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 2000 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 the development site at the R448 & R724 Royal Oak Road, Bagnelstown. Co. Carlow were identified from National Parks and Wildlife Service (NPWS) online map viewer. Other Natura sites within the potential zone of influence 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

A site characterisation assessment was undertaken on the 6th August 2024 to examine the ecological context of the development site, by systematically walking the site 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 THE DEVELOPMENT

4.1 DEVELOPMENT SITE

The proposed development consists of the re-development of an existing road along the R448 and R724 junction of the Royal Oak Road, Bagnelstown, Co. Carlow [ITM Coordinates 668557.04, 661762.22], as shown in the location map included in Figure 4.1.

The proposed development will include the construction of a new 2m wide shared footpath/cycle path and landscaping. The site is accessed via the R448 and R724 junction. There is no formal landscaping however soft landscaping such as grassed areas are included. Any additional planting will incorporate native or non-native non-invasive species.

There will be no foul water, drinking water or additional ligting services as part of this development. There will also be no changes to the existing surface water drainage network. During the operational phase, surface water will percolate to ground via the adjacent landscape areas.

During excavation works, soils would be temporarily stored onsite. Any excess soils would be used for landscaping or exported offsite via a licenced contractor. The proposed development will require the removal of and importation of materials for the construction of the shared pathway measuring 650m^3 which includes the removal of approximately 300mm of topsoil. The proposed development will not require the importation of any topsoil or materials likely to contain invasive species. Any exported materials will be removed to a licensed waste facility. There is no hazardous material within the proposed construction area.

The estimated construction timeframe for the proposed development is approximately 10 weeks. Construction works would be confined to the development footprint and would not necessitate any works within a watercourse or drainage ditch.

The closest Natura 2000 site is the River Barrow and River Nore SAC (Site Code: 002162) located approximately 241m to the south-east of the proposed development as shown in Figure 4.2 below.

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

- Earthworks & Excavation
- Sediment & Hydrocarbon Runnoff
- Stormwater & Waste Water
- Disturbance to Protected Species
- Impact on Protected Habitats
- Dust and Noise
- Invasive Species

Figure 4.1: Location of Site at R448 & R724 Royal Oak Road, Bagnelstown, Co. Carlow

Figure 4.2: Location of Development and Natura 2000 Sites

4.2 EXISTING ENVIRONMENT

The development site is currently comprised of buildings and artificial surfaces with areas of grassy verges and amenity grassland. Hedgerows partially border the existing road network separating the development area from neighbouring properties. The area for development is consists of a busy vehicular road located on the outskirts of Carlow town. There are no watercourses or drainage ditches within the proposed development area. The Barrow (Order 5) is located approximately 281m to the south-west of this development. There will be no works within the River Barrow or any watercourse/drainage ditch.

A site characterisation assessment was undertaken on the 6th August 2024 to examine the ecological context of the development site, by systematically walking the site and boundaries and determining the habitats present. During the site assessment the following habitats were observed.

Buildings and artificial surfaces (BL3) is the dominant habitat throughout which consisted of the existing hardcore road and pathways. It is a relatively species poor habitat given its maintenance and frequent use. Plant species found along the margins of this habitat include Dandelion (*Taraxacum* spp.), Moss (Bryophyta), Groundsel (*Senecio vulgaris*), Black Medick (*Medicago lupulina*), Ribwort Plantain (*Plantago lanceolata*), Germander Speedwell (*Veronica chamaedrys*) with the occasional Yorkshire Fog (*Holcus lanatus*), False-oat Grass (*Arrhenatherum elatius*) and Ryegrass (*Lolium* spp.).

Amenity grassland (GA2) habitat is found to the east. It is evidently managed with short sward heights. The plant species composition is comprised of Ryegrasses (*Lolium* spp.), Yorkshire Fog (*Holcus lanatus*), Annual Meadow Grass (*Poa annua*), Dandelion (*Taraxacum* spp.), Daisy (*Bellis perennis*), Clover (*Trifolium* spp.), Creeping Buttercup (*Ranunculus repens*), Yarrow (*Achillea millefolium*), Ribwort Plantain (*Plantago lanceolata*) and Broadleaved Plantain (*Plantago major*).

A number of **hedgerow (WL1)** habitats are found along the R448 to the north, south, and along the boundaries of the R724 road to the south-east. These hedgerows are mostly dominated by native species although some, particularly those bordering properties are comprised of non-native species. Plant species include Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*), Whitebeam (*Sorbus aria*), Crab Apple (*Malus domestica*), Maple (*Acer* spp.), Elm (*Ulmus* spp.), Cotoneaster, Cherry Laurel (*Prunus laurocerasus*), Beech (*Fagus* spp.) and Sycamore (*Acer pseudoplatanus*) with an understory of Bramble (*Rubus fructicosus*), Snowberry (*Symphoricarpos albus*) and GS2 species.

Dry meadows and grassy verges (GS2) occurs as an understory of the existing hedgerow habitats. It is comprised of False-oat Grass (*Arrhenatherum elatius*), Cocksfoot grass (*Dactylis glomerata*), Nettle (*Urtica dioica*), Spear Thistle (*Cirsium vulgare*), Tutsan (*Hypericum* spp.), Bindweed (*Convolvulus* spp.), Lords and Ladies (*Arum maculatum*), Dock (*Rumex* spp.), Bramble (*Rubus fructicosus*), Herb Robert (*Geranium robertianum*), Vetch (*Vicia* spp.), Ivy (*Hedera* spp.), Dandelion (*Taraxacum* spp.), Spurge (*Euphorbia* spp.), Common Hogweed (*Heracleum sphondylium*), Hedgerow Crane's-bill (*Geranium pyrenaicum*), Yarrow (*Achillea millefolium*), Thistle (*Cirsium* spp.), Oxeye Daisy (*Leucanthemum vulgare*), Sowthistle (*Sonchus* spp.), Wild Carrot (*Daucus carota*), Knapweed (*Centaurea nigra*) and Red Clover (*Trifolium pratense*). 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.

An area of **Scattered trees and parkland (WD4)** is found to the north-east of the development. Plant species included Oak (*Quercus* spp.), Hawthorn (*Crataegus monogyna*), (*Acer* spp.), Rowan (*Sorbus aucuparia*) and Whitebeam (*Sorbus aria*).

There were no protected flora or Third Schedule invasive species found within the site boundary. The proposed development would not support the habitats for which the River Barrow and River Nore SAC has been designated as the majority of the habitats onsite have been modified with plant species commonly found throughout Ireland.

See Table 4.1 for summary for habitats located at development site. See Appendix C for Photo Log of the main habitats observed during the site assessment.

Table 4.1: Summary of Habitats Identified at and Adjacent the Development Site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
B – Cultivated and built land	**BL –** Built land	**BL3** – Buildings and artificial surfaces
G – Grassland and marsh	**GS** – Semi-natural grassland	**GS2** – Dry meadows and grassy verges
	GA – Improved grassland	**GA2 –** Amenity grassland
W – Woodland and scrub	**WL –** Linear woodland/scrub	**WL1** – Hedgerows
	WD – Highly modified/non-native woodland	**WD5 –** Scattered trees and parkland
	WS – Scrub-transitional woodland	**WS1 –** Scrub

Bird species noted during the site walkover included Woodpigeon (*Columba palumbus*), Chaffinch (*Fringilla coelebs*), House Sparrow (*Passer domesticus*), Rook (*Corvus frugilegus*), Swallow (*Hirundo rustica*) and Goldfinch (*Carduelis carduelis*). No species is red listed under the BoCCI classification. Swallow and House Sparrow are amber listed. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

Evidence of mammals (tracks) were observed within a hedgerow to the south-west of the proposed development. It leads into an adjacent residential garden. Therefore, indicating the likelihood of this being from a domestic animal. No other evidence of mammals, including that of protected species was observed onsite. The proposed development area would not provide suitable habitat for freshwater species associated with the River Barrow and River Nore SAC as there are no watercourses or drainage ditches within the construction area. The habitats within the proposed construction area are mainly modified and of lower ecological value. Therefore, there would be no suitable habitats onsite associated with Otter.

Fauna, typical of that found throughout the rest of Ireland, which would be expected to be found in the area include Bat species, Badger (*Meles meles*), Fox (*Vulpes vulpes*), Otter (*Lutra lutra*), Wood Mouse (*Apodemus sylvaticus*), Rabbit (*Oryctalagus cuniculus*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), American Mink (*Mustela vison*), Deer, Irish Hare (*Lepus timidus hibernicus*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Grey Squirrel (*Sciurus carolinensis*) and Brown Rat (*Rattus norvegicus*).

In addition to the site walkover, flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed development site 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 – S66) in which the proposed development site is located. Endangered or threatened flora within this tetrad are Blunt-fruited Pottia (*Tortula modica*).

Four invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) were recorded within the 10km square (Tetrad – S66): Water Fern (*Azolla filiculoides*), Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*) and Three-cornered Garlic (*Allium triquetrum*).

Protected fauna species of note recorded within the NBDC 10km square ((Tetrad – S66) include the protected species, Common Frog (*Rana temporaria*), Freshwater White-clawed Crayfish (*Austropotamobius pallipes*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*), Red Squirrel (*Sciurus vulgaris*), European Otter (*Lutra lutra*), Pine Marten (*Martes martes*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and 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*), Grey Squirrel (*Sciurus carolinensis*), and the Brown Rat (*Rattus norvegicus*).

Bird species of note include Barn Owl (*Tyto alba*), Swallow (*Hirundo rustica*), Black-headed Gull (*Larus ridibundus*), Coot (*Fulica atra*), Grasshopper Warbler (*Locustella naevia*), Kestrel (*Falco tinnunculus*), Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Pheasant (*Phasianus colchicus*), Snipe (*Gallinago gallinago*),), Starling (*Sturnus vulgaris*), Swift (*Apus apus*), Wood Pigeon (*Columba palumbus*), Curlew (*Numenius arquata*), Eurasian Teal (*Anas crecca*), Tree Sparrow (*Passer montanus*), Wigeon (*Anas penelope*), Woodcock (*Scolopax rusticola*), Golden Plover (*Pluvialis apricaria*), Great Cormorant (*Phalacrocorax carbo*), Hen Harrier (*Circus cyaneus*), Herring Gull (*Larus argentatus*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Lesser Black-backed Gull (*Larus fuscus*), Little Egret (*Egretta garzetta*), Mallard (*Anas platyrhynchos*), Mute Swan (*Cygnus olor*), Northern Lapwing (*Vanellus vanellus*), Rock Pigeon (*Columba livia*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Flycatcher (*Muscicapa striata*), Pigeon (*Columba oenas*), Water Rail (*Rallus aquaticus*), Whooper Swan (*Cygnus cygnus*) and the Yellowhammer (*Emberiza citrinella*).

4.3 WATER ENVIRONMENT

The development is located within the Barrow Catchment (Catchment ID: 14), Sub Catchment Barrow_120. The nearest watercourse to the development site is the Moanmore (EPA Code: 14M24 – Order 3) located approximately 172m south-west of the proposed development. It flows in an easterly direction directly into the River Barrow. The River Barrow (EPA Code: 14B01 – Order 5) is at its closest located approximately 281m south-east of the site boundary also. This river flows in a south-westerly direction. The River Barrow is designated as part of the River Barrow and River Nore SAC.

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. Water quality objectives have also been set for Twaite Shad (*Alosa fallax*) with a target of oxygen levels no lower than 5mg/l.

Figure 4.3: Mapped watercourses surrounding the development site

Environmental Protection Agency (EPA) undertake surface water monitoring along the River Barrow. The results for the nearest monitoring stations (as per Table 4.2) with available monitoring results for the period 2009-2023 are summarised in Figure 4.4 below for indicative purposes. As can be seen in Figure 4.4 below, the River Barrow is mainly achieving a water quality status of between Q3 (Moderate) and Q4 (Good) in number of years with water quality maintaining a Moderate status. EPA comments on the most recent monitoring results for the River Barrow are as follows.

"A total of twenty two stations were surveyed on the River Barrow in 2023, only six of the twenty two stations were deemed to be in a satisfactory ecological condition based on their macroinvertebrate fauna. The uppermost stations (0050, 0100, 0200, 0300, 0500, 0700, 0780) remained unchanged, with the top three sites at High quality, before dropping to Good at 0300. Improvements at stations 0740 and 0850 to Moderate were noted. Stations 0900, 1000, 1300 all remained unchanged in 2023. Station 1500 declined to Moderate while 1900 improved from Poor to Moderate. Conditions remain unsatisfactory at all stations monitored in the middle and lower reaches of the Barrow. Eight stations from 2200 (upstream of Carlow town) to 3500 (Graiguenamanagh) maintained their Moderate ecological quality."

Table 4.2: Active Monitoring Stations of the River Barrow

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION RELATIVE TO SITE
RS14B012680	Cardinal Moran Br	269489.39	166360.77	6.9km Upstream
RS14B013100	Gorsebridge	268445.31	153702.67	8.8km Downstream
RS14B013300	Ballyteigelea Br	270971.52	161462	13.8km Downstream

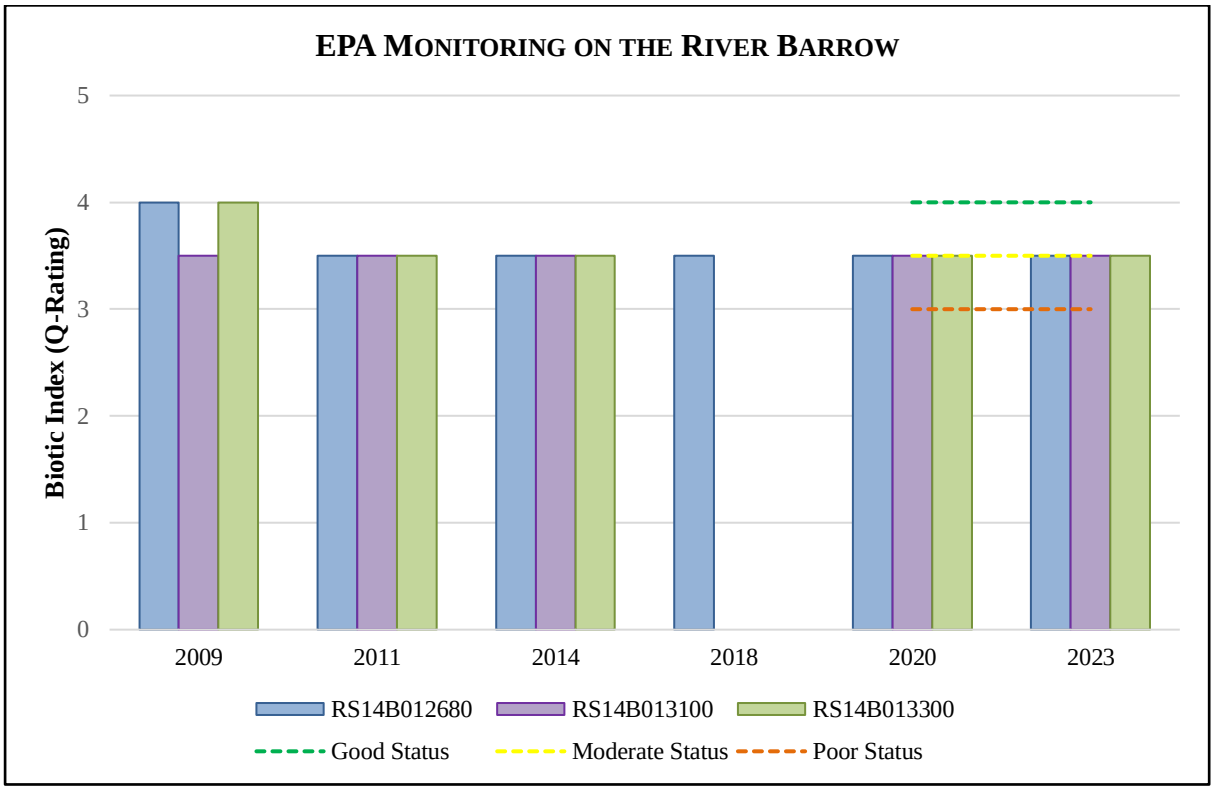

Figure 4.4: EPA Ecological Monitoring of the River Barrow from 2009-2023

According to the Preliminary Flood Risk Assessment (PFRA) Mapping tool by the OPW, the development site is not located in an area of fluvial flooding, indicative of 10% AEP (10-yr) event, 1% AEP (100-yr) event or 0.1% AEP (1000-yr) event. However, 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 at the development site. An area of low probability for present day flooding is located close to the southern boundary of the proposed development; however, the watercourse is culverted under the regional road and flooding is unlikely given that the river is at a much lower elevation than the proposed development.

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 development and European sites.

The project impact sources, environmental pathways and protected site characteristics were screened to identify European sites potentially within the zone of influence of the project.

One Special Protection Area (SPA) site occurs within the potential zone of influence of the development site. Two Special Area of Conservation (SAC) sites occur within the potential zone of influence of the development site and are shown in the following table:

Table 5.1: Special Areas of Conservation and Special Protection Area potentially within the potential zone of influence

SITE NAME	DESIGNATION	SITE CODE	DISTANCE
River Barrow and River Nore	SAC	002162	241m SE
Blackstairs Mountains	SAC	000770	13km SE
River Nore	SPA	004233	16km SW

Maps detailing European sites within the Zone of Influence (ZoI) of the development site are included as Appendix C below. For this assessment, the site considered to be within the potential zone of influence of the development site is the River Barrow and River Nore SAC (Site Code: 002162) due to the close proximity and hydrological connection.

The proposed development is located approximately 13km from the Blackstairs Mountains SAC (Site Code: 000781). There is a hydrological connection between this protected site and the proposed development, however, this connection is upstream on a tributary river of the River Barrow. The proposed development area does not contain the habitats for which this SAC has been designated. The habitats onsite are mostly modified and/or commonly found throughout Ireland. Therefore, due to lack of a source receptor pathway, large distance, nature and scale of the development, this SAC has been screened out.

The River Nore SPA (Site Code: 000781) is located approximately 16km to the south-west of the proposed development. There is a hydrological connection however, this is upstream on the River Nore. The development site would not support the habitats of the qualifying interests of this SPA. Given the lack of direct hydrological connection, lack of supporting habitats, nature and scale of the development, this SPA has been screened out.

The proposed development is not hydrologically connected to any other Natura 2000 site within the potential zone of influence. Therefore, it is not anticipated that the proposed development would have any significant impact on any other protected 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, Aughavaud, 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 a SAC selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive:

TABLE 5.1.1: ANNEX I HABITATS	
CODE	**DESCRIPTION**
1130	Estuaries
1140	Tidal Mudflats and Sandflats
1170	Reefs
1310	*Salicornia* Mud
1330	Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)
1410	Mediterranean salt meadows (*Juncetalia maritimi*)
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 5.1.2: ANNEX II SPECIES		
CODE	**COMMON NAME**	**SCIENTIFIC NAME**
1016	Desmoulin's Whorl Snail	*Vertigo moulinsiana*
1029	Freshwater Pearl Mussel	*Margaritifera margaritifera*
1092	White-clawed Crayfish	*Austropotamobius pallipes*
1095	Sea Lamprey	*Petromyzon marinus*
1096	Brook Lamprey	*Lampetra planeri*
1099	River Lamprey	*Lampetra fluviatilis*
1103	Twaite Shad	*Alosa fallax*
1106	Atlantic Salmon	*Salmo salar*
1355	Otter	*Lutra lutra*
1421	Killarney Fern	*Trichomanes speciosum*
1990	Nore Freshwater Pearl Mussel	*Margaritifera durrovensis*

An excerpt from the site synopsis for River Barrow and River Nore SAC 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. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, 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, Aughavaud 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 site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh, the Curragh, Goul Marsh and along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country.
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.

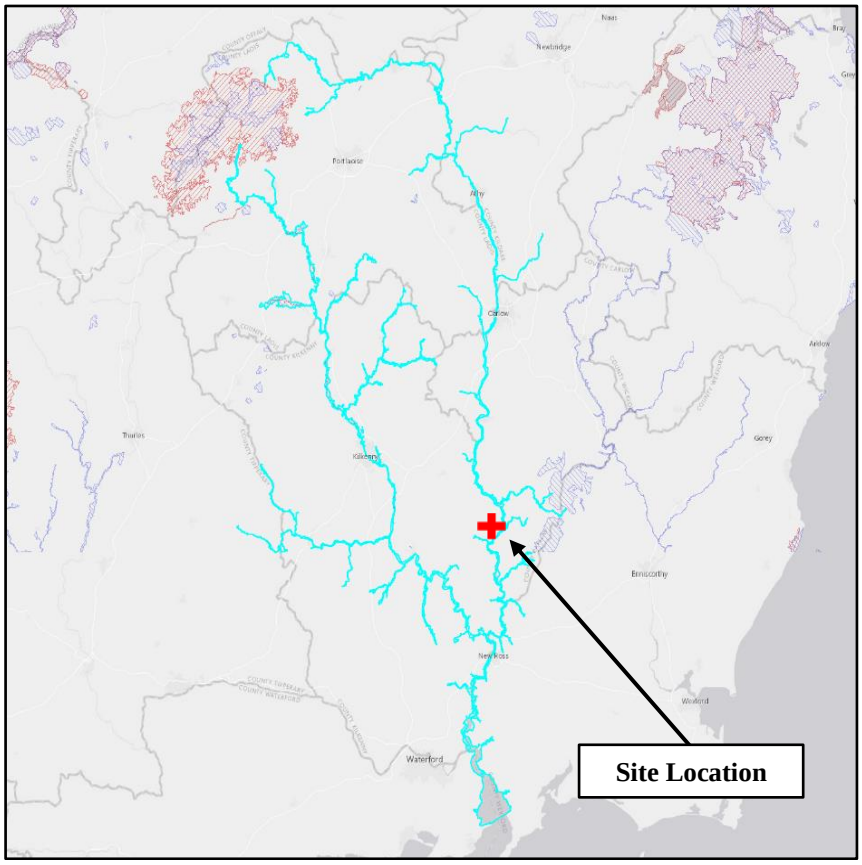

Figure 5.1: River Barrow and River Nore SAC

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, 2011).

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
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 3856ha
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 *Fabulina fabula* community.	
Community extent	Hectares	Maintain the natural extent of the *Sabellaria alveolata* 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	
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
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: *Spartina anglica*	Hectares	No significant expansion of Spartina. 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	
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
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: *Spartina anglica*	Hectares	No significant expansion of *Spartina*. 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	
Vegetation structure: negative indicator species: *Spartina anglica*	Hectares	No significant expansion of *Spartina*. No new sites for this species and an annual spread of less than 1% where it is already known to occur	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
[3260] Floating River Vegetation			
Habitat distribution	Occurrence	No decline, subject to natural processes	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. 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
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	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 the Blackstairs Mountains. Dry heath in this SAC occurs on free-draining nutrient poor soils and is often characterised by gorse and open acid
Habitat area	Hectares	Area stable or increasing, subject to natural processes. Habitat area is not known but estimated as less than 400ha of the area of the SAC, occurring in dispersed locations	
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	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation structure: sub- shrub indicator species	Percentage cover	Cover of characteristic sub- shrub indicator species at least 25%: gorse (*Ulex europaeus*) and where rocky outcrops occur bilberry (*Vaccinium myrtillus*) and woodrush (*Luzula sylvatica*). Some rock outcrops support English stonecrop (*Sedum anglicum*), sheep's bit (*Jasione montana*) and wild madder (*Rubia peregrina*) as well as important moss and lichen assemblages	grassland areas. And locally bilberry and woodrush. 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). 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 (*Trifolium*) species including the legally protected clustered clover, a species known only from one other site in Ireland. Also *T. ornithopodiodes*, *T. striatum* and *Torilus nodosa.*
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 (*Pteridium aquilinum*)	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%	
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 (*Orobanche rapum-genistae*)	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
		and the legally protected clustered clover (*Trifolium glomeratum*)	
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	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. This habitat requires winter inundation, which results in deposition of naturally nutrient-rich sediment. Bare ground, due to natural indundation processes may often be present. Attribute and target based on the Irish Semi-natural Grassland Survey (O'Neill et al., 2010)
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 (*Impatiens glandulifera*), monkeyflower (*Mimulus guttatus*), Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*)	
[7220] Petrifying Springs			
Habitat area	Square metres	Area stable or increasing, subject to natural processes	Full distribution of this habitat in this site is currently unknown. It has been described in woodlands at Dysart,
Habitat distribution	Occurrence	No decline	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes	between Thomastown and Inistioge. Current hydrological regimes are unknown. Petrifying springs rely on permanent irrigation, usually from upwelling groundwater sources or seepage sources. Water chemistry is currently unknown. Water supply to petrifying springs is characteristically oligotrophic and calcareous The bryophytes *Cratoneuron commutatum* and *Eucladium verticillatum* are diagnostic of this habitat.
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	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. Oak regenerates poorly. In suitable sites ash can regenerate in large numbers although few seedlings reach pole size. 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
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	
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Woodland structure: dead wood	m³ per hectare; number per hectare	At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter	propagule sources. Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem. The following are the most common invasive species in this woodland type: Beech (*Fagus sylvatica*), Rhododendron (*Rhododendron ponticum*), Cherry laurel (*Prunus laurocerasus*)
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 (*Quercus petraea*) and birch (*Betula pubescens*)	
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	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. Alder and oak regenerate poorly. Ash often regenerates in large numbers although few seedlings reach pole size. Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem. Mature and veteran trees are important
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	
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Hydrological regime: Flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources. The following are the most common invasive species in this woodland type: Sycamore (*Acer pseudoplatanus*), Beech (*Fagus sylvatica*), Rhododendron (*Rhododendron ponticum*), Cherry laurel (*Prunus laurocerasus*), Dogwood (*Cornus sericea*), Himalayan honeysuckle (*Leycesteria formosa*) and Himalayan balsam (*Impatiens grandiflora*).
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 (*Fraxinus excelsior*) alder (*Alnus glutinosa*), willows (*Salix* spp) and locally, oak (*Quercus robur*)	
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	
Habitat quality: vegetation	Percentage of samples with suitable vegetation	90% of samples in habitat classes I and II	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
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	The crayfish is present almost throughout this SAC. The records extend as far downstream as Thomastown on the Nore and Graiguenamanagh on the Barrow. Alien crayfish species are identified as major direct threat to this species and as disease vector. 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
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 migration, thereby limiting species to lower stretches and restricting access to spawning areas.
Population structure of juveniles	Number of age/size groups	At least three age/size groups present	
Juvenile density in fine sediment	Juveniles/m²	Juvenile density at least 1/m²	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	Juveniles burrow in areas of fine sediment in still water. Lampreys spawn in clean gravels.
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/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²	
Extent and distribution of spawning habitat	m² 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 juveniles in the field. Juveniles burrow in areas of fine sediment
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/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²	
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 2nd order	More than 50% of sample sites positive	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
	channels (and greater), downstream of spawning areas		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 (*Lepeophtheirus salmonis*). Salmon spawn in clean gravels. Q values based on triennial water quality surveys carried out by the EPA.
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	
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	
[1355] Otter			
Distribution	% positive survey sites	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance. 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 Otters will utilise freshwater habitats from estuary to headwaters within 80m of the shoreline.
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	
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	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
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.	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). The extant wild population of Nore freshwater pearl mussel is estimated as 300 adult individuals. 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. This species is known not to have reproduced successfully in the River Nore since 1970. Juvenile mussels require full oxygenation while buried in gravel.
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: Macroinvertebrate s and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	
Substratum quality: Filamentous algae (macroalgae), macrophytes (rooted higher plants)	Percentage	Restore substratum quality- filamentous algae: absent or trace (<5%)	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Substratum quality: sediment	Occurrence	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.	Salmonid fish are host to the larval form of freshwater pearl mussels and thus, they are essential to the completion of the life cycle. 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.
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.

Table 5.1.4: The conservation statuses for the qualifying interests of the River Barrow and River Nore SAC site are outlined below.

CODE	QUALIFYING INTEREST	NATIONAL CONSERVATION STATUS*
1130	Estuaries	Inadequate
1140	Tidal Mudflats and Sandflats	Inadequate
1170	Reefs	Inadequate
1310	*Salicornia* 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
1990	Nore Freshwater Pearl Mussel	Bad

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

6.0 ASSESSMENT OF LIKELY IMPACTS

6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The development site does not directly impinge on any part of a European site, and as such would not be expected to have any in-situ effects upon a protected site through loss or destruction of habitat, fragmentation of habitat, disturbance of habitat or direct reduction in species density. The proposed development is located 241m from the boundary of the River Barrow and River Nore SAC (Site Code: 002162), therefore ex-situ effects must be considered. See Appendix A for summary of the Qualifying Interests and summary of potential impact from the development site.

It is not considered that the development site would contain the habitats or species for which the River Barrow and River Nore SAC have been designated as the development site is predominantly comprised of buildings and artificial surfaces habitat. No areas of woodland exist within the development site; therefore, the site does not contain any habitat which would have potential links to Old Oak Woodlands [91A0] or Alluvial Forests [91E0]. The closest Old Oak Woodlands is approximately 17km south (24km hydrologically downstream) near Graiguenamanagh and the closest Alluvial Forests is approximately 13km south-east (13km hydrologically downstream). Therefore, it is not anticipated that the proposed development would have any direct or indirect impacts on these habitats.

No areas of heath or marsh / swamp habitats occur on the development site; therefore the site 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 be along the River Barrow and tributaries in the Blackstairs Mountains. This habitat is not within or adjacent the site boundary and the development 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. This habitat is not found within the development site and the proposed development would not impact on this habitat.

The development site is located a considerable distance from the tidal stretches of the River Barrow (approximately 29km hydrologically upstream), thus qualifying interests associated with saltwater and tidal conditions would not be present. The River Barrow would likely contain aquatic freshwater species of conservation value. The development would not require any construction works within this watercourse or a riparian zone. This watercourse is located approximately 281m south-east of the proposed development. It should be noted that this watercourse is also culverted under the R724 regional road. Ther are no watercourses or drainage ditches within the proposed construction area. There are also no proposed works within the River Barrow. Therefore, it is not considered that the proposed development would have any direct or indirect significant effects on freshwater species (Salmon, Lamprey Spp., White-clawed Crayfish and Twaite Shad) associated with this SAC. There will be no alterations to the existing drainage network. During the construction works, surface water run-off would be retained onsite or percolate to ground.

During the site assessment, no Killarney Fern [1421] was present with the closest records approximately 24km (hydrologically) downstream (near Graiguenamanagh). In the absence of swamp, fen and marsh habitat at the site, and in the absence of historic records, it is not considered that the development site would be suitable to support populations of Desmoulin's

Whorl Snail. The closest records for this species are approximately 13km (hydrologically) downstream near Borris. Therefore, it is not anticipated that the proposed development would have any direct or indirect impacts on these species.

While no evidence of otter (including holts, slides, spraints and tracks) was recorded during the ecological site assessment, given that the development site is located 281m of the River Barrow, it is likely that otter are present within the general area. The development site is mainly comprised of modified habitats (busy regional roads) which would be of limited value to otter, should this species be present within the vicinity. The development is also bordered by hedgerows and adjacent property developments. Therefore, the development would not have a significant potential direct or indirect impact upon otter due to habitat loss or fragmentation, given the limited land-take required, modified habitats, and given the availability of more suitable otter habitat in the general area.

It is not envisaged that protected species would be significantly impacted upon by the development due to noise generated by the development as the surrounding area is located within a semi-urban setting adjacent to commercial and residential properties. The proposed works involve the re-development of the existing R448 and R724 regional roads to include a shared footpath/cycle paths and landscaping. Fauna in the area would be accustomed to human generated noise from commercial, residential and vehicular activities commonly audible within the area. While there would be increased noise emissions during the construction phase of the development, these would not be considered to pose a significant risk owing to the transient nature of works and the scale of the works. Construction works will be carried out during daylight hours, therefore works will not cause significant disturbance to nocturnal species foraging at the River Barrow. Fauna in the area would also be accustomed to noise from vehicular traffic during the operational phase of the development given the existing use of the development area. Earthworks would be confined to the immediate construction area.

The potential disturbance on protected habitats and species due to dust during the construction phase would not be considered significant, given the transient nature of construction works and the scale of the development. It is not considered that the operational phase of the development has the potential to significantly impact upon designated sites due to air emissions given the nature of the development.

The proposed development would not require any works within a watercourse or drainage ditch or along a riparian habitat. The proposed development will not require any hedgerow or tree removal. It is therefore considered that the development would not result in any significant risk to the protected habitats and species of the River Barrow and River Nore SAC due to habitat fragmentation or loss, disturbance or reduction in species density.

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 as 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 – S66) of the development.

THIRD SCHEDULE INVASIVE FLORA	
Water Fern (*Azolla filiculoides*)	Japanese Knotweed (*Fallopia japonica*)
Indian Balsam (*Impatiens glandulifera*)	Three-cornered Garlic (*Allium triquetrum*)

The spread of invasive plant and animal species can negatively impact on the conservation objectives of certain Annex I habitats and species designated within SACs.

No third schedule invasive species were noted within or adjacent the site boundary during the site assessment. Cherry Laurel, a high impact unscheduled invasive species was observed within a neighbouring property along the R448 and R724.

The risk of invasive species being introduced onto the site during the operational phase of the project is considered to be low, with no import of materials with the potential to contain invasive flora species. Any additional topsoil will be thoroughly checked and screened before being imported or exported where required. No planting programme is proposed at this stage however, any future planting will incorporate native and non-native non-invasive species within its design. Existing boundary hedgerows and treelines will be retained.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

The proposed development is located within the Barrow Catchment, Sub Catchment Barrow_120. The nearest watercourses to the development site is the River Barrow which is at its closest approximately 281m to the south-east and the Moanmore located approximately 172m to the south-west of the proposed development area. The River Barrow is designated as part of the River Barrow and River Nore SAC. The development site would not be considered to impact upon the listed habitats and species of this SAC site during the construction phase due to deleterious effects on water quality, owing to the location of the development, no works within a watercourse/drainage ditch, the nature and the small scale of the development. There are no watercourses or drainage ditches within the proposed construction area.

There will be no alterations to the existing drainage network and therefore, no anticipated significant effects during the operational phase. Surface water comprised of rain-water run-off from the road and hardcore areas would be captured within the existing drainage network or percolate to ground via landscaped areas adjacent to the existing road network.

During the construction phase of projects, a deterioration in water quality can arise through the release of suspended solids during soil disturbance works, the release of uncured concrete and the release of hydrocarbons (fuels and oils). Construction would be confined to the development site footprint, with no works taking place outside of the site boundary within a watercourse or drainage ditch The construction of the development would require limited excavation works. The risk of water quality deterioration as a result of uncured concrete would

be considered low, given that precast concrete would be used where possible and surplus concrete would be returned to the batching plant.

In the event suspended solids become entrained in surface water run-off during the construction phase, there is considered to be no significant risk of impact on water quality as suspended solids would likely be retained on site as run-off percolates to the ground. The proposed development includes some landscaping and grassed areas along the proposed shared path. Therefore, the infiltration of soil within the surrounding area will still be available. Given the construction footprint is small in scale, the nature of the development (re-development of existing road) and the limited construction plant and equipment required, the risk of the development site impacting significantly upon water quality would be greatly reduced. Therefore, run-off from the development site will not have a significant impact on the nearby watercourses such as the River Barrow.

The potential impact of the development upon the River Barrow and River Nore SAC in the event of a flood event would not be considered significant as the development site is not located within a flood risk zone and there is no history of flooding within the development site. The proposed development is located at a much higher altitude than the watercourse which flows beneath the road network. Therefore, the proposed development would not be anticipated to pose a significant risk upon the SAC sites as a result of floodwaters or surface water run-off during the operational phase.

It is therefore considered that, due to the nature and location of the development, approximately 281m from the River Barrow, the relatively small scale and extent of construction works, no excavation works within the riparian zone or along the riparian zone of the River Barrow, the development site does not pose a significant risk upon the River Barrow and River Nore SAC site due to a deleterious effect on water quality during either the construction or operational phases.

6.4 IN COMBINATION EFFECTS

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

- Carlow County Development Plan 2022-2028
- Proposed and permitted developments in the area available on Carlow County Council planning system.

The proposed development is located on the outskirts of Bagnelstown, considered a district town according to the Carlow County development Plan 2022-2028. Part of the re-development is located along the R448 Regional Road which provides connectivity to Carlow town located approximately 15km to the north. The R488 joins with the M9 approximately 2km to the west of the development The small town of Leighlinbridge is located approximately 3.6km north of the proposed development. The following plans and projects were reviewed and considered for in-combination effects with the development site.

Table 6.2: Recent planning applications close to the development site

Application No.	Development Type	Outcome	Approximate Distance
2195	Permission for the change of use of existing on license lounge serving public house to a 3 bedroom residential unit for short term letting, alterations to existing entrance to provide pedestrian access, new wastewater treatment and all associated site development works.	Granted - Conditional	Adjacent SW
21260	Permission is sought for change of use of part of existing single storey dwelling from boiler / bedroom / bathroom to staff and customers toilets (for use by neighbouring shop) as constructed incorporating an open canopy and associated works. Planning permission is also sought for proposed change of use of remainder of existing single storey dwelling from house to storage areas associated with the adjoining shop premises and associated works.	Granted - Conditional	Adjacent NE
17192	Permission is sought for revisions to existing entrance, erection of site fencing, demolition of existing derelict dwelling and all associated site development works.	Granted - Conditional	Adjacent N
20169	Permission for the construction of a domestic shed to include both vehicle storage and hobby areas for domestic use only, and all associated site works.	Granted - Conditional	Adjacent S
18512	Permission for single storey extension to the side of premises with all associated site works.	Granted - Conditional	36m S
16167	Permission for the construction of a domestic garage.	Granted - Conditional	75m SW
19170	Permission for the completion of 6 No. detached 2 storey dwelling homes, numbered 1 to 6 of previous planning application PL Ref: 05/225 together with all associated site and landscaping works at Royal Oak, Bagenalstown, Co. Carlow. Application for Extension of Duration PL Ref. 13/246.	Granted - Conditional	76m SW
18510	Permission for the restoration and extension of Holloden House and associated stables and farmyard, a Protected Structure (Ref. CW46). The works will include restoration of Holloden House and associated stable, farmyard and buildings, demolition at first floor level at the north end of the west stable block (15sqm), construction of a new 3 storey link extension to the rear of Holloden House (103sqm) containing lift and accessible stairs and construction of a single storey extension (132sqm) containing new bar/restaurant, sanitary facilities and ancillary stores and facilities to the rear of the existing stable buildings. Permission is also applied for (i) the restoration and refurbishment of one of the existing farmyard buildings as well as the change of use of the building to use as a whiskey maturation exhibition space (ii) the restoration of the existing farmyard walls and associated turret building and forge and	Granted - Conditional	129m N

Application No.	Development Type	Outcome	Approximate Distance
	reopening of the former carriage arch to the farmyard complex (iii) the restoration and improvement of the existing avenue to Holloden House for vehicular access to the new distillery visitor centre as well as permission for the creation of visitor centre parking area within the walled garden and reinstatement and restoration of the walls to the walled garden. The Change of Use of Holloden House and the associated stable buildings to use as a distillery visitor centre incorporating reception area and retail shop, tasting rooms and associated tourist facilities, warehouse exhibition space, general events accommodation and management offices has previously been approved as part of PL Ref No. 14/33. Permission to also include all associated hard and soft landscaping and associated site development works.		
20142	Planning permission is sought for the provision of new plant and equipment to include (i) new water cooling system to consist of cooling units, water storage bund (120m3 capacity), new covered pump bay (34m2) and new services gantry linking to existing distillery (ii) new centrifugation unit, to consist of centrifugal decanter, storage tank and pumps, screw conveyor and associated access gantry / walkway (25m2) with ladders / stairs, linked to existing distillery at first floor level (iii) new spirit chilling units (iv) alterations to existing distillery to consist of new first floor door linked to decanter gantry / walkway and (v) all associated site development works. (Protected Structure Ref CW 46). The proposed development has been subject to Appropriate Assessment and a Report for AA Screening has been prepared.	Granted - Conditional	219m SE

In-combination impacts would be controlled by national energy policies, grant schemes and motor fuel emission targets. Continued implementation of the Water Framework Directive would result in achieving, or maintaining, improvements to water quality in the Barrow Catchment. Developments such as this proposed development could act in combination with existing environmental pressures on the Barrow Catchment, including: agriculture, anthropogenic, domestic and urban waste water, urban run-off, industry (including extractive) and forestry. However, as noted in Section 6.3, it is not considered that the development would pose a significant risk upon any SAC site due to a deleterious effect on water quality, during either the construction or operational phase. There will be no works within a watercourse or drainage ditch. There will be no alterations to the existing drainage network with no foul services as part of this development.

Future landscaping will incorporate the use of native and non-native non-invasive species within its design with no importation of materials likely to contain invasive species.

In terms of noise and human disturbance, the proposed development will not alter the existing vehicular traffic along the R448 and R724 regional roads during the operational phase. While the proposed development will increase pedestrian traffic and use of the site, it is not considered that the increased human traffic would have a significant cumulative impact on the qualifying interests of the River Barrow and River Nore SAC given the location and existing use already and distance to the nearby SAC.

As discussed in Sections 6.1 – 6.3 above, it is considered that there would be no significant risk to any European site owing to the proposed development. As there are no anticipated significant risks from the development and proposed works and given the nature of the development and distances of other developments in the area, it is considered that there would be no cumulative water, noise or air impacts which would pose a significant risk to designated sites or species.

7.0 SCREENING STATEMENT AND CONCLUSIONS

This report identified the presence of European sites (Natura 2000) within the potential zone of influence. The potential for impacts to European sites as a result of the development site such as potential 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 would be no potential for a significant impact upon the qualifying interests / special conservation interests of the River Barrow and River Nore SAC (002162) during both the construction and operational phase of the development site.

This report presents a Stage 1 Appropriate Assessment Screening for the development site, outlining the information required for the competent authority to screen for appropriate assessment and to determine whether or not the development site, either alone or in combination with other plans and projects, in view of best scientific knowledge, is likely to have a significant effect on any European or Natura 2000 site. It is considered that there would be no significant risk of negative impact, either alone or in combination with other plans or projects, to the integrity of the Natura 2000 network. Therefore, a Natura Impact Statement is not required.

Accordingly, having carried out the Stage 1 Appropriate Assessment Screening, the competent authority may determine that a Stage 2 Appropriate Assessment of the development site is not required as it can be excluded, on the basis of objective scientific information following screening under this Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended, that the development site, individually or in combination with other plans or projects, will not have a significant effect on any European site.

It can be objectively concluded that no significant effects arising from the development site are likely to occur in relation to the River Barrow and River Nore SAC (Site Code 002162) or indeed any other Natura 2000 site in the wider hinterland.

8.0 REFERENCES

Aas, G., Riedmiller, A. (1994) *Trees of Britain & Europe*. Harper Collins Publishers

Averis, B. (2013) P*lants and Habitats: An introduction to common plants and their habitats in Britain and Ireland*. United Kingdom: Swallowtail Print Ltd

Bang, P., Dahlstrøm, P. and Walters, M. (2006) *Animal Tracks and Signs.* Oxford University Press

Byrne, A., Moorkens, E.A., Anderson, R., Killeen, I.J. & Regan, E.C. (2009) *Ireland Red List No. 2 – Non-Marine Mollusc*s. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Cabot, D. (2004*) Irish Birds*. Harper Collins Publishers, London

Cummins, S., Fisher, J., McKeever, R. G., McNaghten, L. and Crow, O. (2010) *Assessment of the distribution and abundance of Kingfisher Alcedo atthis and other riparian birds on six SAC river systems in Ireland*. BirdWatch Ireland.

Council Directive (EC) 2009/147/EC of 30 November 2009 on the conservation of wild birds.

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

DoEHLG (2010) *Freshwater Pearl Mussel Mountain Sub-Basin Management Plan*. Department of the Environment, Heritage and Local Government.

DoEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.*

Environment DG, European Commission (2002) *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.*

Environmental Protection Agency Licence public access information, Available at: http://www.epa.ie/licensing/iedipcse/

EPA (March 2021) "*Code of Practice – Domestic Waste Water Treatment Systems (Population Equivalents ≤10)*".

European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009).

European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. 296 of 2009)

European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988)

Fitzpatrick, U., Weeks, L., Wright, M. (2016) *Identification Guide to Irelands Grasses*. National Biodiversity Data Centre

Gilbert, G., Stanbury, A & Lewis, L. (2021) *Birds of Conservation Concern in Ireland 2021-2026*, Irish Birds, 9, pp. 523-544.

Gordon, P., Donovan, R., Matson, R., Corcoran, W., and Kelly, F.L. (2021) Sampling Fish in Rivers 2020 – River Barrow Catchment, Factsheet No. 2020/01. National Research Survey Programme. Inland Fisheries Ireland

Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Kilkenny: The Heritage Council.

Harrap, S. (2013) Wild Flowers, A Field Guide to the Flowers of Britain & Ireland. Bloomsbury Publishing.

Irish Water (2020) *Connections and Developer Services, Design and Construction Requirements for Self-Lay Developments*. Document IW-CDS-5030-03

Irish Water (2020) *Wastewater Infrastructure Standard Details, Connections and Developer Services. Design and Construction Requirements for Self-Lay Developments*. Document IW-CDS-5030-01

Johnson, O. and More, D. (2006) *Collins Tree Guide: The Most Complete Field Guide to the Trees of Britain and Europe*. London: HarperCollins Publishers.

National Parks and Wildlife Service, available at: http://www.npws.ie/protected-sites

NPWS (2011) Conservation Objectives: River Barrow and River Nore SAC 002162. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: River Barrow and River Nore SAC 002162. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2019a) The Status of Protected EU Habitats and Species in Ireland. Volume 1: Summary Overview Unpublished Report, National Parks and Wildlife Services, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019b) The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitats Assessments. Unpublished report. National Parks and Wildlife Services, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019c) The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished report. National Parks and Wildlife Services, Department of Culture, Heritage and the Gaeltacht.

NPWS (2020) Natura Standard Data Form for River Barrow and River Nore SAC.

O'Neill, F.H. & Barron, S.J. (2013) Results of monitoring survey of old sessile oak woods and alluvial forests. Irish Wildlife Manuals, No. 71. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Parnell, J. and Curtis, T. (2012) *Webb's An Irish Flora*. Cork: Cork University Press.

Philips, R. (1980) *Grasses, Ferns, Mosses & Lichens of Great Britain and Ireland*. London: Pan Books.

Rose, F. (2006) *The Wildflower Key: How to identify wildflowers, trees and shrubs in Britain and Ireland*. China: Frederick Warne & Co.

Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011) *Best Practice Guidance for habitat survey and mapping*. The Heritage Council, Kilkenny. Available at: www.heritagecouncil.ie/wildlife/publications/

Streeter, D. (2018) *Collins Wild Flower Guide*. Harper Collins Publishers, London

Sterry, P. (2004) *Complete Irish Wildlife*. Harper Collins Publishers, London

Sutherland, W.J. (Ed.). (2006) *Ecological Census Techniques*. United Kingdom: Cambridge University Press.

Wheater, C.P., Bell, J.R. and Cook, P.A. (2011) *Practical Field Ecology: A Project Guide*. John Wiley & Sons.

Wilson, J. and Carmody, M. (2013) *The Birds of Ireland*. Gill Books

APPENDIX A

ALL QUALIFYING INTERESTS

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL FOR IMPACTS FROM THE DEVELOPMENT	LISTED FOR FURTHER EXAMINATION IN APPENDIX B
[1130] Estuaries	The development site 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 are located over 29km (hydrologically) downstream of the development site (NPWS, 2011). Given the considerable distance, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests.	No	No
[1140] Tidal Mudflats and Sandflats	The development site 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 are located approximately 58km (hydrologically) downstream of the development site (NPWS, 2011). Given the considerable distance, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests.	No	No
[1170] Reefs	The development site 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 are located greater than 58km (hydrologically) downstream of the development site (NPWS, 2011). Given the considerable distance, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests.	No	No
[1330] Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)	The development site 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 are located over 58km (hydrologically) downstream of the development site (NPWS, 2011). Given the considerable distance, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests.	No	No
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	The development site 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 are located greater than 58km (hydrologically)downstream of the development site (NPWS, 2011). Given the considerable distance, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests.	No	No

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL FOR IMPACTS FROM THE DEVELOPMENT	LISTED FOR FURTHER EXAMINATION IN APPENDIX B
[3260] Floating River Vegetation	The development site is located within the current distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). While this habitat is noted in the SAC site synopsis as being well represented in the River Barrow and its tributaries. The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[4030] Dry Heath	The development site 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 construction works would not be anticipated to have a significant impact upon this qualifying interest should it be present along the River Barrow. The proposed development is located within a semi-urban environment and this habitat would not be expected to be present within the area.	No	No
[6430] Hydrophilous Tall Herb Communities	The development site 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 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. This habitat was not observed within the proposed development boundary. Water quality is not listed as a conservation objective for this qualifying interest. It is therefore not anticipated that the development site would have the potential to significantly impact upon this qualifying interest.	No	No
[7220] Petrifying Springs*	The development site is located outside 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 upstream on the River Nore (NPWS, 2011) approximately 24km southwest of the development site. Given the considerable hydrological distance and that it is on the River Nore, to which the proposed	No	No

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL FOR IMPACTS FROM THE DEVELOPMENT	LISTED FOR FURTHER EXAMINATION IN APPENDIX B
	development is not directly hydrologically connected to, it is not anticipated that the development site would have direct or indirect negative impacts upon this qualifying interest.		
[91A0] Old Oak Woodlands	The development site 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 17km south-east (24km hydrologically downstream near Graiguenamanagh. However, the report notes that further unsurveyed areas may be present within the SAC. Old oak woodlands are a terrestrial habitat, therefore a deterioration in water quality during construction works would not be anticipated to have a significant adverse impact upon this qualifying interest.	No	No
[91E0] Alluvial Forests*	The development site is located outside the current distribution but within the current range and favourable reference range of this qualifying interest (NPWS, 2019b). According to the SAC Conservation Objectives report, alluvial forests are located approximately 13km hydrologically downstream of the development site. 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.	No	No
[1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)	The development site 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 Desmoulin's whorl snail is located approximately 13km (hydrologically) downstream of the development site near Borris. Water quality is not listed as a conservation objective for this qualifying interest, it is not anticipated that the development site would have the potential to adversely impact upon the Desmoulin's whorl snail.	No	No
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)	The development site is located outside 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 *Margaritifera margaritifera* as a qualifying interest for the site is currently under review, while *M.*	Yes	Yes

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL FOR IMPACTS FROM THE DEVELOPMENT	LISTED FOR FURTHER EXAMINATION IN APPENDIX B
[1990] Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)	*m. durrovensis* is confined to a 15km (approximate) stretch of the River Nore, this is located above the tidal reach of the River Nore. The proposed development is located along the stretches of the River Barrow as opposed to the River Nore. There are no NBDC records of this species within or in close proximity to the development site. 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.		
[1092] White-clawed Crayfish (*Austropotamobius pallipes*)	The development site is located within the current distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019c). The SAC Conservation Objectives report notes that crayfish are present almost throughout the SAC. According to the Conservation Objectives report, White-Clawed Crayfish have been recorded approximately 281m south-east within the River Barrow. The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[1095] Sea Lamprey (*Petromyzon marinus*)	The development site 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 sp. were noted within the Monefelim watercourse located approximately 7.9km (hydrologically) downstream and throughout the Barrow Catchment (Gordon et al, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[1096] Brook Lamprey (*Lampetra planeri*)	The development site is located within the current known distribution, current range and favourable reference range of brook lamprey (NPWS, 2019c). River and brook lamprey are indistinguishable as larvae. Potentially located within the River Barrow. Lamprey sp. were noted within the Monefelim watercourse located approximately 7.9km (hydrologically) downstream and throughout the Barrow Catchment (Gordon et al, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL FOR IMPACTS FROM THE DEVELOPMENT	LISTED FOR FURTHER EXAMINATION IN APPENDIX B
[1099] River Lamprey (*Lampetra fluviatilis*)	The development site is located outside the current known distribution, current range and favourable reference range of river lamprey (NPWS, 2019c). River and brook lamprey are indistinguishable as larvae. Potentially located within the River Barrow. Lamprey sp. were noted within the Monefelim watercourse located approximately 7.9km (hydrologically) downstream and throughout the Barrow Catchment (Gordon et al, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[1103] Twaite Shad (*Alosa fallax*)	The development site is located outside the current known distribution, current range and favourable reference range of the Twaite Shad (NPWS, 2019c). The nearest records for Twaite Shad are located approximately 24km south of the development site. Artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas.	No	No
[1106] Atlantic Salmon (*Salmo salar*)	The development site is located within the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019c). Potentially located within the River Barrow. Salmon were noted within the Monefelim watercourse located approximately 7.9km (hydrologically) downstream and throughout the Barrow Catchment (Gordon et al, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[1355] Otter (*Lutra lutra*)	The development site is located outside the current distribution but within the current range and favourable reference range of otter (NPWS, 2019c). According to data from NBCD, otter have been recorded approximately 281m south-east of the development site within the River Barrow. A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability.	Yes	Yes
[6985] Killarney Fern (*Vandenboschis speciosa*)	The development site 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 development site is located approximately 24km (hydrologically) downstream (near Graiguenamanagh) of the development site. Water quality is not listed as a conservation objective for this qualifying interest. It is therefore not anticipated that	No	No

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL FOR IMPACTS FROM THE DEVELOPMENT	LISTED FOR FURTHER EXAMINATION IN APPENDIX B
	the development site would have the potential to adversely impact upon this qualifying interest.		

APPENDIX B

QUALIFYING INTERESTS WITHIN THE PROJECT ZONE OF INTEREST

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
[3260] Floating River Vegetation	• Agricultural activities generating point source pollution to surface or ground waters. • Modification of hydrological flow. • Physical alteration of water bodies. • Discharge of urban wastewater (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water. • Forestry activities generating pollution to surface or ground waters. • Pollution to surface or ground water due to urban runoffs. • Peat extraction. • Plants contaminated or abandoned industrial sites generating pollution to surface or ground water. • Abstraction from groundwater, surface water or mixed water.	A potential deterioration in Water Quality* could potentially impact on this habitat. <u>Key Conservation Measures</u> • Reversal/rehabilitation of hydro-morphological changes, including in-stream structures and catchment drainage impacts/restoration of hydrological regime. • Reducing pollution (with dissolved and/or particulate nutrients, humic substances, organic matter and fine sediment/turbidity) from agricultural, forestry, turf-cutting, and domestic and urban waste-water sources.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1990] Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)	• Drainage for use as agricultural land. • Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams). • Other modification of hydrological conditions for residential or recreational development. • Agricultural activities generating diffuse pollution to surface or ground waters. • Forestry activities generating pollution to surface or ground waters. • Discharge of urban wastewater (excluding storm overflows and/or urban run-offs)	Freshwater Pearl Mussels are sensitive to sedimentation and nutrient enrichment. Furthermore, as the larval stages relay on salmonid fish hosts, any potential impact on salmonids can have an impact upon the Freshwater Pearl Mussel. <u>Key Conservation Measures</u> • Manage drainage and irrigation operations and infrastructures in agriculture.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	generating pollution to surface or ground water. • Peat extraction. • Modification of flooding regimes, flood protection for residential or recreational development. • Hydropower (dams, weirs, run-off-the-river), including infrastructure. • Abstraction of ground and surface waters (including marine) for public water supply and recreational use.	• Reduce diffuse pollution to surface or ground waters from agricultural activities. • Adapt mowing, grazing and other equivalent agricultural activities. • Manage the use of natural fertilisers and chemicals in agricultural (plant and animal) production. • Adapt/manage reforestation and forest regeneration. • Stop forest management and exploitation practices. • Adapt/change forest management and exploitation practices. • Manage drainage and irrigation operations and infrastructures.	that would enter any watercourse or drainage system that is hydrologically connected to the SAC.
[1092] White-clawed Crayfish (*Austropotamobius pallipes*)	• Plant and animal diseases, pathogens and pests. • Invasive alien species of Union concern	A potential deterioration in Water Quality* could potentially impact on this species. <u>Key Conservation Measures</u> • Early detection and rapid eradication of invasive alien species of Union concern. • Controlling and eradicating plant and animal diseases, pathogens and pests.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
			drainage system that is hydrologically connected to the SAC.
[1095] Sea Lamprey (*Petromyzon marinus*)	• Hydropower (dams, weirs, run-off-the-river), including infrastructure. • Increases or changes in precipitation due to climate change. • Application of natural fertilisers on agricultural land. • Application of synthetic (mineral) fertilisers on agricultural land. • Drainage for use as agricultural land. • Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations. • Threats and pressures from outside the Member State. • Temperature changes (e.g. rise of temperature & extremes) due to climate change. • Droughts and decreases in precipitation due to climate change.	Sea lamprey may be adversely impacted upon by sedimentation and water pollution. <u>Key Conservation Measures</u> • Reduce impact of hydropower operations and infrastructure. • Manage changes in hydrological and coastal systems and regimes for construction and development. • Any measure to reduce diffuse pollution to surface or ground waters from agricultural activities would benefit water quality in rivers. This would have a knock-on beneficial effect on sea lamprey during the freshwater spawning phase, when spawning grounds can experience substantial filamentous algal growth.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.
[1096] Brook Lamprey (*Lampetra planeri*)	• Application of synthetic (mineral) fertilisers on agricultural land. • Drainage for use as agricultural land. • Clear-cutting, removal of all trees. • Hydropower (dams, weirs, run-off-the-river), including infrastructure.	Brook lamprey may be adversely impacted upon by sedimentation and water pollution. <u>Key Conservation Measures</u>	No potential for a significant impact on water quality as there is no potential for significant

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	• Pollution to surface or ground water due to urban runoffs. • Discharge of urban wastewater (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water. • Temperature changes (e.g. rise of temperature & extremes) due to climate change. • Droughts and decreases in precipitation due to climate change.	• Diffuse and point source pollution may be having localised impacts on populations of *L. planeri*. There has been a 3% reduction in river water quality in the national territory since 2015 (EPA, 2018) and the main sources of nutrient inputs are agriculture (slurry and chemical fertilisers) and sewage (waste water treatment plants).	groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.
[1099] River Lamprey (*Lampetra fluviatilis*)	• Hydropower (dams, weirs, run-off-the-river), including infrastructure. • Increases or changes in precipitation due to climate change. • Application of natural fertilisers on agricultural land. • Application of synthetic (mineral) fertilisers on agricultural land. • Drainage for use as agricultural land. • Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging). • Temperature changes (e.g. rise of temperature & extremes) due to climate change. • Droughts and decreases in precipitation due to climate change.	River lamprey may be adversely impacted upon by sedimentation and water pollution. <u>Key Conservation Measures</u> • Reduce impact of hydropower operations and infrastructure. • Manage changes in hydrological and coastal systems and regimes for construction and development.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
[1106] Atlantic Salmon (*Salmo salar*)	• Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations. • Freshwater fish and shellfish harvesting (recreational). • Bycatch and incidental killing (due to fishing and hunting activities). • Other invasive alien species (other than species of Union concern). • Temperature changes (e.g. rise of temperature & extremes) due to climate change. • Droughts and decreases in precipitation due to climate change.	Salmon, particularly juveniles and spawning beds, are sensitive to sedimentation and water pollution. A potential deterioration in Water Quality* could impact on this species. <u>Key Conservation Measures</u> • Manage the use of natural fertilisers and chemicals in agricultural (plant and animal) production. • Reduce/eliminate point pollution to surface or ground waters from agricultural activities. • Reduce diffuse pollution to surface or ground waters from agricultural activities. • Adapt/change forest management and exploitation practices. • Reduce diffuse pollution to surface or ground waters from forestry activities. • Management of professional /commercial fishing (including shellfish and seaweed harvesting). • Management of hunting, recreational fishing and recreational or commercial harvesting or collection of plants. • Control/eradication of illegal killing, fishing and harvesting.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
		• Manage water abstraction for public supply and for industrial and commercial use. • Support conservation measures in countries outside the EU.	
[1355] Otter (*Lutra lutra*)	None listed	A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability. <u>Key Conservation Measures</u> • The network of mammal underpasses on new roads are examples of positive measures that have been taken to reduce otter roadkill. • Diffuse and point-source pollution of freshwaters and coastal waters is likely to impact otters indirectly through changes to prey abundance.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff (sediments or hydrocarbons) from the development site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.

** See Table 5.1 for Water Quality Targets set in Conservation Objectives*

APPENDIX C

PROTECTED SITES AND SITE LOCATION

Notes

Site Location –

S.P.A. –

S.A.C. –

Project Title:

PROTECTED SITES MAP

Client Name:

R448 & R724 Road Scheme at Royal Oak Road, Bagnelstown, Co. Carlow

PANTHER ECOLOGY LTD

UNITS 3 & 4
S.E.T.U CARLOW CAMPUS
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Report	Datum:	EPA Envision	
Drawing Number: PES_AA_10216	Drawn:	PES	
	Checked:	MF	
Revision:	Approved:	-	
R0	Date:	06/09/2024	


CST Group

APPENDIX D

PHOTO LOG

Plate 1: Junction of R448 and R724 – BL3 habitats

Plate 2: R448 looking North

Plate 3: Dry meadows and grassy verges (GS2)

Plate 4: Scattered trees and parkland (WD5)

Notes:

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AA_10216	A	approved:	-
		date:	06/08/2024

Plate 5: Hedgerow (WL1)

Plate 6: Hedgerows (WL1) along R724

Plate 7: R724 Road and BL£ habitats

Plate 8: R724 in direction of River Barrow and River Nore SAC

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