

Laois Rivers Framework

Inch Bridge - Natura Impact Statement

Laois County Council

10 November 2020



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This document has 35 pages including the cover.

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Contents

Chapter	Page
1. Introduction	1
1.1. Location of the Proposed Project	1
1.2. Project Description	1
2. Scope of Study	4
2.1. Legislative Context	4
2.2. Appropriate Assessment Process	4
3. Methods	6
3.1. Legislation & Guidance Documents	6
3.2. Desk Study	6
3.3. Site Visit	7
3.4. Statement of Authority	7
4. Existing Environment	8
4.1. Desktop Review	8
4.2. Site Visit	8
5. Appropriate Assessment Screening	11
5.1. Connectivity to European Sites	11
5.2. Brief Description of European sites	15
5.3. Likelihood of Potential Impacts on European Sites	23
6. Appropriate Assessment	24
6.1. Introduction	24
6.2. Impact Evaluation	24
6.3. Mitigation Measures	26
7. Conclusions	28
References	30

Tables

Table 5-1 - SACs within the potential Zol for the proposed project.	12
Table 5-2 - Screening of qualifying interests of the River Barrow and River Nore SAC.	17
Table 5-3 - NPWS identified threats.	21
Table 7-1 - Checklist of Site Integrity (DEHLG, 2009).	28

Figures

Figure 1-1 - Location of Inch Bridge	3
Figure 2-1 - Appropriate Assessment Process (Source: DEHLG, 2009).	5
Figure 5-1 - European sites within potential Zol of the proposed project.	14

1. Introduction

Atkins Ireland was commissioned by Laois County Council to prepare a Natura Impact Statement of the proposed project at Inch Bridge, Co. Laois. The proposed project involves the repair and replacement of the stone-pitched flooring of the western arch of Inch Bridge. The base of the west arch and cutwater will also be repointed.

1.1. Location of the Proposed Project

Inch Bridge is a 3 arch masonry bridge located north-east of Stradbally in County Laois. The bridge is on road L7950 and spans the Stradbally River. The Stradbally River is a tributary of the River Barrow. Both the Stradbally and Barrow rivers are designated as a European site; River Barrow and River Nore Special Area of Conservation (Site Code 002162).

1.2. Project Description

The floor of the west arch of Inch Bridge has been washed out causing the adjacent pier and cutwater to experience scour. The west arch will be dewatered using double lined and sealed sandbags in order to carry out the works. The two remaining 2 arches will remain open during the proposed project to convey flows. A new stone-pitched floor will be installed on the bed of the river under the bridge arch.

It is proposed to reconstruct the stone pitched floor of the west arch. It will be necessary to install 1m x 1m x 0.5m angular boulders placed upstream and downstream of the arch to lock in the stone pitch floor. Boulders to be embedded into channel bed min. 2/3 of the height of stone. Stone may vary depending on site conditions. The stone pitch floors shall be constructed using circa 0.450m x 0.250m x 0.150m selected stone. Imported rock beneath the pitch floor (min. 500 mm thick layers).

The works include the repair of the scoured pier, abutment, wing wall and repairs to all masonry elements of the structure.

The works include repointing of the spandrels & parapets, with NHL 3.5 Lime mortar. Repointing below the Water Level shall be carried out with NHL 5.0 with 10% Vicat Prompt Natural Hydraulic Binder or equal approved. Mortar for repointing/repairs inside the arch barrels and above water level shall be NHL 3.5.

Water management through the remaining two barrels will be necessary to allow work to be carried out in the dry. Substantial water management in the form of 1 tonne sand bags will be needed to deflect flow in high water conditions.

Temporary props may be needed to support the repairs to the pier and abutment.

It will be necessary for scaffolding to be erected within the river channel to gain access to the spandrel and parapet walls for the purpose of repointing on the downstream side. The scaffold shall be erected in accordance with the HSA Code of Practice for Access and Working Scaffolds.

Laois County Council shall consult with Inland Fisheries Ireland (IFI) regarding electro-fishing of the arch barrel to be dried.

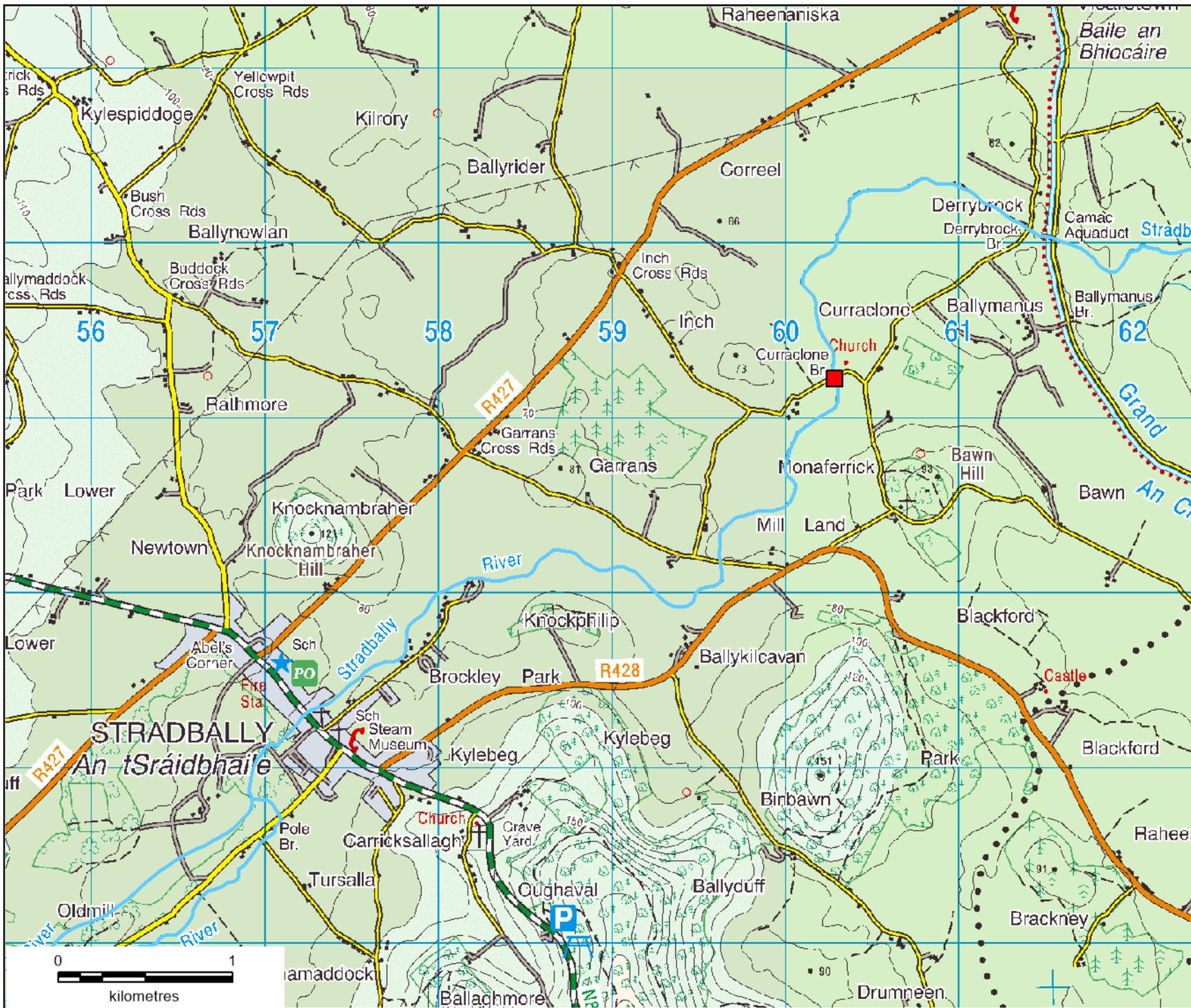
The proposed works are anticipated to take approximately 4 weeks to complete.



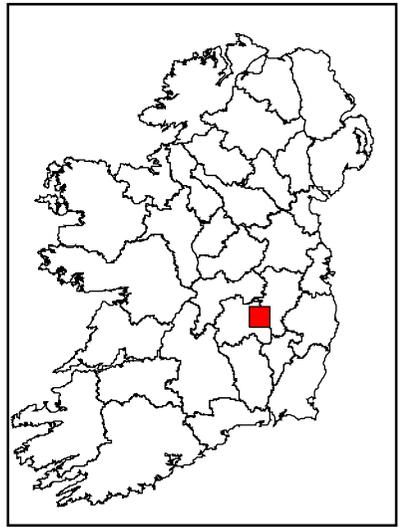
Plate 1-1 Inch Bridge on L7950, Co. Laois.



Plate 1-2 Inch Bridge (facing downstream).



Legend
■ Inch Bridge



Client: Laois County Council		
Project: Laois Drainage Works		
Title: Inch Bridge Site Location		
Drawn: EN	Checked: NS	Authorised: POD
Date: 21/08/2020	Date: 21/08/2020	Date: 21/08/2020
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2. Scope of Study

The aim of this report is to provide supporting information to assist the competent authority to carry out an AA determination with respect to the proposed project.

2.1. Legislative Context

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, known as the 'Habitats Directive' provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 – 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservations of an EU-wide network of sites known as European sites. European sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects that could potentially affect European sites. Article 6(3) establishes the requirement for Appropriate Assessment: -

“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.”

Article 6 (4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan or project will adversely affect a European site. Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures need to be addressed in this case. Article 6(4) states: -

“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”

2.2. Appropriate Assessment Process

Guidance on the AA process was produced by the European Commission (EC, 2001; 2018), which was subsequently used to develop guidance for Ireland by the Department of Environment, Heritage and Local Government in 2009 (DEHLG, 2009) and also by the National Parks and Wildlife Service in 2018¹ (NPWS 2018). These guidance documents set out a staged approach to complete the AA process and outlines the issues and tests at each stage. The stages outlined below are taken from the guidance document Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHLG, 2009).

¹ <https://www.npws.ie/development-consultations>

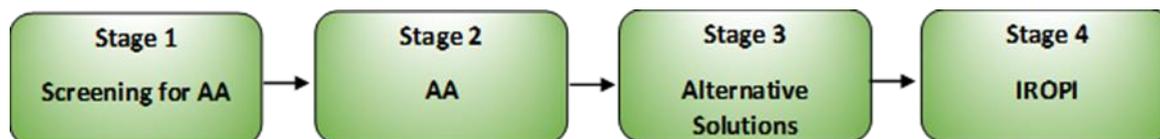


Figure 2-1 - Appropriate Assessment Process (Source: DEHLG, 2009).

2.2.1. Screening for Appropriate Assessment

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3): -

- i. Whether a plan or project is directly connected to or necessary for the management of the site, and
- ii. Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, then the process must proceed to Appropriate Assessment.

2.2.2. Appropriate Assessment

Appropriate Assessment considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any necessary mitigation measures.

The competent authority can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined, and where sufficient mitigation cannot be achieved, the alternative solutions need to be considered and the process proceeds to the consideration of alternative solutions.

2.2.3. Alternative Solutions

This examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a European site. The process must return to AA as alternatives will require assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, it is necessary to examine whether there are imperative reasons of overriding interest (IROPI).

2.2.4. IROPI

This examines whether there are imperative reasons of overriding public interest for allowing a plan or project that will have adverse effects on the integrity of a European site to proceed in cases where it has been established that no less damaging alternative solution exists. Compensatory measures must be proposed and assessed, of which the Commission must be informed.

The AA process only progresses through the full process for certain plans and projects. For example, for a project not connected with the management of a European site and where no likely significant effects on a European site in view of its conservation objectives are identified, the process stops at Screening for AA. Throughout the process the precautionary principle must be applied, which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty (EC, 2001; 2018).

3. Methods

3.1. Legislation & Guidance Documents

This report was prepared with reference and due consideration to the following documents and due regard for relevant case law, including but not limited to: -

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna (Habitats Directive);
- Statutory Instrument No. 477/2011 — European Communities (Birds and Natural Habitats) Regulations 2011;
- National Parks and Wildlife Service - Development Consultations² (NPWS 2018)
- European Commission (2018). Managing Natura 2000 sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC;
- European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC;
- Department of the Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities; and,
- Case C-323/17 People Over Wind & anor. V. Coillte.

3.2. Desk Study

A desk study was carried out to collate information available on European sites in the vicinity of the proposed project. The location of the proposed project and the surrounding areas were viewed using Google Earth, Google maps³ and Bing maps⁴ (last accessed on 14/08/20).

The National Parks and Wildlife Service (NPWS) and National Biodiversity Data Centre (NBDC) online databases were consulted concerning European sites in the vicinity of the proposed remedial works.

Locations and boundaries of all European sites within the potential zone of influence of the proposed development were identified and reviewed using the National Parks and Wildlife Service (NPWS) online map viewer. Boundary shapefiles were also downloaded from this site to facilitate the preparation of project graphics.

Desktop information on relevant European sites were reviewed on the NPWS website, including the site synopsis for each SAC/SPA, the conservation objectives, the site boundaries as shown on the NPWS online map viewer, the standard Natura 2000 Data Form for the SAC/SPA which details conditions and threats of the sites, and published information and unpublished reports on the relevant Natura 2000 sites. The EPA online mapping system and Google Maps were used to complement the information available from the NPWS system.

Relevant planning information for the surrounding area was reviewed using the planning enquiry systems of Laois County Council. Search criteria were implemented to determine whether such projects or plans that would not be relevant to this study. This information was used to determine potential cumulative impacts from other plans/projects with the proposed works.

² <https://www.npws.ie/development-consultations>

³ <https://www.google.ie/maps>

⁴ <http://www.bing.com/maps/>

3.3. Site Visit

An ecological walkover survey of the site was conducted by an Atkins ecologist during July 2020. The purpose of the survey was to survey the site for invasive plant species and to record the habitats and flora in the vicinity of the proposed project. The survey was chiefly concerned with recording the presence or likely presence of protected species and recording protected habitats or those habitats suitable to support protected species, in particular qualifying interests of European sites. The survey had regard for guidance sources such as NRA (2009) and Smith *et al.* (2011).

Aerial photos and site maps assisted the ecological walkover survey. Mammals and birds were surveyed based on incidental sightings, signs of activity during the survey and the identification of possible suitable habitats to support these species.

During the ecological survey the presence of invasive plant species such as Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera* and Giant Hogweed *Heracleum mantegazzianum* were recorded.

3.4. Statement of Authority

This report was prepared by Niamh Sweeney under the direction of Paul O'Donoghue, who also provided peer review support.

Niamh Sweeney (BSc, MSc(Res)) is a freshwater ecologist with 10 years' experience in ecological consultancy, with specialisms in macroinvertebrate and diatom taxonomy. Niamh has worked on numerous Screenings for Appropriate Assessment, Natura Impact Statements and Ecological Impact Assessments for private architect firms, waste companies, numerous County Councils, the OPW and Inland Fisheries Ireland. Niamh carried out the site visit and preparation of this report.

Emma Nickelsen has a BSc (Hons) in Environmental Biology and an MSc in Marine Biology. Emma has worked in ecological and environmental consultancy since 2017, working on a wide range of projects including bridge works, road construction, local amenity development and renewable energy. A focus of Emma's work to date has been on conducting Appropriate Assessment screenings, ecological appraisals and supporting the preparation of Natura Impact Statements and Ecological Impact Statements. Emma assisted in the preparation of this report.

Paul O'Donoghue has a BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics. His is a chartered member of the Society for the Environment (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Paul has over 18 years' experience in ecology; including extensive experience in the preparation of Habitat Directive Assessments / Natura Impact Statements (i.e. Appropriate Assessment under Article 6(3) of the EU Habitats Directive). Paul carried out the technical review of this report.

4. Existing Environment

4.1. Desktop Review

The Stradbally River is a 4th order river that flows in a north-east direction until it joins the River Barrow. The Stradbally River is categorised as 'Moderate' under the Water Framework Directive. Inch Bridge is not sampled by the EPA. Garran's Bridge, located approximately 1.6km upstream of Inch Bridge, was sampled by the EPA in 2017 and was assigned a quality rating of Q3-4, which denotes slightly polluted conditions.

Inland Fisheries Ireland conducted a fish stock assessment throughout the River Barrow catchment in 2015 (Delanty *et al.*, 2017). Fish species encountered in the Stradbally catchment included brown trout, Atlantic salmon, 3 spined stickleback, stone loach, lamprey sp. and minnow. Brown trout were present at all 4 sites sampled within the catchment, while Atlantic salmon were limited to the Clone Bridge site in the lower reaches. Clone Bridge is the name assigned to Inch Bridge in the IFI report, and therefore Atlantic salmon were recorded by IFI at Inch Bridge.

The National Biodiversity Centre has records for white-clawed crayfish *Austropotamobius pallipes* on the Stradbally River within Stradbally town and at Garran's Bridge and Derrybrock Bridge. These bridges are located upstream and downstream of Inch Bridge, respectively. Therefore, it is likely that crayfish are present in the vicinity of Inch Bridge.

4.2. Site Visit

Inch Bridge is a 3 arch masonry bridge with all 3 arches wetted. The bridge is generally in good condition and well repointed. The river has minimal shade and the river water was turbid due to heavy rain the previous night. The substrate was dominated by cobble and gravel.

Upstream of the bridge, an agricultural grassland field was present on the east bank and a harvested field on west bank. The west bank was vegetated with willowherb *Epilobium sp.*, bindweed *Calystegia sp.*, bramble *Rubus fruticosus agg.* with ash trees *Fraxinus excelsior ca.* 30m upstream of the bridge.

The upstream east bank consisted of willowherb, goose grass *Galium aparine*, bramble, false oat grass *Arrhenatherum elatius*, rye grass *Lolium perenne*, Yorkshire fog grass *Holcus lunatus* and bindweed. Reed canary grass *Phalaris arundinaceae* fringed both sides of the channel.

Downstream of the bridge a crop field was present on the west bank and an agricultural grassland field with horses on the east bank. Riverbank vegetation was similar to that upstream of the bridge. No trees were present on the downstream riverbanks in the vicinity of the bridge.

No invasive species listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/ 2011 were recorded in the environs of Inch Bridge.

No otter activity signs or holts were recorded in the vicinity of the bridge. However, the Stradbally River offers good foraging, commuting and holting habitat for otter.



Plate 4-1 Stradbally River upstream of Inch bridge (facing upstream).



Plate 4-2 Upstream of Inch Bridge (facing downstream).



Plate 4-3 **Stradbally River downstream of Inch Bridge.**

5. Appropriate Assessment Screening

5.1. Connectivity to European Sites

The 'zone of influence' (Zol) for a project is the area over which ecological features may be subject to significant effects as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change (CIEEM, 2018).

A distance of 15km is recommended in the case of plans, as a potential zone of influence and this distance is derived from UK guidance (Scott Wilson *et al.*, 2006). However, for projects the distance could be much less, and in some cases less than 100m. National Parks and Wildlife Service guidance⁵ advises that this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects.

Thus, given the nature, scale and extent of the proposed project, the potential zone of influence (Zol) will consider European sites with regard to the location of a European site, the QIs of the site and their potential mobility outside that European site, the Cause-Pathway-Effect model and potential environment effects of the proposed project.

Given the location of Inch Bridge and that it spans the Stradbally River, the potential zone of influence will be limited to the closest European sites or to those connected via surface water pathways or landscape features such as linear woodland and scrub.

As illustrated in Figure 5-1, two SACs are present within the Zol of the proposed project; River Barrow and River Nore SAC (002162) and Ballyprior Grassland SAC (002256). The proposed project is hydrologically connected to the River Barrow and River Nore SAC. There are no SPAs located within the Zol of the proposed project.

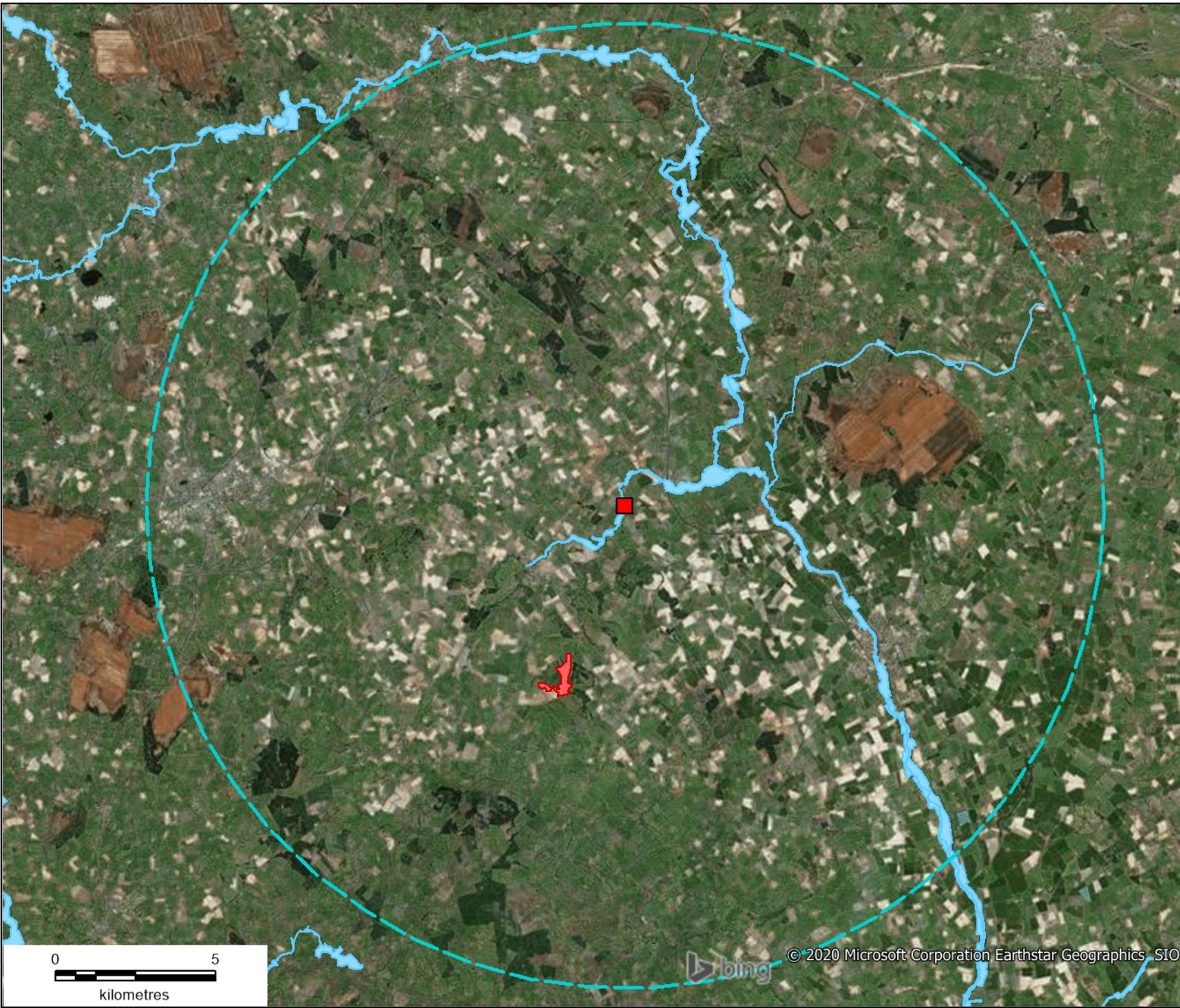
Table 5-1 outlines the qualifying interests of the SACs and discusses whether further consideration is required in relation to the potential for likely significant effects on these SACs as a result of the proposed project.

⁵ DoEHLG (2009). *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities*. Department of Environment, Heritage and Local Government, Dublin, Ireland.

Table 5-1 - SACs within the potential Zol fo the proposed project.

Natura 2000 Site	Site Code	Distance	Qualifying Interests	Within Zone of Influence (Zol)
River Barrow and River Nore SAC	0002162	Within. Inch Bridge spans the Stradbally River.	<ul style="list-style-type: none"> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Reefs [1170] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] • European dry heaths [4030] • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] • <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016] • <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] • <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] • <i>Petromyzon marinus</i> (Sea Lamprey) [1095] • <i>Lampetra planeri</i> (Brook Lamprey) [1096] • <i>Lampetra fluviatilis</i> (River Lamprey) [1099] • <i>Alosa fallax fallax</i> (Twaiite Shad) [1103] • <i>Salmo salar</i> (Salmon) [1106] • <i>Lutra lutra</i> (Otter) [1355] • <i>Trichomanes speciosum</i> (Killarney Fern) [1421] • <i>Margaritifera durrovensis</i> (Nore Pearl Mussel) [1990] 	Yes.

Natura 2000 Site	Site Code	Distance	Qualifying Interests	Within Zone of Influence (ZoI)
Ballyprior Grassland SAC	002256	Ca. 3.7km south west of the proposed project.	<ul style="list-style-type: none"> <li data-bbox="1014 236 1664 316">Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] 	<p>No.</p> <p>There is no hydrological link or connectivity via landscape features between the proposed project and the SAC. Thus, it is not considered further in this assessment.</p>



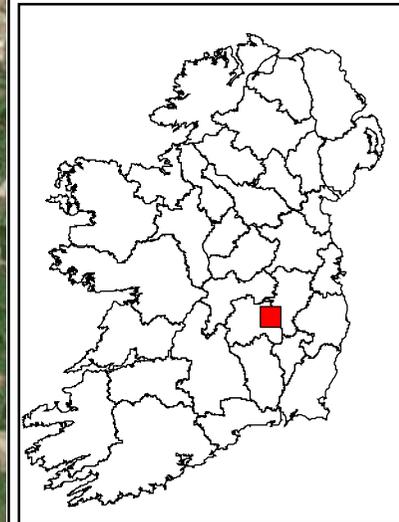
Legend

■ Inch Bridge

Special Areas of Conservation

■ River Barrow And River Nore SAC

■ Ballyprior Grassland SAC



Client: Laois County Council

Project: Laois Drainage Works

Title: SACs within 15km of Inch Bridge

Drawn: EN	Checked: NS	Authorised: POD
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5.2. Brief Description of European sites

5.2.1. River Barrow and River Nore SAC (002164)

The following description of the River Barrow and River Nore SAC is taken from NPWS site synopsis (NPWS, 2016). Further information on the site is also published in the Natura 2000 Data Forms, also available on the NPWS webpage ⁶.

“This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford.

Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy’s of the River, in Abbeyleix estate and along other shorter stretches of both the tidal and freshwater elements of the site. A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix. Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley. Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached. In the larger areas of salt meadow the Atlantic and Mediterranean sub types are generally intermixed.

The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (both Margaritifera margaritifera and M. m. durrovensis), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and River Lamprey, the tiny whorl snail Vertigo moulinsiana and Otter. This is the only site in the world for the hard water form of the Freshwater Pearl Mussel, M. m. durrovensis, and one of only a handful of spawning grounds in the country for Twaite Shad.

The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick’s Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter”

5.2.1.1. Features of Interest

The River Barrow and River Nore SAC is designated for the habitats and species listed in Table 5-1. Due to the size and geographic range of the River Barrow and River Nore SAC, not all qualifying interests of the SAC are within the ZoI of the proposed project.

Given the location of Inch Bridge, the results of the ecology site visit and the nature and scale of the proposed project, the qualifying interests of the SAC that are within the ZoI are surface water dependent habitats and species. These are summarised in Table 5-2 and are listed below:-

- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]

⁶ <https://www.npws.ie/protected-sites/sac/002162>

- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

5.2.2. Conservation Objectives

The Habitats Directive defines when the conservation status of the listed habitats and species is considered as favourable. The definitions it uses for this are specific to the Directive. In summary, they require that the range and areas of the listed habitats, and the range and population of the listed species, should be at least maintained at their status at the time of designation. Site-specific conservation objectives aim to define favourable conservation conditions for a particular habitat or species at that site.

Site specific conservation objectives for River Barrow and River Nore SAC (002162) were published by NPWS in 2011 (NPWS, 2011). The conservation objectives of the qualifying interests of the SAC that are within the Zol of the proposed project are listed below:

- To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation in the River Barrow and River Nore SAC.
- To maintain the favourable conservation condition of White-clawed Crayfish in the River Barrow and River Nore SAC.
- To restore the favourable conservation condition of Sea Lamprey in the River Barrow and River Nore SAC.
- To restore the favourable conservation condition of Brook Lamprey in the River Barrow and River Nore SAC.
- To restore the favourable conservation condition of River Lamprey in the River Barrow and River Nore SAC.
- To restore the favourable conservation condition of Salmon in the River Barrow and River Nore.
- To restore the favourable conservation condition of Otter in the River Barrow and River Nore SAC.

Table 5-2 - Screening of qualifying interests of the River Barrow and River Nore SAC.

Habitat/ Species	Comment	Within Zol
<p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p>	<p>These estuarine and coastal habitats are not located in the vicinity of the proposed project. They are located along the estuarine stretches of the SAC, which is a significant distance from the Stradbally River. Therefore, these habitats are located outside the Zol of the proposed project and direct and indirect impacts are not anticipated to these habitats.</p>	No
<p>European dry heaths [4030]</p>	<p>Dry heath habitat is confined to steep valley sides of the River Barrow and its tributaries, and the foothills of the Blackstairs Mountains (NPWS, 2011). This habitat is not present in the vicinity of Inch Bridge. Therefore, direct and indirect impacts to this habitat type are not anticipated.</p>	No
<p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</p>	<p>This habitat is not present in the vicinity of the proposed project. This habitat is associated with riverside woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of the river (NPWS, 2011). The proposed project will not affect the hydrological regime of the of river. Therefore, this habitat is not within the Zol of the proposed project and direct and indirect impacts to this habitat type are not anticipated.</p>	No
<p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p>	<p>This habitat type is known to occur in woodlands at Dysart between Thomastown and Inistioge on the River Nore (NPWS, 2011). This habitat is not present at the Garran's Bridge. Therefore, this habitat is not within the Zol of the proposed project and direct and indirect impacts to this habitat type are not anticipated.</p>	No
<p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p>	<p>This habitat is not present in the vicinity of Garran's Bridge, as determined by the site visit. Old oak woodlands are not present in the vicinity of along the Stradbally River (NPWS, 2011). Therefore, this habitat is not within the Zol of the proposed project and direct and indirect impacts to this habitat type are not anticipated.</p>	No

Habitat/ Species	Comment	Within Zol
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]	<p>This habitat is not present in the vicinity of Inch Bridge, as determined by the site visit. Alluvial woodlands are present upstream of Athy and upstream and downstream of Carlow town in the vicinity of Newacre and Mildford bridge respectively (NPWS, 2011).</p> <p>Therefore, this habitat is not within the Zol of the proposed project and direct and indirect impacts to this habitat type are not anticipated.</p>	No
Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	<p>The reaches of the Stradbally River upstream and downstream of Inch Bridge have the potential to support this habitat, however, it was not present in the immediate vicinity of Inch Bridge as determined by the site visit. This habitat is dependent on water quality parameters such as suspended solids and nutrients in the water column being sufficiently low to prevent changes in vegetation composition.</p> <p>Therefore, this habitat is considered to be within the Zol of the proposed project. Potential impacts are discussed in Section 5.5 of this report.</p>	Yes
<i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]	<p><i>V. moulinsiana's</i> optimal habitat includes a good distribution of tall sedge <i>Carex</i> species, interspersed with black bog rush <i>Schoenus nigricans</i> and common reed <i>Phragmites australis</i>. The moisture content of the habitat is for water to rise and surround a surveyor's boot under light pressure. Therefore, sub-optimal conditions are either open water (too wet) or damp conditions (too dry) (Moorkens and Killeen, 2011).</p> <p>As determined by the site visit, the habitats in the vicinity of Inch Bridge are unsuitable for whorl snails due to the combination of vegetation and hydrological influence being outside the snail's range of tolerance.</p> <p>Therefore, this species is not within the Zol of the proposed project and direct and indirect impacts to this species are not anticipated.</p>	No
<p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Margaritifera durrovensis</i> (Nore Pearl Mussel) [1990]</p>	<p>The Nore pearl mussel is not found in the River Barrow.</p> <p>The Conservation Document (NPWS, 2011) states that 'the status of the freshwater pearl mussel as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species'. However, this species still remains a qualifying interest of the SAC.</p> <p>Freshwater pearl mussel have not been recorded on the Stradbally River. On the main channel of the River Barrow, freshwater pearl mussel are present a significant distance downstream of the proposed project at Goresbridge, Co. Kilkenny.</p> <p>Given the nature and scale of the proposed works and the fact that they will be carried out in the dry, likely significant effects to pearl mussel located on the main channel of the River Barrow are not anticipated. Therefore, this species is not within the Zol of the proposed project and direct and indirect impacts to this species are not anticipated.</p>	No

Habitat/ Species	Comment	Within Zol
<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]	<p>There are records of white-clawed crayfish on the Stradbally River at numerous EPA sampling sites on the NBDC database and by NPWS (2011). This species is dependent on water quality and substrate within the river channel.</p> <p>Therefore, this species is considered to be within the Zol of the proposed project. Potential impacts are discussed in Section 5.5 of this report.</p>	Yes
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]; <i>Lampetra planeri</i> (Brook Lamprey) [1096]; <i>Lampetra fluviatilis</i> (River Lamprey) [1099]	<p>Sea Lamprey have been recorded in the vicinity of Carlow town, but not in the upper reaches of the River Barrow of the Stradbally River (King, 2006). Therefore, their presence is unlikely in the vicinity of the proposed project.</p> <p>IFI have recorded lamprey species (River/ Brook lamprey) in the Stradbally River, as well as the main channel of the River Barrow (Delanty <i>et al.</i>, 2017).</p> <p>Therefore, brook and river lamprey are considered to be within the Zol of the proposed project. Potential impacts are discussed in Section 5.5 of this report.</p>	Yes
<i>Alosa fallax</i> (Twaite Shad) [1103]	<p>Twaite Shad is an anadromous species, with adult fish migrating from saltwater to spawn in freshwater rivers. The main spawning ground on the River Barrow is immediately upstream of St. Mullins. Young fish then drop down to the estuary of the River Nore / Barrow to grow on (NPWS, 2011).</p> <p>Due to the location of the spawning ground in the lower reaches of the Barrow, this species is not considered to be within the Zol of the proposed project and direct and indirect impacts to this species are not anticipated.</p>	No
<i>Salmo salar</i> (Salmon) [1106]	<p>The Stradbally River contains suitable salmon spawning and nursery habitat (King, 2006). IFI have recorded salmon in the Stradbally River and at Inch Bridge (Delanty <i>et al.</i>, 2017).</p> <p>Therefore, this species is considered to be within the Zol of the proposed project. Potential impacts are discussed in Section 5.5 of this report.</p>	Yes
<i>Lutra lutra</i> (Otter) [1355]	<p>Otter are widely distributed across freshwater habitats and are well documented along the River Barrow and its tributaries (Bailey & Rochford, 2006; Reid <i>et al.</i>, 2013). The Stradbally River provides potential foraging, commuting and holting habitat for otter.</p> <p>Therefore, this species is considered to be within the Zol of the proposed project. Potential impacts are discussed in Section 5.5 of this report.</p>	Yes
<i>Trichomanes speciosum</i> (Killarney fern) [1421]	<p>Killarney fern is located in the environs of Graiguenamanagh and south of Inistioge within the SAC. There are no records of it in the vicinity of the proposed project.</p> <p>Therefore, this species is not within the Zol of the proposed project and direct and indirect impacts to this habitat type are not anticipated.</p>	No

5.2.3. Potential Threats

The site synopsis for the River Barrow and River Nore SAC (NPWS, 2016) describes the land use and management, and threats within the site as follows:-

“Land use at the site consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. There is net fishing in the estuary and a mussel bed also. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the site. Several industrial developments, which discharge into the river, border the site. New Ross is an important shipping port. Shipping to and from Waterford and Belview ports also passes through the estuary.

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

Table 5-3 - NPWS identified threats.

Natura 2000 site	Features of Interest	NPWS identified sensitivities/threats ⁷			
		Rank ⁸	Threats and pressures [code]	Threats and pressures [type] ⁹	inside/outside/both [i/o/b]
River Barrow and River Nore SAC (002162)	Estuaries [1130]	M	B02	Forest and Plantation management & use	b
	Mudflats and sandflats not covered by seawater at low tide [1140]	H	H01	Pollution to surface waters (limnic, terrestrial, marine & brackish)	b
	Reefs [1170]				
	Salicornia and other annuals colonising mud and sand [1310]	M	B05	Use of fertilizers (forestry)	b
	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]	M	A04.01.01	Intensive cattle grazing	i
	Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	H	K01.01	Erosion	i
	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	L	C01.01.01	Sand and gravel quarries	b
	European dry heaths [4030]	M	B07	Forestry activities not referred to above	b
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	M	J02	Human induced changes in hydraulic conditions	b
	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]	M	M01	Changes in abiotic conditions	i
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	M	I01	Invasive non-native species	i
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]	H	A02.01	Agricultural intensification	b
	<i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]				
	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	H	J02.05.02	Modifying structures of inland water courses	i
	<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]	L	F01.01	Intensive fish farming, intensification	i
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]					
<i>Lampetra planeri</i> (Brook Lamprey) [1096]	M	J02.06	Water abstractions from surface waters	i	

⁷ The sensitivities/threats have been identified from the Natura 2000 standard data form and site synopsis for each designated site provided on www.npws.ie.

⁸ Rank: H = high, M = medium, L = low

⁹ Given at http://bd.eionet.europa.eu/activities/Natura_2000/Folder_Reference_Portal/Ref_threats_pressures_FINAL_20110330.xls

Natura 2000 site	Features of Interest	NPWS identified sensitivities/threats ⁷			
		Rank ⁸	Threats and pressures [code]	Threats and pressures [type] ⁹	inside/outside/both [i/o/b]
	<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	M	C01.03	Peat extraction	o
	<i>Alosa fallax fallax</i> (Twaite Shad) [1103]	M	F02	Fishing and harvesting aquatic resources	o
	<i>Salmo salar</i> (Salmon) [1106]	L	D03.01	Port areas	i
	<i>Lutra lutra</i> (Otter) [1355]	L	A10.01	Removal of hedges and copses or scrub	i
	<i>Trichomanes speciosum</i> (Killarney Fern) [1421]	L	E02	Industrial or commercial areas	o
	<i>Margaritifera durrovensis</i> (Nore Pearl Mussel) [1990]	M	J03.02.01	Reduction in migration/ migration barriers	i
		M	J02.02.01	Dredging/ removal of limnic sediments	i
		H	J02.12.02	Dykes and flooding defence in inland water systems	i
		L	F02.01.02	Netting	i
		L	F02.03	Leisure fishing	i
		M	D03.01	Port areas	i

5.3. Likelihood of Potential Impacts on European Sites

The available information on European sites was reviewed to establish whether or not the proposed project at is likely to have a significant effect on the conservation objectives of the European sites within the Zol of the proposed project. The likelihood of impacts on the features of interest of the European sites identified in this report is based on information collated from the desk study, site visit and photographs, and other available existing information.

The likelihood of impacts occurring are established in light of the nature and scale of the proposed project, the location of the proposed project with respect to European sites and the features of interest and conservation objectives of the European sites.

This report is prepared following the Cause – Pathway – Effect model. The potential impacts are summarised into the following categories for screening purposes.

- Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct impacts can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.
- Indirect and secondary impacts do not have a straight-line route between cause and effect. It is potentially more challenging to ensure that all the possible indirect impacts of the plan/project – in combination with other plans and projects - have been established. These can arise, for example, when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as an indirect consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect impact. Disturbance to fauna can arise directly through the loss of habitat (e.g. displacement of roosting bats) or indirectly through noise, vibration and increased activity associated with construction and operation.

The proposed project is located within the River Barrow and River Nore SAC. The proposed project is not directly connected with or necessary to the management of the SAC. Therefore, it is necessary for the competent authority to assess whether the proposed project, either individually or in combination with other plans or projects, would be likely to have significant effects on European sites.

Given the nature of the proposed project during the construction phase and the potential impacts posed by the proposed works on the SAC, it is concluded by the authors of this report that in the absence of additional measures, it is not possible to screen-out likely significant effects on the SAC. Thus, it is recommended by the authors of this report that the proposed project should be brought forward to the second stage of the assessment process, i.e. full Appropriate Assessment.

6. Appropriate Assessment

6.1. Introduction

This section of the report assesses the European site in more detail and examines where likely significant effects may arise. Where these effects are identified that may affect the integrity of the SAC, avoidance and mitigation measures are proposed to offset these effects. These are discussed below in the following sections.

6.2. Impact Evaluation

6.2.1. 'Do Nothing' Impact

In the case of the proposed project the 'do nothing' approach would be not to repair the floor of the bridge arch and the adjacent pier and cutwater. In the absence of the proposed project, Inch Bridge will continue to convey river flows. As the existing bridge is experiencing erosion, in the absence of repair works, this erosion will continue and could ultimately result in structural failure in the future.

6.2.2. Potential impacts during the works

In summary and as outlined in Section 5 above, the features of interest that are within the zone of influence of the proposed works are: -

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

6.2.2.1. Direct impacts

Inch Bridge is situated within the River Barrow and River Nore SAC and thus, the proposed project has the potential to have direct impacts via land and air pathways on habitats and species of the SAC that are located in the immediate vicinity of the bridge, in particular crayfish, brook/river lamprey, and salmon. Instream elements of the project, such as instream access of personnel, placement of sandbags and de-watering have the potential to cause physical disturbance to these qualifying interests. The proposed project has the potential to result in possible mortality of crayfish, lamprey species and their ammocoetes, and salmon.

The ecology survey did not record Otter holts or couching sites in the vicinity of Inch Bridge and thus, direct impact to otter are not anticipated.

6.2.2.2. Indirect impacts

The site of the proposed works is within the SAC. Therefore, the proposed project has potential to indirectly have negative impacts of surface water dependent habitats and species, either located immediately downstream on the Stradbally River, or downstream of the River Stadbally – Barrow confluence. The mobilisation of silts, nutrients, hydrocarbons and concrete materials, could potentially occur during the works. The release and entry of these materials to the Stradbally River has the potential to result in localised impacts of sedimentation and

increased algal and macrophyte growth in the watercourses downstream, which in turn could impact on the aquatic biota that the river supports and hence, its ecological status.

Qualifying interests such as salmon and lamprey may be impacted by the release of sediments as they are sensitive to changes in water quality. Mobilisation of sediments may affect lamprey and salmon spawning beds due to sedimentation of river substrates and the increase of fine sediments to spawning habitats. Floating river vegetation is also sensitive to siltation and changes in substrate composition as this affects the rooted structure of the plants and their ability to photosynthesise.

The potential impacts to species such as salmon and lamprey may also indirectly affect otter and the availability of a food source (fish biomass). Salmon and lamprey are important food sources for otter and a decline in these would have an indirect negative impact on otter. The construction works may also cause temporary noise disturbance to otter due to the operation of machinery and increased human activity along the river, however as the works are temporary in nature, this impact is anticipated to be negligible. The works will not cause fragmentation of the river habitat as the remaining two arches of the river will remain open to convey flows. Therefore, indirect disturbance of otter is not anticipated.

The potential entry of polluting materials such as hydrocarbons and concrete material to the Stradbally River would have a negative impact on all aquatic qualifying interests of the SAC.

6.2.3. Potential impacts post completion of the works

The proposed project is replacing the floor of the bridge arch with like-for like stone-pitching and will not impact on the hydrological and hydraulic regime of the watercourse. The proposed project will not pose a barrier to fish migration on the Stradbally River. The operation of the proposed project will not generate further emissions to the watercourse.

6.2.4. In-combination Impacts

In combination impacts with the following plans and projects were considered during the preparation of this report.

- Laois County Development Plan 2017 - 2023
- Kildare County Development Plan 2017 - 2023
- Laois and Kildare County Council Planning Portal (map-based search).

Laois County Development Plan 2017 – 2023 sets out strategies and objectives to provide sustainable development within Co. Laois. Stradbally, among other towns and villages, are identified in the settlement hierarchy of the Plan. In particular, the Plan notes the presence on European sites adjacent to these areas and that the developments shall be subject to Appropriate Assessment. In the case of Stradbally, it is noted that encroachment of the SAC will be avoided, a buffer area shall be implemented and that there shall be no loss of bankside vegetation. Road developments that involve crossing Natura 2000 sites will ensure that alternative routes have been considered to minimise the impact on the Natura 2000 site. It also identifies the need for flood defence works or river channel maintenance to be assessed according to Article 6 of the Habitats Directive, i.e. Appropriate Assessment. The Plan also contains a number of Biodiversity objectives, which includes the maintenance and protection of the River Barrow and River Nore SAC and to preserve ecological linkages or stepping stone habitats and landscape features. A Natura Impact Report was prepared for the Plan, which assessed the Plan regarding its potential to adversely affect the integrity of Natura 2000 sites. The findings of the AA were integrated into the Plan, ensuring that potential adverse effects have been and will be avoided, reduced or offset (CAAS, 2017). Thus, an AA determination was made by Laois County Council that the Plan is not foreseen to have any likely significant effects on the ecological integrity of any European Site (CAAS, 2017). As outlined in the Plan, this AA Screening report is being prepared for the proposed maintenance works to ensure no adverse impact on the integrity of European sites. Given the elements outlined above, the Laois County Development Plan 2017 – 2023 is not anticipated to act in-combination with the proposed project.

Given the rural and agricultural setting of Garran's Bridge, farmers and landowners may also undertake general agricultural operations in areas adjacent to the proposed project, which could potentially give rise to impacts that could impact the SAC. This could potentially result in additional periods of disturbance and a risk to water quality.

Many agricultural operations are periodic, not continuous in nature, and qualify as a Notifiable Action that requires consultation with National Parks and Wildlife Service in advance of the works e.g. reclamation, infilling or land drainage within 30m of the river, removal of trees or any aquatic vegetation within 30m of the river, and harvesting or burning of reed or willow (NPWS, 2018). Agricultural operations must also comply with the EC (Environmental Impact Assessment) (Agriculture) Regulations 2011 and amendment 2017 S.I. No. 456/2011 and 407/2017 in relation to activities covered by the regulations;

- restructuring of rural land holdings,
- commencing use of uncultivated land or semi-natural areas for intensive,
- land drainage works on lands used for agriculture.

A Natura Impact Statement (NIS) is required under Regulation 9 if it is likely to have a significant effect on a European designated site. The drainage or reclamation of wetlands is controlled under the Planning and Development (Amendment) (No. 2) Regulations 2011 and the European Communities (Amendment to Planning and Development) Regulations 2011. Therefore, given that impacts to the SAC are not anticipated as a result of the proposed project, agricultural operations will not act in-combination with the proposed project.

6.3. Mitigation Measures

This section describes the mitigation measures required to ensure there are no residual effects on the integrity of the River Barrow and River Nore SAC. Table 7-1 summaries how these mitigation measures will result in no adverse effect on the integrity of European sites.

6.3.1. Measures to mitigate impacts to water quality.

1. The proposed works shall be carried out during July 1st to September 30th inclusive. The works shall not take place during high river flows or prior to forecasts of heavy rainfall.
2. All operations will be in accordance with, but not limited to, the following guidelines: -
 - C532 Control of water pollution from construction sites. Guidance for consultants and contractors (Masters-Williams et al., 2001),
 - SP156 Control of water pollution from construction sites – guide to good practice (Murnane, 2002),
 - C750 Groundwater control: design and practice (Preene *et al.*, 2016)
 - Guidance on Protection of Fisheries during Construction Works In and Adjacent to Waters (IFI, 2016).
3. A Temporary Traffic Management zone will be created within the road corridor. This shall be used as for parking and deliveries of materials.
4. Any chemical, fuel and oil stores will be located on an impervious base within a secured bund with a storage capacity 110% of the stored volume.
5. Biodegradable oils and fuels will only be used.
6. Drip trays will be placed underneath any standing machinery to prevent pollution by oil/fuel leaks. Where practicable, refuelling of vehicles and machinery will be carried out on an impermeable surface in one designated area well away from any watercourse or drainage (at least 20m).
7. Emergency spill kits will be available on site and staff will be trained in their use.
8. Operators will check all equipment, machinery and vehicles on a daily basis before starting work to confirm the absence of leakages. Any leakages should be reported immediately and addressed.

9. Daily checks will be carried out and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to be defective will be removed from site immediately or positioned in a place of safety until such time that it can be removed. All items of plant will be checked prior to use before each shift for signs of wear/damage.
10. A dry working area will be achieved by setting up a dam system upstream and downstream of the bridge arch. Each dam will consist of tightly packed sand bags that are filled with clean sand. The sand bags will be double lined and sealed. No clay or soil material is permitted to 'seal' the sand bag dams.
11. The integrity of the sand bag dams must be monitored to ensure that the works area is isolated from the live channel.
12. There can be no entry of debris and/ or waste material from the works area to the live channel. The debris must be collected within the dry work area, removed from the work area and disposed of appropriately off site at a licensed waste facility.
13. At no point will any equipment be washed out within the work area or adjacent to a watercourse.
14. All materials used on site, including the sandbags, will be removed from site and disposed of at a licensed waste facility.

6.3.2. Measures to mitigate disturbance of species

- A crayfish search and electrofishing of the dammed area of river channel shall take place prior to the commencement of instream works. During the de-watering process, if crayfish are found during the search, they shall be collected and translocated upstream to suitable receptor area. The crayfish search should take place prior to electrofishing.
- Electrofishing of the dammed area for both Salmonid and Lamprey species will use appropriate standard methodologies, as salmonids typically require a higher frequency than lamprey ammocoetes, which would immobilize ammocoetes within the sediment.
- Prior to electrofishing, areas of suitable habitat shall be identified for the translocation of Lamprey species, i.e. receptor areas. Both salmonid and lamprey species shall be recovered from the working area and translocated to respective suitable habitat upstream of the works.
- In order to mitigate potential impacts to otter, working hours shall be restricted to daylight hours only and there shall be no overnight artificial lighting of the site.
- The river channel and riverbanks will not be artificially lit during hours of dusk and darkness.

6.3.3. Biosecurity protocols

Biosecurity protocols shall be implemented during the construction phase of the proposed project to prevent the introduction of invasive species, in particular those listed on the third schedule of the 2011 Regulations, to site and the further spread of diseases.

1. All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.
2. If drying out of equipment is not feasible, equipment should be either:
 - i. power steam washed at a suitably high temperature or at least 65 degrees, or
 - ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer's instructions are followed and if required, the correct contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant.

3. During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.
4. Appropriate facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.
5. Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

7. Conclusions

This NIS provides the competent authority with supporting information to undertake the Appropriate Assessment in relation to the proposed project at Inch Bridge and its potential for direct and indirect impacts on the River Barrow and River Nore SAC.

The NIS has examined the potential impacts of the proposed project on the integrity of the SAC, alone and in combination with other plans and projects, taking into account the site's structure, function and conservation objectives. Where potential likely significant effects were identified, mitigation measures have been recommended to assist in offsetting these effects.

Following a comprehensive evaluation of the potential direct, indirect and cumulative impacts on the qualifying interests of the SAC and the implementation of the proposed mitigation measures, it has been concluded by the authors of this report that there will be no residual impacts and the proposed project will not have an adverse effect on the integrity of the River Barrow and River Nore SAC.

To confirm this conclusion, the following checklist taken from DEHLG (2009) has been completed.

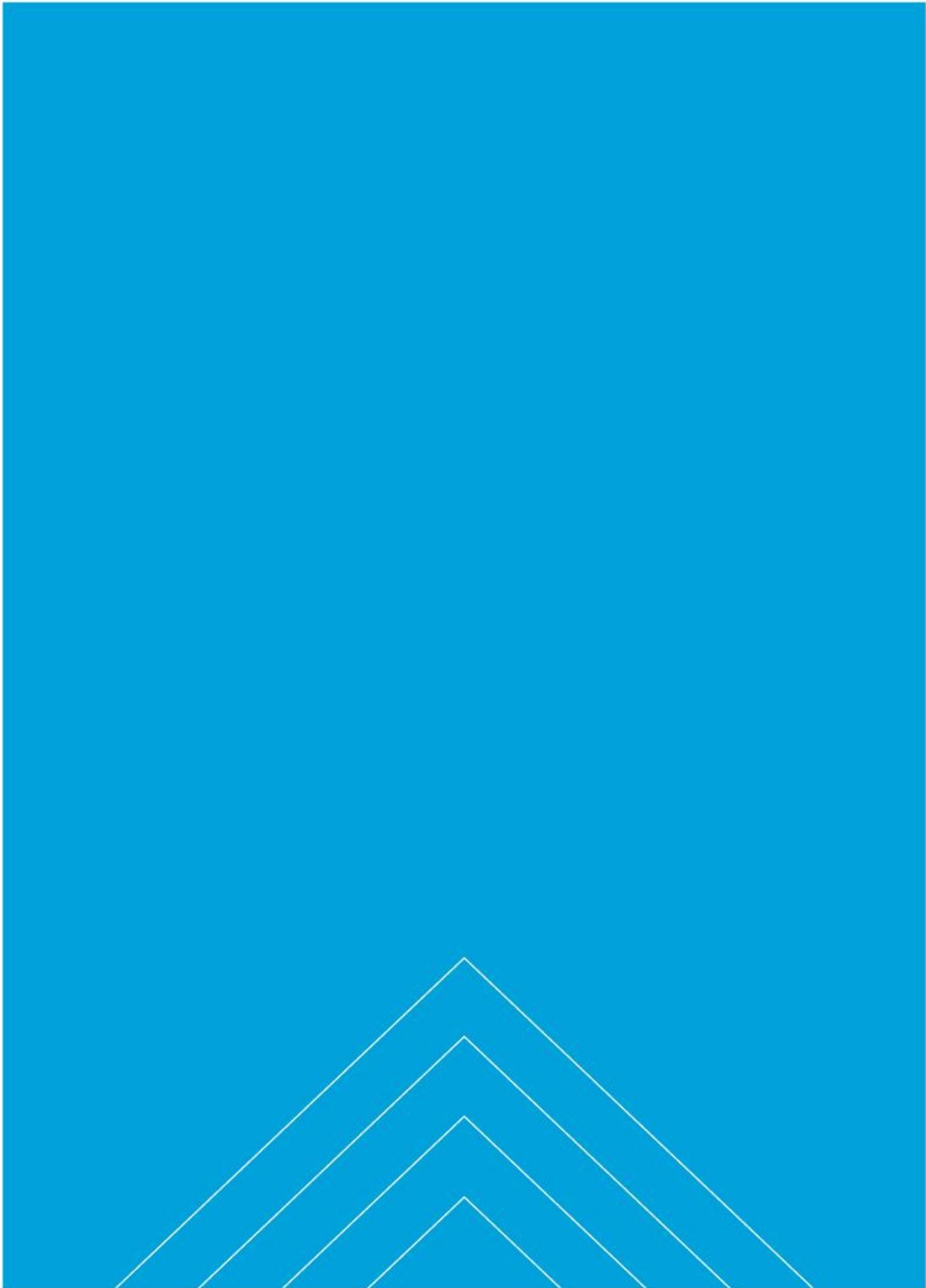
Table 7-1 - Checklist of Site Integrity (DEHLG, 2009).

Does the project or plan have the potential to:-	Y/N
Cause delays in progress towards achieving the conservation objectives of the sites?	N - Following mitigation, no residual adverse effects have been identified that will prevent achievement of the conservation objectives of the River Barrow and River Nore SAC.
Interrupt progress towards achieving the conservation objectives of the sites?	N - Following mitigation, no residual adverse effects have been identified that will prevent achievement of the conservation objectives of the SAC.
Disrupt those factors that help to maintain the favourable conditions of the site?	N - Potential impacts, including potential changes to water quality issues and pollution, can be avoided or mitigated against.
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	N - Potential impacts can be avoided by implementing a range of measures to maintain water quality and thus protect the surface water dependent species of the SAC.
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	N - Potential impacts from sediment mobilisation and pollution, which could impact upon ecosystem functioning, can be effectively mitigated.
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	N - Potential impacts relating to changes in the physical and hydrological regime of the SAC will not occur as a result of the project and therefore will not impact on the functioning of the SAC.
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	N - Potential impacts from changes to the physical and hydrological regime will not occur and therefore will not impact upon the functioning of the SAC.
Reduce the area of key habitats?	N – Following mitigation, there will be no loss of habitats within the SAC.

Does the project or plan have the potential to:-	Y/N
Reduce the population of key species?	N – Following mitigation, there will be no adverse disturbance impacts to key species of the SAC. Mitigation measures will ensure that the works will not cause a deterioration in water quality.
Change the balance between key species?	N – Following mitigation, there will be no adverse disturbance impacts to species of the SAC. Mitigation measures will ensure that the works will not cause a deterioration in water quality.
Reduce diversity of the site?	N - The identified mitigation measures during the construction phase of the project to mitigate disturbance impacts and protect water quality will ensure that the current diversity of the SAC is maintained.
Result in disturbance that could affect population size or density or the balance between key species?	N – Following mitigation, there shall be no residual disturbance impacts to species of the SAC and therefore, population size and density will not be reduced.
Result in fragmentation?	N - The proposed works will not result in the fragmentation of habitats within the SAC or surrounding habitat.
Result in loss or reduction of key features?	N – There shall be no loss or reduction of key features within the SAC.

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