

N77 Ballyragget Village to Ballynaslee Road Improvement Scheme, Co. Kilkenny



NATURA IMPACT STATEMENT

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EXECUTIVE SUMMARY

The current report provides a Natura Impact Statement of the proposed road improvement scheme on the N77 Ballyragget to Ballynaslee road in Co. Kilkenny. The length of the scheme is approximately 2.4km, with a c.700m realignment, drainage design, and a new entrance for the Glanbia factory located on the N77. A Screening for Appropriate Assessment report has already been prepared by Ecofact, which identified the potential for impacts on both the River Barrow and River Nore SAC and the River Nore SPA. The proposed road scheme is located adjacent to both of these Natura 2000 sites. The Screening Assessment concluded that due to the sensitivity of the qualifying interests Freshwater Pearl Mussel / Nore Pearl Mussel in the SAC and the potential for water quality impacts; mitigation was required. This report also noted the requirement for mitigation during the operational phase to protect other aquatic interests in the SAC, and Kingfisher within the SPA. Mitigation is therefore set out in this Natura Impact Statement.

The key qualifying interests of the River Barrow and River Nore SAC identified as being potentially affected by the proposal and assessed in this NIS report include the floating river vegetation habitat and the Annex II species Atlantic Salmon, Freshwater Pearl Mussel / Nore Pearl Mussel, Sea Lamprey, Brook Lamprey, River Lamprey, Twaite Shad, White-clawed Crayfish and Otter. The pathways for water quality impacts affecting the Floating River Vegetation and Hydrophilous Tall Herb habitat were also noted. The only qualifying interest of the River Nore SPA, Kingfisher, could also be affected and is assessed in the current report.

All of the qualifying interests assessed in the current report have the potential to be impacted by construction phase water quality pollution arising from the proposed road improvement scheme works. Freshwater Pearl Mussels are particularly sensitive to water pollution as they are a filter feeding species. During the construction phase of the proposed development indirect water quality impacts have the potential to arise from run-off from excavated areas and soil deposition areas resulting in increased suspended solids, accidental spillages of hydrocarbons (oils and fuels) from machinery and waste materials such as concrete. Non-native invasive species impacts were also identified, which could be introduced to the SAC or SPA through vectors such as machinery. Noise and disturbance impacts and air quality and dust impacts were also identified, although these impacts are both considered to be imperceptible negative in the absence of mitigation.

The inclusion of an attenuation pond and a bypass petrol interceptor in the proposal will result in positive impact during the operational phase. There is currently no treatment of road run-off for the existing N77 road. In addition to this, the attenuation pond and bypass interceptors will have manual shut-off valves which will ensure easier containment of potential spillages; in turn ensuring adverse water quality impacts during the operational phase are avoided. Additionally, the use of road salt and grit on the existing N77 road is currently not attenuated before discharge. The proposed attenuation pond will ensure that any road salt and grit used on the affected stretch of the N77 road is treated before discharge to the River Nore. Habitat loss was identified as another operational phase impact, however this loss of habitat will be minimal; only habitats of low ecological value will be affected.

Mitigation measures are proposed in the current NIS to minimise the impacts of water quality and non-native invasive species affecting both the River Barrow and River Nore SAC and the River Nore SPA. An outline Environmental Operating Plan (EOP) has been prepared and is included in Appendix 5. This outline plan includes the proposed mitigation drawings for the N77 road scheme and a schedule of environmental commitments. All mitigation included in the NIS and EoIA will be implemented on site through an EOP. A site ecologist will be appointed for the duration of the works



and will approve the contractors EOP and ensure it follows all guidelines listed in the NIS and EclA. The site ecologist will also monitor water quality on the River Nore upstream and downstream of the works areas as requested by NPWS, although there is considered to be a low risk of water quality impacts provided water quality protection mitigation is followed correctly. The site ecologist will also ensure the effectiveness of the silt fences on site. All of the works areas will be fenced to ensure no work activities are undertaken outside delineated areas, or within the SAC or SPA boundaries. Machinery will not operate or be stored outside of delineated works areas. The site compound will not be located within the SAC or SPA boundaries, or within 50m of any watercourse, which is shown in the drawings in the outline EOP in Appendix 5. Terrastop Premium Silt Fences, or an equivalent alternative, will be placed in selected areas and used to intercept run-off from the works areas and the site compound. Oils/fuels required for machinery will be appropriately stored in bunded areas in the fenced site compound. The open grass swale will be constructed only in periods of dry weather. Any stockpiling of materials will be outside of the SAC and SPA boundaries, 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalized. Uncontaminated U1 material can be reprocessed on site, within areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility. Mixing of cement/concrete or other materials will also be undertaken in the site compound. Toilet / waste facilities will be located within the site compound. The site compound will also have security to deter theft, vandalism and unauthorised access. The proposed attenuation pond will have a manual shut-off valve and bypass petrol interceptors will also be able to be closed to ensure easier containment of any spillages on the new N77, as well as providing attenuation for road salt / grit used in winter. An inspection regime of the bypass petrol interceptors will be carried out by the council to ensure they are working correctly and effectively. The proposed open grass swale will be planted with native Irish wildflower species to promote biodiversity and create a wetland area. Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site. The NRA biosecurity guidelines will be followed.

The current assessment concludes that provided all mitigation measures are adhered to, direct, indirect and cumulative impacts that may arise from the proposed road improvement works on the N77 in Co. Kilkenny will be avoided and therefore will not affect the integrity of the either the River Barrow and River Nore SAC and the River Nore SPA.



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1. INTRODUCTION

The current document is a Natura Impact Statement (NIS) and assesses the likely significant effects on the River Barrow and River Nore SAC and the River Nore SPA arising from a proposed road improvement scheme on the N77 Ballyragget to Ballynaslee Road in Co. Kilkenny. The location of the proposed development and layout is provided in Figures 1a and 1b. A Screening for Appropriate Assessment has already been carried out for the proposed development, which concluded that the proposed road scheme on the N77 be subject to an Appropriate Assessment as detailed water quality protection measures are required due to the sensitivity of the receiving water and the qualifying interests of the River Barrow and River Nore SAC and the River Nore SPA (Ecofact, 2018a). Mitigation is therefore set out here in this Natura Impact Statement.

The preparation of this NIS for Appropriate Assessment is as required under the Habitats Directive (92/43/EEC) in instances where a plan or project may give rise to significant effects upon a Natura 2000 site. Natura 2000 sites are of European Importance and have been designated in accordance with the requirements of the EC Habitats Directive (1992) and EC Birds Directive (2009/147/EC); transposed into Irish legislation as the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). The Habitats Directive, in combination with the Birds Directive (2009), establishes a network of internationally important sites designated for their ecological status; identified as Special Areas of Conservation (SACs) designated under the Habitats Directive for the protection of flora, fauna and habitats and as Special Protection Areas (SPAs) designated under the Birds Directive to protect rare, vulnerable and migratory birds. These sites together form a Europe-wide 'Natura 2000' network of designated sites, referred to in this report as Natura 2000 sites.

This assessment follows the Habitats Directive 92/43/EEC, Article 6(3) and the guidance published by the National Parks and Wildlife Service (DoEHLG, 2010) '*Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*'. The current Natura Impact Statement (NIS) assesses the impact of the proposed road scheme at construction and operation stages in relation to direct, indirect and cumulative effects on the Integrity of the Natura 2000 sites. Ecofact Environmental Consultants Ltd. were commissioned by Kilkenny County Council to prepare this NIS.

1.1 Consultation

The following statutory bodies provided information via publically available sources for this report:

- National Parks and Wildlife Service (NPWS);
- Inland Fisheries Ireland (IFI);
- Environmental Protection Agency (EPA);
- National Biodiversity Data Centre (NBDC).

Correspondence was also issued to the National Parks and Wildlife Service (NPWS) and Inland Fisheries Ireland (IFI) on the 4th of September 2018. NPWS responded on the 30th of October 2018 and the response is included in Appendix 2 of the current report. Inland Fisheries Ireland responded on the 7th of September 2018 and the response is also included in Appendix 2 of the current report. IFI requested further information of the drainage design drawings for the project and this information was forwarded, although no further response from IFI has been received. A summary of the consultations with both NPWS and IFI are provided below.



The consultation response received from the Development Applications Unit of the National Parks and Wildlife Service outlines the department's heritage-related observations and recommendations for the project. Particular attention is given to the protection of the Nore Freshwater Pearl Mussel as a sensitive receptor for the River Barrow and River Nore SAC. Sources of and pathways for impacts that may arise during both the construction and operation phases of the project are noted to be given attention to in the NIS, particularly concerning silt and other pollutants that may enter the River Nore. Mitigation measures are to be provided, evidence of how mitigation will be produced and by whom must also be included. Water quality monitoring will be carried out and an on-site ecologist should also be appointed to oversee the works. The response also notes the need for an outline construction environmental management plan (CEMP), demonstrating mitigation measures and their physical feasibility on site. Details of all components of the project including positions, sizing and locations are to be provided. The Glanbia factory is also noted in relation to the potential for milk spillages, fuels, lubricants and other chemical additives and therefore the NIS should take this into account and include details of surface water attenuation and treatment before discharge. Impacts in relation to road salt in winter are also mentioned. It is also noted that emission limit values in respect of this development must aim to achieve the ecological quality objectives for Freshwater Pearl Mussel Habitats outlined in S.I. No. 296/2009. Finally, the consultation notes that the NIS should also address invasive species and mitigation to ensure they are not introduced or spread within the SAC. The full response from NPWS is included in Appendix 2.

The recommendations provided by NPWS for the proposed N77 road improvement scheme have been taken into account and mitigation measures have been provided in the current NIS that are sufficient to ensure these recommendations have been addressed. Terrastop Premium Silt Fences, or an equivalent alternative, will be used to intercept any run-off from the construction works areas. Any oils or fuels required for machinery will be stored within the fenced site compound in bunded areas to avoid any spillages. A site ecologist will also be appointed and will ensure the effectiveness of the silt fences. The Site Ecologist will also carry out water quality monitoring on the River Nore upstream and downstream of the works to ensure that the silt fences and bunding for the site compound are effective in intercepting run-off from these areas; although the risk to water quality is considered to be low provided water quality protection mitigation is adhered to. An outline Environmental Operating Plan has been completed and is included in Appendix 5. All mitigation included in the NIS and EclA will be implemented on site through an EOP. Drawings of the proposed scheme can be found in Appendix 3 of the current report. The proposed scheme includes an attenuation pond and bypass petrol interceptors with manual shut off valves which will improve current run-off treatment conditions on the existing N77, and ensure that any spillages, either milk, petrol, oil, etc., can be controlled before discharge. Regarding the use of road salt in the winter months, road salt is currently being used on the existing N77 beside the River Nore. The proposed attenuation pond will ensure that current conditions are improved, where road salt run-off from the N77 road will be attenuated before discharge into the River Nore. Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site. NRA guidelines for biosecurity will be followed to ensure no non-native invasive species are introduced to the study area.

A consultation response was also received from Inland Fisheries Ireland. It is noted in their response that an improvement to road drainage can only be welcomed, with a request for details of the sizing of the attenuation pond. Details of any inspection regime to be carried out by Kilkenny County Council for the bypass interceptors, was also requested. IFI expressed concern over the potential interactions of discharges from construction works and the existing discharge points on the River Nore from Glanbia (of which there are three). A strict method statement and plan of works is recommended. More generally, in the response IFI also note typical impacts associated with these types of works.



They mention impacts regarding uncured concrete and the discharge of silt-laden waters. Mitigation is recommended including working in the dry, the use of silt traps, bunded areas for oils and fuels and temporary oil interceptor facilities. Detailed drawings received from Kilkenny County Council were forwarded onto IFI however no further response was received at the time of writing. The response is included in Appendix 2.

The recommendations provided by IFI for the proposed N77 road improvement scheme have been taken into account and mitigation measures have been provided in the current NIS that are sufficient to ensure these recommendations have been addressed. An inspection regime of the bypass interceptors will be conducted by the council for the operational phase of the scheme to ensure they are correctly maintained and effective. The water quality mitigation measures listed above to address the recommendations provided by NPWS for the proposed road scheme also apply for addressing the recommendations provided by IFI. Water quality mitigations are considered sufficient to ensure that no silt / oil / fuel run-off from the construction phase will come in contact with the River Nore, and therefore will not interact with discharges from Glanbia into the River Nore. An outline Environmental Operating Plan has been completed and is included in Appendix 5. All mitigation included in the NIS and EclA will be implemented on site through an EOP.

1.2 Legislative context

The current assessment takes account of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora - '*The Habitats Directive*' which was transposed into Irish law by the '*European Community (Natural Habitats) Regulations 1997*' (S.I. No. 94/1997). The most recent transposition of this legislation in Ireland is the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). The Birds Directive (2009/147/EC) which is now included in the former Regulations seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs) whereas the Habitats Directive does the same for habitats and other species groups within Special Areas of Conservation (SACs), which are designated or proposed as candidate Special Areas of Conservation (cSACs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected areas throughout the European Community. Article 6, paragraphs 3 and 4 of the EC 'Habitats' Directive (1992) state that:

6(3) *'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.'*

6(4) *'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.'

In addition, the European Court of Justice in Case C-127/02 (the "Waddenzee Ruling") has made a relevant ruling in relation to Appropriate Assessment and this is reflected in the current assessment:

'Any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects' and that the plan or project may only be authorised "where no reasonable scientific doubt remains as to the absence of such effects.'

In case C-323/17 People Over Wind and Peter Sweetman v Coillte, the Court of Justice of the European Union (CJEU) ruled that mitigation measures could not be taken into account when undertaking a screening for Appropriate Assessment (AA). If mitigation measures are required to reduce or avoid a significant adverse effect, then Appropriate Assessment is required. In the Screening for Appropriate Assessment Report for the proposed N77 road scheme, it was assessed that mitigation was required for potential water quality impacts affecting the SAC and SPA; therefore the proposed N77 road scheme was subject to a NIS (AA).

In case C-461/17 Holohan v An Bórd Pleanála, the Court of Justice of the European Union (CJEU) ruled that the developer, under Article 5 of the Habitats Directive, was required to supply information in relation to the environmental impact both of the proposed project and of all the main alternatives studied by the developer (including any such alternative that had been rejected at an early stage), together with the reasons for his choice taking into account of the environmental affects. The consideration of the alternatives for the proposed N77 road scheme is given below in section 1.3.

1.3 Consideration of Alternatives

The proposed N77 Ballyragget to Ballynaslee road improvement scheme was originally put forward with 3 scheme options. Scheme option 3 was selected for reasons other than the potential impacts on the River Barrow and River Nore SAC and the River Nore SPA. However, none of the scheme options put forward required a crossing or bridge over the River Nore, and each of the scheme options would have given rise to similar impacts as discussed in the current NIS.

Scheme option 3, the final option assessed in the current NIS, was designed and adjusted with ecological input. As an example, the proposed grass swale was originally intended to be longer in length, thus resulting in the proposed scheme being partly located within the boundary of the River Barrow and River Nore SAC. The Screening for Appropriate Assessment Report provided an assessment of this original design, and this report has been through various versions, with impacts re-assessed, as the design of the scheme has been modified.

Minor tweaks were made to the original design of the road scheme. In particular, the proposed open grass swale in the design was modified and scaled back to avoid direct impacts on the SAC and remove the swale from the SAC boundary. Meetings were held with the Kilkenny County Council Design Office for further ecological input into proposed drawings and a site walkover was also conducted during one of the meetings. The reasons for the selection of option 3 as the final scheme option are given in the design report in Appendix 3.



2. METHODOLOGY

2.1 Desktop Review

A desktop study was undertaken to identify the extent and scope of the potentially affected Natura 2000 sites within the current study area, in relation to the proposed road scheme on the N77 in Ballyragget, Co. Kilkenny. The desktop study identified the conservation interests of the designated sites with respect to the qualifying interests (species and habitats) relevant to the designated sites within the area.

A review of published literature was undertaken in order to collate data on the receiving environment; a range of additional sources of information including scientific reports produced by, and information on the websites of the EPA, NPWS and the IFI were also reviewed. Information sources reviewed included the NPWS site synopses for the River Barrow and River Nore SAC and the River Nore SPA, as well as protected species data held on the NPWS online database. The Freshwater Pearl Mussel Second Draft Nore Sub-basin Management Plan was also reviewed (NS2, 2010) in addition to the Biodiversity Ireland website (www.biodiversityireland.ie). A full bibliography of information sources reviewed is given in the reference section.

2.2 Site Surveys

The proposed development site was visited during December 2017, August 2018 and November/December 2018. The length of the proposed scheme and environs were inspected in December 2017 and August 2018 for evidence of ecological features of high conservation concern such as those flora and fauna that occur in the closest Natura 2000 sites. The August 2018 survey also included a walkover mammal survey, and weather conditions were dry and sunny. In November/December 2018 the study area was visited again on two separate days to conduct specific mammal surveys, involving walkover surveys and trail camera surveys. The walkover mammal surveys were conducted to assess the potential for mammal activity in the study area, including observing trails, tracks and other mammal signs such as scat. Weather conditions during the November/December 2018 were very wet and the River Nore had elevated water levels.

2.3 Appropriate Assessment Methodology

The preparation of this NIS for Appropriate Assessment follows the guidance published by DoEHLG (2010) '*Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities*'. According to these guidelines, assessing the impacts of a project or plan on a Natura 2000 site is a four staged approach, as described below:

- **Stage One: Screening / Test of Significance** - The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;
- **Stage Two: Appropriate Assessment** - The consideration of the impact of the project or plan on the integrity of the Natura 2000 site, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;



- **Stage Three: Assessment of Alternative Solutions** - The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site; and
- **Stage Four: Assessment Where Adverse Impacts Remain** - An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

The safeguards set out in Article 6(3) and (4) of the Habitats Directive are triggered not by certainty but by the possibility of significant effects. Thus, in line with the precautionary principle, it is unacceptable to fail to undertake an appropriate assessment on the basis that it is not certain that there are significant effects.

2.3.1 Natura Impact Assessment

A Natura Impact Statement (NIS) considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The current report is set out in the format of a NIS and comprises a scientific examination of the plan / project and the relevant Natura 2000 sites; to identify and characterize any possible implications for the site in view of the site's conservation objectives, structure and function, taking account of in combination effects. The requirements for Appropriate Assessment derive directly from Article 6(3) of the EU Habitats Directive (1992).

Direct and indirect impacts in isolation or in combination with other plans and projects on the identified Natura 2000 sites in view of the sites' conservation objectives have been examined. Case law of the European Court of Justice (ECJ) has established that Appropriate Assessment must be based on best scientific knowledge in the field. These are the qualifying interests i.e. Annex I habitats, Annex I bird species (EU Birds Directive, incorporated into the EU Habitats Directive) and Annex II species hosted by a site and for which that site has been selected. The conservation objectives for Natura sites (SACs and SPAs) are determined under Article 4 of the Habitats Directive and are intended to ensure that the relevant qualifying interests i.e. Annex I habitats, Annex I bird species and Annex II species present within the designated sites are maintained in a favourable condition. The current assessment of the proposal for the road scheme on the N77 in Ballyragget provides a description of the project and the receiving environment. The conservation objectives of Natura 2000 sites potentially affected by the proposal are listed and potential impacts outlined with respect to the integrity of the Natura 2000 site. Mitigation measures have been proposed for the protection of the conservation interests and the avoidance of impacts to Natura 2000 sites occurring within the study area.

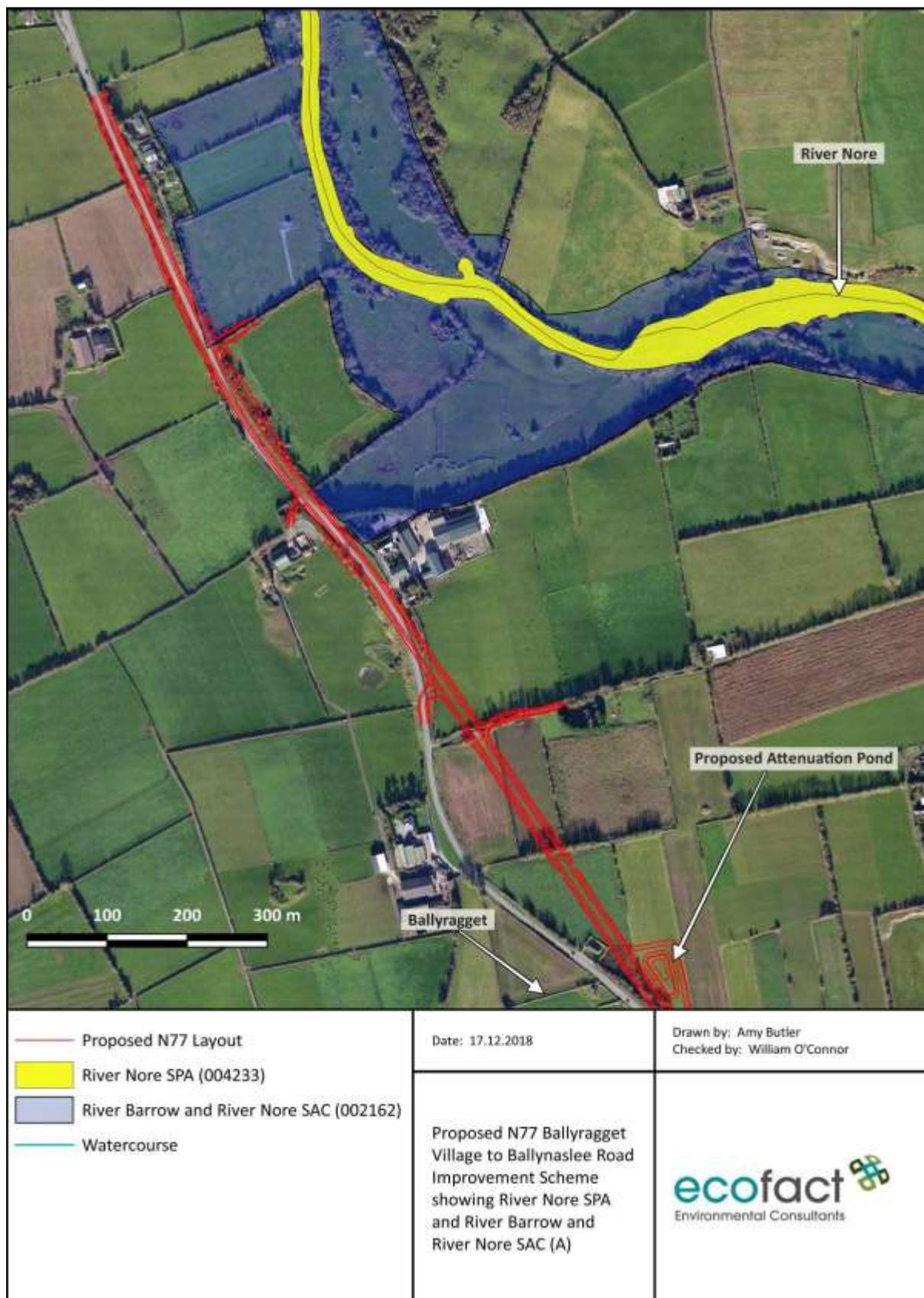


Figure 1a Proposed N77 Ballyragget Village to Ballynaslee Road Improvement Scheme showing River Nore SPA and River Barrow and River Nore SAC (A).

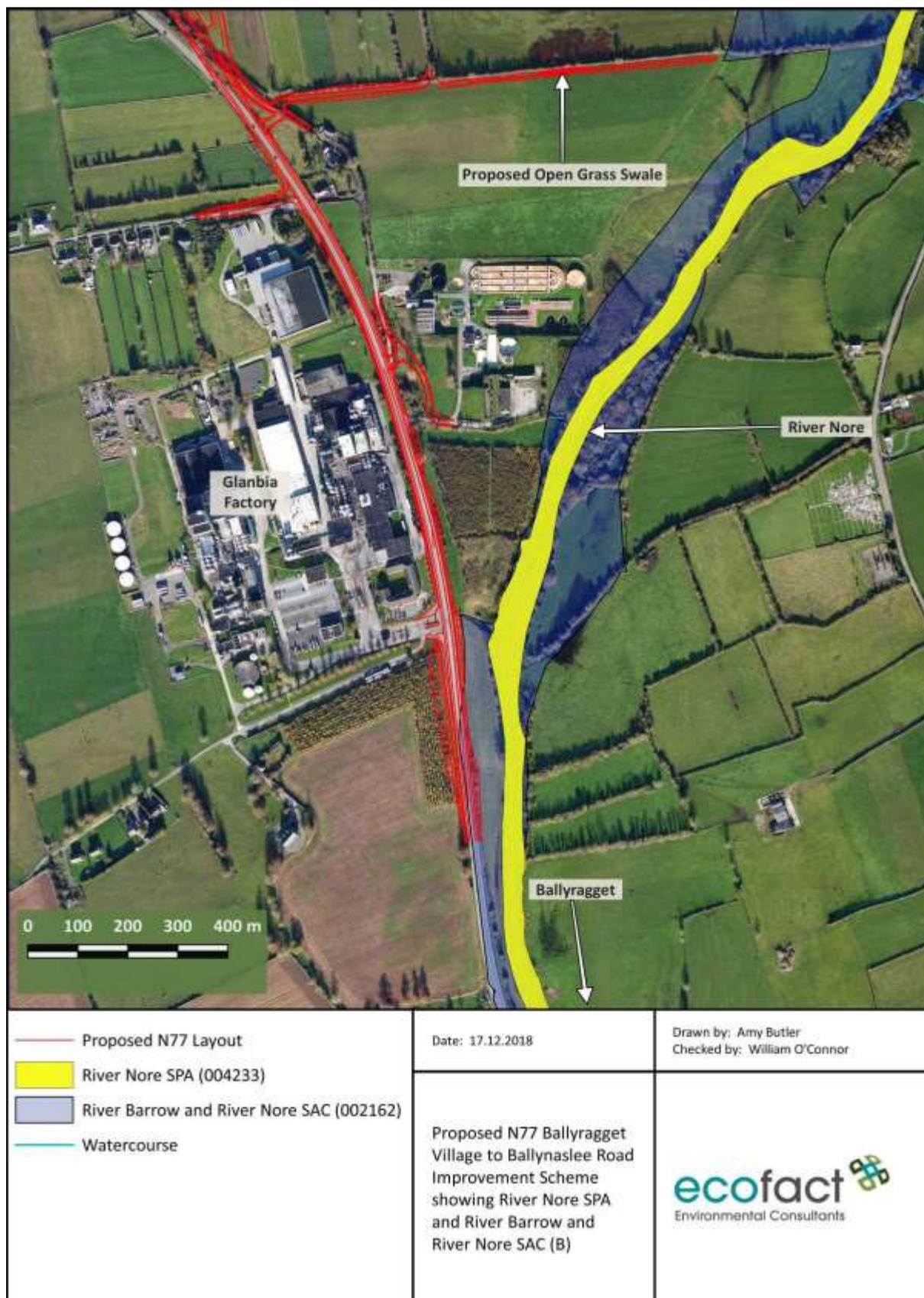


Figure 1b Proposed N77 Ballyragget Village to Ballynaslee Road Improvement Scheme showing River Nore SPA and River Barrow and River Nore SAC (B).



3. NATURA IMPACT STATEMENT

At this stage mitigation can be provided for the proposed road improvement works to minimise the potential for significant impacts on the River Barrow and River Nore SAC and the River Nore SPA. In addition, the impact of a project or plan on the *integrity* of the Natura 2000 site is considered alone and in combination with other projects or plans, with respect to the conservation objectives of the site and to its structure and function (DoEHLG, 2010). This Natura Impact Statement provides a description of the proposed works with regard to the conservation objectives of both the River Barrow and River Nore SAC and the River Nore SPA, where the qualifying interests and conservation objectives of these sites potentially affected by the proposed road scheme are listed and potential impacts outlined.

3.1 Description of the Proposed Project

The effective length of the proposed N77 Minor Scheme is 2.4km. The scheme includes a junction upgrade for the Glanbia factory, with carriageway and verge widening, as well as c. 700m realignment. Land take and hedgerow removal will be required as part of the proposed development.

A new drainage system is proposed for the scheme from c. Ch1950 to c. Ch3300, including the new realignment section. The system includes the provision of a road drainage bypass petrol interceptor which outfalls to an attenuation pond and adjacent soak away area. Surface run-off from adjacent lands between c. Ch2350 to c. Ch2990 will be piped and discharged directly to a proposed spillway and grassed swale with wetland area. The gradient of the swale and wetland area are designed so as to promote the discharge of sediment from surface water run-off. Existing road drainage systems will be utilised on the northern and southern ends of the scheme, with the provision of new road drainage and bypass petrol interceptors as shown.

Project specific design drawings are indicated in the design report in Appendix 3. The outline Environmental Operating Plan, which also includes proposed mitigation drawings, is provided in Appendix 5.

3.2 Description of the receiving environment

The proposed road scheme is located adjacent to the River Nore and The River Barrow and River Nore SAC and River Nore SPA. The River Nore is located within Hydrometric Area 15 (Nore) and the South Eastern River Basin District. The stretch of the River Nore adjacent to the proposed scheme is classified as 'at risk' by the Water Framework Directive (WFD).

The EPA carry out biological monitoring on the River Nore within the study area. The nearest monitoring station is located to the south of the scheme at the bridge just west of Ballyragget. This station was rated as Q4-5 in 2016, corresponding to WFD status 'High' (Station Code: 15N01 1450). Furthermore, approximately 7.1km upstream of this point, another station was rated Q4-5 in 2016 (Station Code: 15N01 1300). A biological assessment of water quality in the River Nore adjacent to this stretch of the N77 was undertaken in May 2018 by Pascal Sweeney for the Glanbia IPPC license (Pascal Sweeney, 2018). At all 6 sites sampled, Q4 'Good' Status was recorded (Pascal Sweeney, 2018).

The EclA for the proposed road improvement scheme completed by Ecofact describes the habitats on site as the following: *'In general the habitats on the proposed development site are of Local Importance and are habitats that are widespread and common across Ireland'* (Ecofact, 2018b). The



habitats along the proposed road scheme generally consist of agricultural grassland, hedgerows, treelines and scrub.

4 DESCRIPTION OF THE NATURA 2000 SITES AFFECTED

4.1 Overview of the River Barrow and River Nore SAC

The River Barrow and River Nore SAC is selected for alluvial forests and petrifying springs, priority habitats on Annex I of the E.U. Habitats Directive, 1992. The site is also selected as a SAC for old oak woodlands, reefs, floating river vegetation, estuaries, tidal mudflats, *Salicornia* mudflats, Atlantic salt meadows, Mediterranean salt meadows, dry heath and hydrophilous tall herbs, all habitats listed on Annex I of the E.U. Habitats Directive. As well as habitats, the SAC has been selected due to the presence of invertebrate, fish and mammal species which are listed under Annex II of the EU Habitats Directive, including freshwater pearl mussel (*Margaritifera margaritifera*), nore pearl mussel *M. durrovensis*, white-clawed crayfish (*Austropotamobius pallipes*), Atlantic salmon (*Salmo salar*), twaite shad (*Alosa fallax fallax*), the three Irish Lamprey species - sea (*Petromyzon marinus*), brook (*Lampetra planeri*) and river (*Lampetra fluviatilis*), the Desmoulin's whorl snail *Vertigo moulinsiana* and Eurasian otter (*Lutra lutra*). The riparian corridor and aquatic habitat of the River Nore supports a number of the qualifying interests of this Natura site. The site synopsis for the River Barrow and River Nore SAC is included in Appendix 4.

The Screening for Appropriate Assessment Report identified the potential for impacts on the following habitats and species: 'Watercourses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation'; 'Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels'; 'Freshwater Pearl Mussel'; 'White-clawed Crayfish'; 'Sea Lamprey'; 'Brook Lamprey'; 'River Lamprey'; 'Twaite Shad'; 'Salmon'; 'Otter' and 'Nore Pearl Mussel'.

4.1.1 Annex II species listed as qualifying interests of the River Barrow and River Nore SAC

4.1.1.1 Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029] / Nore Pearl Mussel [1990]

The stretch of the River Nore in the study area of the proposed scheme is within the distribution of the Nore Pearl Mussel. There are records of Nore Pearl Mussels from this stretch of river, and small numbers of large old individuals may still occur here. The main population appears to be restricted to the section of main river channel from Poorman's Bridge (S 407 859) to Lismaine Bridge (S 442 660), with most of the population found between Poorman's Bridge and the Glanbia Factory above Ballyragget (S 440 722). There is a sub-basin management plan (NS 2, 2010) for the catchment area upstream of Ballyragget. The most recent full distribution survey of the River Nore took place in 1991, and monitoring work has been undertaken at intervals, with the most recent being in 2007, by Evelyn Moorkens for NPWS and monitoring for the River Barrow and River Nore SAC.

The Freshwater Pearl Mussel Second Draft Nore Pearl Mussel Management Plan notes that the Nore Pearl Mussel has not successfully reproduced in the River Nore since 1970 and is on the edge of extinction. The sub-basin management plan notes that the single extant *M. durrovensis* population in the River Nore is un-viable and on the verge of extinction (NS 2, 2010). It also notes that the most recent estimate of the total number of extant adults, based on surveys in 2005 is 500 individuals, a 75% decline since the surveys in 2009. Water quality issues in the Nore catchment have hindered juvenile mussel recruitment, with heavy siltation and nutrient enrichment, and the timescale for such



issues to be cleared is noted to be much longer than the lifespan of the last remaining mussels in the River Nore. Breeding programmes have been set up in the hope of creating self-sustaining populations of the Nore Pearl Mussel that can be translocated to the Nore catchment (NS 2, 2010).

Filamentous algae sampling was undertaken at Ballyragget Bridge, and two other sites on the Nore, for the Nore sub-basin management plan. The results showed that the macroscopic visible algae was very high at all sites, with abundance (*Cladophora glomerata*) between 25-50% at Ballyragget Bridge (NS 2, 2010). The sub-basin management plan also notes significant erosion/deposition on the river bank at Ballyragget Bridge. An increase in filamentous algae can indicate eutrophication problems, which are detrimental to the survival of the Freshwater Pearl Mussel as it is very sensitive to water quality issues.

Despite prognosis for the species in this stretch of the River Nore it has to be acknowledged that the proposed scheme is within the sub-basin plan area. The adjoining stretch of river is therefore existing or potential mussel habitat and any works which have the potential to introduce silt or other pollutants into this stretch has to be assessed as working against the conservation objectives of the SAC.

4.1.1.2 White-clawed Crayfish [1092]

The White-clawed Crayfish is evaluated as being of 'Inadequate' conservation status nationally (2013b). The National Biodiversity Data Centre maps show records of White-clawed Crayfish in the study area both upstream and downstream of the proposed road scheme. In 1995 the EPA recorded White-clawed Crayfish at Tallyho Bridge approximately 2.6km upstream of the proposed scheme, and also c. 6.7km downstream of the scheme in the same year. However, it is thought that the crayfish population crashed in 2001, with accumulations of dead crayfish in slack water noted by a local angler. It is considered that this could have been crayfish plague, although this has never been confirmed. Therefore, it is unlikely that White-clawed Crayfish are present in the study area, although it is possible.

4.1.1.3 Sea Lamprey [1095]

The Sea Lamprey is evaluated as being of 'Bad' conservation status nationally (2013b). It is noted in Kurtz & Costello (1999) that Sea Lamprey are common in the Nore catchment, and sometimes spawn up as far as Ballyragget. Suitable spawning areas exist just downstream of Ballyragget. Sea Lamprey redds were identified on the River Nore at Thomastown by Inland Fisheries Ireland in 2014, however no redds were identified here in 2016 (IFI, 2015, 2017). Despite this, it is considered likely that Sea Lamprey are present in the study area.

4.1.1.4 Brook/River Lamprey [1096, 1099]

Both the Brook and River Lamprey are evaluated as being of 'Favourable' conservation status nationally (2013b). Brook Lamprey and River lamprey are included together as ammocoetes cannot readily be distinguished. Kurtz & Costello note that Brook Lampreys are present in the Nore main channel between Abbeyleix and Ballyragget (Kurtz & Costello, 1999). Suitable nursery and spawning habitat is present for lamprey species in the study area and therefore these species are considered to be present.



4.1.1.5 Twaite Shad [1103]

Twaite Shad are evaluated as being of 'Bad' conservation status nationally (2013b). The site synopsis for the River Barrow and River Nore SAC describes the SAC as one of only a handful of spawning grounds in the country for Twaite Shad. No twaite shad were captured by Inland Fisheries Ireland during surveys in 2014 on the River Nore below Inistioge (IFI, 2015). However, it is noted in the report that results were poor for the River barrow, River Nore and River Suir, potentially due to adult shad spawning earlier than usual. It is possible that Twaite Shad are present in the River Nore, and potentially within the study area.

4.1.1.6 Atlantic Salmon [1106]

Atlantic Salmon are evaluated as being of overall 'Bad' conservation status nationally (NPWS 2013). Annex II Atlantic Salmon are present in the River Nore and considered likely to be present in the study area. Salmon spawning habitat is present downstream of Ballyragget.

4.1.1.7 Otter [1355]

Otters are evaluated as being of 'Favourable' conservation status nationally (2013b). Otter are present all along the River Nore main channel and would use this water feature as the basis for their commuting routes in the study area. The trail camera surveys did not confirm Otter usage along the River Nore adjacent to the proposed road scheme, although it is likely that this stretch of the River is used by Otters. However, Otter footprints and tracks were identified under Ballyragget Bridge during the current survey, which is located approximately 1.1km downstream of the proposed road improvement scheme. It is noted that the habitat in the study area is fragmented, with the existing N77 road restricting the movement of Otters in the area and acting as a barrier. It is likely therefore that Otters in the study area are mainly confined to the River Nore, although it must be noted that there is the potential that an occasional young Otter may stray from the river. Again, no established Otter trails were identified in any of the surveys along the length of the proposed road scheme. No Otter holts were identified in the study area. The only crossing point in the area that is likely to be used by Otters in the SAC is at Ballyragget Bridge, c. 1.1km downstream of the proposed scheme.

4.1.1.8 Desmoulin's Whorl Snail [1016]

Desmoulin's Whorl Snail are evaluated as being of 'Inadequate' conservation status nationally (2013b). Desmoulin's Whorl Snail are present in two areas within the River Barrow and River Nore SAC. The first area is located c. 3.5km north-west of Cullohill, Co. Kilkenny (c. 10km from the proposed scheme as the crow flies), and the second area is located c. 1.7km west of Borris, Co. Carlow (c. 35.2km from the proposed scheme as the crow flies). It is noted in the Screening for Appropriate Assessment Report that there is no potential for impacts and no pathways for impacts were identified due to geological separation. Therefore no mitigation is required and this species will not be assessed in the current Natura Impact Statement.

4.1.1.9 Killarney Fern [1421]

Killarney Fern is evaluated as being of 'Favourable' conservation status nationally (2013b). There is only one area along the River Nore within which this species is found, and this is located c. 60km downstream of the proposed road scheme about 5km south-east of Inistioge, Co. Kilkenny. It is noted in the Screening for Appropriate Assessment Report that there is no potential for impacts and no



pathways for impacts were identified due to geological separation. Therefore no mitigation is required and this species will not be assessed in the current Natura Impact Statement.

Table 1 Annex II species listed as qualifying interests of River Barrow and River Nore SAC.

Natura Code	Item Description	Occurrence in the study area
1109	Freshwater Pearl Mussel <i>Margaritifera margaritifera</i>	✓
1990	Nore Pearl Mussel <i>Margaritifera durrovensis</i>	✓
1092	White-clawed Crayfish <i>Austropotamobius pallipes</i>	Potential
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 fallax</i>	Potential
1106	Salmon <i>Salmo salar</i>	✓
1355	Otter <i>Lutra lutra</i>	✓
1016	Desmoulin's Whorl Snail <i>Vertigo moulinsiana</i>	X
1421	Killarney Fern <i>Trichomanes speciosum</i>	X

4.1.2 Habitats listed as qualifying interests of the River Barrow and River Nore SAC

The River Barrow and River Nore SAC is selected for the presence of various marine, freshwater and woodland habitats. It is noted in the Screening for Appropriate Assessment Report that the 'Estuaries' and 'Mudflats and sandflats not covered by seawater at low tide' are dynamic habitats with naturally occurring levels of sediment. Reefs are located at a minimum some c. 80km downstream from the scheme. 'Salicornia and other annuals colonizing mud and sand', 'Atlantic salt meadows', 'Mediterranean salt meadows' are all located approximately c. 72.3km downstream of the scheme in the Suir estuary. Petrifying springs with tufa formation is located c. 47.3km downstream of the scheme. Taking into account the relatively small scale of the scheme, and that localized water quality impacts are identified which require mitigation in an NIS (AA) to protect local aquatic habitats and species, there is no potential for impacts on these habitats located this long distance downstream. The stringent mitigation measures included in the current report for protect the extremely sensitive Freshwater Pearl Mussel in the SAC are more than sufficient to ensure that no water quality impacts arise that would have the potential to affect these marine habitats located far distances downstream of the scheme.

No pathways were identified in the Screening for Appropriate Assessment Report for impacts on the European dry heath or woodland habitats in the SAC, 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' and 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)'. These habitats are not located along the footprint of the proposed road improvement scheme or the study area. No access roads for construction or storage of materials or any construction or operational activities will be located anywhere near these habitats within the



SAC, and therefore no impacts have the potential to arise, as noted in the Screening for Appropriate Assessment Report in Appendix 1.

The freshwater habitats 'watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho – Batrachion* vegetation' 'Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels' were identified in the Screening Report as having the potential to be impacted by the proposed road scheme, as there is no mapping of these habitats in the conservation objectives document for the SAC. Although these habitats are not present in the study area, they are likely to be present downstream and therefore could be affected by water quality impacts, as noted in the Screening for Appropriate Assessment Report. There are records of floating river vegetation i.e. *Ranunculion fluitantis/Callitricho – Batrachion*' in Kilkenny city from the Better Environmental and Engineering Services Ltd. (2006). These habitats are assessed with other aquatic interests of the SAC below.

Table 2 Habitats listed as qualifying interests of the River Barrow and River Nore SAC.

Natura Code	Item Description	Occurrence in the study area
1130	Estuaries	X
1140	Mudflats and sandflats not covered by seawater at low tide	X
1170	Reefs	X
1310	Salicornia and other annuals colonising mud and sand	X
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	X
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	X
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Potential
4030	European dry heaths	X
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Potential
7220	Petrifying springs with tufa formation (Cratoneurion)	X
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	X
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	X

4.2 Overview of the River Nore SPA

The River Nore SPA is designated for one qualifying interest, the Kingfisher. This SPA is a long linear site including the following rivers: the River Nore from the bridge at Townparks to Coolnamuck in Co. Kilkenny, the Delour River from its junction with the River Nore to Derrynaseera bridge in Co. Laois, the Erkina River from its junction with the River Nore at Durrow Mills to Boston Bridge in Co. Laois, a 1.5km stretch of the River Goul upstream of its junction with the Erkina River and the Kings River from its junction with the River Nore to a bridge at Mill Island, Co. Kilkenny. The River Nore SPA is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that



is listed on Annex I of the E.U. Birds Directive. The site synopsis for the River Nore SPA is included in Appendix 4.

In the Screening for Appropriate Assessment Report it was noted that there is no suitable Kingfisher habitat in the stretch of the River Nore adjacent to the proposed road improvement scheme. Kingfishers are unlikely to use the area as it is along an existing road, the N77. Indirect water quality impacts during the construction phase are unlikely to affect this species due to the stringent water quality mitigation measures included to protect the extremely sensitive Freshwater Pearl Mussel. However, the potential for operational phase impacts on water quality was identified in relation to spillages on the new road and mitigation is required, which cannot be provided in a Screening for Appropriate Assessment Report. Impacts on this species within the SPA are assessed below.

5 IMPACT PREDICTION

At NIS stage, mitigation to offset potential negative impacts can be provided. In addition, the impact of the project / plan affecting the *integrity* of a Natura 2000 site is considered with respect to the conservation objectives of the site. Integrity is defined as: *'the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified'*. Therefore, the integrity of a site is principally related to the structure and function of the site with regard to its Annex I habitats and Annex II species listed as the qualifying interests. The conservation status of these qualifying interests comprises the primary conservation objectives for all designated Natura 2000 sites.

5.1 Direct impacts

5.1.1 Direct impacts during construction phase

The proposed road improvement scheme is not located within any Natura 2000 site; however it is located in close proximity to the River Barrow and River Nore SAC and the River Nore SPA. The most northern and most southern sections of the scheme are located closest to the SAC and SPA. The southern extent of the scheme is located the closest to the river corridor, at c. 30m. There are no Otter holts located within the footprint of the scheme. It is unlikely the Otters associated with the SAC would come in contact with the construction phase of the development. Along sections of the existing N77 road that is located in close proximity to the River Nore, some minor disturbance impacts may arise but this impact is not considered to be significant and works will not be undertaken during dark hours. Direct impacts during the construction phase are assessed as imperceptible negative. Again as noted in the Screening for Appropriate Assessment report, Kingfisher would not use the study area outside of the SAC as the N77 is an existing road and no suitable Kingfisher habitat is present here.

5.1.2 Direct impacts during operational phase

As noted above, the proposed development is not located within any Natura 2000 site; although it is located in close proximity to the River Barrow and River Nore SAC and the River Nore SPA. There is no potential for direct impacts to arise during the operational phase that would affect any of the conservation interests of the SAC or SPA as none of these species are present within the footprint of the scheme. As the N77 is an existing road there would be no established crossing routes that would be used by Otters, which was confirmed by the current surveys. No mammal trails were identified in the offline sections of the proposed road scheme, on the c. 700m realignment. Therefore it is considered unlikely that Otters associated with the nearby SAC would cross the N77 road. It is also noted that there is no bridge over the River Nore either adjacent or along the stretch of the N77 and



the proposed realignment. However it must be noted that there is the possibility the occasional young Otter may stray from the River Nore main channel. The most likely point that Otters may cross in the wider study area is considered to be at Ballyragget Bridge, c. 1.1km downstream of the proposed scheme. Otter footprints and tracks were observed here during the current surveys. Mammal fencing is present at the Bridge although it was found to be damaged. Again, as noted in the Screening for Appropriate Assessment Report no Kingfisher habitat is present here as the N77 is an existing road with no suitable habitat in the vicinity and therefore there are no potential for impacts on this species associated with the SPA. Direct impacts during the operational phase are assessed as imperceptible negative.

5.2 Indirect impacts

5.2.1 Indirect impacts during construction phase

5.2.1.1 Water Quality

Potential indirect impacts that may arise during the construction phase of the project mostly comprise water quality impacts, particularly affecting the sensitive Nore Freshwater Pearl Mussel. However, water quality impacts also have the potential to impact Sea Lamprey, Brook/River Lamprey, White-clawed Crayfish, Otter, Atlantic Salmon and Twaite Shad, all aquatic interests designated as part of the River Barrow and River Nore SAC. Water quality impacts could also affect Kingfisher indirectly, within the River Nore and the River Nore SPA.

A deterioration in water quality could arise through runoff of soil from excavated areas and soil deposition areas contributing to increased suspended solids, hydrocarbons (including fuels and lubricants) spilling from machinery, and waste materials such as concrete. Uncured concrete can kill fish and macroinvertebrates by altering the pH of the water. Freshwater Pearl Mussels are particularly sensitive to water pollution as they are a filter feeding species. The habitat of the Nore Pearl Mussel failed water quality (macroinvertebrates and diatoms) standards during 2009 sampling for the Freshwater Pearl Mussel Second Draft Nore Sub-basin Management Plan (NS2, 2010). Therefore any alteration in water quality status caused by the proposed road scheme can affect the conservation objectives for this species in the River Barrow and River Nore SAC, such as working against the ability to restore habitat and water quality status. The Freshwater Pearl Mussel Nore Sub-basin Management Plan (NS2, 2010) notes '*road development as well as ongoing risks from roads that are proximal to pearl mussel rivers are considered to present a significant threat to this species*'. However, these works are of a small scale and at a distance from the River Nore, with the proposed realignment section located c. 948m from the river at its closest point. Therefore impacts are not considered likely to be significant. Nevertheless, mitigation measures are required to ensure that water quality impacts are avoided during the construction phase. These mitigation measures are considered to be more than sufficient to also avoid any potential impacts to the floating river vegetation habitat and the Hydrophilous tall herb habitat located a distance downstream of the works. Indirect water quality construction phase impacts are assessed as being slight negative and short-term.

5.2.1.2 Invasive Species

The proposed development could also potentially result in the introduction of non-native invasive species indirectly to the SAC and the SPA. It is noted that while no non-native species were identified during the site survey, there is the potential for machinery to introduce invasive species to the area. This impact, in the absence of mitigation measures, is assessed as moderate negative and long term.



5.2.1.3 Noise and Disturbance

The construction phase of the proposed development will result in increased noise and disturbance levels in the study area. Along the northern and southern sections of the proposed road scheme located in close proximity to the River Nore, c. 200m and c. 30m respectively, noise and disturbance could impact Otters within the River Nore. However, works will be undertaken during daylight hours and this impact is not considered to have the potential to be significant. The proposed road scheme is of a relatively small size, and the sections located close to the River Nore would be no more than 350m of the 2.4km proposed road scheme length. This impact is assessed as imperceptible negative. Again, as noted in the Screening for Appropriate Assessment Report, no impacts regarding noise and disturbance are likely to arise that would affect Kingfisher in the River Nore SPA, as there is no suitable habitat for this species in the study area.

5.2.1.4 Air Quality and Dust

The proposed road alignment scheme may result in increased dust during the construction phase, which would affect air quality and potentially water quality. The majority of the scheme is located at a distance from the River Nore, with the northern and southern sections located the closest (c. 200m and 30m respectively). Due to distance, dust generated from the construction phase of the project is not considered to have the potential to reach the River Nore or cause significant water quality impacts. Air quality may be affected during the construction phase, however due to the relatively small size of the scheme this will be a localized and short-term impact, and would not affect any of the conservation interests of the nearby SAC and SPA. This impact is assessed as being imperceptible negative.

5.2.2 Indirect impacts during operational phase

5.2.2.1 Water Quality

No negative indirect impacts arising from the operational phase of the proposed road scheme that could affect water quality are envisaged. This is because the N77 is an already existing and busy road, with only a small c. 700m realignment proposed. However, it is considered that there would be a positive operational phase impact as run-off from the N77 does not currently receive any treatment. The current proposal will provide treatment and attenuation for road run-off, in addition to bypass petrol interceptors. The proposed development will be upgrading current conditions with a modern treatment system.

Regarding the Glanbia factory located adjacent to the N77, there already remains the potential for spillages on the road, including milk, fuels, lubricants and other chemical additives from HGVs. The new design for the N77 road has kept safety in mind and will improve current conditions. In relation to spillages, the proposed attenuation pond will have a manual shut off valve fitted to the outfall pipe, the bypass interceptor will also be able to be closed, ensuring that any spillages, either milk, petrol, oil, etc., can be controlled before discharge. The Northern Ireland Environment Agency, Scottish Environment Agency and Environment Agency for England and Wales (2011) Pollution Prevention Guidelines for Dealing with Spills note the containment of spills in drainage systems and oil separators, upon failure to contain the spill on the roadside itself. This new upgrade would prevent any spillages from entering the River Nore and impacting water quality. Indirect impacts during the operational phase are assessed as being moderate positive in the long term.



Similarly to milk spillages, road salt is already being used on the existing N77 road during the winter months, located adjacent to the River Nore, the River Barrow and River Nore SAC and the River Nore SPA. As mentioned previously any run-off from the existing N77 road does not get treated before discharging to the River Nore. The proposed attenuation pond will have a positive impact as any road salt used on the N77 will be treated before discharging to the River Nore. The grit used during de-icing applications is of such a high density that it readily settles in grit traps and the particle size is large enough for it to be effectively removed by filter drains and would be fully removed by the attenuation pond proposed for the N77 road improvement scheme. Frequent rainfall makes it unlikely that salt would still be present in any significant concentration when the cold conditions that necessitated the spreading of salt has passed. Indeed, the high frequency of rainfall (particularly during the winter months when de-icing is carried out) has the effect of almost constantly cleansing the road surface and renewing surface water bodies quickly. Salt levels will temporarily increase in the attenuation ponds following a de-icing operation. However, salt and other agents would not be used for extended periods (i.e. as would be the case on North American and eastern European roads) so the dilution rates would ensure negligible effects (Luker, M. Montague, K., 1994). Again, it is considered that the proposed attenuation pond would improve the current conditions on the existing N77 road in relation to issues with road salt run-off during the Irish winter months.

The Freshwater Pearl Mussel Nore Sub-basin Management Plan (NS2, 2010) notes *'road development as well as ongoing risks from roads that are proximal to pearl mussel rivers are considered to present a significant threat to this species'*. 'Ongoing Risks' from roads like the proposed road improvement scheme for the N77 comprise the above mentioned spillages and run-off. This has been addressed due to the proposed attenuation pond and bypass interceptors; the risk to water quality in the River Nore arising from the N77 will be lowered significantly during the operational phase of the development. However, inspection regimes for the bypass interceptors will be required to ensure effectiveness, and this is detailed in the mitigation section of the current report. It is also noted that the positive impact on water quality during the operational phase will also affect Kingfisher indirectly, present in the River Nore SPA.

5.2.2.2 Habitat Loss

Minor habitat loss will occur as a result of the proposed N77 Ballyragget to Ballynaslee Road Improvement Scheme. The proposed c. 700m realignment will cut through habitats of low ecological importance outside the SAC, and none of these habitats are protected or considered to be of importance to any of the qualifying interests of either the River Barrow and River Nore SAC or the River Nore SPA. They comprise agricultural habitats, hedgerows and improved agricultural grassland. This impact is assessed as being imperceptible negative in the long term.

5.3 Cumulative impacts

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects (Bowers-Marriott, 1997).

The Freshwater Pearl Mussel Second Draft Nore Sub-basin Management Plan identifies the key pressures affecting the status of FPM in the River Nore catchment (NS2, 2010). These pressures are listed as the following: sources of erosion (channel manipulation, animal trampling, hard bank



protection measures), diffuse nutrients (grazing, forestry, housing, industry), diffuse silt (arable, silage, peat cutting, quarries), barriers to migration (culverts, bridge aprons, weirs), outfalls and abstractions. The water quality pressures listed above also impact on the other aquatic conservation interests of the SAC in the study area: Sea Lamprey, Brook/River Lamprey, White-clawed Crayfish, Otter, Atlantic Salmon and Twaite Shad. Water quality pressures in the River Nore can also affect Kingfisher in the River Nore SPA, by indirectly affecting its food source, i.e. fish.

It is not considered likely that the proposed road scheme would result in significant water quality impacts that would have the potential to affect the aquatic interests of the River Barrow and River Nore SAC, specifically the sensitive Freshwater Pearl Mussel and Nore Pearl Mussel. The River Nore in this stretch is surrounded by agricultural activities contributing to bank side erosion, diffuse silt and diffuse nutrients, with the Glanbia factory also discharging into this stretch of river. A Pavement Overlay Scheme may be undertaken at Ballyragget Bridge, c. 1.1km downstream of the works area, which would involve upgrading the existing pathway and could lead to cumulative impacts with the current proposal. The current proposed scheme is of a relatively small scale with the majority of the scheme running along the existing N77 road and with a small c. 700m realignment proposed. With the improved drainage design resulting in easier containment of spillages as noted above in section 5.2.2, the low lying landscape in this area, the proposed water quality mitigation provided in the outline Environmental Operating Plan, and the small scale of the scheme, potential cumulative water quality impacts are not considered to have the potential to be significant. Cumulative water quality impacts are assessed as being imperceptible negative.

6 Mitigation measures

6.1 Construction Phase

6.1.1 Mitigation Guidelines

All mitigation measures set out in this NIS have taken into account the following guidelines as relevant:

- CIRIA, (2002) '*Control of Water Pollution from Construction Sites - Guide to Good Practise (SP156)*'
- CIRIA, (2005) '*Environmental Good Practice – Site Guide (C650)*'
- CIRIA, (2006) '*Control of Water Pollution from Linear Construction Projects- Site Guide (C649)*'
- CIRIA, (2006) '*Control of Water Pollution from Linear Construction Projects -Technical Guidance (C648)*'
- CIRIA, (2001) '*Control of Water Pollution from Construction sites- Guidance for Consultants and Contractors (C532)*'
- NRA, (2008a) '*Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes*'
- IFI, (2016) '*Guidelines of protection of Fisheries during construction works in and adjacent to waters*'
- NRA, (2010) '*The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*'



6.1.2 Environmental Operating Plan

An outline Environmental Operating Plan (EOP) has been completed for the proposed development and is included in Appendix 5 of the current report. This outline plan includes the proposed mitigation drawings for the N77 road scheme and a schedule of environmental commitments. All mitigation included in the NIS and EclA will be implemented on site through an EOP.

6.1.3 Site Ecologist

A Site Ecologist will be appointed by Kilkenny County Council for the proposed works. The role of the Ecologist will be to approve the contractors EOP, ensure the EOP contains all mitigation in the NIS and EclA and ensure that it is implemented on site. The Site Ecologist will be employed by Kilkenny County Council but will be under the management of the Employers Representative (ER) on site. The Site Ecologist will also carry out water quality monitoring, as requested by NPWS, on the River Nore upstream and downstream of the works areas. Although, it is noted that there is a low risk for water quality impacts due to the provision of silt fences and bunding. The Site Ecologist will also ensure that the silt fences and bunding are in place as per the drawings in the EOP and are effectively managed to ensure any run-off from these areas is intercepted.

6.1.4 Limiting Works Areas

The entire works area will be fenced off to ensure that no work activities will take place outside delineated areas, adjacent to the River Nore or within the boundaries of the SAC and SPA. The site compound will not be located within the SAC or SPA boundaries, or within 50m of any watercourse, which is shown in the drawings in the outline EOP in Appendix 5. The site compound will also be fenced off with silt fences (below), the locations of which are also included in the outline EOP in Appendix 5. Toilet and waste facilities for staff working on site will also be located within the fenced site compound also included in the outline EOP (Appendix 5). The site compound will also have security to deter theft, vandalism and unauthorized access. Machinery will not operate or be stored outside of delineated works areas.

6.1.5 Water Quality Protection

Strict water quality protection measures are provided to ensure adverse water quality impacts do not arise during the construction phase. Silt fences will be erected around the selected works areas and the site compound, included in the outline EOP in Appendix 5. Terrastop Premium Silt Fences, or an equivalent alternative, will be used to intercept any run-off from these areas. The site ecologist will ensure that the silt fences are correctly placed as illustrated in the outline EOP, and that they are effectively managed on site.

The site compound will also have bunded storage areas to store any oils or fuels required for machinery, which are illustrated in the outline EOP in Appendix 5. Any stockpiling of materials will be outside of the SAC and SPA boundaries, 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalized. Uncontaminated U1 material can be reprocessed on site, within areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility. Any mixing of concrete / cement or other materials



required for the works will also be undertaken within the site compound, with all wash water and waste / grey water stored securely on site, which is included in the outline EOP in Appendix 5.

6.1.6 Biosecurity

Strict biosecurity measures will be employed during the construction of the proposed scheme to avoid the introduction of any non-native invasive species on site. Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site. The NRA guidelines '*The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*' (2010) are considered to be sufficient for the current project as no non-native invasive species were recorded in the study area during the current surveys.

6.2 Operational Phase

6.2.1 Water Quality

The proposed attenuation pond and bypass petrol interceptors will mitigate for potential operational phase water quality impacts. The proposed attenuation pond will have a manual shut off valve fitted to the outfall pipe and the bypass interceptor will also be able to be closed, ensuring that any spillages, either milk, petrol, oil, etc., can be controlled before discharge. The drawings for the proposed attenuation pond and bypass petrol interceptors are included in the design report in Appendix 3. The Northern Ireland Environment Agency, Scottish Environment Agency and Environment Agency for England and Wales (2011) Pollution Prevention Guidelines for Dealing with Spills note the containment of spills in drainage systems and oil separators, upon failure to contain the spill on the roadside itself.

The proposed attenuation pond will also ensure that any road salt / grit used on the new N77 road will be attenuated before discharge, preventing operational phase water quality impacts. Additionally, to ensure effectiveness, an inspection regime of the bypass interceptors will be conducted by the council for the operational phase of the scheme to ensure they are correctly maintained. The grit used during de-icing applications is of such a high density that it readily settles in grit traps and the particle size is large enough for it to be effectively removed by filter drains and would be fully removed by the attenuation pond proposed for the road improvement scheme. Salt levels will temporarily increase in the attenuation ponds following a de-icing operation. However, salt and other agents would not be used for extended periods (i.e. as would be the case on North American and eastern European roads) so the dilution rates would ensure negligible effects (Luker, M. Montague, K., 1994). Indeed, the high frequency of rainfall (particularly during the winter months when de-icing is carried out) has the effect of almost constantly cleansing the road surface and renewing surface water bodies quickly.

6.2.2 Biosecurity

Biosecurity measures will be employed during the operational phase to ensure non-native invasive species risk is minimized. Biosecurity will be managed on the new N77 road using the NRA guidelines '*The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*'. During management of the new road checks will be made on a regular basis for non-native invasive species. If any non-native invasive species are found they will be eradicated appropriately as indicated in the NRA guidelines.



6.2.3 Mammal Fencing

No mammal fencing will be required on the new N77 road as it is not considered necessary. No water crossings or bridges over the River Nore are included in the proposal for the N77 road improvement scheme. The N77 is an existing road and no Otters have established routes here; the majority of this road scheme is along the existing road. No mammal trails were identified in the footprint of the offline sections, either in the August or November / December mammal surveys.

It is recommended for the current project that the existing mammal fencing at Ballyragget Bridge be repaired, ideally to 50m or more either side of the bridge as per recommendations in the NRA *Guidelines for the treatment of Otters prior to the construction of national road schemes* (2008b). In the wider study area, this is the most likely point at which Otters would cross the River Nore, some c. 1.1km downstream of the scheme at Ballyragget Bridge, where damaged mammal fencing already exists as identified in the current surveys. Otter footprints and tracks were observed under the bridge during the current surveys.

7 IMPACTS AFFECTING THE CONSERVATION OBJECTIVES OF THE NATURA 2000 SITES

The overall aim of the Habitats Directive is to maintain or restore the favorable conservation status of habitats and species of community interest. Favorable conservation status is defined for Annex I habitats and Annex II species in the Habitat Directive (1992):

Article 1 (e)

Conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2.

The conservative status of a natural habitat will be taken as 'favourable' 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.

Article 1 (i)

Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;

The conservation status will be taken as 'favourable' 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.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area 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.



The 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 Objectives of the River Barrow and River Nore SAC are detailed in a site specific report prepared by the National Parks and Wildlife Service (NPWS, 2011). The current assessment utilises the site-specific conservation objectives and the national 'Status of EU Protected Habitats and Species in Ireland' Report (NPWS, 2013a; NPWS, 2013b).

During the construction phase, water quality impacts, invasive species impacts, noise and disturbance, air quality and dust impacts may arise which could affect both the River Barrow and River Nore SAC and the River Nore SPA. The implementation of mitigation measures prescribed for the works, such as silt fences, a bunded site compound, an appointed site ecologist, etc., will result in these impacts being reduced to imperceptible in scale.

During the operational phase, habitat loss impacts, and positive water quality impacts may arise from the proposed road scheme which could affect the River Barrow and River Nore SAC and the River Nore SPA. The implementation of mitigation measures prescribed for the works, with an upgrade in treatment and attenuation of road run-off and easier containment for oils/milk/fuel spillages on the road, will result in these impacts being reduced to imperceptible in scale.

There are no impacts arising from the proposed road scheme which would could affect the conservation status of the Annex I habitats or Annex II species listed as qualifying interests of the SAC. The proposed development will not affect the conservation objectives of this site or have an adverse effect on the requirements to meet the conservation objectives with regard to the restoration of Annex I habitats and Annex II species to favourable conservation status. Water quality is identified as a key sensitivity of the water-dependent qualifying interests of the SAC. Mitigation measures to protect water quality to avoid impacts affecting the aquatic species of the SAC, and Kingfisher within the SPA, have been included in the current report.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the: 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or population of species for which the site is or will be classified'.

The proposed works are relatively small in scale and will comply with the required mitigations to ensure that there will be no impacts arising which would have the potential to affect the integrity of either the River Barrow and River Nore SAC or the River Nore SPA, particularly with regard to the sensitive aquatic species in the study area.



Table 3 Impact assessment for the conservation interests of both the River Barrow and River Nore SAC and the River Nore SPA (Kingfisher) potentially affected by the proposed N77 road scheme.

Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1109; 1990	Freshwater Pearl Mussel <i>Margaritifera margaritifera</i> ; Nore Pearl Mussel <i>Margaritifera durrovensis</i>	Slight negative impacts regarding water quality: run-off of silt from denuded areas and from soil deposition areas resulting in increased suspended solids, oil / fuel / concrete spillages from machinery working adjacent to the River Nore. Moderate negative potential non-native Invasive species impacts in the absence of mitigation: reducing the quality of the habitat and working against conservation objectives of restoring to favourable habitat.	Outline EOP has been prepared; All mitigation included in the NIS and EclA will be implemented on site through an EOP; Terrastop Premium Silt Fences, or an equivalent alternative, around site compound and selected works areas; proposed open grass swale to be constructed only in dry conditions; toilet/waste facilities located in fenced site compound; Any stockpiling of materials will be outside of the SAC and SPA boundaries, 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalized; site compound not within 50m of any watercourse, or within SAC or SPA boundaries as in outline EOP; appointment of Site Ecologist for the works; Site Ecologist will agree EOP and ensure it contains all mitigation; site ecologist will carry out water quality monitoring on river nore upstream and downstream of works areas as requested by NPWS (although low risk of water quality impacts); machinery not to operate or be stored outside of delineated works areas; any mixing of	None – Imperceptible Negative	No negative impacts. Moderate positive long term impact of treatment and attenuation of road run-off and road salt used in winter months, including bypass petrol interceptor, to be constructed as part of proposed road scheme.	Inspection regime of the bypass interceptors will be conducted by the council.	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
			<p>concrete / cement or other materials required for the works will also be undertaken within the site compound; uncontaminated U1 material can be reprocessed on site, within areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility; any hired equipment or machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site</p>					



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1092	White-clawed Crayfish <i>Austropotamobius pallipes</i>	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.
1095	Sea Lamprey <i>Petromyzon marinus</i>	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1096	Brook Lamprey <i>Lampetra planeri</i>	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.
1099	River Lamprey <i>Lampetra fluviatilis</i>	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1103	Twaite Shad <i>Alosa fallax fallax</i>	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.
1106	Atlantic Salmon <i>Salmo salar</i>	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1355	Otter <i>Lutra lutra</i>	Slight negative impacts regarding water quality: run-off of silt from denuded areas and from soil deposition areas resulting in increased suspended solids, oil / fuel / concrete spillages from machinery working adjacent to the River Nore. Moderate negative potential non-native Invasive species impacts in the absence of mitigation; disturbance impacts during construction.	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	No specific mitigation required – however it is recommended for the current project that the existing mammal fencing at Ballyragget Bridge, some c. 1.1km downstream of the scheme, be repaired.	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1421	Killarney Fern (<i>Trichomanes speciosum</i>)	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways for impacts were identified. The closest record for this species is approximately 60rkm downstream.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
1016	Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>)	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways for impacts were identified due to geological separation. The closest record for this species is approximately c. 10km from the proposed scheme as the crow flies.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1130	Estuaries	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways for impacts were identified due to geological separation. This is a dynamic habitat, located some c. 50.3km downstream from the proposed scheme in the Suir Estuary, with naturally occurring levels of sediment. As stated in the Screening for Appropriate Assessment Report, the local water quality impacts that have been already identified which require mitigation (in this NIS) to protect local habitats and species, further ensure there is no potential for impacts on these habitats located this long distance downstream.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
1140	Mudflats and sandflats not covered by seawater at low tide	As above for Estuaries.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1170	Reefs	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways for impacts were identified. Reefs are located at a minimum of c. 80km downstream from the scheme.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
1310	Salicornia and other annuals colonising mud and sand	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways for impacts were identified. This habitat is located at a minimum of c. 72.3km downstream of the scheme in the Suir Estuary.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
1330	Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	As above for Salicornia and other annuals colonizing mud and sand.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	As above for Salicornia and other annuals colonizing mud and sand.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Although closest records are approximately 60km downstream of the proposed scheme, this habitat still has the potential to occur in the study area. Potential for water quality impacts identified that may arise during construction, through silt run-off and accidental spillages, and in the operational phase due to spillages and road salt usage during winter months.	As above for Freshwater Pearl Mussel / Nore Pearl Mussel – stringent mitigation measures for FPM are more than sufficient.	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
4030	European dry heaths	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways were identified. This is a terrestrial habitat, not located within the footprint of the proposed scheme area or the study area. No construction or operational phase activities will give rise to the potential for effects on this habitat.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	As above for 'Watercourses of plain to montane levels with the <i>Ranunculion fluitantis/ Callitricho-Batrachion</i> vegetation'	As above for Freshwater Pearl Mussel / Nore Pearl Mussel – stringent mitigation measures for FPM are more than sufficient.	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
7220	Petrifying springs with tufa formation (Cratoneurion)	As noted in the Screening for Appropriate Assessment Report, no potential for impacts and no pathways for impacts were identified. This habitat at its closest is located some c. 47.3km downstream of the proposed road scheme.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	As above for European Dry Heaths.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.



Natura Code	Item Description	Construction phase			Operational phase			Significance affecting the integrity of the SAC
		Potential impacts	Mitigation measures	Residual impacts	Potential impacts	Mitigation Measures	Residual impacts	
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	As above for European Dry Heaths.						No pathways / impacts identified – therefore not affecting the integrity of the SAC.
A229	Kingfisher (<i>Alcedo atthis</i>) (River Nore SPA)	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None – Imperceptible Negative	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	As above for Freshwater Pearl Mussel / Nore Pearl Mussel	None	Providing mitigation is adhered to, not significant and not affecting the integrity of the SAC.



8 NIS CONCLUSION STATEMENT

The proposed road scheme on the N77 in Ballyragget, Co. Kilkenny is located adjacent to both the River Barrow and River Nore SAC and the River Nore SPA. These are the only Natura 2000 sites that could be potentially affected by the proposed road scheme as established in the previous Screening for Appropriate Assessment Report (Ecofact, 2018a). The majority of the scheme will be undertaken along the existing N77 road with the exception of c. 700m realignment. The length of the scheme is approximately 2.4km.

The River Barrow and River Nore SAC is designated for a number of aquatic species that are dependent on good water quality, specifically the Nore Freshwater Pearl Mussel. This species is a filter feeder and is therefore extremely sensitive to water pollution. Therefore, water quality impacts could arise during the construction phase of the proposed scheme could significantly impact this species. Sea Lamprey, Brook/River Lamprey, Twaite Shad, Atlantic Salmon and Otter could also be affected by water quality impacts. Kingfisher is the only qualifying interest for the River Nore SPA, and although no suitable habitat is located in the study area for this species, it is acknowledged that indirect and cumulative water quality impacts could also affect this species. Other impacts identified which may arise during the construction phase of the project are non-native invasive species, noise and disturbance and air quality and dust impacts.

During the operational phase of the project, habitat loss impacts and a positive impact on water quality may arise. Improved treatment and attenuation for road run-off and salt / grit via the proposed attenuation pond and bypass petrol interceptors, as well as the easier containment of spillages will positively affect both the SAC and the SPA in the study area.

Taking cognisance of the sensitivity of the water-dependent Annex II species listed as qualifying interests of the SAC, mitigation measures have been prepared for implementation on the site to protect water quality. The stringent mitigation included for the sensitive aquatic species in the SAC are considered to be more than sufficient to avoid any potential water quality impacts that could affect Kingfisher in the River Nore SPA. Mitigation is included to protect water quality, limit the works areas, appoint a site ecologist, avoid biosecurity risks, and repair the existing mammal fencing at Ballyragget Bridge downstream of the proposed scheme. An outline Environmental Operating Plan (EOP) has been prepared; All mitigation included in the NIS and EclA will be implemented on site through an EOP. With mitigations proposed, there will be no impacts arising which would have the potential to adversely affect the conservation objectives or the integrity of either the River Barrow and River Nore SAC or the River Nore SPA.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or population of species for which the site is or will be classified'. The mitigation measures proposed are considered to be sufficient to ensure that impacts regarding water quality and non-native invasive species are reduced to imperceptible in scale. From the evidence presented in the current assessment, it is concluded that provided all mitigation measures are adhered to, direct, indirect and cumulative impacts that may arise from the proposed road improvement works on the N77 in Co. Kilkenny will be avoided and therefore will not affect the integrity of the either the River Barrow and River Nore SAC and the River Nore SPA.



Table 4 Integrity of Site Checklist (adapted from DoEHLG, 2010) for the proposed road improvement scheme at Ballyragget, Co. Kilkenny with regard to the River Barrow and River Nore SAC and the River Nore SPA.

Integrity of Site Checklist Conservation objectives	River Barrow and River Nore SAC	River Nore SPA
Does the project or plan have the potential to:	Yes/No	Yes/No
Cause delays in progress towards achieving the conservation objectives of the site?	No	No
Interrupt progress towards achieving the conservation objectives of the site?	No	No
Disrupt those factors that help to maintain the favourable conditions of the site?	No	No
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No	No
Other objectives	Yes / No	Yes / No
Does the project or plan have the potential to:		
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No	No
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?	No	No
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	No
No Reduce the area of key habitats?	No	No
Reduce the population of key species?	No	No
Change the balance between key species?	No	No
Reduce diversity of the site?	No	No
Result in disturbance that could affect population size or density or the balance between key species?	No	No
Result in fragmentation?	No	No
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No	No



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PLATES



Plate 1 The River Barrow and River Nore SAC adjacent to the existing N77 during August 2018.



Plate 2 The River Nore at Ballyragget Bridge c. 1.1km downstream of the proposed scheme, during site surveys in August 2018. An EPA Biological Water Quality Monitoring station is located just downstream of this point, and was rated as Q4-5 'High status' in 2016.



Plate 3 Typical riparian habitat of the River Nore in the SAC adjacent to the proposed road scheme.



Plate 4 The existing N77 road in Co. Kilkenny.



Plate 5 The proposed realignment section for the N77 road scheme will cross through the above Improved Agricultural Grassland field.



Plate 6 This section of the existing N77 road will be realigned, with the proposed new road to cut through the grassland field to the right.



Plate 7 The proposed open grass swale will be constructed in this field along the treeline to the left. The boundary of the SAC is located c. 440m from this point; located to the far background.



Plate 8 Bank side erosion is listed as a pressure on FPM in the Freshwater Pearl Mussel Second Draft Nore Sub-basin Management Plan. The proposed road scheme works will be undertaken away from the River Nore and will not add cumulatively to bank side erosion impacts on FPM.



Plate 9 The Glanbia factory is located on the existing N77 road, and the proposed road scheme includes a junction upgrade for the factory. The Glanbia factory discharges into the River Nore upstream of this point. A Biological Water Quality Report prepared by Pascal Sweeney indicates that this discharge is not having a negative impact on water quality status.



Plate 10 Trail camera set up during November 2018 along the River Nore. A total of six trail cameras were set up during the trail camera surveys. No Otters were recorded here.



Plate 11 Another trail camera set up along the River Nore. No Otters were recorded here. This set up was located on the opposite side of the existing N77 road and the Glanbia factory.



Plate 12 The River Nore with elevated water levels in November 2018.



APPENDIX 1 SCREENING FOR APPROPRIATE ASSESSMENT

[Appropriate Assessment Screening Report](#)



APPENDIX 2 CONSULTATION RESPONSES

An Roinn Cultúir,
Oidhreacht agus Gaeltachta
Department of Culture,
Heritage and the Gaeltacht



Your Ref: N77 Ballyragget
Our Ref: G Pre00217/2018 (Please quote in all related correspondence)

30 October 2018

Amy Butler
Ecofact Environmental Consultants Ltd.
Tait Business Centre
Dominic Street
Limerick City

Via email to amy.butler@ecofact.ie

Re: Notification to the Minister for Culture, Heritage and the Gaeltacht under the Planning and Development Act, 2000, as amended.

Proposed Development: Kilkenny County Council are currently progressing a proposal for minor road improvement works on the N77 Ballyragget to Ballynaslee road. The affected stretch of road is located north of Ballyragget village in Co. Kilkenny. The proposed scheme is illustrated in Figure 1a and Figure 1b. Ecofact Environmental Consultants Ltd. are completing a Natura Impact Statement for the proposed works due to its proximity to the River Barrow and River Nore SAC (002162) and the River Nore SPA (004233).

A chara

On behalf of the Department of Culture, Heritage and the Gaeltacht, I refer to correspondence received in connection with the above.

Outlined below are heritage-related observations/recommendations of the Department under the stated heading(s).

Nature Conservation

The Department refers to the consultation letter received from Ecofact Environmental Consultants dated 4th September 2018 in relation to a Natural Impact Assessment being completed in relation to the N77 Ballyragget to Ballynaslee Road Improvement Scheme on behalf of Kilkenny County Council. The Department would draw your attention to its requirements in relation to pre-planning

www.npws.ie/development%20consultations, in particular the section entitled pre-application consultation/engagement which has recently been updated. The proposed development lies adjacent to the River Barrow and River Nore cSAC 002162 and adjacent to the habitat the Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*),

Aonad na nIarratas ar Fhorbairt, Bóthar an Bhaile Nua, Loch Garman, Y35 AP90
Development Applications Unit, Newtown Road, Wexford, Y35 AP90
manager.dau@chg.gov.ie
www.chg.gov.ie



which is a qualifying interest for the site and listed for protection on Annex II and Annex V of the Habitats Directive (92/43/EEC). The Nore Freshwater Pearl Mussel (NFPM) is also listed as "Critically endangered" on the current International Union for Conservation of Nature and Natural Resources (IUCN) Red Data List and is threatened with extinction.

Site specific conservation objectives are available for the River Barrow and River Nore SAC (NPWS, 2011) and the NIS must assess the impacts of the development on attributes and targets in relation to NFPM and other sensitive receptors listed as qualifying interests for this site. Information about other relevant Natura 2000 sites including their conservation objectives must be included in the NIS. The NIS must pay particular attention to an analysis of sources of impacts associated with the development at both construction and operational phases and analyse the pathways between the road and the habitat of FPM and other sensitive receptors. The major threats to *Margaritifera* are eutrophication and siltation. Siltation has become a problem in the River Nore due to excessive loading from various sources. Nutrient enrichment leading to excessive growth of filamentous algae is also impacting negatively on the Nore Freshwater Pearl Mussel (North South Protect 2, 2010). Of particular concern is the impact of the mobilisation of silt and other pollutants during construction phase of this project. Impacts must be assessed and mitigation measures put in place to avoid or reduce adverse impacts. Evidence of how mitigation measures are to be introduced and by whom must be included. Water quality monitoring during the construction phase will be required and an on-site Ecologist, with the authority to halt or review work practices, should water quality impacts be detected, must be appointed to oversee construction works.

Complete project details including an outline construction environmental management plan (CEMP) needs to be provided in order to allow an adequate appropriate assessment to be undertaken. Applicants need to be able to demonstrate that the CEMP and other such plans are adequate and effective mitigation, supported by scientific information and analysis, and that they are feasible within the physical constraints of the site. The positions, locations and sizes of construction infrastructure and mitigation, such as settlement ponds, disposal sites and construction compounds, may significantly affect European sites, designated sites, habitats, and species in their own right and could have an effect for example on drainage, water quality, habitat loss, and disturbance. If these are undetermined at time of the assessment, all potential effects of the development on the site are not being considered. If applicants are not in a position to decide the exact location and details of these at time of application, then they need to consider the range of options that may be used in their assessment so that all issues are covered. The CMP should also include methods to ensure invasive alien species are not introduced or spread.

The Glanbia Plant at Ballyragget processes up to 1 billion litres of milk, 900 million litres of whey and 180,000 tonnes of dairy ingredients annually, making it the largest

.....
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multi-purpose integrated dairy plant in Europe. Large volumes of HGV traffic carrying liquid milk to the site can therefore be anticipated on the new road. The NIS must assess impacts of any leakages of fuels, lubricants or other chemical additives from HGVs and mitigation measures must be included to avoid impacts. The NIS must assess the impacts spillage of liquid milk cargo, including large-scale, unforeseen accidental spillages due to road traffic collisions or other accidents. Such risks should be outlined and mitigated for in the NIS. In addition the impacts of use of road salt in winter must be considered. Impacts may be magnified due to the effects of climate change and the increased probability of extreme weather events. Mitigation measures including reed bed filtration beds should be considered. The NIS should include details on proposals for surface water attenuation, its treatment and proposed discharge.

The project area lies within a *Margaritifera* sensitive catchment as outlined in European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. No. 296/2009). Regulation 12 of the above regulations states 'Without prejudice to the generality of Regulation 9 or any requirement arising under the European Communities Environmental Objectives (Surface Water) Regulations 2009, a public authority considering an application for authorisation of a discharge to waters draining to the surface water bodies identified under the First Schedule to these Regulations, under the Fisheries Acts 1959-2003, the Act of 1977, the Act of 1992, the Act of 1996 or Regulations made for that purpose under the European Communities Act of 1972 shall, where it is satisfied that the proposed discharge would not contravene Article 6(3) and 6(4) of the Habitats Directive, set down in the authorisation, emission limit values that aim to achieve the ecological quality objectives set out in the Fourth Schedule to these Regulations.' In order to comply with Regulation 12, emission limit values in respect of this development must aim to achieve the ecological quality objectives for Freshwater Pearl Mussel Habitat outlined in S.I. No. 296/2009.

Alien invasive species

The NIS should also address the issue of invasive alien plant and animal species, such as Himalayan balsam (*Impatiens glandulifera*), *Rhododendron ponticum*, Japanese knotweed (*Fallopia japonica*). Detail of methods required to ensure they are not accidentally introduced to the Natura 2000 site or spread during construction must be included in the NIS. Information on alien invasive species in Ireland can be found at <http://invasives.biodiversityireland.ie/> and at <http://invasivespeciesireland.com/>.

Ecological Impact Assessment (EclA)

This project will involve significant land take including loss of hedgerows and may include an increase in illumination from roadside lighting, from vehicles and at the junction upgrade. Therefore the project should be subject to EclA. Projected species which may be impacted on include bats, badgers, otters, bird species as well as rare and protected flora and important habitats. An ecological survey of the land take area must take place. Mitigation measures for impacts must include appropriate scheduling of construction works to avoid or reduce disturbance of fauna or destruction of nests and shelters. Mitigation measure should aim to avoid mammal road deaths and where



appropriate suitability cited mammal underpasses should be included in the road design with particular attention paid to locations of any culverts or suitable habitat.

Bats

Bat species are strictly protected under Annex IV of the Habitats Directive. This project has potential to significantly affect bats, in particular due to the loss of hedgerow and potential increase in illumination. In assessing and mitigating any lighting impacts, the procedures outlined in 'Guidance Note 08/18 Bats and Artificial Lighting in the UK (http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting) should be consulted. Where it is not possible to identify a means of avoiding risk completely, consideration should be given as to whether a derogation licence from the Minister under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015 is required. Applications for a derogation licence should be made in writing, including survey results and proposed mitigation measures, to Wildlife Licensing Unit, National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht. An application for such a derogation licence should be made in advance of seeking planning permission for works. This will ensure that full consideration can be given to the impacts of the proposed project on the species and to avoid the possibility of delay to the proposed project or of a refusal of a derogation licence which would prevent the works being carried out as planned.

Otters

Otters (*Lutra lutra*) are protected under the Wildlife Acts and listed on Annexes II and IV of the Habitats Directive. This project, given its location adjacent to the River Nore, has the potential to have significant effects on otters and impacts must be assessed. Full details of the surveys undertaken to assess the ecological impacts should be given. Where it is not possible to identify a means of avoiding risk completely, consideration should be given as to whether a derogation licence from the Minister under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015 is required. Applications for a derogation licence should be made in writing, including survey results and proposed mitigation measures, to Wildlife Licensing Unit, National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht. An application for such a derogation licence should be made in advance of seeking planning permission for works. This will ensure that full consideration can be given to the impacts of the proposed project on the species and to avoid the possibility of delay to the proposed project or of a refusal of a derogation licence which would prevent the works being carried out as planned.

Hedgerows

The significance of loss of hedgerow and other habitats should be assessed in terms of percentage of habitat affected and suitable mitigation measures put in place. Roadside planting should be appropriate to the area and include native species of Irish provenance.



References

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NPWS (2011) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

You are requested to send further communications to this Department's Development Applications Unit (DAU) at manager.dau@ahg.gov.ie (team monitored); if this is not possible, correspondence may alternatively be sent to:

The Manager
Development Applications Unit (DAU)
Department of Culture, Heritage and the Gaeltacht
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Diarmuid Buttimer
Development Applications Unit



From Jane Gilleran <Jane.Gilleran@fisheriesireland.ie>

Subject: **N77 Ballyragget** 07/09/2018, 11:06

To: Me

Good morning Amy,

Thank you for your email regarding the proposed improvement works of Glanbia.

Specifically to this site:

The improvements to road drainage can only be welcomed. We would be interested in the adequacy of sizing of the attenuation pond and the details of the hydrobrake system (if any) that will control the outflow. Bypass interceptors only work if they are correctly maintained so IFI would like to see details of an inspection regime by the council.

IFI are also interested in any interaction between the works and the already existing discharge points on the Nore from Glanbia of which there are three. There was fish kill on this exact section of river on August 16th of this year so any potential discharges from the construction activity would be a major concern. A very strict method statement and plan of works would need to be in place.

More generally:

Uncured concrete can kill fish and macroinvertebrates by altering the pH of the water. Pre-cast concrete should be used whenever possible, to eliminate the risk to all forms of aquatic life. When cast-in-place concrete is required, all work must be done in the dry and effectively isolated from any water that may enter the stream for a period sufficient to cure the concrete. One of the potential impacts of infrastructural programmes is the discharge of silt-laden waters to fisheries streams from newly developed sites at which earth moving and excavation works are ongoing. Silt can clog salmonid spawning beds, and juvenile salmonids are particularly sensitive to siltation of gill structures. Similarly plant and macroinvertebrate communities can literally be blanketed over, and this can lead to loss or degradation of valuable habitat. It is important to incorporate best practices into construction methods and strategies to minimise discharges of silt/suspended solids to waters.

Silt traps should be constructed at locations that will intercept run-off to streams. Traps should not be constructed immediately adjacent to natural watercourses. A buffer zone should remain between the silt trap and the watercourse with natural vegetation left intact so as to assist silt interception.

All oils and fuels should be stored in secure bunded areas, and particular care and attention should be taken during refuelling and maintenance operations on plant and equipment. Where site works involve the discharges of drainage water to receiving rivers and streams, temporary oil interceptor facilities should be installed and maintained.

When more detailed drawings are available we will be available for further consultation.

Regards

Jane

Jane Gilleran
Fisheries Environmental Officer
Inland Fisheries Ireland - Clonmel

Iasach Inlre Éireann
Inland Fisheries Ireland

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APPENDIX 3 PROPOSED N77 ROAD SCHEME DESIGN REPORT

[Preliminary Design Report](#)



APPENDIX 4 NPWS SITE SYNOPSES

SITE NAME: River Barrow and River Nore SAC **SITE CODE: 002162**

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

Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone for a short stretch below Thomastown. Before joining the Barrow it runs over intrusive rocks poor in silic. The upper reaches of the Barrow also run through limestone. The middle reaches and many of the eastern tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end, like the Nore runs over intrusive rocks poor in silic. Waterford Harbour is a deep valley excavated by glacial floodwaters when the sea level was lower than today. The coast shelves quite rapidly along much of the shore.

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. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*).

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded.

The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kyleadohir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16th century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved Bellflower and the moss *Leucodon sciuroides*. The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeyleix.



Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

On the steeply sloping banks of the River Nore, about 5 km west of New Ross, in Co. Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of relatively undisturbed, relict oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown, a small, mature oak dominated woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Common Cow-wheat (*Melampyrum pratense*) and Bracken (*Pteridium aquilinum*).

Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition. There is quite a high degree of natural regeneration of oak and Ash through the woodland. At the northern end of the estate oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly oak species. The woods have a well-established understorey of Holly, and the herb layer is varied, with Bramble abundant. The whitebeam *Sorbus devoniensis* has also been recorded here.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*). Indian Balsam (*Impatiens glandulifera*), an introduced and invasive species, is abundant in places.

Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), the pondweed *Potamogeton x nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes of the river bank consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove, Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). On the steep slopes above New Ross the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*) has been recorded. Where rocky outcrops are shown on the maps Bilberry and Great Wood-rush are present. At Ballyhack a small area of dry heath is interspersed with patches of lowland dry grassland. These support a number of clover species, including the legally protected Clustered Clover (*Trifolium glomeratum*) - a species known from only one other site in Ireland. This grassland community is especially well developed on the west side of the mud-capped walls by the road. On the east of the cliffs a group of rock-dwelling species occur, i.e. English Stonecrop (*Sedum anglicum*), Sheep's-bit (*Jasione montana*) and Wild Madder (*Rubia*



peregrina). These rocks also support good lichen and moss assemblages with *Ramalina subfarinacea* and *Hedwigia ciliata*.

Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabrisky, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather, Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*).

Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickcloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

Glassworts (*Salicornia* spp.) and other annuals colonising mud and sand are found in the creeks of the saltmarshes and at the seaward edges of them. The habitat also occurs in small amounts on some stretches of the shore free of stones.

The estuary and the other E.U. Habitats Directive Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. Good quality intertidal sand and mudflats have developed on a linear shelf on the western side of Waterford Harbour, extending for over 6 km from north to south between Passage East and Creadaun Head, and in places are over 1 km wide. The sediments are mostly firm sands, though grade into muddy sands towards the upper shore. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina*, *Nephtys hombergii*, *Scoloplos armiger*, *Lanice conchilega* and *Cerastoderma edule*. An extensive area of honey-comb worm biogenic reef occurs adjacent to Duncannon, Co. Wexford on the eastern shore of the estuary. It is formed by the polychaete worm *Sabellaria alveolata*. This intertidal *Sabellaria alveolata* reef is formed as a sheet of interlocking tubes over a considerable area of exposed bedrock. This polychaete species constructs tubes, composed of aggregated sand grains, in tightly packed masses with a distinctive honeycomb-like appearance. These can be up to 25cm proud of the substrate and form hummocks, sheets or more massive formations. A range of species are reported from these reefs including: *Enteromorpha* sp.; *Ulva* sp.; *Fucus vesiculosus*; *Fucus serratus*; *Polysiphonia* sp.; *Chondrus crispus*; *Palmaria palmate*; *Coralinus officinalis*; *Nemertea* sp.; *Actinia equine*; *Patella vulgate*; *Littorina littorea*; *Littorina obtusata* and *Mytilus edulis*.

The western shore of the harbour is generally stony and backed by low cliffs of glacial drift. At Woodstown there is a sandy beach, now much influenced by recreation pressure and erosion. Behind it a lagoonal marsh has been impounded which runs westwards from Gaultiere Lodge along the course of a slow stream. An extensive reedbed occurs here. At the edges is a tall fen dominated by



sedges (*Carex* spp.), Meadowsweet, willowherbs (*Epilobium* spp.) and rushes (*Juncus* spp.). Wet woodland also occurs.

The dunes which fringe the strand at Duncannon are dominated by Marram (*Ammophila arenaria*) towards the sea. Other species present include Wild Clary/Sage (*Salvia verbenaca*), a rare Red Data Book species. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately exposed shore and the cliffs themselves support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*).

Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds.

Seventeen Red Data Book plant species have been recorded within the site, most in the recent past. These are Killarney Fern (*Trichomanes speciosum*), Divided Sedge, Clustered Clover, Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry (*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobanche hederæ*) and Greater Broomrape. Of these, the first nine are protected under the Flora (Protection) Order, 2015. Divided Sedge was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants which do not have a very wide distribution in the country are found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria*. The rare moss *Leucodon sciuroides* also occurs.

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, Twaité 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 Twaité Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning

The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*.

Three rare invertebrates have been recorded in alluvial woodland at Murphy's of the River. These are: *Neoascia obliqua* (Order Diptera: Syrphidae), *Tetanocera freyi* (Order Diptera: Sciomyzidae) and *Dictya umbrarum* (Order Diptera: Sciomyzidae). The rare invertebrate, *Mitostoma chrysomelas* (Order Arachnida), occurs in the old oak woodland at Abbeyleix and only two other sites in the country. Two flies (Order Diptera) *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur at this woodland

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



winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeyleix has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail.

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.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows and the population of the hard water form of the Freshwater Pearl Mussel, which is limited to a 10 km stretch of the Nore, add further interest to this site.

SITE NAME: River Nore SPA
SITE CODE: 004233

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



with the Erkina River; the Kings River from its junction with the River Nore to a bridge at Mill Island, Co. Kilkenny. The site includes the river channel and marginal vegetation.

For a large part of its course the River Nore traverses Carboniferous limestone plains; it passes over a narrow band of Old Red Sandstone rocks below Thomastown.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive of special conservation interest for the following species: Kingfisher.

A survey in 2010 recorded 22 pairs of Kingfisher (based on 16 probable and 6 possible territories) within the SPA. Other species which occur within the site include Mute Swan (35), Mallard (267), Cormorant (14), Grey Heron (45), Moorhen (14), Snipe (17) and Sand Martin (1,029) – all figures are peak counts recorded during the 2010 survey.

The River Nore SPA is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive.



APPENDIX 5 OUTLINE ENVIRONMENTAL OPERATING PLAN

This outline EOP provides the proposed mitigation drawings and the schedule of environmental commitments for the proposed N77 Ballyragget to Ballynaslee Road Improvement Scheme. The proposed mitigation drawings for the road scheme are given below, and indicate where mitigation measures included in the NIS and EclA will be implemented on site. The schedule of environmental commitments detail the mitigation measures given in the NIS and EclA and are included in tables A5.1 and A5.2 below.

The final EOP will be drawn up by the appointed contractor prior to the commencement of works. The purpose of this EOP is to outline site procedures to the delivery of every mitigation measure listed in both the NIS and the EclA for the proposed road scheme. The EOP will nominate the person/s responsible for each task. The final EOP will follow the NRA *'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'* (2007). This final EOP is to ensure that the contractor will adhere to the mitigations provided in the EclA and NIS, as indicated in the schedule of environmental commitments in the tables below. The final EOP will also utilize the proposed mitigation drawings provided by Tramore House Regional Design Office.

The NRA guidelines state that an Environmental Operating Plan will assign duties and responsibilities to staff to effectively carry out the schedule of environmental commitments for both the NIS and EclA. As noted in the guidelines, the final EOP will include project details, a contact sheet of all relevant personnel and duties and a list of reference documents that were used in the EOP's development. The EOP will outline the Environmental Awareness Training that will be implemented so that staff will have the necessary information to successfully carry out the schedule of environmental commitments. The site ecologist will then ensure all commitments/requirements set out in the NIS and EclA are included in the EOP and implemented effectively and successfully on site.

Table A5.1 Schedule of environmental commitments as per the NIS for the proposed road scheme.

Project phase	Mitigation measure
Construction	Prevision of an Environmental Operating Plan
	Appointment of a site ecologist
	Limiting works areas
	Water quality protection



		be removed from the fenced site compound and brought to an existing licensed waste facility; Construction of open grass swale will occur in periods of dry weather.
	Biosecurity	Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site. The NRA guidelines will be adhered to.
Operational	Water quality protection	Propose attenuation pond and bypass petrol interceptors can be closed allowing for spillages and road salt / grit to be controlled. Inspection regime of bypass interceptors will be put in place. Salt and other agents will not be used for extended periods.
	Biosecurity	The NRA guidelines will be adhered to and checks will be made on a regular basis for non-native invasive species
	Mammal fencing repair	Mammal fencing at Ballyragget Bridge should be repaired to 50m or more either side of the bridge.

Table A5.2 Schedule of environmental commitments as per the EclA for the proposed road scheme.

Project Phase		Mitigation Measure	
		Environmental Operating Plan	All mitigation included in this EclA and the NIS will be implemented on site through an EOP.
Construction	Designated Areas	-	A site ecologist will be appointed to do the following: monitor water quality, approve contractors EOP and ensure it complies with the NIS and EclA including ensuring works area will be fenced off to and no work activities take place outside delineated areas; ensuring the Terrastop silt fences, or equivalent alternative are in place and effective, oils and fuels are correctly stored in bunded areas, open grass swale construction only occurs during dry periods; Any stockpiling of materials will be outside of the SAC and SPA boundaries, 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalized; uncontaminated U1 material can be reprocessed on site, within areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility; all hired equipment and machinery will be treated with approved biocide/cleaning agent and to ensure outline EOP has been completed.
	Flora	Landscaping	Any planting or re-planting will be done using native Irish species. The NRA's guidelines will be followed. Native Irish hedgerow species will be planted linearly along the road side to ensure habitat connectivity is not lost.
		Biosecurity	Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site.
		Water Quality	A site ecologist will be appointed to do the following: monitor water quality, approve contractors EOP and ensure it complies with the NIS and EclA including ensuring works area will be fenced off to and no work activities take place outside delineated areas; ensuring the Terrastop silt fences, or equivalent alternative are in place and effective, oils and fuels are correctly stored in bunded areas, open grass swale construction only occurs during dry periods; Any stockpiling of materials will be outside of the SAC and SPA boundaries, 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalized; uncontaminated U1 material can be reprocessed on site, within



			areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility; all hired equipment and machinery will be treated with approved biocide/cleaning agent and to ensure outline EOP has been completed.
	Fauna	Limiting works area	The entire works areas will be fenced off to ensure that no work activities will take place outside delineated areas. The site compound will not be located within the boundaries of the SAC or SPA. The Site compound will not be located within 50m of any watercourse.
		Timing of works	The appointed contractor will make reasonable efforts to avoid vegetation clearance or tree felling during the bird nesting season. No heavy plant machinery should be in operation in times of darkness as a mitigation measure for mammals. Tree felling should be undertaken late August to late October/early November to protect bats.
		Landscaping & Lighting	Newly planted trees / shrubs should be native species. Wildflower planting with native Irish species is also recommended within the proposed grass swale. In offline sections where hedgerows are severed new ones will be planted linearly. Work around existing trees will be done slowly to allow birds and mammals to flee. Artificial lighting will be kept to the minimum that is required for safety.
		Pre-construction bat survey	Bat survey will be targeted to locations where hedgerows and treelines will be severed by the offline sections of the proposed road scheme.
Operation	Designated Areas	-	The proposed attenuation pond and bypass petrol interceptors will be able to be closed. An inspection regime of the bypass interceptors will be conducted by the council. NRA guidelines will be followed and mammal fencing at Ballyragget bridge will be repaired.
	Flora	Water Quality	Proposed attenuation pond and bypass petrol interceptor will be able to be closed. Proposed open grass swale, attenuation pond and bypass interceptors will also result in improving treatment for road run-off before discharge. Any road salt or grit used during winter months will also be attenuated within the proposed open grass swale. Inspection regime of the bypass interceptors will be conducted by the council
		Biosecurity	Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site. The NRA guidelines will be followed.
	Fauna	Water Quality	Proposed attenuation pond and bypass petrol interceptor will be able to be closed. Proposed open grass swale, attenuation pond and bypass interceptors will also result in improving treatment for road run-off before discharge. Any road salt or grit used during winter months will also be attenuated within the proposed open grass swale. Inspection regime of the bypass interceptors will be conducted by the council
		Mammal fencing	Existing mammal fencing at Ballyragget Bridge be repaired to 50m either side of the bridge as per the NRA guidelines