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APPROPRIATE ASSESSMENT
SCREENING
REPORT

**CARLOW COUNTY COUNCIL CAR PARK,
ANDY MURPHY ROAD,
CARLOW,
CO. CARLOW**

2021

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1. INTRODUCTION

Panther Environmental Solutions Ltd was commissioned by Carlow County Council, to carry out an Appropriate Assessment for the proposed redevelopment of a plot of land for additional carpark spaces for Carlow County Council at their offices adjacent to Andy Murphy Road, Carlow Town, Co Carlow.

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).

A study was undertaken by Dr Ross Donnelly-Swift (BSc (Hons) Biology, MSc Environmental Science and PhD Biosystems Engineering) of Panther Environmental Solutions Limited. This comprised a review of the proposed development, a site visit on the 19th October 2021 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. LEGISLATIVE CONTEXT

The EU Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna 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. METHODOLOGY

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

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

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

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

Screening for Appropriate Assessment involves:

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

3.1 METHODOLOGY GUIDELINES

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

- *Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities.* DoEHLG, 2009.
- 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

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- *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, 2002.
- 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 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

3.2 DESKTOP RESEARCH

Desktop research was carried out to gather information on the ecology of the site and surrounding areas. The locations of the Natura 2000 sites within 15km of the proposed development at Andy Murphy Road, Carlow, 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 2013-2018 (2020))

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 19th October 2021 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 steppingstone habitats of relevance to Natura 200 sites.

4. DESCRIPTION OF PROPOSED DEVELOPMENT AND EXISTING SITE

4.1 PROPOSED DEVELOPMENT

The site is located adjacent to Andy Murphy Road within the environs of Carlow Town. The site is located to the rear of the Carlow County Council offices at ITM Coordinates 671998X, 677123N. The proposed site is 0.14 Hectares and is comprised predominantly of scrub and trees. The site is accessed by the L4006 Andy Murphy Road which runs adjacent to the site's northern boundary. This road connects to the R417 Athy Road which is located approximately 40m to the east of the site. The River Barrow and River Nore SAC is located at its closest approximately 155m to the south-west of the proposed site. See Figure 4.1 and 4.2 below.

Proposed works at the site will consist of site clearance by an excavator to clear away areas of overgrown scrub/immature trees within the site boundary. The site clearance works will allow for the accurate surveying of the site. It should be noted that no mature trees will initially be removed from the site at this stage. Trees will be assessed for location and suitability in the final design. Once the survey process has been completed, the design for installation of the car park will be finalised. The site would have the capacity for 30-50 car parking spaces depending on design specifications. Part of the existing boundary wall will be removed to allow for access to the site to carry out surveying and for operational access.

With regards drainage for the proposed car park, it is proposed to discharge surface and storm water generated at the site to the drainage system installed along the adjacent Andy Murphy Road. A new drainage system was installed for this road as part of works carried out to this road. There is an interceptor on the drain before it enters the River Barrow. This drainage system and interceptor will prevent and sediments or hydrocarbons from directly entering the River Barrow from the proposed carpark.

During excavation works, excavated soil would be temporarily stored onsite, for re-use in landscaping and reinstatement works where possible. Following site clearance and survey works, the detailed design and construction of the car park along with all associated site works would commence. No construction works would take place within or adjacent to any watercourses. All waste from the site will go to a licenced waste facility.

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;
- Disturbance to Protected Species;
- Impact on Protected Habitats;
- Dust and Noise;
- Invasive Species.

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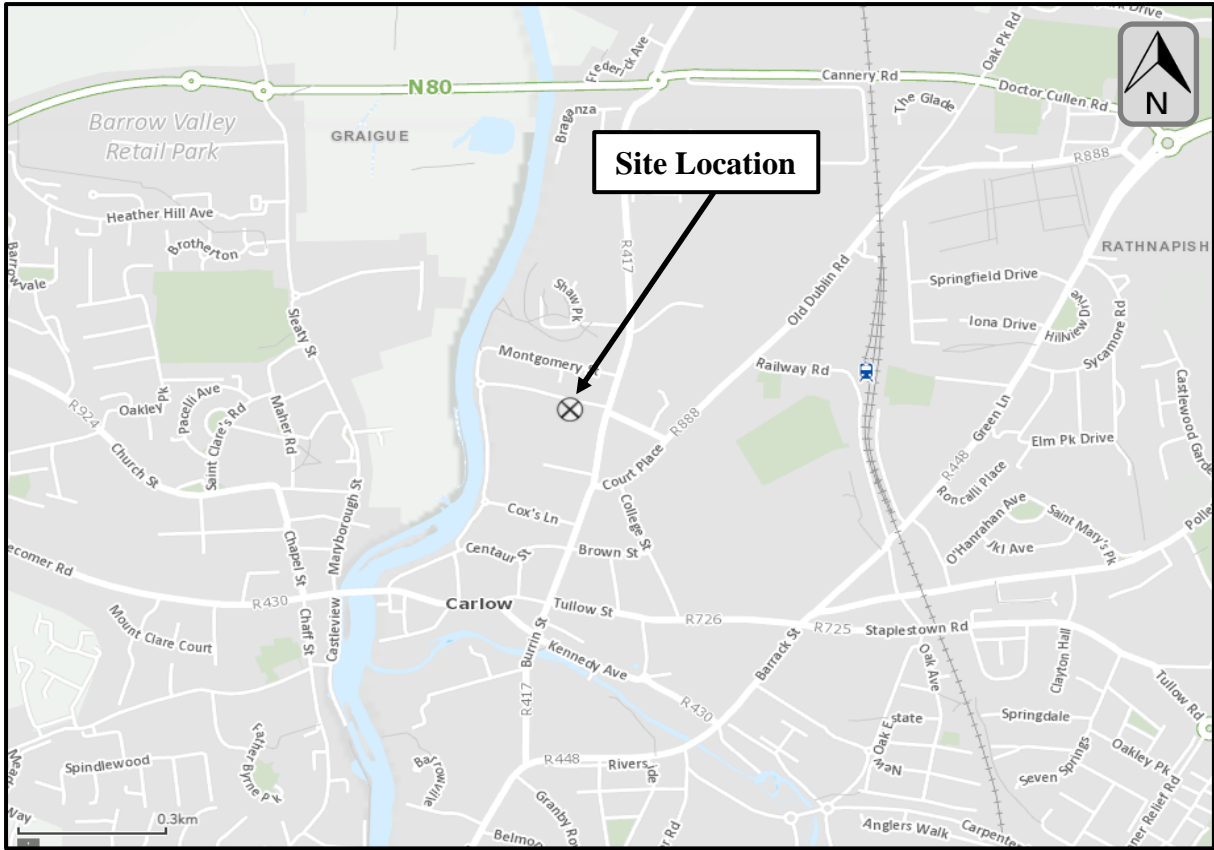


Figure 4.1: Location of Proposed Development at Carlow Town, Co. Carlow

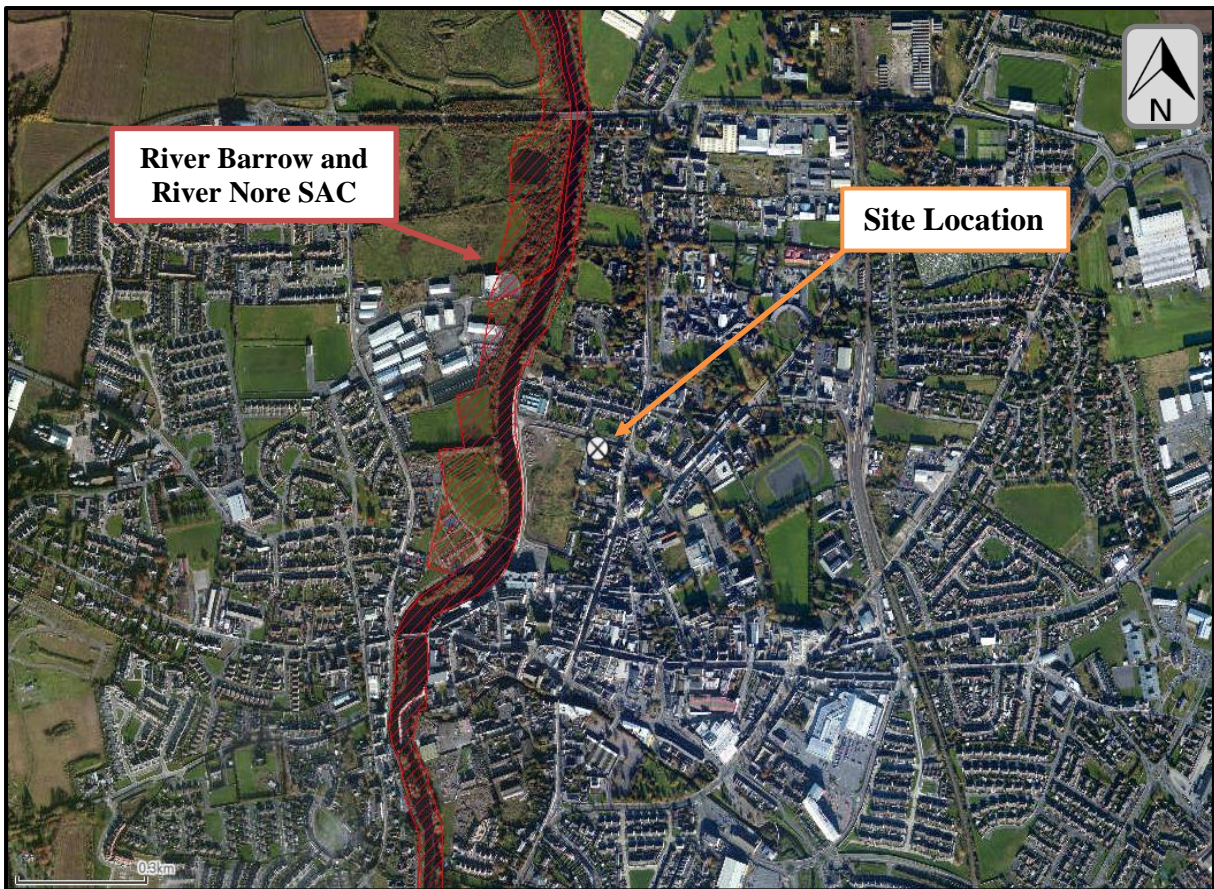


Figure 4.2: Location of Proposed Development and Natura 2000 Sites

4.2 EXISTING ENVIRONMENT

The proposed development site is mainly scrub and ornamental trees with immature trees from surrounding matures having set seed within disused garden. The boundary is comprised of a concrete wall. Carlow County Council offices are to the south of the proposed site with commercial, residential and public amenities within the vicinity. A large area of scrub and grassland is located to the west of the site. The proposed site has not been

According to the Preliminary Flood Risk Assessment (PFRA) Mapping tool by the OPW, the proposed development site is not located within an area of fluvial 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.

The site is a mixture of scrub and different modified woodland habitats. Scrub (WS1) habitat is present with Bramble (*Rubus fruticosus*) dominant. Immature woodland (WS3) habitat is present along the south boundary with Ash (*Fraxinus excelsior*), Birch (*Betula* spp.), Willow (*Salix* spp.), Holly (*Ilex aquifolium*) and Sycamore (*Acer pseudoplatanus*). Ivy (*Hedera helix*) is the dominant understory flora with Tutsan (*Hypericum androsaemum*). Along the west boundary is Treelines (WL2) with Birch (*Betula* spp.).

Within the middle of the site is Scattered trees and parkland (WD5) habitat. Numerous Apple trees (*Malus domestica*) make up this habitat with Ivy (*Hedera helix*) the dominant understory flora. The walls surrounding the site and derelict outhouses are classified as buildings and artificial surfaces (BL3) with Ivy (*Hedera helix*) the dominant flora. Throughout the site are areas of ornamental/non-native shrub (WS3) habitat. With Box (*Buxus sempervirens*), Flowering currant (*Ribes sanguineum*), Fuchsia (*Fuchsia magellanica*), Japanese laurel (*Aucuba japonica*), Cherry Laurel (*Prunus laurocerasus*), Traveller's-joy (*Clematis vitalba*), Laurustinus (*Viburnum tinus*) and Castor Oil Plant (*Fatsia Japonica*).

The majority of habitats identified within the boundary of the site such as scrub and ornamental/non-native shrub are considered to be modified and of low conservation value. The treelines would be moderate conservation value. There are no plant species of conservation significance nor are there any Third Schedule high impact invasive plant species recorded within the site. See Table 4.1 for summary for habitats located at the proposed development.

Table 4.1: Habitats found within the development site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	LEVEL 2	LEVEL 3
B – Cultivated & built land	BL – Built land	BL3 – Buildings and artificial surfaces
W – Woodland and scrub	WS – Scrub / transitional woodland	WS1 – Scrub
		WS2 – Immature woodland
		WS3 – Ornamental/non-native shrub
	WD – Highly modified non-native woodland	WD5 – Scattered trees and parkland
	WL – Linear woodland / scrub	WL2 - Treelines

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Bird species noted during the site walkover included Woodpigeon (*Columba palumbus*), Blackbird (*Turdus merula*), Chaffinch (*Fringilla coelebs*), Blue Tit (*Parus caeruleus*), Dunnock (*Prunella modularis*), Great Tit (*Parus major*), Magpie (*Pica pica*), House Sparrow (*Passer domesticus*), Grey Wagtail (*Motacilla cinera*), Feral pigeons (*Columba livia domestica*), Rook (*Corvus frugilegus*), Robin (*Erithacus rubecula*) and Wren (*Troglodytes troglodytes*). No species is red listed, one species Grey Wagtail (*Motacilla cinera*) is amber listed. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

A disused Fox (*Vulpes vulpes*) den was noted within the proposed site. No other fauna, or evidence of fauna, were noted during the survey. Fauna typical of that found throughout the rest of Ireland which would be expected to be found in the area would include; Bat species, Badger (*Meles meles*), Otter (*Lutra lutra*), Rabbit (*Oryctolagus cuniculus*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), American Mink (*Mustela vison*), Irish Hare (*Lepus timidus hibernicus*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Grey Squirrel (*Sciurus carolinensis*), Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*) and Brown Rat (*Rattus norvegicus*).

In addition to the site walkover, flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed development site and vicinity. No protected plant species under the Flora (Protection) Order, 2015 (S.I. No. 356 of 2015) were recorded within the 10km square (Tetrad – S77) in which the proposed development site is located. Endangered or threatened flora within this tetrad are Blue Fleabane (*Erigeron acer*), Cornflower (*Centaurea cyanus*). Seven invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) were recorded within the 10km square (Tetrad – S77): Water Fern (*Azolla filiculoides*), Canadian Waterweed (*Elodea canadensis*), 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 species of note recorded within the NBDC 10km square ((Tetrad – S77) include the protected species, Freshwater White-clawed Crayfish (*Austropotamobius pallipes*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*) Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Natterer's Bat (*Myotis nattereri*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Hedgehog (*Erinaceus europaeus*).

Bird species of note include Barn Owl (*Tyto alba*), Black-headed Gull (*Larus ridibundus*), Canada Goose (*Branta canadensis*), Coot (*Fulica atra*), Kestrel (*Falco tinnunculus*), Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Pochard (*Aythya ferina*), Sandpiper (*Actitis hypoleucos*), Starling (*Sturnus vulgaris*), Swift (*Apus apus*), Curlew (*Numenius arquata*), Teal (*Anas crecca*), Tree Sparrow (*Passer montanus*), Woodcock (*Scolopax rusticola*), Golden Plover (*Pluvialis apricaria*), Gadwall (*Anas strepera*), Great Black-backed Gull (*Larus marinus*), Great Cormorant (*Phalacrocorax carbo*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Lesser Black-backed Gull (*Larus fuscus*), Little Egret (*Egretta garzetta*), Little Grebe (*Tachybaptus ruficollis*), Mallard (*Anas platyrhynchos*), Mute Swan (*Cygnus olor*), Northern Lapwing (*Vanellus vanellus*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Flycatcher (*Muscicapa striata*), Tufted Duck (*Aythya fuligula*), Water Rail (*Rallus aquaticus*), Whooper Swan (*Cygnus cygnus*) and the Yellowhammer (*Emberiza citrinella*).

4.3 WATER QUALITY

The proposed development is located within the Barrow Catchment (14) and the Barrow sub-catchment (Barrow_SC_090). The closest watercourse to the proposed development site is the River Barrow (EPA Code: 14B01 – Order 5) which is located at its closest approximately 162m to the west of the site. The River Barrow is designated as part of the River Barrow and River Nore SAC. Other watercourses in the area are the River Burren (EPA Code: 14B05 – Order 4) which flows into the River Barrow approximately 660m downstream of the site. See Figure 4.3 for map of watercourses surrounding the proposed development.

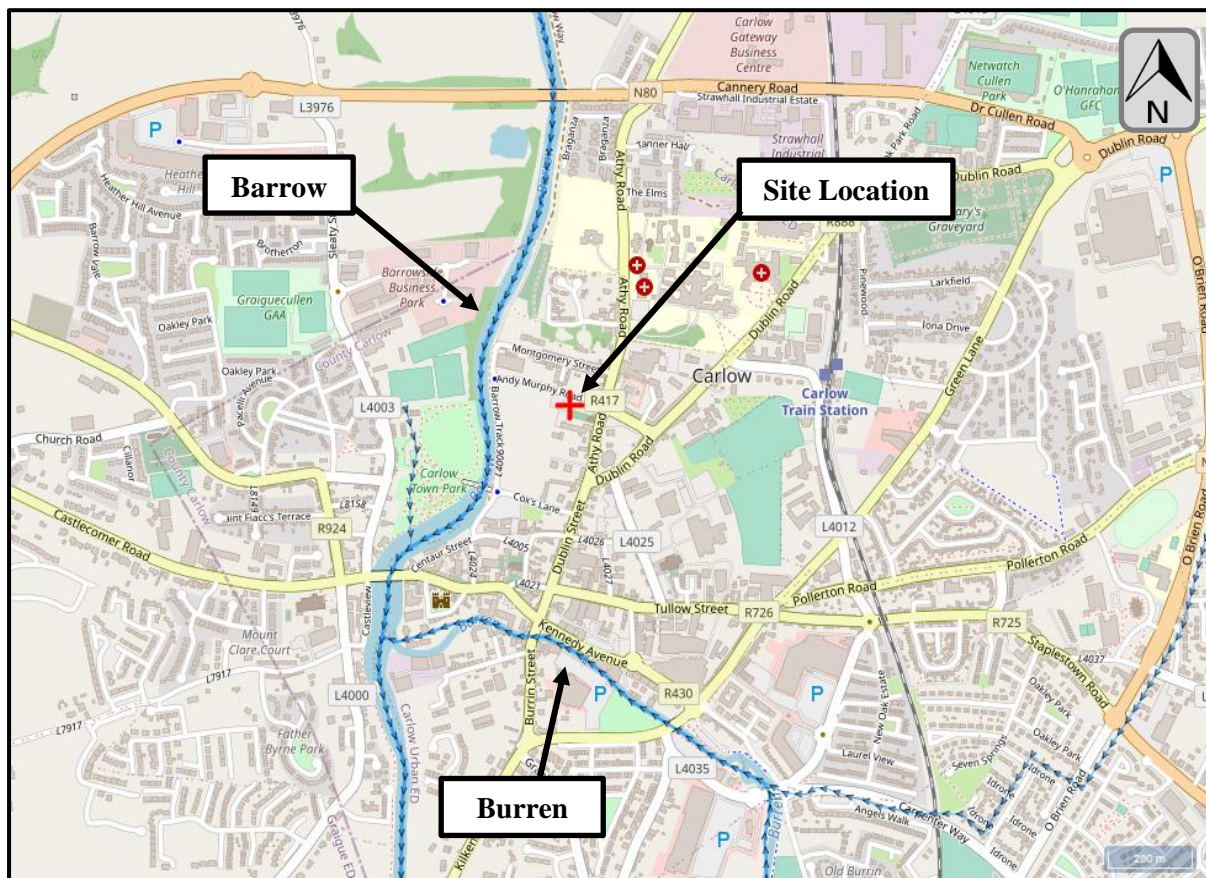


Figure 4.3: Watercourses surrounding the proposed development site

The Conservation Objectives document for the River Barrow and River Nore SAC 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, with a target of oxygen levels no lower than 5mg/l.

The Environmental Protection Agency (EPA) undertakes surface water monitoring along the River Barrow. The results for the nearest monitoring stations of the River Barrow (as per Table 4.3) with available monitoring results for the period 2000 – 2020 are summarised in Figure 4.4 below for indicative purposes.

Table 4.3: Active Monitoring Stations of the Rivers Barrow

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. DISTANCE FROM SITE
RS14B012200	New Br 1km u/s Carlow Br	272007	177778	684m Upstream of Proposed Site
RS14B012455	Footbridge, Dolmen Hotel	270653	174173	3.4km Downstream of Proposed Site
RS14B012600	Milford Br	269975	170430	7.8km Downstream of Proposed Site

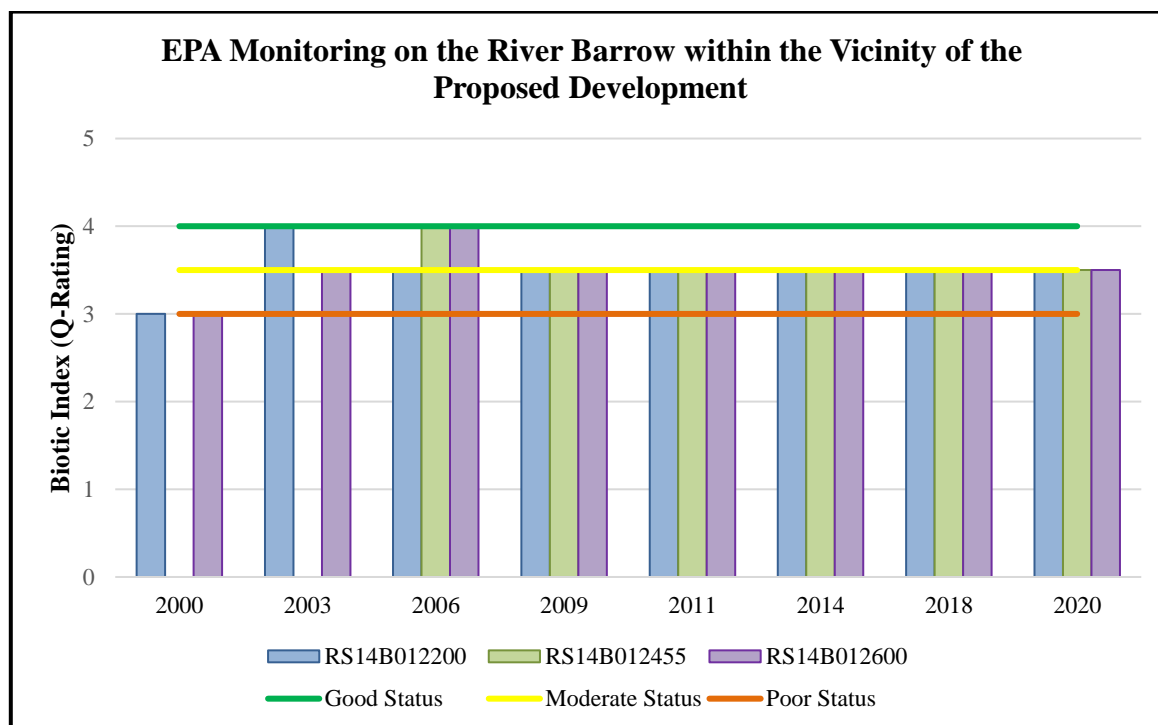


Figure 4.4: EPA Ecological Monitoring of the Rivers Barrow from 2000 – 2020

As can be seen in Figure 4.4 above, the River Barrow is achieving a water quality status of Q3-4 (moderate) upstream and downstream of the site location.

EPA comments on the most recent monitoring results for the River Barrow are as follows; *In 2020, 20 stations were surveyed on the River Barrow. General observations noted too much filamentous algae and poor dissolved oxygen concentrations indicative of excess nutrient along the entirety of the river. Three stations were High, 4 Good, 16 Moderate and 1 Poor. More specifically, the upper Barrow (stations 0050, 0100, 0200) was High ecological quality, with improvements at 0200 despite high levels of filamentous algae. Station 0300 (Twomile Br) declined from High in 2018 to Good, with filamentous algae and siltation issues noted. Station 0500 remained Moderate and 0700 remained Good, but 0780 declined to Moderate quality. Nutrient issues suspected at all three stations owing to high cover of filamentous algae. Stations 0900 and 1000 remained unchanged at Moderate quality in 2020, while station 1300, 1500 remained Good, also unchanged since 2017. Station 1900 (Tankardstown Br) declined again to Poor quality, after a slight improvement in 2019. Again, excess filamentous algae noted. Stations 2200, 2455, 2600 and 2680 all remained Moderate, while station 2900 (Royal Oak Br (LHS)) declined to Moderate from Good in 2017. The lowest three stations 3100, 3300 and 3500 all remained Moderate in 2020.*

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 have been 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 zone of influence of the project at hand. A rule of thumb often used is to include all European sites within a distance of 15km. No Special Protection Area (SPA) site occurs within 15km of the proposed development. Two Special Area of Conservation (SAC) sites occur within 15km of the proposed development and are shown in the Table 5.1

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

SITE NAME	DESIGNATION	SITE CODE	DISTANCE TO PROPOSED SITE
River Barrow and River Nore	SAC	002162	155m West
Slaney River Valley	SAC	000781	10.61km East

The location of the site in relation to Natura 2000 sites is shown Appendix C.

The Slaney River Valley SAC is located in a separate catchment to that of the proposed site. There is also a significant distance between the site location and the Slaney River Valley SAC designated area. Therefore, in the absence of a source-pathway-receptor relationship and given the significant distance, this SAC site has been screened out.

For this assessment, the sites considered to be within the potential zone of influence of the proposed development are the River Barrow and River Nore SAC (Site Code: 002162) due to the distance.

5.1 RIVER BARROW AND RIVER NORE SAC

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 species listed on Annex I / II of the E.U. Habitats Directive:

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

* denotes a priority habitat

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

An excerpt from the Natura 2000 Data Form for the SAC is included below, while further details are available within the site's site synopsis (NPWS, 2016).

“This site consists of most of the freshwater stretches of the Barrow/Nore River catchments. The Barrow is tidal as far upriver as Graiguenamanagh while the Nore is tidal as far upriver as Inishtioige. The site also includes the extreme lower reaches of the River Suir and all of the estuarine component of Waterford Harbour extending to Creadan Head. 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. They traverse limestone bedrock for a good proportion of their routes, though the middle reaches of the Barrow and many of the eastern tributaries run through Leinster Granite. A wide range of habitats associated with the rivers are included within the site, including substantial areas of woodland (deciduous, mixed), dry heath, wet grassland, swamp and marsh vegetation, salt marshes, a small dune system, biogenic reefs and intertidal sand and mud flats. Areas of improved grassland, arable land and coniferous plantations are included in the site for water quality reasons.

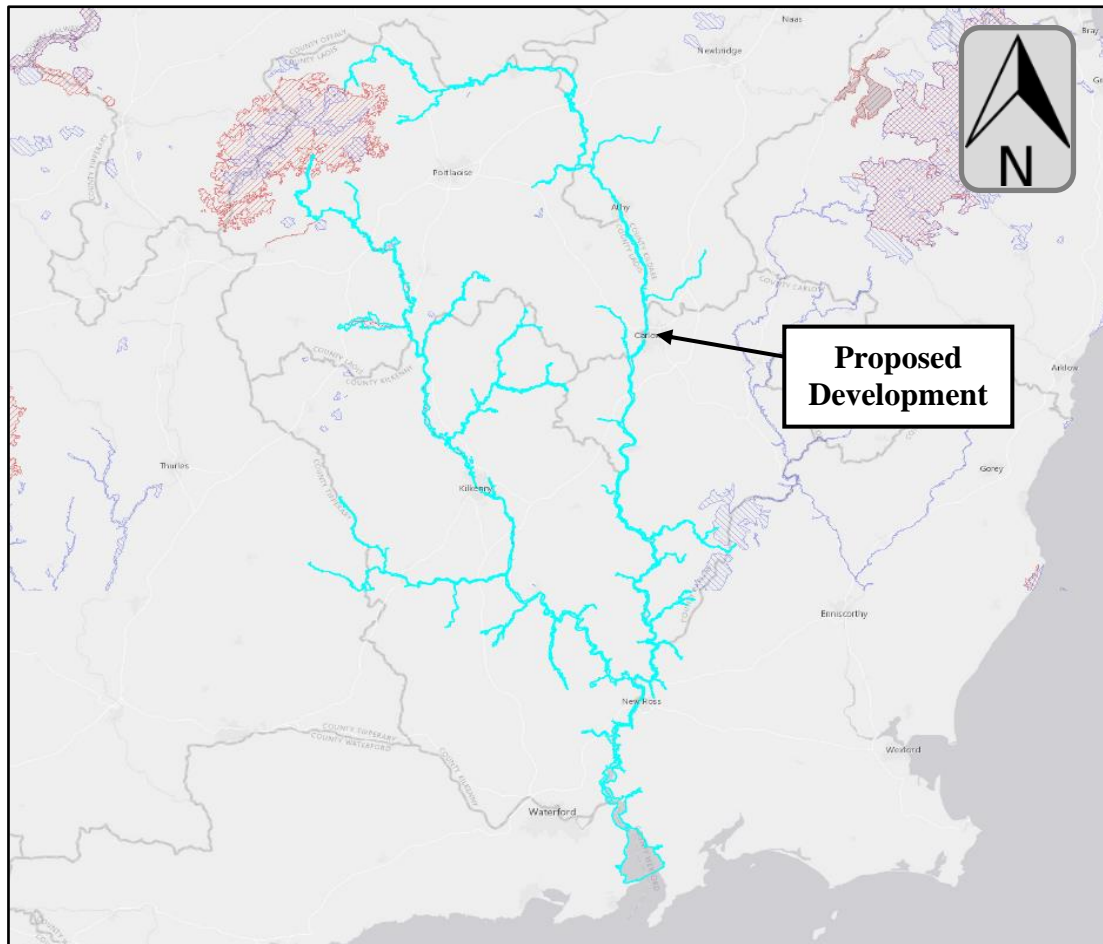


Figure 5.1: River Barrow and River Nore SAC

The site supports many Annexed habitats including the priority habitats of alluvial woodland and petrifying springs. Quality of habitat is generally good. The site also supports a number of Annex II animal species – Atlantic Salmon, Freshwater Pearl Mussel, Nore Freshwater Pearl Mussel, Twaite Shad, White-clawed Crayfish, Sea Lamprey, Otter, River Lamprey and Brook Lamprey. Annex I Bird species include Greenland White-fronted Goose (*Anser albifrons flavirostris*), Peregrine Falcon (*Falco peregrinus*), Whooper Swan (*Cygnus cygnus*), Bewick’s Swan (*Cygnus columbianus bewickii*), Bar-tailed Godwit (*Limosa lapponica*), Golden Plover (*Pluvialis apricaria*) and Kingfisher (*Alcedo atthis*). A range of rare plants and invertebrates are found in the woods along these rivers and rare plants are also associated with the saltmarsh.”

The main site vulnerabilities to the SAC that have been identified as impacting upon the site, may be summarised as agricultural intensification, pollution to surface waters, human induced changes in hydraulic conditions and erosion.

River Barrow and River Nore SAC Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development “in view of the site’s conservation objectives”. 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).

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TABLE 5.1 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 <i>Fabulina fabula</i> community.	
Community extent	Hectares	Maintain the natural extent of the <i>Sabellaria alveolata</i> reef, subject to natural process	
[1140] Tidal Mudflats and Sandflats			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	Habitat area was estimated using OSI data as 926ha
Community distribution	Hectares	The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex	
[1170] Reefs			
None Specified	-	-	
[1310] Salicornia Mud			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	The Ringville sub-site was mapped and no additional areas of potential Salicornia mudflat were identified from an examination of aerial photographs, giving a total estimated area of 0.03ha. Note further unsurveyed areas maybe present within the site
Habitat distribution	Occurrence	No decline, subject to natural processes	
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession	

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TABLE 5.1 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: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	
[1330] Atlantic Salt Meadows			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	Four sub-sites were mapped and additional areas of potential saltmarsh were identified from an examination of aerial photographs, giving a total estimated area of Atlantic salt meadow of 35.07ha. Note further unsurveyed areas maybe present within the site
Habitat distribution	Occurrence	No decline, subject to natural processes	
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
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	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	
[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: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	
[3260] Floating River Vegetation			
Habitat distribution	Occurrence	No decline, subject to natural processes	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
Habitat area	Kilometres	Area stable or increasing, subject to natural processes	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES

ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes	<p>the habitat is the presence of an excellent example of the vegetation assemblage associated with tidal reaches of large rivers between Enniscorthy and Polladerg townland.</p> <p>Due to regular disturbance (through variations in flow), river macrophytes rarely reach a climax condition but frequently occur as transient communities. A natural (relatively unmodified) flow regime is required for both plant communities and channel geomorphology to be in favourable condition, exhibiting typical dynamics for the river type</p>
Hydrological regime: groundwater discharge	Metres per second	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation	
Substratum composition: particle size range	Millimetres	The substratum should be dominated by large particles and free from fine sediments	
Water chemistry: minerals	Milligrammes per litre	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits	
Water quality: suspended sediment	Milligrammes per litre	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments	
Water quality: nutrients	Milligrammes per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	
Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition	
Floodplain connectivity	Area	The area of active floodplain at and upstream of the habitat should be maintained	
[4030] Dry Heath			
Habitat distribution	Occurrence	No decline from current habitat distribution, subject to natural processes	<p>Spatial extent currently unmapped but indicated as occurring on the steep, free-draining, river valley sides especially the Barrow and tributaries in the foothills of the Blackstairs Mountains.</p> <p>Dry heath in this SAC occurs on free-draining nutrient poor soils and is often characterised by gorse and open acid grassland areas. And locally bilberry and woodrush.</p> <p>Bracken appears to be quite dense in places and before any</p>
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	
Vegetation structure: sub- shrub indicator species	Percentage cover	Cover of characteristic sub- shrub indicator species at least 25%: gorse (<i>Ulex europaeus</i>) and where rocky outcrops occur bilberry (<i>Vaccinium myrtillus</i>) and woodrush (<i>Luzula sylvatica</i>). Some rock outcrops support English stonecrop (<i>Sedum</i>	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES

ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
		<i>anglicum</i>), sheep's bit (<i>Jasione montana</i>) and wild madder (<i>Rubia peregrina</i>) as well as important moss and lichen assemblages	<p>management action is considered its rate of spread needs to be established as well as its threat, if any, to other dry heath species and its potential value to important fauna (e.g. Twite).</p> <p>Broomrape is dependent on gorse at this site as it is parasitic on gorse roots. It is recorded as occurring on steep slopes above New Ross. A small area of excellent dry coastal heath at Ballyhack is interspersed with patches rock and of dry lowland grassland and has a high species diversity. Notably there is an excellent range of Clover (<i>Trifolium</i>) species including the legally protected clustered clover, a species known only from one other site in Ireland. Also <i>T. ornithopodioides</i>, <i>T. striatum</i> and <i>Torilus nodosa</i>.</p>
Vegetation structure: senescent gorse	Percentage cover	Cover of senescent gorse less than 50%	
Vegetation structure: browsing	Percentage cover	Long shoots of bilberry with signs of browsing collectively less than 33%	
Vegetation structure: native trees and shrubs	Percentage cover	Cover of scattered native trees and shrub less than 20%	
Vegetation composition: positive indicator species	Number	Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora	
Vegetation structure: positive indicator species	Percentage cover	Cover of positive indicator species at least 60%. This should include plant species characteristic of dry heath in this SAC including gorse, bilberry and associated acid grassland flora	
Vegetation composition: bryophyte and non-crustose lichen species	Number	Number of bryophyte or non- crustose lichen species present at least 2	
Vegetation composition: bracken (<i>Pteridium aquilinum</i>)	Percentage cover	Cover of bracken less than 10%	
Vegetation structure: weedy negative indicator species	Percentage cover	Cover of agricultural weed species (negative indicator species) less than 1%	
Vegetation composition: non-native species	Percentage cover	Cover of non-native species less than 1%.	
Vegetation composition: rare/scarce heath species	Location, area and number	No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (<i>Orobanche rapum-genistae</i>) and the legally protected clustered clover (<i>Trifolium glomeratum</i>)	
Vegetation structure: disturbed bare ground	Percentage cover	Cover of disturbed bare ground less than 10% (but if peat soil less than 5%)	
Vegetation structure: burning	Occurrence	No signs of burning within sensitive areas	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
[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 inundation 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 (<i>Impatiens glandulifera</i>), monkeyflower (<i>Mimulus guttatus</i>), Japanese knotweed (<i>Fallopia japonica</i>) and giant hogweed (<i>Heracleum mantegazzianum</i>)	
[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 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
Habitat distribution	Occurrence	No decline	
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes	
Water quality	Water chemistry measures	Maintain oligotrophic and calcareous conditions	
Vegetation composition: typical species	Occurrence	Maintain typical species	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
			The bryophytes <i>Cratoneuron commutatum</i> and <i>Eucladium verticillatum</i> 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	<p>The sizes of at least some of the existing woodlands need to be increased in order to reduce habitat fragmentation and benefit those species requiring ‘deep’ woodland conditions.</p> <p>Oak regenerates poorly. In suitable sites ash can regenerate in large numbers although few seedlings reach pole size.</p> <p>Mature and veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources.</p> <p>Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem.</p> <p>The following are the most common invasive species in this woodland type: Beech (<i>Fagus sylvatica</i>), Rhododendron (<i>Rhododendron ponticum</i>), Cherry laurel (<i>Prunus laurocerasus</i>)</p>
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	
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including oak (<i>Quercus petraea</i>) and birch (<i>Betula pubescens</i>)	
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
[91E0] Alluvial Forests			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed	<p>The sizes of at least some of the existing woodlands need to be increased in order to reduce habitat fragmentation and benefit those species requiring ‘deep’ woodland conditions.</p> <p>Alder and oak regenerate poorly. Ash often regenerates in large numbers although few seedlings reach pole size.</p> <p>Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem.</p> <p>Mature and veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources.</p> <p>The following are the most common invasive species in this woodland type: Sycamore (<i>Acer pseudoplatanus</i>), Beech (<i>Fagus sylvatica</i>), Rhododendron (<i>Rhododendron ponticum</i>), Cherry laurel (<i>Prunus laurocerasus</i>), Dogwood (<i>Cornus sericea</i>), Himalayan honeysuckle (<i>Leycesteria formosa</i>) and Himalayan balsam (<i>Impatiens grandiflora</i>).</p>
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)	
Woodland structure: veteran trees	Number per hectare	No decline	
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including ash (<i>Fraxinus excelsior</i>) alder (<i>Alnus glutinosa</i>),	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
		willows (<i>Salix</i> spp) and locally, oak (<i>Quercus robur</i>)	
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	
[1016] Desmoulin's Whorl Snail			
Distribution: occupied sites	Number	No decline. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois.	
Population size: adults	Number per positive sample	At least 5 adults snails in at least 50% of samples	
Population density	Percentage positive samples	Adult snails present in at least 60% of samples per site	
Area of occupancy	Hectares	Minimum of 1ha of suitable habitat per site	
Habitat quality: vegetation	Percentage of samples with suitable vegetation	90% of samples in habitat classes I and II	
Habitat quality: soil moisture levels	Percentage of samples with appropriate soil moisture levels	90% of samples in moisture class 3-4	
[1029] Freshwater Pearl Mussel			
The status of the FPM as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review			
[1092] White-clawed Crayfish			
Distribution	Occurrence	No reduction from baseline	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.
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	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Disease	Occurrence	No instances of disease	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
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	
[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.
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	
Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density of brook/river lamprey at least 2/m ²	
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Juveniles burrow in areas of fine sediment in still water. Lampreys spawn in clean gravels.
[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.
Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present	
Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density of brook/river lamprey at least 2/m ²	
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	
[1103] Twaite Shad			
Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	In some catchments, artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Regular breeding has been confirmed in the River Barrow in recent years, but not in the Nore.
Population structure- age classes	Number of age classes	More than one age class present	
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning habitats	
Water quality- oxygen levels	Milligrammes per litre	No lower than 5mg/l	
Spawning habitat quality: Filamentous algae; macrophytes; sediment	Occurrence	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
[1106] Atlantic Salmon			
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary	<p>Artificial barriers block salmon's upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas.</p> <p>Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (<i>Lepeophtheirus salmonis</i>).</p> <p>Salmon spawn in clean gravels.</p> <p>Q values based on triennial water quality surveys carried out by the EPA.</p>
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	<p>Otters need lying up areas throughout their territory where they are secure from disturbance.</p> <p>Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater and wrasse and rockling in coastal waters</p> <p>Otters will utilise freshwater habitats from estuary to headwaters within 80m of the shoreline.</p>
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds	
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 857.7ha	
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 616.6km	
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 2.6ha	
Couching sites and holts	Number	No significant decline	
Fish biomass available	Kilograms	No significant decline	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
[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	
[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.
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	

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TABLE 5.1 RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES

ATTRIBUTE	MEASURE	TARGET	SELECTED NOTES
Habitat extent	Kilometres	Restore suitable habitat in length of river corresponding to distribution target (15.5km) and any additional stretches necessary for salmonid spawning	<p>Mussels of no more than 65mm are considered 'young mussels' and may be found buried in the substratum and/or beneath adult mussels. Mussels of no more than 30mm are 'juvenile mussels' and are always buried in the substratum. This species is known not to have reproduced successfully in the River Nore since 1970.</p> <p>Juvenile mussels require full oxygenation while buried in gravel.</p> <p>Salmonid fish are host to the larval form of freshwater pearl mussels and thus, they are essential to the completion of the life cycle.</p> <p>As native brown trout appear to be favoured by the Nore freshwater pearl mussel, it is particularly important that these are not outcompeted by stocked fish.</p>
Water quality: Macroinvertebrates and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	
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	
Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae	

River Barrow and River Nore SAC Conservation Status

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

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined below.

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

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

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

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

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CODE	QUALIFYING INTEREST	NATIONAL CONSERVATION STATUS*	SITE LEVEL CONSERVATION STATUS**
1103	Twaite Shad	Bad	Good
1106	Atlantic Salmon	Inadequate	Good
1355	Otter	Favourable	Excellent
1421	Killarney Fern	Favourable	Excellent
1990	Nore Freshwater Pearl Mussel	Bad	Reduced

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

***Sourced from NPWS (2020)*

6.0 ASSESSMENT OF LIKELY IMPACTS

6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The proposed development does not directly impinge on any part of a European site, and as such would not be expected to impact upon a protected site through destruction of habitat, fragmentation of habitat, disturbance of habitat or direct reduction in species density. See Appendix A & B for summary of the Qualifying Interests and summary of potential impact from the proposed site.

It is not considered that the proposed development site would contain the habitats or species for which the River Barrow and River Nore SAC has been designated as the site is predominately scrub with recolonising flora. The woodland within the site is either immature or highly modified. The majority of plant species within the site are ornamental species which would be expected from a disused garden/orchard. There are no potential links to Old Oak Woodlands [91A0] or Alluvial Forests [91E0]. Where possible, scrub and tree removal would not be undertaken during the 1st March to the 31st August, so as not to disturb nesting bird species.

During the site walkover, no Killarney Fern [1421] was present. In the absence of swamp, fen or 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. No areas of heath occur within the development site boundary therefore the site does not contain any habitat which would have potential links to Dry Heath [4030].

The proposed development site is located approximately 50km from the tidal stretches of the River Barrow at St Mullins, thus qualifying interests associated with saltwater and tidal conditions would not be present. The site does not contain any watercourses therefore any aquatic habitats or species would not be present within the site boundary. There is no riparian habitat within or directly adjacent the site boundary. The River Barrow is approximately 162m from the western boundary of the proposed development site.

While no sightings of otter, or evidence of otter (including holts, slides, spraints and tracks) were recorded during the site walkover, given that the proposed development site is located approximately 162m from the River Barrow, it is probable that otter is in the surrounding area of the proposed site. The most recent NBDC records shows that otter is within the River

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Barrow as it flows through Carlow Town. The proposed development site is mainly comprised of scrub and ornamental trees/flora which can be considered as modified and of lower value to foraging otters.

The potential disturbance on protected species due to noise would not be considered significant, given the nature and small scale of the proposed development. While there would be increased noise emissions during the construction phase, these would not be considered to pose a significant risk owing to the transient nature of construction works, the construction timeframe and the small scale of the development (site area is 0.14 Hectares).

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 (Tetrad-S77) of the proposed development.

INVASIVE FLORA SPECIES	
Water Fern (<i>Azolla filiculoides</i>)	Canadian Waterweed (<i>Elodea canadensis</i>)
Giant Hogweed (<i>Heracleum mantegazzianum</i>)	Indian Balsam (<i>Impatiens glandulifera</i>)
Japanese Knotweed (<i>Fallopia japonica</i>)	Nuttall's Waterweed (<i>Elodea nuttallii</i>)
Three-cornered Garlic (<i>Allium triquetrum</i>)	

The spread of invasive plant and animal species can negatively impact on the conservation objectives of certain Annex I habitats and species designated within SACs. There are no high impact invasive species within or adjacent the site boundary. The risk of invasive species being introduced onto the site during the operational phase of the project is considered to be low, with no import of materials with the potential to contain invasive flora species. No topsoil will be required for this development. Therefore, it is considered that there would be no significant risk to protected habitats and species as a result of invasive species from the site.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

The proposed development is located within the Barrow Catchment, thus the proposed development would be hydrologically linked to the River Barrow and River Nore SAC. However, the proposed development would not be considered to impact upon the listed habitats and species of the SAC site due to deleterious effects on water quality, owing to the nature of the development works and the proposed drainage system. Storm water, comprised of rainwater run-off from hard surface areas, will be collected via the existing drainage system along Andy

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Murphy Road. 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 works would be confined to the proposed development footprint, the closest watercourse to the proposed development is the River Barrow approximately 162m west of the site boundary. With no works taking place within or adjacent to a riparian or aquatic habitat. In the event suspended solids become entrained in surface water run-off, there is considered to be no significant risk of impact on water quality as suspended solids would be retained on site as run-off percolates to the ground. Any potential runoff from the site would percolate to ground or within the drainage network within the existing carpark of Carlow County Council or the drainage system along Andy Murphy Road which has an interceptor to prevent potential sediments from entering the River Barrow from this road. The risk of water quality deterioration as a result of uncured concrete would be further reduced, given that limited concrete would be used. Where possible precast concrete would be used if required and surplus concrete would be returned to the batching plant.

The section of the boundary wall to be removed would be small and is to allow access during both site clearance works and the operational phase. The material would be removed to a licenced waste facility if no use for this material is required during the construction phase. Dust emissions from these works would be considered to be minimal and not cause a significant impact on the River Barrow. Earthworks would be confined to the site as much as possible with the main activities being for the drainage network and site levelling.

It is not considered that the proposed development would have a significant impact upon the SAC site due to flooding, as the proposed development site is not located within an area of fluvial, pluvial or coastal flood.

It is therefore considered that, due to nature and location of the proposed development, the scale and extent of construction works and the current drainage network, the proposed development would not pose a significant risk upon the River Barrow and River Nore SAC 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 2015-2021;
- County Carlow 2021 Local Economic and Community Plan 2016-2021;
- Proposed and permitted developments in the area available on Carlow County Council planning system.

The proposed development is located in the environs of Carlow Town. The N80 national road is approximately 730m to the north via the nearby via the R417. The following plans and projects were reviewed and considered for in-combination effects with the proposed development:

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Table 6.4: Recent planning applications close to the proposed site

Application No.	Development Type	Outcome	Approximate Distance
17137	Permission to install a 0.51m x 1.42m x 1.8m (LxWxH) above ground enclosure to house a new natural gas district regulating installation with all ancillary services	Granted - Conditional	60m SE
19487	Permission for widening of existing pedestrian entrance to accommodate a vehicular entrance, widening of existing opening in front boundary wall, proposed new gates to same, widening of driveway and all associated works (being within an ACA)	Granted - Conditional	80m NW
20267	Permission for a change of use from 2 No. Office units on first and second floor of existing three storey building to 2 No one bedroom apartments and internal alterations	Granted - Conditional	177m S
20380	Permission for Change of use of premises from existing commercial premises to use as a domestic dwelling and all associated site works	Granted - Conditional	178m E
20419	Permission for Change of use of an existing ground floor retail premises to use as two apartments, to consist of one two-bedroom apartment & a one bedroom apartment.	Granted - Conditional	275m NE
2014	Permission for a 24-hour access, self-storage facility consisting of temporary container units, permanent reception and guest washroom facilities and all associated works	Granted - Conditional	373m NW
16205	Permission for the construction of a new ESB substation adjacent to an existing switch room, to include for all associated ancillary site works	Granted - Conditional	412m NE
136580	Permission for the sub-division of the existing vacant retailing ground floor unit to form a separate new retailing ground floor unit with access through the existing entrance off Maryborough Street and a new exit door on Morrin's Lane	Granted - Conditional	542m SE
1550	Permission for alterations to a surface car park and associated ancillary site development works permitted by planning permission P.D. 11/6403	Granted - Conditional	570m SE
19331	Permission for change of use on ground floor from existing retail unit to office use with internal connection to adjacent office unit and external alterations to façade, external signage and lighting and all associated site works	Granted - Conditional	591m SW

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 wastewater, urban run-off, industry and forestry. However, as noted in Section 6.3, it is not considered that

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the development would pose a significant risk upon any Natura 2000 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 in-combination risk to any European site owing to the development. As there are no anticipated significant risks from the development and proposed works given the small-scale nature of recent nearby developments, 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

It is the conclusion of this screening study that there would be no potential for significant effects on European Sites (Natura 2000 network) as a result of the proposed development, by itself or in combination with other developments, and an Appropriate Assessment is not warranted. Screening establishes that there is no potential for significant effects, and the project is recommended to proceed as proposed.

8.0 REFERENCES

- Aas, G., Riedmiller, A. (1994) *Trees of Britain & Europe*. Harper Collins Publishers
- Averis, B. (2013) *Plants and Habitats: An introduction to common plants and their habitats in Britain and Ireland*. United Kingdom: Swallowtail Print Ltd
- Bang, P., Dahlstrøm, P. and Walters, M. (2006) *Animal Tracks and Signs*. Oxford University Press
- Byrne, A., Moorkens, E.A., Anderson, R., Killeen, I.J. & Regan, E.C. (2009) *Ireland Red List No. 2 – Non-Marine Molluscs*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Cabot, D. (2004) *Irish Birds*. Harper Collins Publishers, London
- Cummins, S., Fisher, J., McKeever, R. G., McNaghten, L. and Crow, O. (2010) *Assessment of the distribution and abundance of Kingfisher *Alcedo atthis* and other riparian birds on six SAC river systems in Ireland*. BirdWatch Ireland.
- Curtis, T. and Thompson, R. (2009) *The Orchids of Ireland*. National Museums Northern Ireland
- Devlin, Z. (2014) *Wildflowers of Ireland: A Field Guide*. Cork: Collins Press.
- DoEHLG (2010) *Freshwater Pearl Mussel Mountain Sub-Basin Management Plan*. Department of the Environment, Heritage and Local Government.
- DoEHLG (2009) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*.

APPROPRIATE ASSESSMENT SCREENING REPORT
ANDY MURPHY ROAD, CARLOW, CO. CARLOW

Environment DG, European Commission (2002) *Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*.

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

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

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

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

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

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

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

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

Marnell, F., Kingston, N. and Looney, D. (2009). *Ireland Red List No. 3: Terrestrial Mammals*, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

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

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

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

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

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

NPWS (2018) *Site Synopsis: River Barrow and River Nore SAC 002162*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017) Natura Standard Data Form for Slaney River Valley SAC.

APPROPRIATE ASSESSMENT SCREENING REPORT
ANDY MURPHY ROAD, CARLOW, CO. CARLOW

NWPS (2015) *Site Synopsis: Slaney River Valley SAC 000781*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NWPS (2011a) *Conservation Objectives: Slaney River Valley SAC 000781*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

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

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

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

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

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

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

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

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

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

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

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

APPENDIX A

ALL QUALIFYING INTERESTS

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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 proposed development 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 50km downstream of the proposed development (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 proposed development 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 approximately 70km downstream of the proposed development (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 proposed development 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 approximately 70km downstream of the proposed development (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 (<i>Glaucopuccinellietalia maritima</i>)	The proposed development 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 approximately 70km downstream of the proposed development (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 (<i>Juncetalia maritimi</i>)	The proposed development 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 approximately 70km downstream of the proposed development (NPWS, 2011). Given	No	No

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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 considerable distance, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests.		
[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 proposed development 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 adverse impact upon this qualifying interest should it be present adjacent the Barrow River.	No	No
[6430] Hydrophilous Tall Herb Communities	The proposed development is located within the current known distribution, the current range and favourable reference range of this qualifying interest (NPWS, 2019b). The SAC Conservation Objectives report notes that the distribution of this habitat within the SAC site is currently unknown, but is considered to occur at some riverside woodlands, river islands and in narrow bands along the floodplain of slow-flowing river stretches. Water quality is not listed as a conservation objective for this qualifying interest. It is therefore not anticipated that the proposed development would have the potential to adversely impact upon this qualifying interest.	No	No
[7220] Petrifying Springs*	The proposed development 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 at the River Nore (NPWS, 2011). Given the considerable distance and that it is above the tidal reach of the River Nore,	No	No

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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
	it is not anticipated that the proposed development would have direct or indirect negative impacts upon this qualifying interest.		
[91A0] Old Oak Woodlands	The proposed development is located outside the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019b). According to the SAC Conservation Objectives report, old oak woodlands are located approximately 41km downstream of the proposed site. However, the report notes that further unsurveyed areas may be present within the SAC. Old oak woodlands are a terrestrial habitat, therefore a potential deterioration in water quality during construction works would not be anticipated to have a significant adverse impact upon this qualifying interest.	No	No
[91E0] Alluvial Forests*	The proposed development is located within the current range, favourable reference range and the current known distribution of this qualifying interest (NPWS, 2019b). According to the SAC Conservation Objectives report, alluvial forests are located approximately 8.7km downstream of the proposed 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 (<i>Vertigo moulinsiana</i>)	The proposed development is located outside the current known distribution and current range but within the favourable reference range of this qualifying interest (NPWS, 2019c). According to the SAC Conservation Objectives report, the nearest record of Desmoulin's whorl snail is located approximately 33km, downstream of the proposed development site. Water quality is not listed as a conservation objective for this qualifying interest, it is not anticipated that the proposed development would have the potential to adversely impact upon the Desmoulin's whorl snail.	No	No
[1029] Freshwater Pearl Mussel	The proposed development 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 <i>Margaritifera</i>	Yes	Yes

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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
<p><i>(Margaritifera margaritifera)</i></p> <p>[1990] Nore Freshwater Pearl Mussel (<i>Margaritifera durrovensis</i>)</p>	<p><i>margaritifera</i> as a qualifying interest for the site is currently under review, while <i>M. m. durrovensis</i> is confined to a 15km (approximate) stretch of the River Nore, this is located above the tidal reach of the River Nore. The Conservation Objectives for this qualifying interest notes Salmonid fish are host to the larval form of freshwater pearl mussels.</p>		
<p>[1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)</p>	<p>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. Potentially located within the River Barrow approximately 162m west of proposed site. The Conservation Objectives for this qualifying interest include water quality attributes.</p>	Yes	Yes
<p>[1095] Sea Lamprey (<i>Petromyzon marinus</i>)</p>	<p>The proposed development is located outside the current known distribution, current range and favourable reference range of the Sea Lamprey (NPWS, 2019b). 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. Potentially located within the River Barrow approximately 162m west of proposed site. The Conservation Objectives for this qualifying interest include water quality attributes</p>	Yes	Yes
<p>[1096] Brook Lamprey (<i>Lampetra planeri</i>)</p>	<p>The proposed development is located within the current known distribution, current range and favourable reference range of brook lamprey. River and brook lamprey are indistinguishable as larvae. Potentially located within the River Barrow approximately 162m west of proposed site. The Conservation Objectives for this qualifying interest include water quality attributes</p>	Yes	Yes
<p>[1099] River Lamprey (<i>Lampetra fluviatilis</i>)</p>	<p>The proposed development 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</p>	Yes	Yes

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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
	Barrow approximately 162m west of proposed site. The Conservation Objectives for this qualifying interest include water quality attributes		
[1103] Twaite Shad (<i>Alosa fallax</i>)	The proposed development 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 50km downstream from the proposed development site. Artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas.	No	No
[1106] Atlantic Salmon (<i>Salmo salar</i>)	The proposed development is located within the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019c). Potentially located within the River Barrow approximately 162m west of proposed site. The Conservation Objectives for this qualifying interest include water quality attributes.	Yes	Yes
[1355] Otter (<i>Lutra lutra</i>)	The proposed development is located within the current distribution, current range and favourable reference range of otter (NPWS, 2019c). Potentially located within the River Barrow approximately 162m west of proposed 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
[1421] Killarney Fern (<i>Trichomanes speciosum</i>)	The proposed development is located outside the current known distribution, current range and favourable reference range of this qualifying interest (NPWS, 2019c). According to the SAC Conservation Objectives report, the nearest record of Killarney fern to the proposed site is located approximately 41km downstream of the proposed development site. Water quality is not listed as a conservation objective for this qualifying interest. It is therefore not anticipated that the proposed development would have the potential to adversely impact upon this qualifying interest.	No	No

* Denotes a priority habitat

APPENDIX B

QUALIFYING INTERESTS WITHIN THE PROJECT ZONE OF INTEREST

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CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
[3260] Floating River Vegetation	<ul style="list-style-type: none"> • 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. 	<p>A potential deterioration in Water Quality* could potentially impact on this habitat.</p> <p style="text-align: center;"><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • 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. 	<p>No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.</p>
<p>[1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)</p> <p>[1990] Nore Freshwater Pearl Mussel (<i>Margaritifera durrovensis</i>)</p>	<ul style="list-style-type: none"> • 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) 	<p>Freshwater Pearl Mussels are sensitive to sedimentation and nutrient enrichment. Furthermore, as the larval stages rely on salmonid fish hosts, any potential impact on salmonids can have an impact upon the Freshwater Pearl Mussel.</p> <p style="text-align: center;"><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • Manage drainage and irrigation operations and infrastructures in agriculture. 	<p>No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or</p>

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CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> • Reduce diffuse pollution to surface or ground waters from agricultural activities. • Adapt mowing, grazing and other equivalent agricultural activities. • Manage the use of natural fertilisers and chemicals in agricultural (plant and animal) production. • Adapt/manage reforestation and forest regeneration. • Stop forest management and exploitation practices. • Adapt/change forest management and exploitation practices. • Manage drainage and irrigation operations and infrastructures. 	<p>drainage system that is hydrologically connected to the SAC.</p>
<p>[1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)</p>	<ul style="list-style-type: none"> • Plant and animal diseases, pathogens and pests. • Invasive alien species of Union concern 	<p>A potential deterioration in Water Quality* could potentially impact on this species.</p> <p><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • Early detection and rapid eradication of invasive alien species of Union concern. • Controlling and eradicating plant and animal diseases, pathogens and pests. 	<p>No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically</p>

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CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
			connected to the SAC.
[1095] Sea Lamprey (<i>Petromyzon marinus</i>)	<ul style="list-style-type: none"> • Hydropower (dams, weirs, run-off-the-river), including infrastructure. • Increases or changes in precipitation due to climate change. • Application of natural fertilisers on agricultural land. • Application of synthetic (mineral) fertilisers on agricultural land. • Drainage for use as agricultural land. • Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations. • Threats and pressures from outside the Member State. • Temperature changes (e.g. rise of temperature & extremes) due to climate change. • Droughts and decreases in precipitation due to climate change. 	<p>Sea lamprey may be adversely impacted upon by sedimentation and water pollution.</p> <p><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • Reduce impact of hydropower operations and infrastructure. • Manage changes in hydrological and coastal systems and regimes for construction and development. • Any measure to reduce diffuse pollution to surface or ground waters from agricultural activities would benefit water quality in rivers. This would have a knock-on beneficial effect on sea lamprey during the freshwater spawning phase, when spawning grounds can experience substantial filamentous algal growth. 	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.
[1096] Brook Lamprey (<i>Lampetra planeri</i>)	<ul style="list-style-type: none"> • 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. 	<p>Brook lamprey may be adversely impacted upon by sedimentation and water pollution.</p> <p><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • Diffuse and point source pollution may be having localised impacts on 	No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or

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CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	<ul style="list-style-type: none"> • 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. 	<p>populations of <i>L. planeri</i>. 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).</p>	<p>significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.</p>
<p>[1099] River Lamprey (<i>Lampetra fluviatilis</i>)</p>	<ul style="list-style-type: none"> • 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. 	<p>River lamprey may be adversely impacted upon by sedimentation and water pollution.</p> <p><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • Reduce impact of hydropower operations and infrastructure. • Manage changes in hydrological and coastal systems and regimes for construction and development. 	<p>No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.</p>
<p>[1106] Atlantic Salmon (<i>Salmo salar</i>)</p>	<ul style="list-style-type: none"> • Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations. • Freshwater fish and shellfish harvesting (recreational). 	<p>Salmon, particularly juveniles and spawning beds, are sensitive to sedimentation and water pollution. A potential deterioration in Water Quality* could impact on this species.</p>	<p>No potential for a significant impact on water quality as there is no potential for</p>

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CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
	<ul style="list-style-type: none"> • Bycatch and incidental killing (due to fishing and hunting activities). • Other invasive alien species (other than species of Union concern). • Temperature changes (e.g. rise of temperature & extremes) due to climate change. • Droughts and decreases in precipitation due to climate change. 	<p style="text-align: center;"><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • Manage the use of natural fertilisers and chemicals in agricultural (plant and animal) production. • Reduce/eliminate point pollution to surface or ground waters from agricultural activities. • Reduce diffuse pollution to surface or ground waters from agricultural activities. • Adapt/change forest management and exploitation practices. • Reduce diffuse pollution to surface or ground waters from forestry activities. • Management of professional /commercial fishing (including shellfish and seaweed harvesting). • Management of hunting, recreational fishing and recreational or commercial harvesting or collection of plants. • Control/eradication of illegal killing, fishing and harvesting. • Manage water abstraction for public supply and for industrial and commercial use. • Support conservation measures in countries outside the EU. 	<p style="text-align: center;">significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.</p>

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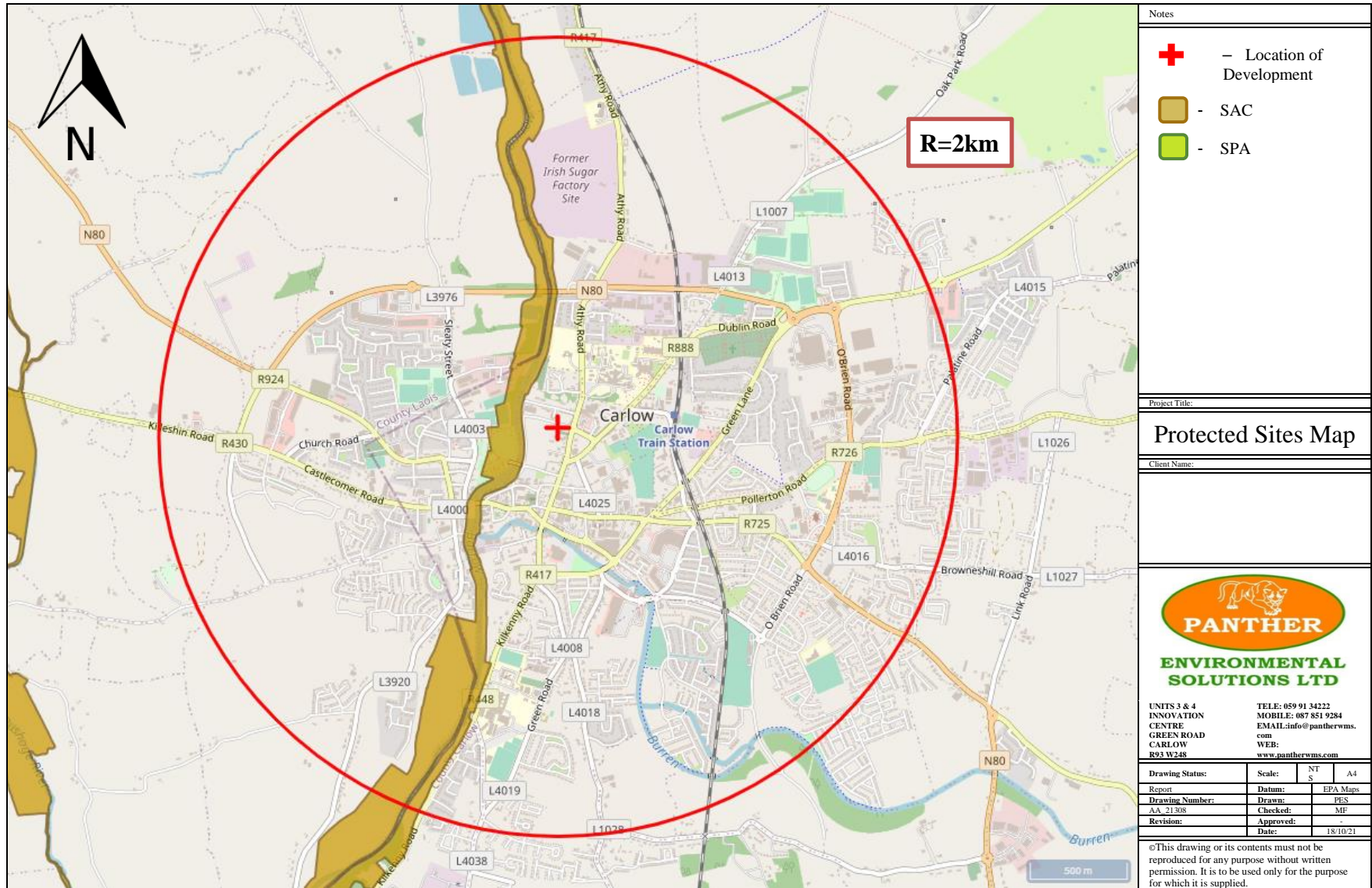
CONSERVATION OBJECTIVES (NPWS 2011)	THREATS AND PRESSURES (NPWS 2019)	KEY ENVIRONMENTAL CONDITIONS	POTENTIAL IMPACTS FROM THE DEVELOPMENT
[1355] Otter (<i>Lutra lutra</i>)	None listed	<p>A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability.</p> <p><u>Key Conservation Measures</u></p> <ul style="list-style-type: none"> • 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. 	<p>No potential for a significant impact on water quality as there is no potential for significant groundwater contamination or significant runoff from the proposed site that would enter any watercourse or drainage system that is hydrologically connected to the SAC.</p>

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

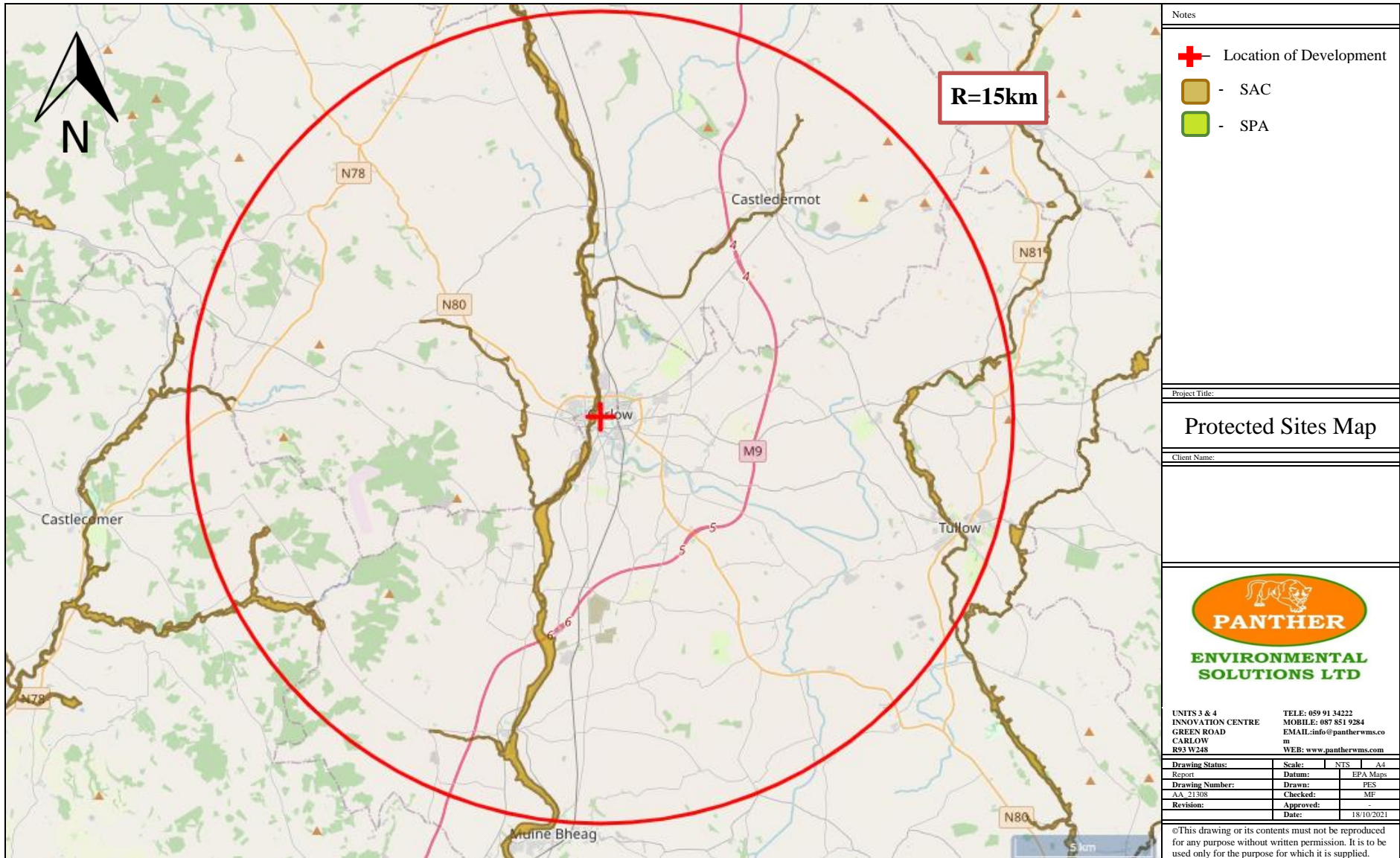
APPENDIX C


PROTECTED SITES AND SITE BOUNDARY

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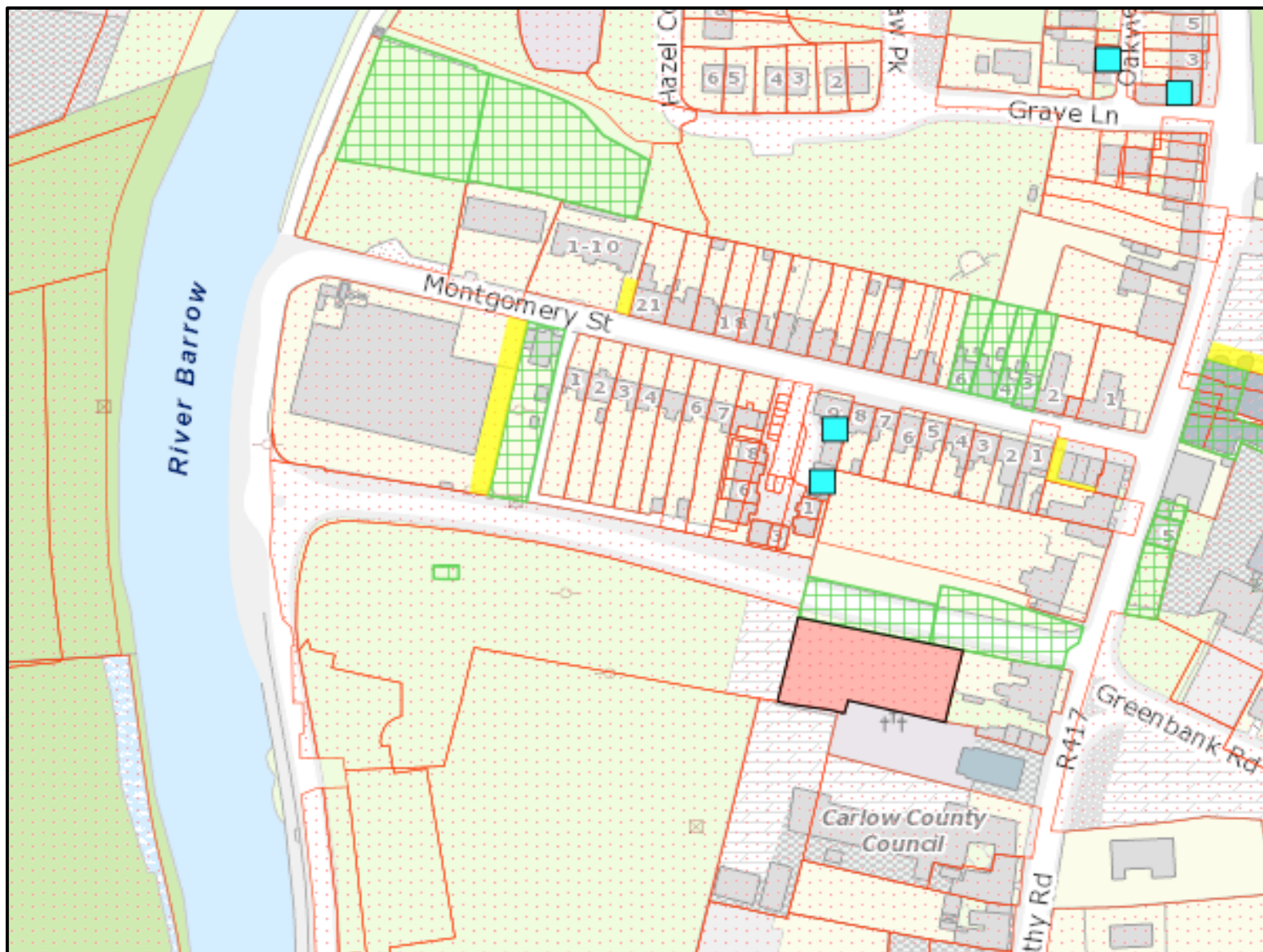
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Notes		
	Location of Development	
	SAC	
	SPA	
Project Title:		
Protected Sites Map		
Client Name:		
 PANTHER ENVIRONMENTAL SOLUTIONS LTD		
UNITS 3 & 4 INNOVATION CENTRE GREEN ROAD CARLOW R93 W248		TELE: 059 91 34222 MOBILE: 087 851 9284 EMAIL: info@pantherwms.com m WEB: www.pantherwms.com
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Appendix C3: Site Boundary in Red



APPENDIX D

- PHOTO LOG -

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Plate 1: Immature woodland (WS2) habitat



Plate 2: Ornamental/non-native shrub (WS3) habitat.



Plate 3: Scrub (WS1) habitat



Plate 4: Treelines (WL2) habitats along west boundary with Immature woodland (WS2)

Notes:

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APPENDIX C
 PHOTO LOG



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AA_21308	A	checked:	MF
		approved:	-
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Plate 5: East boundary wall (BL3) habitat



Plate 6: Scattered trees and parkland (WD5)



Plate 7: Site boundary with Andy Murphy Road (L4006)



Plate 8: River Barrow (SAC) approx. 152m south-west

Notes:

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APPENDIX D
 PHOTO LOG



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