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APPROPRIATE ASSESSMENT SCREENING REPORT

PEDESTRIAN RAIL LINK, CARLOW TOWN, CO. CARLOW

2024

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DATE:	20th March 2024	**REVIEWED:**	Martin O'Looney, BSc.

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1.0 INTRODUCTION

Panther Environmental Solutions Ltd. was commissioned by Carlow County Council to prepare an Appropriate Assessment Screening Report for planning permission for the proposed development, which consists of a pedestrian Rail Link through Carlow College.

The principal aim of this study is to assess whether significant effects to European sites (the Natura 2000 network) are likely to occur as a result of this project in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act, 2001, as amended. 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) of Panther Environmental Solutions Limited. This survey was supervised by Martin O'Looney who has a BSc Degree in Environmental Science and Technology from Atlantic Technological University Sligo (formerly IT Sligo) and over 10 years' experience in environmental consultancy and environmental impact assessment.This comprised a review of the proposed development, a site visit on the 30th January 2024 to examine the ecological context of the proposed development, 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

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

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

- *Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities*. DoEHLG, 2010.
- Appropriate Assessment Screening for Development Management OPR Practice Note PN01 March 2021

- 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, 2000.
- 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.
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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 15km of the development in Co. Carlow were identified from National Parks and Wildlife Service (NPWS) online map viewer. Other Natura sites beyond 15km 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 (Water Quality in Ireland 2016-2021 (2019).

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 FIELD SURVEY

A site characterisation assessment was undertaken on the 30th January 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 and dwellings were also noted. Particular attention was given to the possible presence of habitats and/or species, which are legally protected under

Irish and European legislation and to assessing any potential ecological connectivity with Natura 2000 sites or supplementary or stepping stone habitats of relevance to Natura 2000 sites.

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT AND EXISTING SITE

4.1 PROPOSED DEVELOPMENT

The proposed development consists of a pedestrian Rail Link through Carlow College at Carlow Town, Co. Carlow. The proposed construction works will include new footpaths and upgrading of an existing footpath from the Visual, in an easterly direction through St. Leo's College grounds and out towards St. Joesphs Road (l4012) adjacent to St. Catherine's Community Centre. The development will also include an extension to an existing carpark at St. Catherine's Community Centre and new lighting adjacent to College Street (L4025). The railway station is located approximately 150m to the north of the new proposed entrance at St. Joseph's Road, which would provide access to both pedestrians and vehicles.

The proposed new pathways will be comprised of bonded beed paving, natural stone paving and tactile paving with a new flexible surface comprised of tarmac or bonded bead where the existing pathway is adjacent the sports field. The proposed road at the entrance off St. Joesph's Road will be comprised of natural stone paving with a coloured tarmac cycle path and natural stone curbing.

At the existing carpark (At the visual) within the grounds of Carlow College, the surface water comprised of clean rainwater run off from hard surfaces will be directed to the existing drainage system via a series of new gullies and ACO drains. Further east along the pedestrian pathway, adjacent the existing sports field, the existing pathway will be raised to allow clean surface water to drain to the east and percolate to ground. The existing curb along this section will be replaced with a new curb where slots will be incorporated to allow for the movement of surface water. Surface water within the grounds of St. Leo's College Carlow to the existing entrance adjacent to St. Catherine's Community Centre for the new proposed road and path will be directed to new soakaways via a system of gullies and ACO drains. This will include a petrol/oil interceptor to take surface water from the new proposed road. Surface water from the new carpark extension will be directed to the existing surface water drainage network in St. Catherine's Community Centre.

There will be no foul water or drinking water facilities as part of this development.

Boundary treatment includes the installation of a 1200mm high traditional wrought iron effect fence, a new 2.1m high block wall in the centre and at the entrance adjacent to St. Catherine's Community Centre.

Landscaping will include new planters throughout and new hedgerows. The proposed planting schedule will incorporate a mix of native and non-native non-invasive species within its design. This includes low perennial planting of grasses, Giant Hyssop (*Agastache Foeniculum*), Red Spider (*Zinnia tenuifolia*), Gentian Sage (*Salvia Patens*), *Hylotelephium 'Matrona'* and Squirrel's Tail (*Lagarus ovatus*). A majority of the existing treelines and hedgerow habitats

will be retained with the exception of those in poor condition or to facilitate the proposed development (Refer to Arboricultural Report).

A lighting plan has been designed by Signify as part of the operational phase of the proposed development. It will take into account the sensitivity of the existing habitats onsite.

The proposed construction duration will be 6 months. During excavation works, soils would be temporarily stored onsite. The development will require the importation of typical building aggregates used in the construction of pathways and roads such as gravel stone, concrete etc with no importation of materials likely to contain contaminants or invasive species. All imported materials will be screened. Excess stone/soil where not used will be exported to a licensed waste facility. Construction works would be confined to the development site footprint and would not necessitate any works within a watercourse or drainage ditch. There is no hazardous material within the site boundary. See Appendix C for site plans and layout.

The intervention at Carlow College will provide additional connectivity from the Town Centre to the college campus itself as well as to the Railway Station. Permeability through Carlow College as a public space is a key and must be promoted through design features. The proposed development would align with the following objectives set out in Project Carlow 2040: A Vision for Regeneration:

- To deliver improved connections and enhance accessibility between key retail, recreational, educational, and civic spaces in Carlow Town as well as to public transport.
- To create an attractive public realm that entices people to spend more time in a vibrant and modern Town Centre.
- To support and enhance the strategic partnership between Carlow College and SETU Carlow.
- To optimise the natural environment through well-designed upgrades to play a role in an expanded open space network in the Town.
- To link the Train Station to the Town Centre in a direct manner along a route of interest and beauty, supporting the greening of Carlow and its aim to become more sustainable.
- To highlight opportunities to integrate and increase accessibility to the River Barrow.

The closest Natura 2000 site is the River Barrow and River Nore SAC (Site Code: 002162) located approximately 400m west from the proposed development (figure 4.2).

The following project elements of the proposed development 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

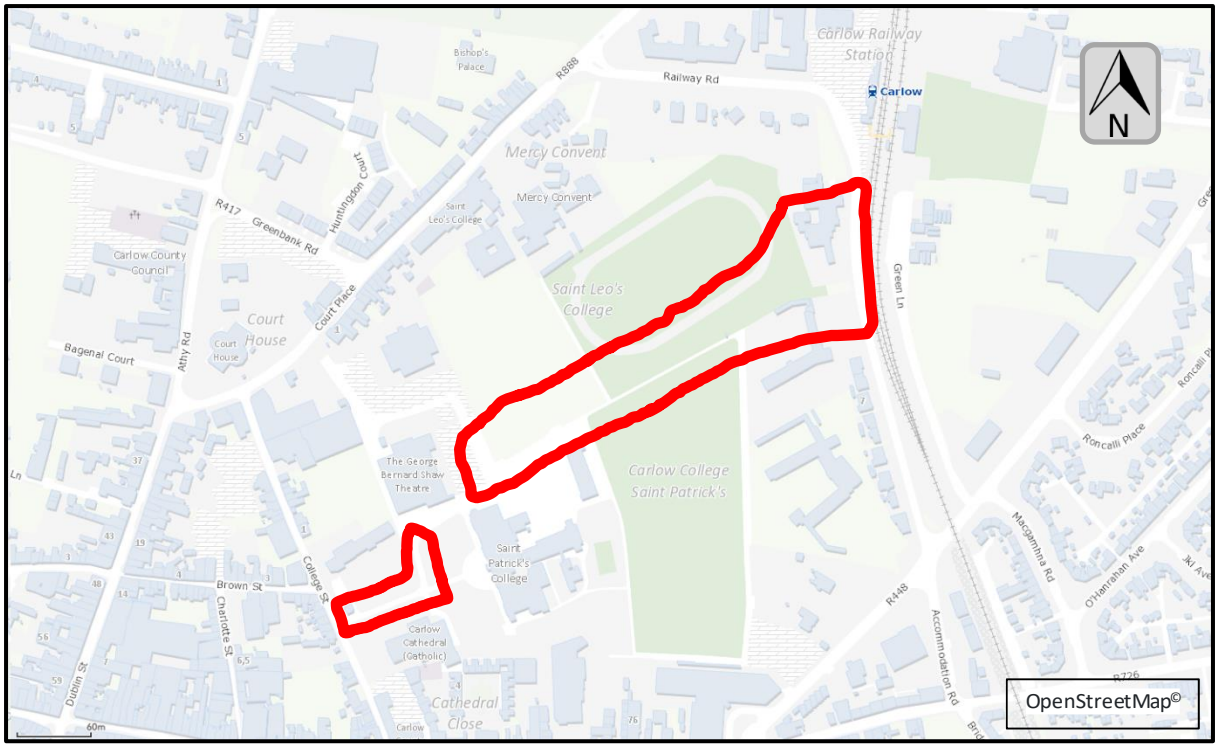

Figure 4.1: Location of Proposed Site at Co. Carlow

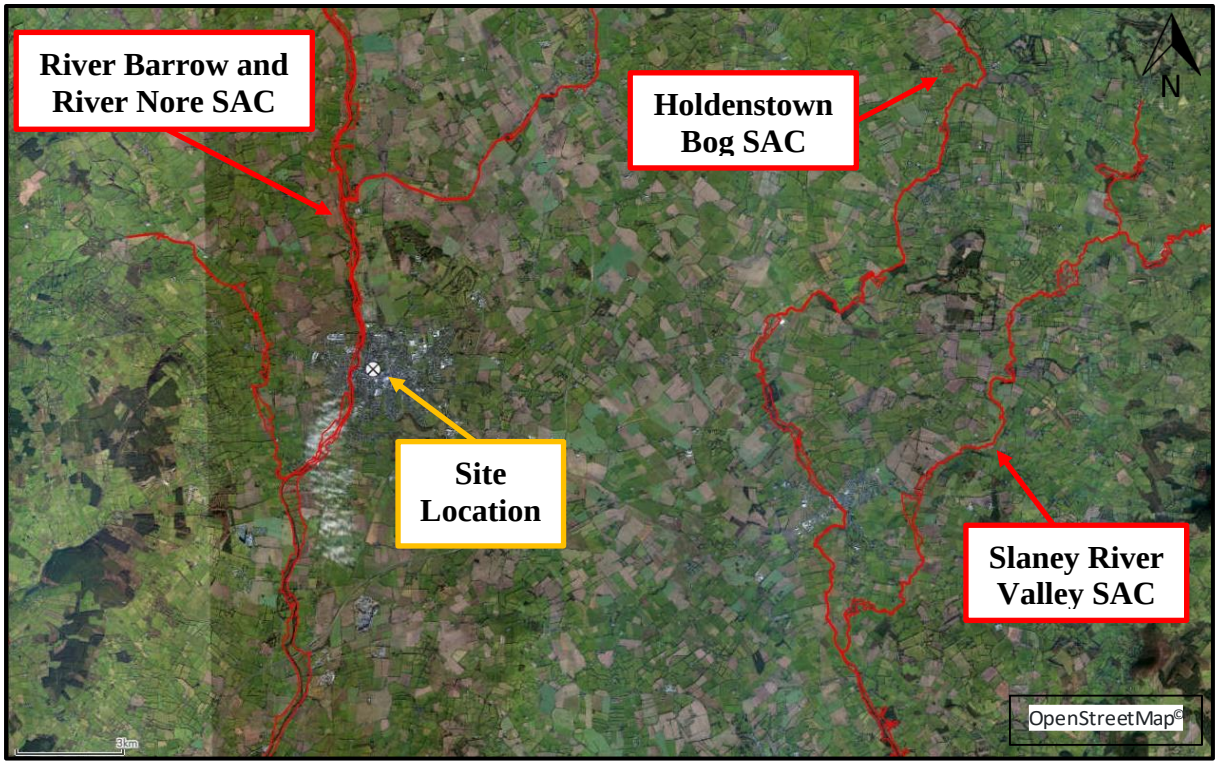

Figure 4.2: Location of Proposed Development and Natura 2000 Sites

4.2 EXISTING ENVIRONMENT

The development site is mainly comprised of buildings and artificial surfaces with treelines and grassland habitat throughout. The surrounding area is of urban fabric with residential housing, schools, sports clubs, parks, churches, healthcare centres, nursing homes, retail stores, restaurants and other services. The route is located within Carlow town. The closest watercourse to the start point of the proposed footpath is the Burren (EPA Code: 14B05 – Order 4) located approximately 271m to the south. The Burren is hydrologically connected to the River Barrow and River Nore SAC approximately 495m (hydrologically) downstream of its closest point to the proposed development. The River Barrow (EPA Code: 14B01 – Order 5) itself is located 400m to the west of the proposed development site.

A site characterisation assessment was undertaken on the 30th January 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 following habitats were recorded within the proposed construction area from the start point at the L4025 College Street to the end point at the proposed entrance at St Joseph's Road (L4012).

Buildings and artificial surfaces (BL3) is the dominant habitat type. It is comprised of hard surfaces such as the existing road network, buildings, walls and pathways found throughout. This habitat is very modified, maintained and species poor. It is evidently management and was dominated by Mosses (Bryophyta).

Amenity grassland (GA2) is the dominant grassland found throughout the development area which includes the existing sports field within the rounds of Carlow College and within the grounds of St. Leo's College. Species include Bent Grass (*Agrostis* spp.), Fescues (*Festuca* spp.), Ryegrasses (*Lolium* spp.), Daisy (*Bellis perennis*), Dandelion (*Taraxacum* spp.), Ribwort Plantain (*Plantago lanceolata*), Greater Plantain (*Plantago major*), Sowthistle (*Sonchus* spp.), Moss (Bryophyta), Clover (*Trifolium* spp.), Creeping Cinquefoil (*Potentilla reptans*), Cleavers (*Galium aparine*), Creeping Buttercup (*Ranunculus repens*), Dock (*Rumex* spp.) and False-oat Grass (*Arrhenatherum elatius*) along the margins.

Habitats outside the immediate construction area but along the peripheries are as follows;

Several treelines (WL2) form the boundaries of the proposed construction area, particularly within the carpark adjacent to the Visual and along the existing pathway adjacent to the sports grounds. An additional treeline is found at St. Catherines Community Centre running horizontally to the L4012 and within the grounds of St. Leo's. The species composition is comprised of Birch (*Betula* spp.), Oak (*Quercus* spp.), Lime (*Tilia* spp.), Elder (*Sambucus* spp.), Maple (*Acer* spp.), Sycamore (*Acer pseudoplatanus*), Horse Chestnut (*Aesculus hippocastanum*), Ash (*Fraxinus* spp.), Poplar (*Populus* spp.), Willow (*Salix* spp.), Wild Cherry (*Prunus avium*), with an understory of Hawthorn (*Crataegus monogyna*), Dandelion (*Taraxacum* spp.), Red Dead Nettle (*Lamium purpureum*), Nettle (*Urtica dioica*), Herb Robert (*Geranium robertianum*), Ivy (*Hedera helix*), Cleavers (*Galium aparine*) and Bent (*Agrostis* spp.). The treeline varies from young to mature trees.

Scattered trees and parkland (WD5) habitat is found throughout but particularly to the west adjacent the existing pedestrian entrance from College Street and within the grounds of St.

Leo's College. Trees in close proximity to the proposed construction area include Ash (*Fraxinus* spp.), Birch (*Betula* spp.) and Scots Pine (*Pinus sylvestris*).

A hedgerow (WL2) habitat occurs to the east along the existing pathway adjacent to the sports grounds. Species include Euonymus, Barberry (*Berberis* spp.) and Privet (*Ligustrum* spp.).

Ornamental non/native shrub (WS3) and Flower beds and borders (BC4) habitat occur within the surrounding grounds of the development area. It is comprised of Daffodil (Narcissus), Snowdrop (*Galanthus* spp.), Wood Avens (*Geum urbanum*), Hebe, Lavendar (*Lavandula* spp.), Rose (*Rosa* spp.) and Mexican Orange Blossom (*Choisya* spp.).

Spoil and bare ground (ED2) and recolonising bare ground (ED3) habitat consisting of topsoil and loose gravelled areas is found to the east. Plant species recorded include Creeping Buttercup (*Ranunculus repens*), Bent Grass (*Agrostis* spp.), Dandelion (*Taraxacum* spp.), Ribwort Plantain (*Plantago lanceolata*), Horseweed (*Conyza* spp.), Clover (*Trifolium* spp.), Sowthistle (*Sonchus* spp.), Cleavers (*Galium aparine*), Buddleia, Thistle (*Cirsium* spp.), Bramble (*Rubus fructicosus)* and Daisy (*Bellis perennis*).

The identified habitats at the proposed development site, as per the Fossitt habitat classification scheme, are summarised in Table 4.1 below.

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

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
G – Grassland and marsh	**GA** – Improved grassland	**GA2** – Amenity grassland (improved)
	GS – Semi-natural grassland	**GS2** – Dry meadows and grassy verges
W – Woodland and scrub	**WS** – Scrub / transitional woodland	**WS3** – Ornamental/ non-native shrub
	WL – Linear woodland / scrub	**WL1** – Hedgerows
		WL2 – Treelines
B – Cultivated and built land	**BL** – Built land	**BL3** – Buildings and artificial surfaces
	BC – Cultivated land	**BC4 –** Flower beds and borders
E – Exposed rock and disturbed ground	**ED –** Disturbed ground	**ED2 -** Spoil and bare ground

Bird species noted during the site walkover included Blackbird (*Turdus merula*), Rook (*Corvus frugilegus*), Chaffinch (*Fringilla coelebs*), Robin (*Erithacus rubecula*), Wren (*Troglodytes troglodytes*), Dunnock (*Prunella modularis*), Pied Wagtail (*Motacilla alba yarrellii*), Coal Tit (*Periparus ater*), Hooded Crow (*Corvis cornix*), Great Tit (*Parus major*), Woodpigeon (*Columba palumbus*), Starling (*Sturnus vulgaris*), Song Thrush (*Turdus philomelos*) and Goldfinch (*Carduelis carduelis*). No species is red, Starling are amber listed under the BoCCI

classification. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

There was evidence of fauna (trackways) near the proposed construction area adjacent St. Leo's College however, due to the existing use of the site as a pedestrian walkway and sports ground, it is likely to be domestic animals. No evidence of protected fauna was observed.

As there are no aquatic habitats within or near the proposed construction area, therefore it is not considered that the proposed development would support species associated with freshwater habitats such as Otter and Lamprey.

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.

However, fauna, typical of that found throughout the rest of Ireland, which would be expected to be found in the area include Bat species, Fox (*Vulpes vulpes*), Badger (*Meles meles*), Rabbit (*Oryctalagus cuniculus*), Otter (*Lutra lutra*), 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*).

In addition to the site walkover, flora and fauna records for the most recent 30 years were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed development site and vicinity. The proposed development site is located within the S77 Hectad, therefore cognisance was taken of the records for the 10km square. No protected plant species under the Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) were recorded within the 10km square (Hectad – S77) in which the proposed development site is located in. There are no endangered or threatened flora recorded within hectad S77.

Six 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 (Hectad – S77): Water Fern (*Azolla filiculoides*), Giant Hogweed (*Heracleum mantegazzianum*), Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*), Nuttall's Waterweed (*Elodea nuttallii*) and Three-cornered Garlic (*Allium triquetrum*).

Protected fauna and species of note recorded within the NBDC 10km square (Hectad – S77) include the protected species: Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*), Freshwater White-clawed Crayfish (*Austropotamobius pallipes*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*), Pygmy Shrew (*Sorex minutus*), Red Squirrel (*Sciurus vulgaris*), Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Natterer's Bat (*Myotis nattereri*), Pine Marten (*Martes martes*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Red Deer (*Cervus elaphus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and West European Hedgehog (*Erinaceus europaeus*). High impact invasive species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) include American Mink (*Mustela vison*), Brown Rat (*Rattus norvegicus*), Eastern Grey Squirrel (*Sciurus carolinensis*) and Sika Deer (*Cervus nippon*).

Bird species of note recorded for the most recent 30 years include: Barn Owl (*Tyto alba*), Barn Swallow (*Hirundo rustica*), Black-headed Gull (*Larus ridibundus*), Black-tailed Godwit (*Limosa limosa*), Canada Goose (*Branta canadensis*), Common Coot (*Fulica atra*), Common Greenshank (*Tringa nebularia*), Kestrel (*Falco tinnunculus*), Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Pheasant (*Phasianus colchicus*), Pochard (*Aythya ferina*), Sandpiper (*Actitis hypoleucos*), Snipe (*Gallinago gallinago*), Starling (*Sturnus vulgaris*), Swift (*Apus apus*), Wood Pigeon (*Columba palumbus*), Dunlin (*Calidris alpina*), Curlew (*Numenius arquata*), Teal (*Anas crecca*), Tree Sparrow (*Passer montanus*), Wigeon (*Anas penelope*), Golden Plover (*Pluvialis apricaria*), Gadwall (*Anas strepera*), Great Black-backed Gull (*Larus marinus*), Cormorant (*Phalacrocorax carbo*), Greylag Goose (*Anser anser*), Herring Gull (*Larus argentatus*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Lesser Black-backed Gull (*Larus fuscus*), Little Egret (*Egretta garzetta*), Grebe (*Tachybaptus ruficollis*), Mallard (*Anas platyrhynchos*), Merlin (*Falco columbarius*), Mew Gull (*Larus canus*), Mute Swan (*Cygnus olor*), Lapwing (*Vanellus vanellus*), Northern Shoveler (*Anas clypeata*), Peregrine Falcon (*Falco peregrinus*), Red Kite (*Milvus milvus*), Rock Pigeon (*Columba livia*), Ruff (*Philomachus pugnax*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Flycatcher (*Muscicapa striata*), Stock Pigeon (*Columba oenas*), Tufted Duck (*Aythya fuligula*), Water Rail (*Rallus aquaticus*), Whooper Swan (*Cygnus cygnus*) and Yellowhammer (*Emberiza citrinella*).

4.3 WATER ENVIRONMENT

The proposed pedestrian rail link is located within the Barrow_SC_090 subcatchment, which belongs to the Barrow catchment (Catchment ID: 14). The closest watercourse to the proposed development is the Burren (EPA Code: 14B05 – Order 4) located approximately 271m to the south. The Burren is hydrologically connected to the River Barrow and River Nore SAC approximately 495m (hydrologically) downstream of its closest point to the proposed development. The River Barrow (EPA Code: 14B01 – Order 5) itself is located 400m to the west of the proposed development site.

Other watercourses in the area include the Knocknagee (EPA Code: 14K61 – Order 1) which flows into the Burren. From this confluence, the Burren flows for a further 1.05 km until it reaches the River Barrow.

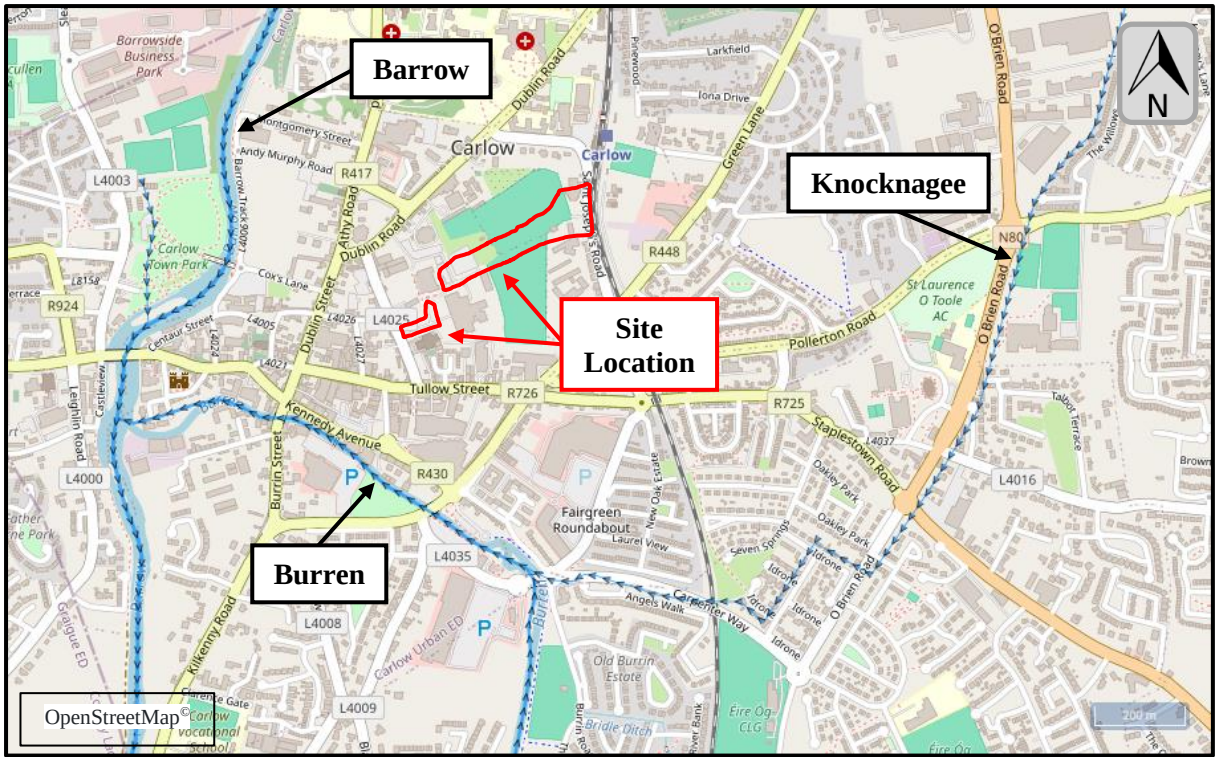

Figure 4.3: Watercourses in the vicinity of the proposed development

The Conservation Objectives report 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.

The Environmental Protection Agency (EPA) undertakes surface water monitoring along the Rivers Burren and River Barrow. The results for the nearest monitoring stations (as per **Table 4.2**) with available monitoring results for the period 2003 – 2020 are summarised in **Figure 4.4** below for indicative purposes. As can be seen in **Figure 4.4** below, both rivers are mainly achieving a water quality status of between Q3.5 (Moderate) in recent years with water quality maintaining a Moderate status at least.

Table 4.2: Nearest Active Monitoring Stations of the River Burren and River Barrow

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION FROM BURREN-BARROW CONFLUENCE
RS14B012200	New Br 1km u/s Carlow Br	272007.35	177778.69	1.38km Upstream
RS14B050485	Hanover Br (Ring Rd Br Carlow)	272531.73	176227.51	1.05km Upstream
RS14B012600	Milford Br	269975	170430	7.25km Downstream

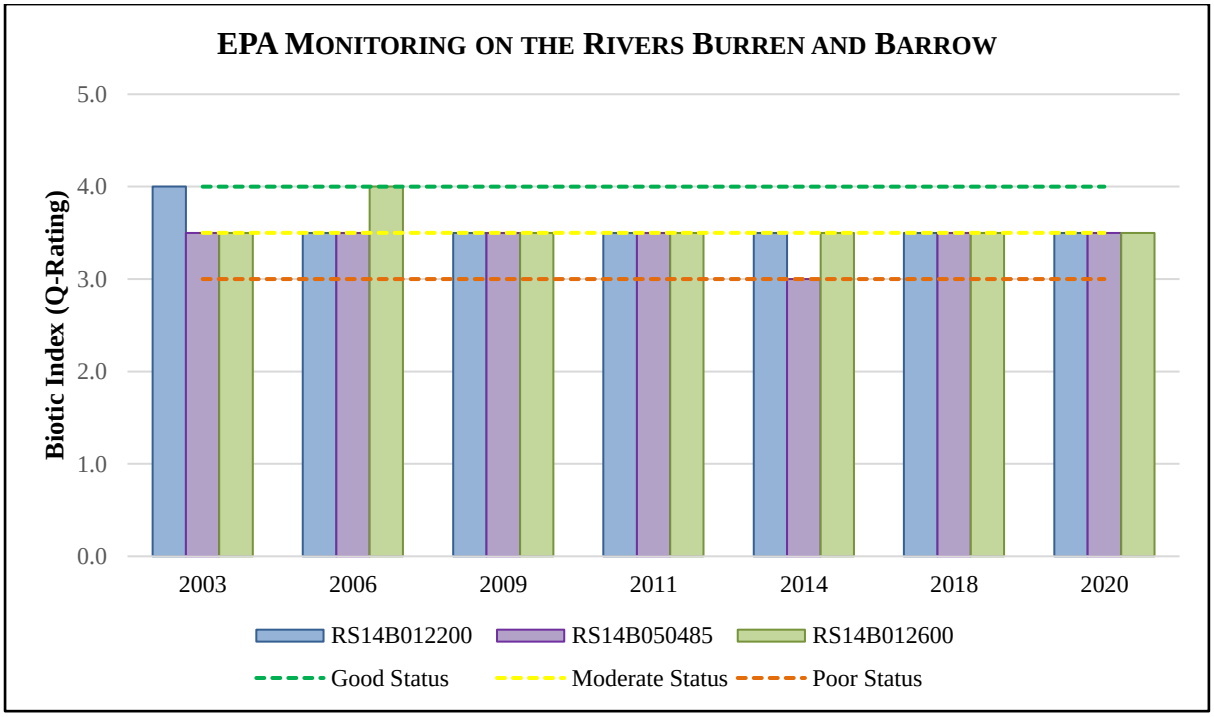

Figure 4.4: EPA Ecological Monitoring of the Rivers Burren and Barrow from 2003–2020

EPA comments on the most recent monitoring results for the River Burren are as follows.

"In 2022, the uppermost site (0080) on the Burren fell from High to Moderate ecological condition, due to a siltation impact, with layer of silt blanketing the riverbed on the night prior to the assessment. This was the only station assessed in 2022. Previously, in 2020 the Burren was surveyed in full. The macroinvertebrate fauna indicated continuing Moderate ecological conditions at stations 0100, 0200, 0300 and 0485, while station 0400 improved to Good quality."

EPA comments on the most recent monitoring results for the River Barrow are as follows:

"*Both of the stations assessed in 2021, one upstream of Portarlington storm water overflow and one downstream of the Portarlington WWTP primary discharge, were in Poor ecological condition, which is lower than any rating recorded in the Barrow since 2009. The dissolved oxygen levels recorded in evening sampling at both of these sites was very high, indicating excessive primary production.*"

According to the Preliminary Flood Risk Assessment (PFRA) Mapping tool by the OPW, the college and the proposed pedestrian rail link are not located within an area of fluvial or pluvial flood, 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 anywhere else along the area of proposed construction.

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.

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

No Special Protection Area (SPA) sites occur 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	400m W
Slaney River Valley	SAC	000781	10.2km E

Maps detailing European sites within the potential zone of influence of the proposed 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 potential hydrological connection via the River Burren.

The proposed development is located approximately 10.2km from the Slaney Valley SAC (Site Code: 000781). There is no direct hydrological connection between this protected site and the proposed development. The Slaney Valley SAC is also located within a separate catchment (Slaney and Wexford Harbour – Catchment ID:12). Therefore, due to the lack of a source receptor pathway and large distance, this SAC 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.

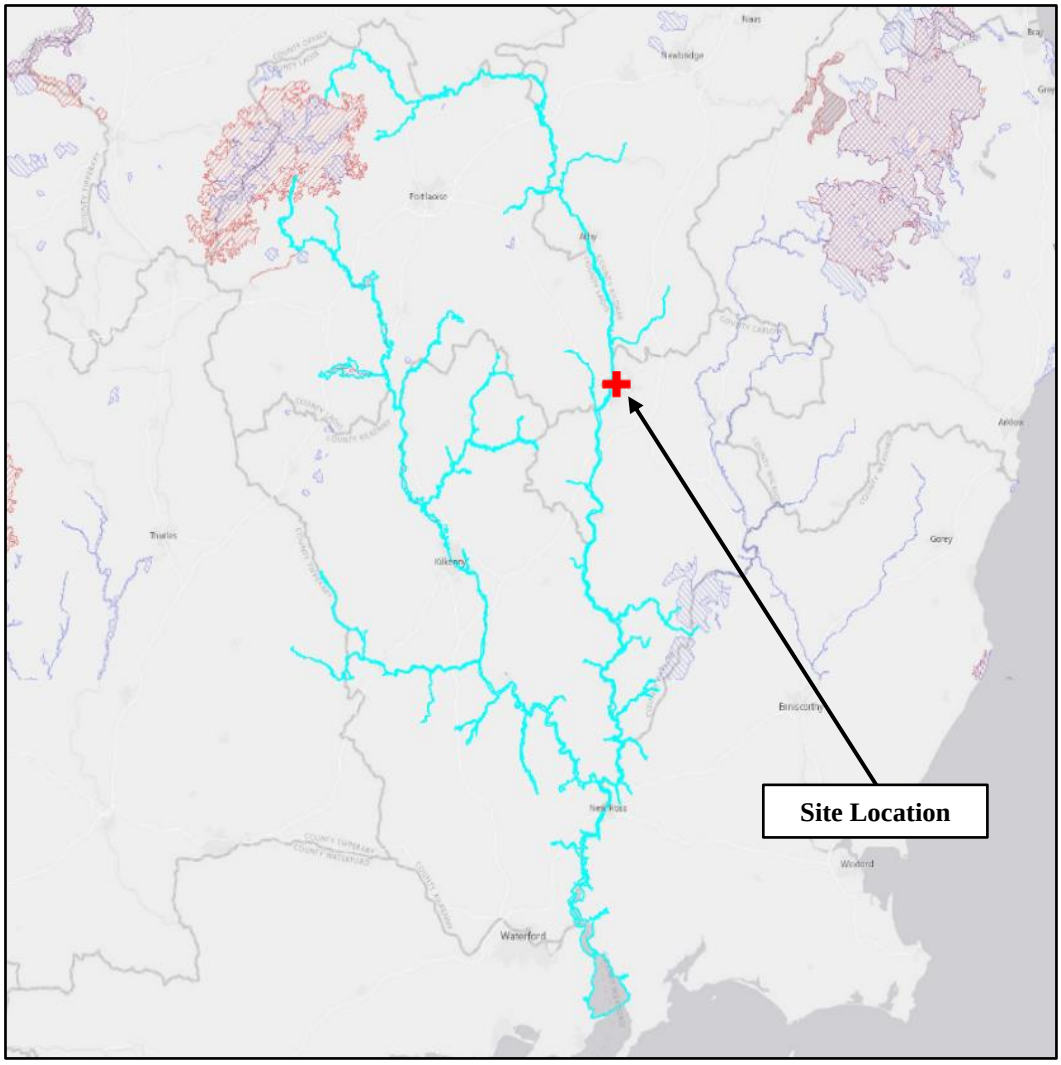

Figure 5.1: River Barrow and River Nore SAC

River Barrow and River Nore SAC Conservation Objectives

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, between Thomastown and Inistioge. Current hydrological regimes are unknown. Petrifying springs rely on
Habitat distribution	Occurrence	No decline	
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes	
Water quality	Water chemistry measures	Maintain oligotrophic and calcareous conditions	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation composition: typical species	Occurrence	Maintain typical species	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.
[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 propagule sources. Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem.
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	
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least 30m^3/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter	
Woodland structure: veteran trees	Number per hectare	No decline	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	The following are the most common invasive species in this woodland type: Beech (*Fagus sylvatica*), Rhododendron (*Rhododendron ponticum*), Cherry laurel (*Prunus laurocerasus*)
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 habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources.
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	
Hydrological regime: Flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least 30m^3/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Woodland structure: veteran trees	Number per hectare	No decline	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: 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	
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			

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
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. 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 present	
Juvenile density in fine sediment	Juveniles/m^2	Juvenile density at least 1/m^2	
Extent and distribution of spawning habitat	m^2 and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
[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 in still water. Lampreys spawn in clean gravels.
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 channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	
[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
Population structure- age classes	Number of age classes	More than one age class present	

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 habitats	and restricting access to spawning areas. Regular breeding has been confirmed in the River Barrow in recent years, but not in the Nore.
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	
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.
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 122.8ha above high water mark	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
		(HWM); 1136.0ha along river banks / around ponds	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 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	
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	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
[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. 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
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%)	
Substratum quality: sediment	Occurrence	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.	
Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate	
Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regimes	

TABLE 5.1.3 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae	fish.

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 ISIGNIFICANT EFFECTS

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 at its closest approximately 400m from the River Barrow and River Nore SAC (Site Code: 002162) to the east and is potentially hydrologically connected via the River Burren. 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 and improved grassland that would be considered as having been modified. No areas of semi-natural woodland exist within the proposed construction area; 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 32.9km south and 41.8km hydrologically downstream from the confluence between the Rivers Burren and Barrow near Graiguenamanagh. The closest Alluvial Forests is approximately 3.05km north and 3.7km hydrologically upstream from the confluence between the Rivers Burren and Barrow. Hedgerow and trees exist throughout the proposed development. These are comprised of native and non-native species. No hedgerows will be removed as part of this development. Much of the existing trees will also be retained except for the removal of trees to facilitate the proposed development and as per the Arboricultural Report. Trees to be removed will be replaced with new native species while other trees of poor quality will be cut to the stump and allowed to regenerate. These trees are not linked to a protected species or habitat of the River Barrow and River Nore SAC. Their removal could have an impact on birds or bats within the area however, this impact would be minor at most. Given the limited tree removal proposed, it is not anticipated that the proposed development would have any likely significant effects on protected species. In addition, the proposed development will include new hedgerows and planters throughout comprised of low perennial planting with grasses, Giant Hyssop (*Agastache Foeniculum*), Red Spider (*Zinnia tenuifolia*), Gentian Sage (*Salvia Patens*), *Hylotelephium 'Matrona'* and Squirrel's Tail (*Lagarus ovatus*).

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 development does not impact on this habitat.

The development site is located a considerable distance from the tidal stretches of the River Barrow (approximately 48km hydrologically downstream from the confluence between the Rivers Burren and Barrow), thus qualifying interests associated with saltwater and tidal conditions would not be present. The River Burren and River Barrow would likely contain aquatic freshwater species of conservation value. The development would not require any

construction works within any of these watercourses or riparian zone. There are no watercourses or drainage ditches within or close to the proposed construction area. During the operational phase there would be no significant impact as stormwater will be directed to the existing drainage network or percolate to ground.

During the site assessment, no Killarney Fern [1421] was present with the closest records approximately 41.9km hydrologically downstream from the confluence between the Rivers Burren and Barrow 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 15.0km hydrologically upstream from the confluence between the Rivers Burren and Barrow near Athy.

While no evidence of otter (including holts, slides, spraints and tracks) was recorded during the ecological site assessment, given that the development site is 271m to the River Burren which is hydrologically connected to the River Barrow, it is unlikely that otter are present within the general area. The development site is mainly comprised of modified habitats which would be of limited value to otter, should this species be present within the vicinity. Therefore, the development would not have a significant potential 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 adversely impacted upon by the development due to noise generated by the development as the surrounding area is located within an urban setting with an established road network and with the railway line in close proximity to the development. Fauna in the area would be accustomed to human generated noise from commercial, residential, leisure and vehicular activities commonly audible within urban areas. 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. Fauna in the area would also be accustomed to noise from vehicular traffic during the operational phase of the development. Earthworks would be confined to the site with the main activities being the installation of new lighting, new pathways/roadways and drainage network.

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 adversely impact upon designated sites due to air emissions given the nature of the development.

Any proposed lighting plan will be sensitive to any potential nocturnal species within the area and will be directed away from hedgerows and trees (see accompanying Document Ref: PE_PDBRA_10156).

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 high impact invasive species within 10km square (Hectad-S77) of the proposed development.

HIGH IMPACT INVASIVE FLORA	
Canadian Waterweed (*Elodea canadensis*)	Canadian Waterweed (*Elodea canadensis*)
Indian Balsam (*Impatiens glandulifera*)	Indian Balsam (*Impatiens glandulifera*)
Nuttall's Waterweed (*Elodea nuttallii*)	Nuttall's Waterweed (*Elodea nuttallii*)
Water Fern (*Azolla filiculoides*)	

No third schedule invasive species was noted within the proposed construction area or closeby during the site assessment.

The proposed development boundary is approximately 271m to the north of River Burren and 400m to the east of River Barrow and will not require any works within these watercourses or along the riparian zone.

The risk of invasive species being introduced onto the site during the operational or construction 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 into the site. A majority of the existing treelines and hedgerows will be maintained. A landscape plan will include the additional planting of native and non-native non-invasive species within its design.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

The proposed development is located within the Barrow Catchment, Sub Catchment Barrow_SC_090. The nearest watercourse to the development site is the Burren, which is 271m to the south of the site. From the closest point to the site, this river flows in an easterly direction for approximately 495m where it joins the River Barrow and the River Barrow and River Nore SAC. The development site would not be considered to impact upon the listed habitats and species of the SAC site during construction phase the 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 site boundary.

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 or within a riparian zone or aquatic habitat. The construction of the development would require limited deep excavation works and machinery.

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 or be directed to the existing drainage network. The risk of water quality deterioration as a result of uncured concrete would be reduced, given that precast concrete / blockwork would be used where possible. Given the construction footprint is small in scale, 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 Burren.

During the operational phase, it is not anticipated that the drainage systems have the potential to impact upon the listed habitats and species of the SAC sites due to deleterious effects on water quality. Surface water comprised of rainwater runoff from the new path crossing an existing carpark (refer to site layout out) will be directed to the existing drainage network. Surface water from the existing footpath that is to be upgraded and the new footpath along the boundary of St. Josephs School will percolate to ground. Surface water from the new extended carpark and new entrance adjacent St. Catherine's Community Centre will be directed to the existing drainage network and soakaways. The new overlaid pathway will be elevated to allow surface water to be directed to the existing sports pitch. A new curb may be installed as part of these works and will be spaced to allow water through.

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. There is also no history of flooding within the development site. The proposed development is located at a higher altitude than the watercourses to the south and west. As the development is not located within a flood risk zone, it is not considered that the proposed development would have a significant impact on the River Barrow and River Nore SAC due to flooding.

No wastewater will be generated from the proposed development during its operational phase. During construction phase, staff will have access to the existing sanitary facilities in Carlow College.

It is therefore considered that, due to the nature and location of the development, which is 271m to the River Burren at its closest, the relatively small scale and extent of construction works, no excavation works within the riparian zone or along the riparian zone of the Burren, 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 proposed development:

- 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 in the townlands of Carlow, which is described as a Key Town according to the Carlow County Council Development Plan 2022-2028, and Rathnapish, Carlow Town. The surrounding landscape would be considered urban in nature with residential housing estates, schools, sports clubs, parks, churches, healthcare centres, nursing homes, retail stores, restaurants, gas stations and other services. The proposed development would allow access from the railway station into the centre of Carlow via Carlow College and will span an approximate distance of 510m.

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

Table 6.2: Recent planning applications within 150m to the proposed site

Application No.	Development Type	Outcome	Approximate Distance
19138	For the existing installation of a single storey portacabin in the grounds of an existing community centre. The portacabin comprises of additional general meeting room and office and all associated works.	Granted - Conditional 02/07/2019	Adjacent
1928	the erection of a single storey extension incorporating 1 No. mainstream classroom and new main entrance lobby (total floor area of proposed extension = 101.4msq) to the front of existing single storey school building, realignment / setting back of part of the existing roadside boundary wall to provide a bus set down area, provision of a second vehicular access in order to provide a one way traffic policy, provision of 5 No. additional car parking spaces, together with all associated site works.	Granted - Conditional 29/04/2019	Adjacent
21332	Permission for development consisting of resurfacing of the existing hockey pitch (63m x 101.4m) with artificial grass and the existing 400m running track with a polymeric surface with upgrade to the existing drainage arrangements, the installation of mesh ball stop fencing to the hockey pitch and construction of two Multi Use Games Area (M.U.G.A.) pitches with associated drainage and mesh ball stop fencing. The site is located within the curtilage of a Protected Structure St. Leo's Convent of Mercy (RPS No. CT3). The proposed development will not impact on this structure. The site is bounded by St. Joseph's Road to the East and St. Leo's College, Carlow to the West.	Granted - Conditional 24/11/2021	Adjacent
22218	Permission is sought for the construction of a proposed single storey extension (being a replacement/ reduction of permission granted 17/339) to existing community centre comprising of	Granted - Conditional 19/09/2022	Adjacent

Application No.	Development Type	Outcome	Approximate Distance
	: additional consultation rooms/family room, additional offices, toilets, hallway to front of creche, removable of existing portacabin and associated works.		
1910	Permission to retain works carried out to a Protected Structure Ref.100000440 & RPS No. CT79 and to retain the change the use of 232.27 msq from residential (basement, ground and first floor) to a restaurant use, including a new electricity meter store to the front garden and 16.20 msq covered outdoor deck to the rear of Mimosa Wine and Tapas Bar and also to construct a single storey 119.08 msq extension to an existing kitchen (part of Mimosa Wine and Tapas Bar) and to convert part of the existing kitchen to use as customer and staff toilets and a wash up area at Mimosa Wine and Tapas Bar (a Protected structure Ref. 100000440 & RPS No. CT79) and all associated site works. This is further to the granted permissions 11/6421 and 16/139, all on the lands at College Street, Carlow, Co. Carlow	Granted - Conditional 28/08/2019	35m S
20160	To extend the existing kitchen by 32 sq. m. at the existing Mimosa Wine & Tapas Bar (a Protected Structure Ref. 100000440 & RPS No. C779). This is further to granted permission 19/10 all at College Street, Carlow, Co. Carlow.	Granted - Conditional 11/08/2020	35m S
2226	Permission for internal alterations and change of use from doctor's surgery in through entire shared property 1a and 8a, subdivided for use as office in 1a and for use as apartment in 8a	Granted - Conditional 21/06/2022	50m S
2312	To extend the existing permitted restaurant by constructing a new floor within an existing derelict building. The works will consist of the development of a new seated area and two toilets all connected to the existing services at Mimosa Wine and Tapas Bar, the new works are within the curtilage of a protected structure (Ref. 100000440 & RPS No. CT79)	Granted - Conditional 10/04/2023	55m S
2081	For change of use from existing first and second floor offices with ground floor access, to 2 No. one bedroom apartments, use of existing ground floor access and rear balcony, external alterations to the rear and all associated site works.	Granted - Conditional 10/07/2020	100m W
21450	Replacement of existing pylon sign with new VW Commercial Vehicles pylon sign in the same position and all associated works	Granted - Conditional 18/02/2022	115m E
19471	External works to alter the layout of, and provide a barrier at the street entrance to the exiting forecourt car park of the bank branch to provide four staff spaces and an off-street delivery and collections facility for the security truck	Granted - Conditional 04/03/2020	120m S
20468	Permission for development consisting of change of use from existing vacant first floor office area as	Granted - Conditional	125m S

Application No.	Development Type	Outcome	Approximate Distance
	granted planning ref: 075861 to 11 no. one bed student accommodation units and communal areas consisting of; laundry room, general / bicycle storage room, refuse storage area, ancillary services; use of existing ground floor entrances, lift & stairwells and all associated site works	26/04/2021	
21475	Planning permission is sought for alterations/change of use to existing three storey/two storey mixed use buildings at 139/140 Tullow Street, Carlow Town, Co. Carlow. Proposed alterations are as follows: Ground floor: 140- proposed pedestrian access route through shop to rear, alterations to front façade, conversion of part of existing shop to 1no. studio apartment, new stairs to access first floor (remove existing) to rear. 139- repositioning of existing stairs to front of shop to access first and second floor. First Floor: 140- Subdivision of existing apartment at first floor level to 1no. bed apartment/2no. 1 bed studio apartments with small extension to same. 139- Subdivision of existing apartment to 2no. 1 bed apartments with extension to rear of same. Second Floor: 140- 1no. bed studio apartment to existing area. 139- 2no. 1 bed apartments to existing apartment with extension to rear of same. Conversion of existing detached two storey storeroom to rear yard to 2no. 1 bed studio apartment, alteration of existing stairs to first floor and all associated works	Granted - Conditional 05/01/2023	125m SW
20309	For change of use of the ground floor retail unit to commercial use. Planning permission for external signage and supply and extract ventilation louvres to East façade along with all ancillary services	Granted - Conditional 15/01/2021	130m S
2217	Permission for development consisting of the replacement of the existing shopfront fascia and signage with new fascia detail, internally illuminated fascia signage and illuminated projecting signage, complete with all associated site works.	Granted - Conditional 06/07/2022	135m S
20380	Change of use of premises from existing commercial premises to use as a domestic dwelling and all associated site works.	Granted - Conditional 22/01/2021	140m N

There is no proposed heating system as part of this development. Therefore, it is not anticipated that the proposed development would have a significant impact upon the qualifying interest of the River Barrow and River Nore SAC in terms of air quality.

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.

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 given the nature of the development and distances of other facilities 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 of the proposed development. 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.

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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 approximately 44km (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 45km (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 45km (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 greater than 45km (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 45km (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 Burren or River Barrow.	No	No
[6430] Hydrophilous Tall Herb Communities	The development site is located within 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 41km southwest of the development site. Given the considerable hydrological distance and that it is on the River Nore, to which the proposed 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.	No	No
[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	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
	to the SAC Conservation Objectives report, old oak woodlands are located approximately 32.9km south (41.8km 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.		
[91E0] Alluvial Forests*	The development site is located within the current distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). According to the SAC Conservation Objectives report, alluvial forests are located approximately 3.05km north (3.7km hydrologically upstream) 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 15.0km hydrologically upstream from the confluence between the Rivers Burren and Barrow near Athy. 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*) [1990] Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)	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. 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. The closest NBDC record for Freshwater Pearl Mussel is 25.6km west along the River Nore. The Conservation Objectives for this qualifying interest notes Salmonid fish are host to the	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
	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 both upstream and downstream of development site. 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 on Fushoge River, which confluences with the River Barrow approximately 5.4km (hydrologically) downstream from the development, 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 Burren adjacent to the development site. Lamprey sp. were noted on Fushoge River, which confluences with the River Barrow approximately 5.4km (hydrologically) downstream from the development, and throughout the Barrow Catchment (Gordon et al, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[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 Burren	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
	adjacent to the development site. . Lamprey sp. were noted on Fushoge River, which confluences with the River Barrow approximately 5.4km (hydrologically) downstream from the development, and throughout the Barrow Catchment (Gordon et al, 2021). The Conservation Objectives for this qualifying interest include water quality attributes.		
[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 49km (hydrologically downstream) from the development site near St. Mullins. 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 Burren adjacent to the development site. Salmon were noted on Fushoge River, which confluences with the River Barrow approximately 5.4km (hydrologically) downstream from the development, 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 within the current distribution, current range and favourable reference range of otter (NPWS, 2019c). According to data from NBCD, otter have been recorded within the River Burren approximately 504m to the south of the development site. 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 35km (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.
[6430] Hydrophilous Tall Herb Communities	• Intensive grazing or overgrazing by livestock • Drainage for use as agricultural land • Invasive alien species of Union concern • Other invasive alien species (other than species of Union concern)	Hydrophilous Tall Herb Communities are sensitive to sedimentation and nutrient enrichment. <u>Key Conservation Measures</u> • Maintain existing extensive agricultural practices and agricultural landscape.	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
			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) 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.	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. • 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.	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
		• Adapt/change forest management and exploitation practices. • Manage drainage and irrigation operations and infrastructures.	
[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 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.	Sea lamprey may be adversely impacted upon by sedimentation and water pollution. <u>Key Conservation Measures</u> • Reduce impact of hydropower operations and infrastructure.	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or

CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	• 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.	• 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.	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. • 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.	Brook lamprey may be adversely impacted upon by sedimentation and water pollution. <u>Key Conservation Measures</u> • 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).	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
[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.
[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.	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.	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

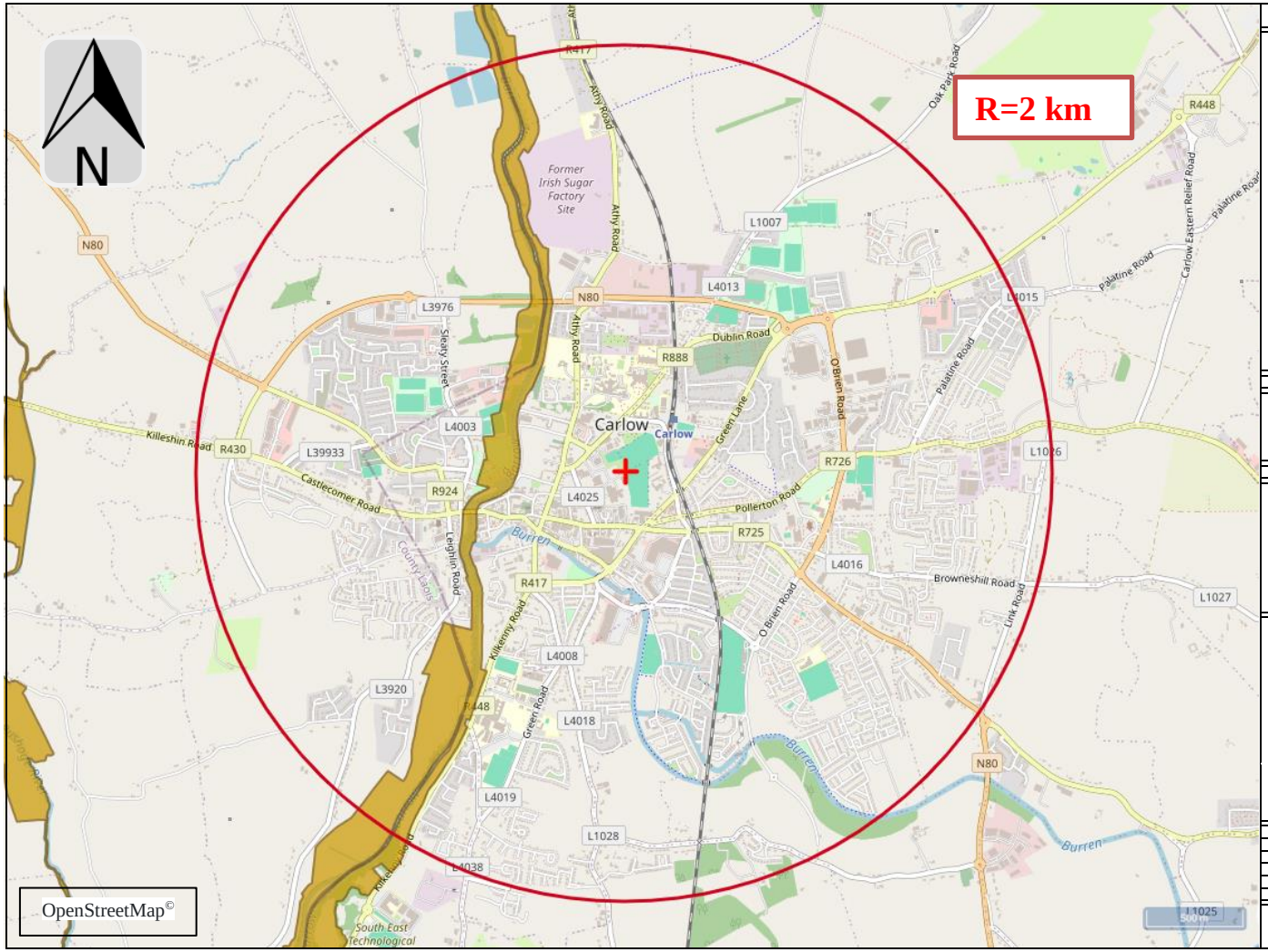
CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	• Droughts and decreases in precipitation due to climate change.	• Reduce/eliminate point pollution to surface or ground waters from agricultural activities. • Reduce 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. • Manage water abstraction for public supply and for industrial and commercial use. • Support conservation measures in countries outside the EU.	watercourse or drainage system that is hydrologically connected to the SAC.
[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>	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
		• 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.	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 & SITE PLANS



Notes

Site Location –

S.P.A. –

S.A.C. –

Project Title:

PROTECTED SITES MAP

Client Name:

PEDESTRIAN RAIL LINK, CARLOW TOWN, CO. CARLOW

PANTHER ECOLOGY LTD

UNITS 3 & 4
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GREEN ROAD
CARLOW
R93 W248

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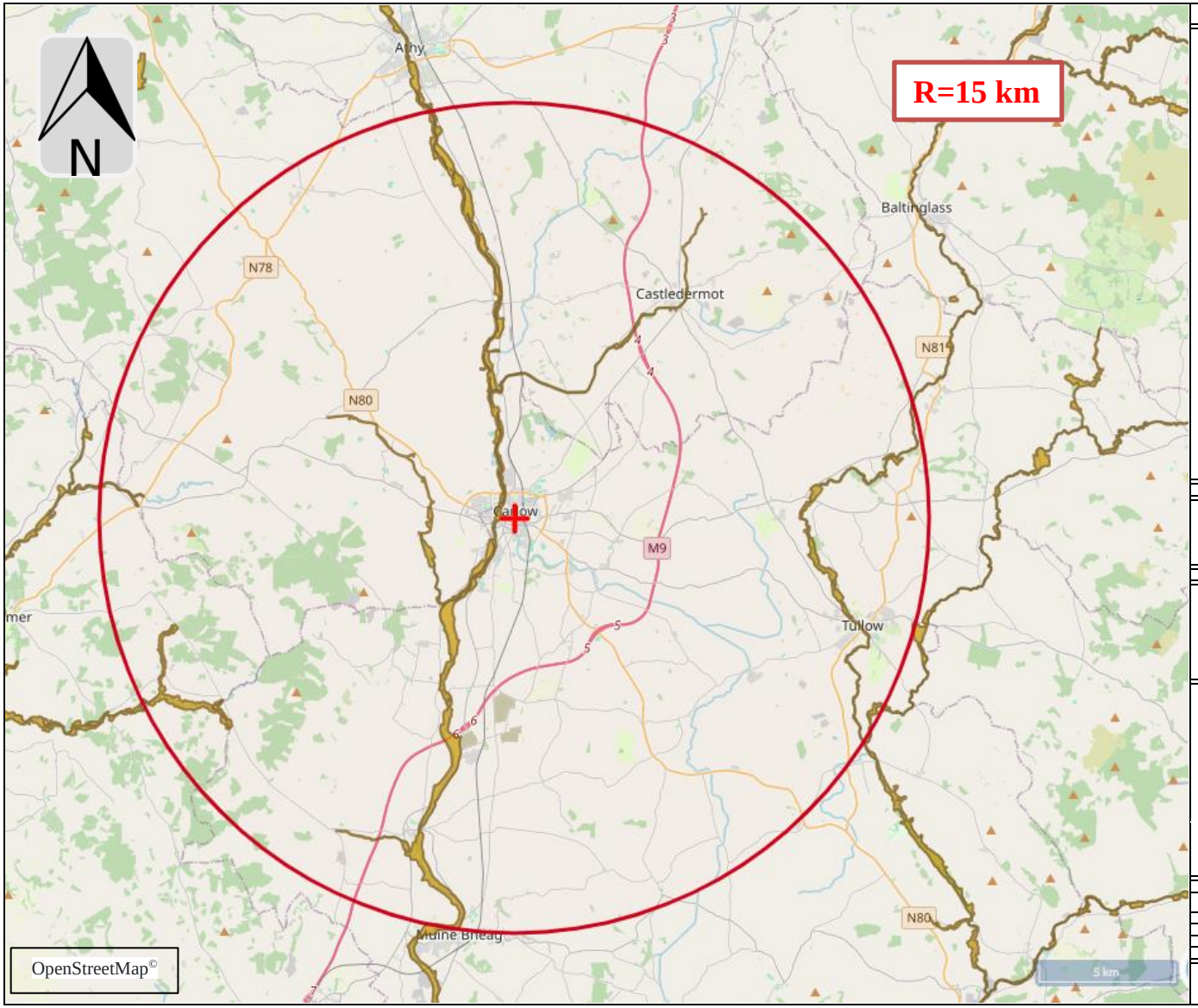
Drawing Status:	Scale:	NTS	A4
Report	Datum:		EPA Envision
Drawing Number: PES_AA_10156	Drawn:		PES
	Checked:		MF
Revision:	Approved:		-
R0	Date:		24/01/2024



Notes

Site Location – ⊗

S.P.A. –

S.A.C. –

Project Title:

PROTECTED SITES MAP

Client Name:

PEDESTRIAN RAIL LINK, CARLOW TOWN, CO. CARLOW

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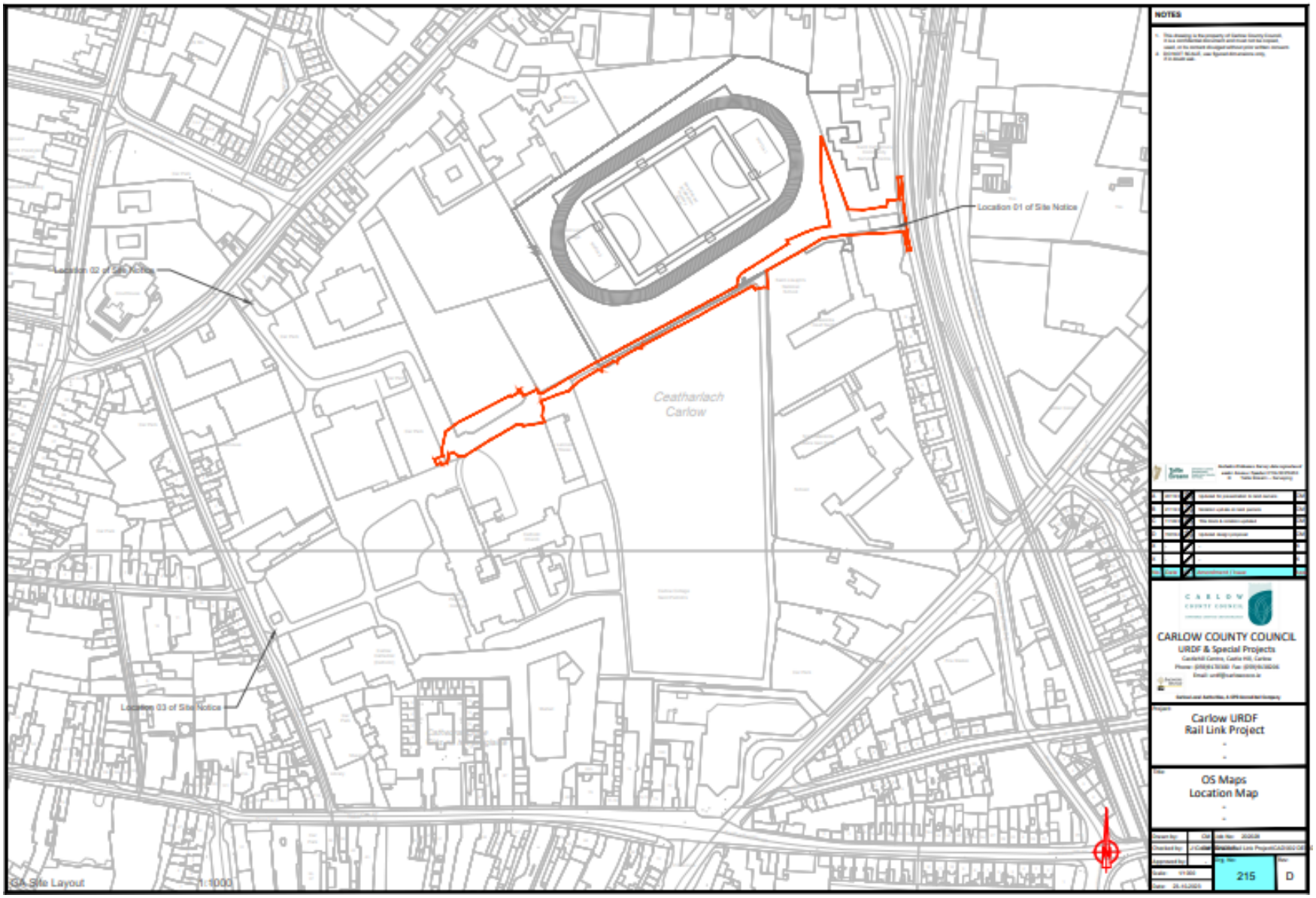
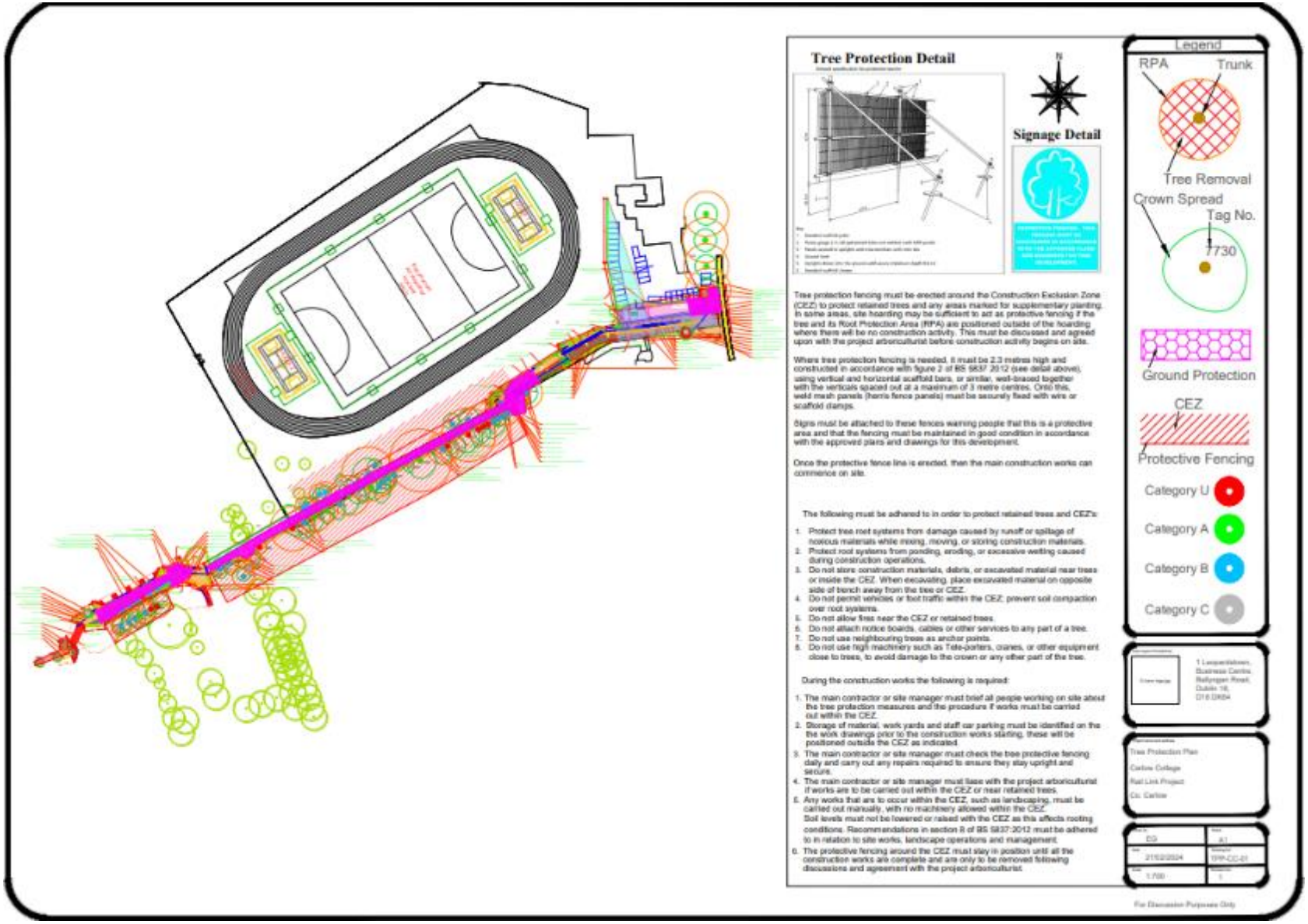
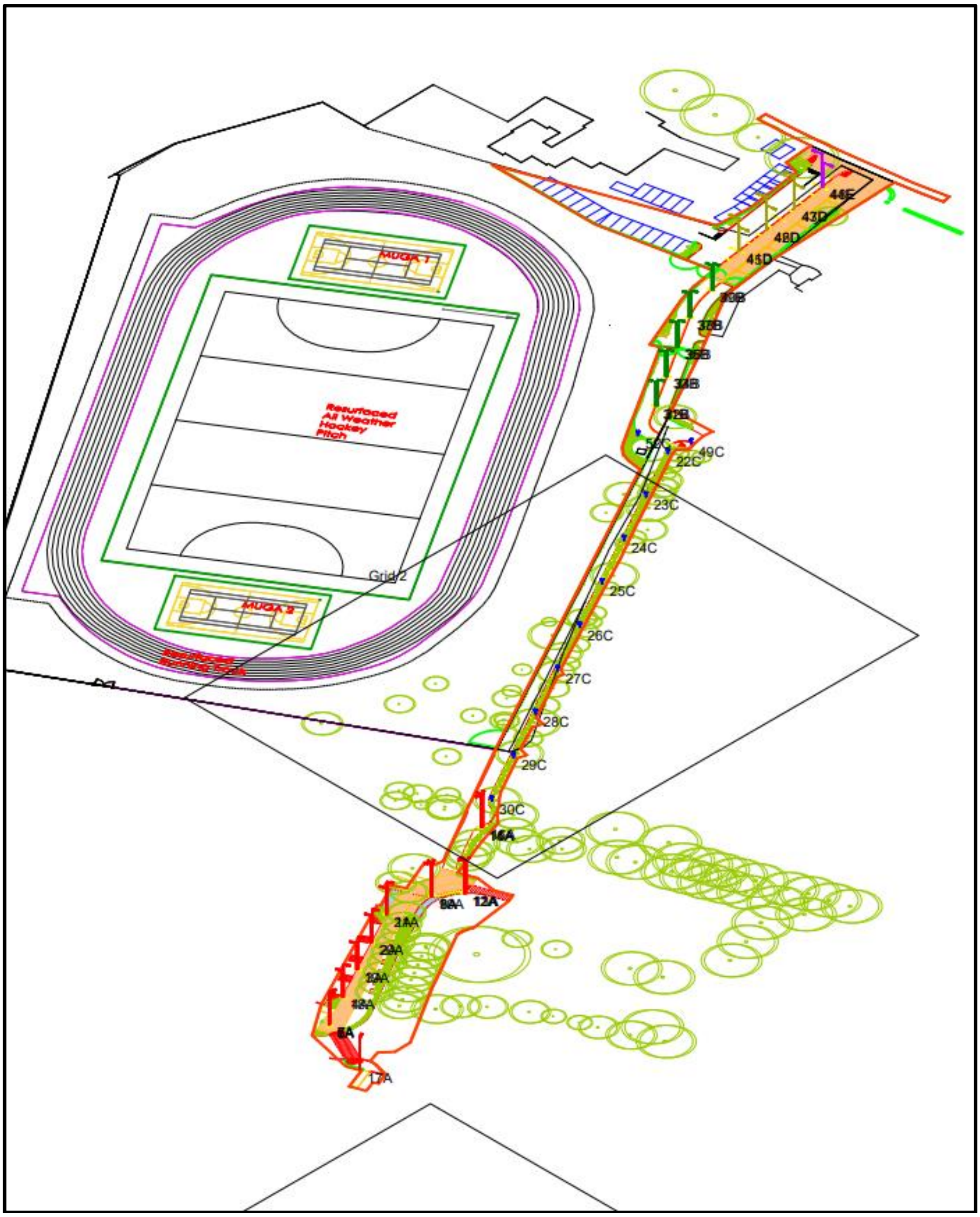
Drawing Status:	Scale:	NTS	A4
Report	Datum:		NPWS Viewer
Drawing Number: PES_AA_10156	Drawn:		PES
	Checked:		MF
Revision:	Approved:		-
R0	Date:		24/01/2024


Location 01 of Site Notice
Location 02 of Site Notice
Location 03 of Site Notice
Ceatharlach
Carlow
GA Site Layout
1:1000
NOTES
CARLOW COUNTY COUNCIL
URDF & Special Projects
Carlow URDF
Rail Link Project
OS Maps
Location Map
215
D


Tree Protection Detail
Signage Detail
Tree protection fencing must be erected around the Construction Exclusion Zone (CEZ) to protect retained trees and any areas marked for supplementary planting. In some areas, site hoarding may be sufficient to act as protective fencing if the tree and its Root Protection Area (RPA) are positioned outside of the hoarding where there will be no construction activity. This must be discussed and agreed upon with the project arboriculturist before construction activity begins on site.
Where tree protection fencing is needed, it must be 2.3 metres high and constructed in accordance with figure 2 of BS 5837 2012 (see detail above), using vertical and horizontal scaffold bars, or similar, well-braced together with the verticals spaced out at a maximum of 3 metre centres. Onto this, weld mesh panels (herris fence panels) must be securely fixed with wire or scaffold clamps.
Signs must be attached to these fences warning people that this is a protective area and that the fencing must be maintained in good condition in accordance with the approved plans and drawings for this development.
Once the protective fence line is erected, then the main construction works can commence on site.
The following must be adhered to in order to protect retained trees and CEZ's:
1. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, moving, or storing construction materials.
2. Protect root systems from ponding, eroding, or excessive wetting caused during construction operations.
3. Do not store construction materials, debris, or excavated material near trees or inside the CEZ. When excavating, place excavated material on opposite side of trench away from the tree or CEZ.
4. Do not permit vehicles or foot traffic within the CEZ; prevent soil compaction over root systems.
5. Do not allow fires near the CEZ or retained trees.
6. Do not attach notice boards, cables or other services to any part of a tree.
7. Do not use neighbouring trees as anchor points.
8. Do not use high machinery such as Tele-porters, cranes, or other equipment close to trees, to avoid damage to the crown or any other part of the tree.
During the construction works the following is required:
1. The main contractor or site manager must brief all people working on site about the tree protection measures and the procedure if works must be carried out within the CEZ.
2. Storage of material, work yards and staff car parking must be identified on the the work drawings prior to the construction works starting, these will be positioned outside the CEZ as indicated.
3. The main contractor or site manager must check the tree protective fencing daily and carry out any repairs required to ensure they stay upright and secure.
4. The main contractor or site manager must liase with the project arboriculturist if works are to be carried out within the CEZ or near retained trees.
5. Any works that are to occur within the CEZ, such as landscaping, must be carried out manually, with no machinery allowed within the CEZ. Soil levels must not be lowered or raised with the CEZ as this affects rooting conditions. Recommendations in section 8 of BS 5837:2012 must be adhered to in relation to site works, landscape operations and management.
6. The protective fencing around the CEZ must stay in position until all the construction works are complete and are only to be removed following discussions and agreement with the project arboriculturist.
Legend
RPA
Trunk
Tree Removal
Crown Spread
Tag No.
7730
Ground Protection
CEZ
Protective Fencing
Category U
Category A
Category B
Category C
Tree Protection Plan
Carlow College
Rail Link Project
Co. Carlow
For Discussion Purposes Only


MUGA 1
Resurfaced All Weather Hockey Pitch
MUGA 2
Grid 2
44E
43D
42D
41D
22C
23C
24C
25C
26C
27C
28C
29C
30C
49C
12A
17A

APPENDIX D

PHOTO LOG

Plate 1: Existing pedestrian entrance from College street

Plate 2: Area for proposed new lighting

Plate 3: Buildings and artificial surfaces (BL3) habitat

Plate 4: Treeline (WL2)

Notes:

APPENDIX D
PHOTO LOG

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file location:		scale: N/A	A4
drawing status:	REPORT	datum:	N/A
		drawn:	PES
drawing no.	rev	checked:	MF
AA_10156	A	approved:	-
		date:	30/01/2024

Plate 5: Hedgerow (WL1) habitat

Plate 6: Amenity grassland (GA2) habitat

Plate 7: Entrance from St. Josephs Road

Plate 8: Spoil and bare ground (ED2)

Notes:

APPENDIX D
PHOTO LOG

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		drawn:	PES
drawing no.	rev	checked:	MF
AA_10156	A	approved:	-
		date:	30/01/2024