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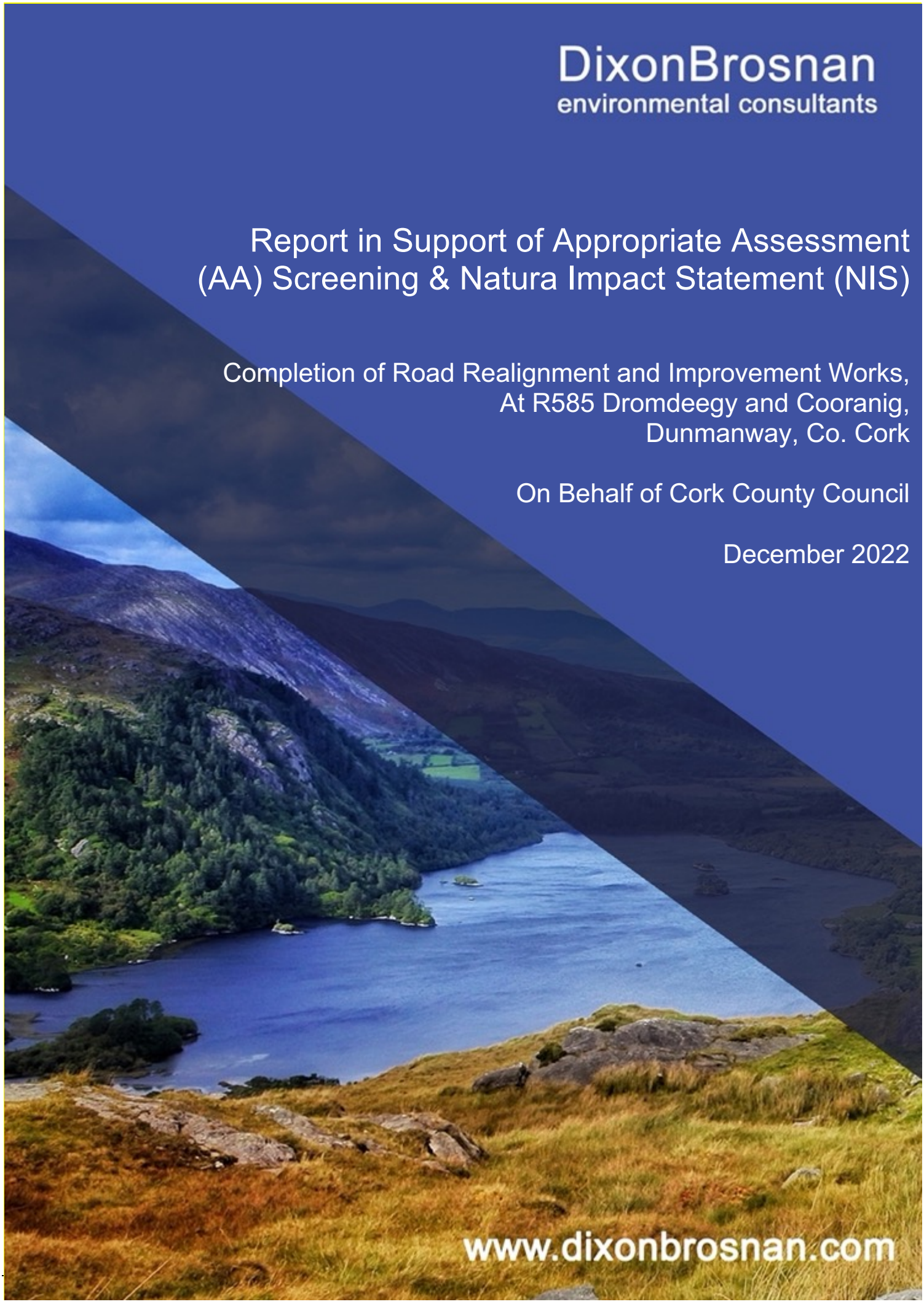
Report in Support of Appropriate Assessment (AA) Screening & Natura Impact Statement (NIS)

Completion of Road Realignment and Improvement Works,
At R585 Dromdeegy and Cooranig,
Dunmanway, Co. Cork

On Behalf of Cork County Council

December 2022



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Project	Report in Support of Appropriate Assessment (AA) Screening & Natura Impact Statement (NIS) for Completion of Road Realignment and Improvement Works, At R585 Dromdeegy and Cooranig, Dunmanway, Co. Cork	
Client	Cork County Council	
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07/12/22	1st Draft	Sorcha Sheehy PhD
12/12/22	Issue to client	Carl Dixon MSc

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1. Introduction

1.1 Background

The information in this report has been compiled by DixonBrosnan Environmental Consultants, on behalf of the applicant. It provides information on and assesses the potential for the completion of road realignment and improvement works, at the R585 Dromdeegy and Cooranig, Dunmanway, Co. Cork, to impact on any Natura 2000 sites within its likely zone of impact. The information in this report forms part of and should be read in conjunction with the planning application documentation for the proposed development.

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs) and Special Protection Areas (SPAs). SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites and from these the conservation objectives of the site are derived. The Birds and Habitats Directives set out various procedures and obligations in relation to nature conservation management in Member States in general, and of the Natura 2000 sites and their habitats and species in particular. A key protection mechanism is the requirement to consider the possible nature conservation implications of any plan or project on the Natura 2000 site network before any decision is made to allow that plan or project to proceed. Not only is every new plan or project captured by this requirement but each plan or project, when being considered for approval at any stage, must take into consideration the possible effects it may have in combination with other plans and projects when going through the process known as Appropriate Assessment (AA).

The obligation to undertake Appropriate Assessment (AA) derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. As set out in Section 177U of the Planning and Development Act 2000 as amended, a screening for appropriate assessment of an application for consent for the proposed development must be carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made.

The purpose of this report is to inform the AA process as required under the Habitats Directive (92/43/EEC) in instances where a plan or project may give rise to significant impacts on a Natura 2000 site. This report aims to inform the Appropriate Assessment process in determining whether the development, both alone and in combination with other plans or projects, are likely to have a significant impact on the Natura 2000 sites in the study area, in

the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

This report has been prepared with regard to the following guidance documents, where relevant.

- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC (European Commission (EC), 2018);*
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodical*
- *Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission (EC), 2021);*
- *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC (European Commission, (EC) 2007);*
- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision);*
- *Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10 (Department of Environment, Heritage and Local Government, 2010);*
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011);*
- *Commission notice Guidance document on wind energy developments and EU nature legislation, (EC 2020);*
- *Communication from the Commission on the precautionary principle. European Commission (2000)*
- *Assessment of plans & projects in relation to N2K sites – Methodological Guidance (EC 2021);*
- *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC 2021) and*
- *CJEU Case C 164/17 Edel Grace Peter Sweetman v An Bord Pleanála.*

1.2 Authors of the Report

This report was prepared by Carl Dixon MSc (Ecological Monitoring) and Dr. Sorcha Sheehy PhD (Ecology/ornithology).

Carl Dixon MSc (Ecology) is a senior ecologist who has over 25 years' experience in ecological and water quality assessments. Carl Dixon holds an Honours Degree (BSc) in Ecology and a Masters (MSc) in Ecological Monitoring from UCC. He is a senior ecologist who has over 25 years' experience in ecological assessment. Prior to setting up DixonBrosnan Environmental

Consultants in 2000, Carl set up and ran Core Environmental Services which included Rural Environmental Protection Scheme (REPS) planning for landowners and ecological assessments. Carl has particular experience in freshwater ecology including electrofishing fish stock assessments and water quality assessments. He also has considerable experience in habitat mapping and mammal ecology including survey work and reporting in relation to badgers and bats. Other competencies include surveys for invasive species and bird surveys. Carl has extensive experience with regards to EIAR and NIS mitigation and impact assessment. He has particular experience in large-scale industrial developments with extensive experience in complex assessments as part of multi-disciplinary teams. Such projects include gas pipelines, incinerators, electrical cable routes, oil refineries and quarries.

Dr. Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant specialising in bird behaviour. Sorcha received a BSc in Applied Ecology from UCC and subsequently went on to receive a PhD in behavioural ornithology at UCC. During her PhD research, Sorcha studied bird-aircraft collision with a particular focus on bird behaviour, included field-based behavioural observations at airports, bird cadaver examination and collision classification and the use of radar tracking to model collision risk. Sorcha has worked for over 15 years in a professional ecology role and specialises in the coordination of ecology projects and assessments. She has coordinated and contributed to Habitats Directive Assessments (AA screenings and NIS) and Environmental Impact Assessment Reports (EIAR) for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Notable projects include Arklow Bank Wind Park, Shannon Technology and Energy Park and Waste to Energy Facility Ringaskiddy.

2. Regulatory Context and Appropriate Assessment Procedure

2.1 Regulatory Context

The Habitats Directive (Council Directive 92/43/EEC on the *Conservation of Natural Habitats and of Wild Fauna and Flora*) aims to maintain or restore the favourable conservation status of habitats and species of community interest across Europe. The requirements of these directives are transposed into Irish law through the European Communities (Birds and Natural Habitats Regulations; S.I. No. 477 of 2011).

Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained or returned to favourable conservation status. In Ireland the network consists of SACs and SPAs, and also candidate sites, which form the Natura 2000 network.

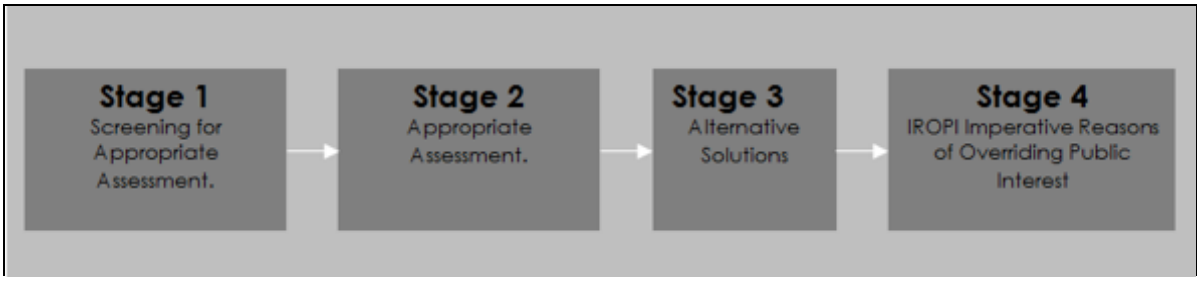
Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the *Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a designated site, but likely 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. A competent authority (e.g. the EPA or Local Authority) can only agree to a plan or project after having determined that it will not adversely affect the integrity of the site concerned.

The possibility of a significant effect on a designated or "European" site has generated the need for an appropriate assessment to be carried out by the competent authority for the

purposes of Article 6(3). A Stage Two Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) Stage for appropriate assessment operates merely to determine whether a (Stage Two) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

2.2 Appropriate Assessment Procedure

The assessment requirements of Article 6(3) establish a stage-by-stage approach. This assessment follows the stages outlined in the 2001 European Commission publications "Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC" (2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (Draft) Office for Official Publications of the European Communities, Luxembourg (EC, 2015);



The stages are as follows:

Stage One: Screening — the process which identifies any appreciable 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 on the integrity of the Natura 2000 site of the project or plan, 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. It is confirmed that no reliance is placed by the developer on Stage Three in the context of this application for development consent;

Stage Four: Assessment where no alternative solutions exist and 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 (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest). Again, for the avoidance of doubt, it is confirmed that no reliance is placed by the developer on Stage Four in the context of this application for development consent.

It is the responsibility of the competent authority, in this instance Cork County Council, to make a decision on whether or not the proposed development should be approved, taking into consideration any potential impact upon any Natura 2000 site within its likely zone of impact.

3. Receiving Environment

3.1 Existing Site

Cork County Council has identified the need to carry out road safety and realignment improvement works to the R585 regional road at Dromdeegy and Cooranig, Dunmanway, Co. Cork. The existing road is substandard because of its inadequate width and poor horizontal and vertical alignment geometry. The realignment works will run over a length of approximately 410m with tie-in to the existing road at both ends.

The proposed development site is located circa 6.5km north of Dunmanway Town Centre in the townlands of Dromdeegy and Cooranig. The R585 is a Regional road which runs from Kealkill Village to its Junction with the N22, National Primary Road, east of Crookstown in the Municipal District (MD) area of Dunmanway. The road is a busy rural regional road which is used as one of the main routes for motorists travelling from West Cork especially from the Beara Peninsula. There are high volumes of Heavy Goods Vehicles (HGV's) using this route.

The proposed development site is located on the Regional Route R585 from Copeen to Kealkill (**Figure 1**). The site is located in a rural setting. In the wider landscape habitats include a mixture of immature and semi-mature conifer plantations, areas of wet heath with exposed bedrock and semi-intensive grassland. The Caha River is located to the northeast of the site and the R585 crosses this river at the Poulnaberry Bridge approximately 200m east of the proposed development site.

3.2 Proposed Development

The proposed overall road improvement works will consist of the following:

Alteration to existing road alignment to improve road safety;

- Site Clearance;
- Relocation of overhead line;
- Constructing earth berms and fencing;
- Signage, road lining & roads studs;
- All ancillary works required to deliver the proposed scheme.

Part of the works have already been completed i.e. site clearance and laying of hardcore in new road footprint. This report deals with the completion of the works i.e. construction of earth berms and fencing, signage, road lining, road studs and all ancillary work. The existing road which will no longer be in active usage will not be excavated. It is expected that this will be colonised by a mixture of early successional species and scrub over time.

An overview of the proposed development site is shown in **Figure 2**.

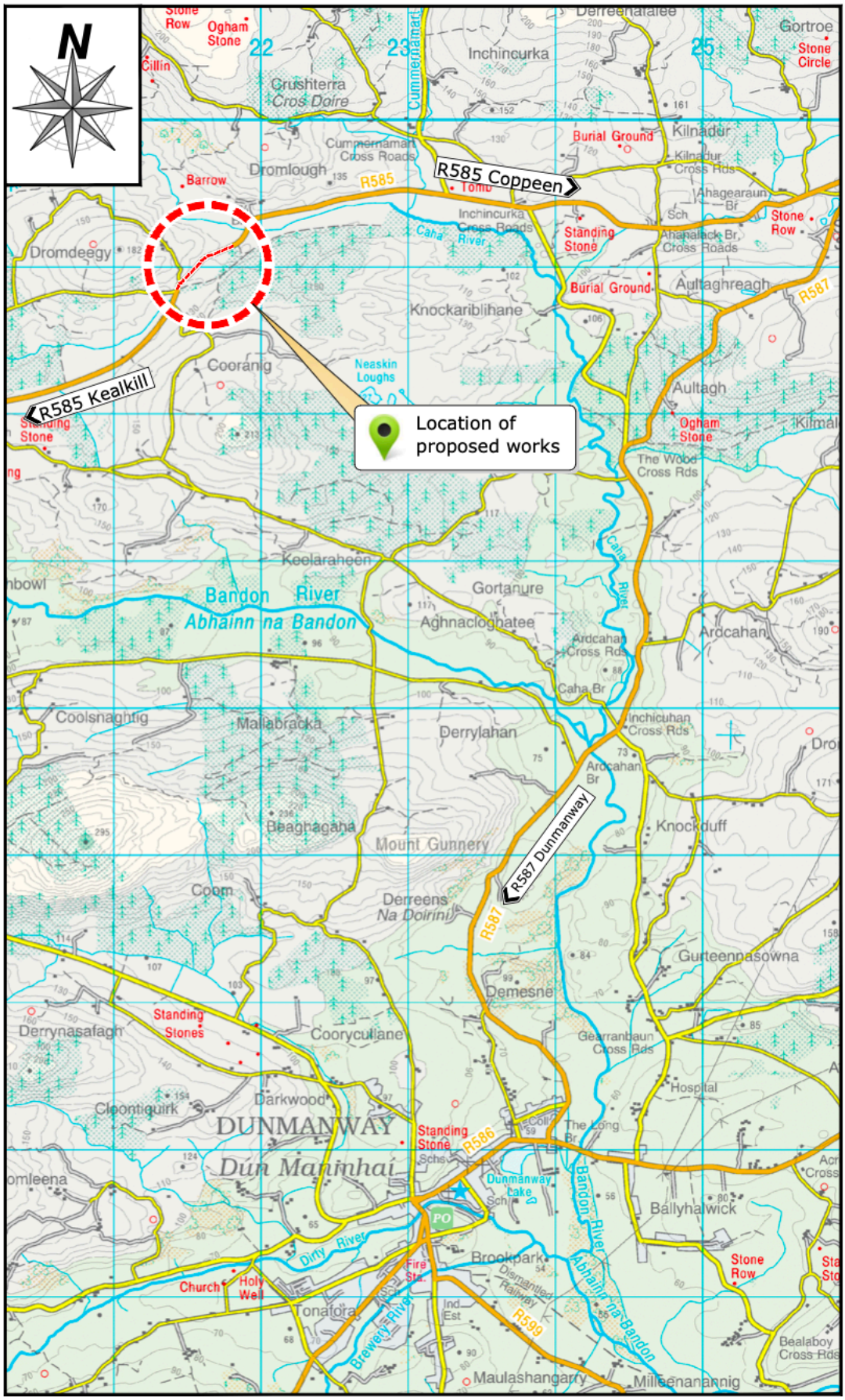


Figure 1. Site location| Source Cork County Council

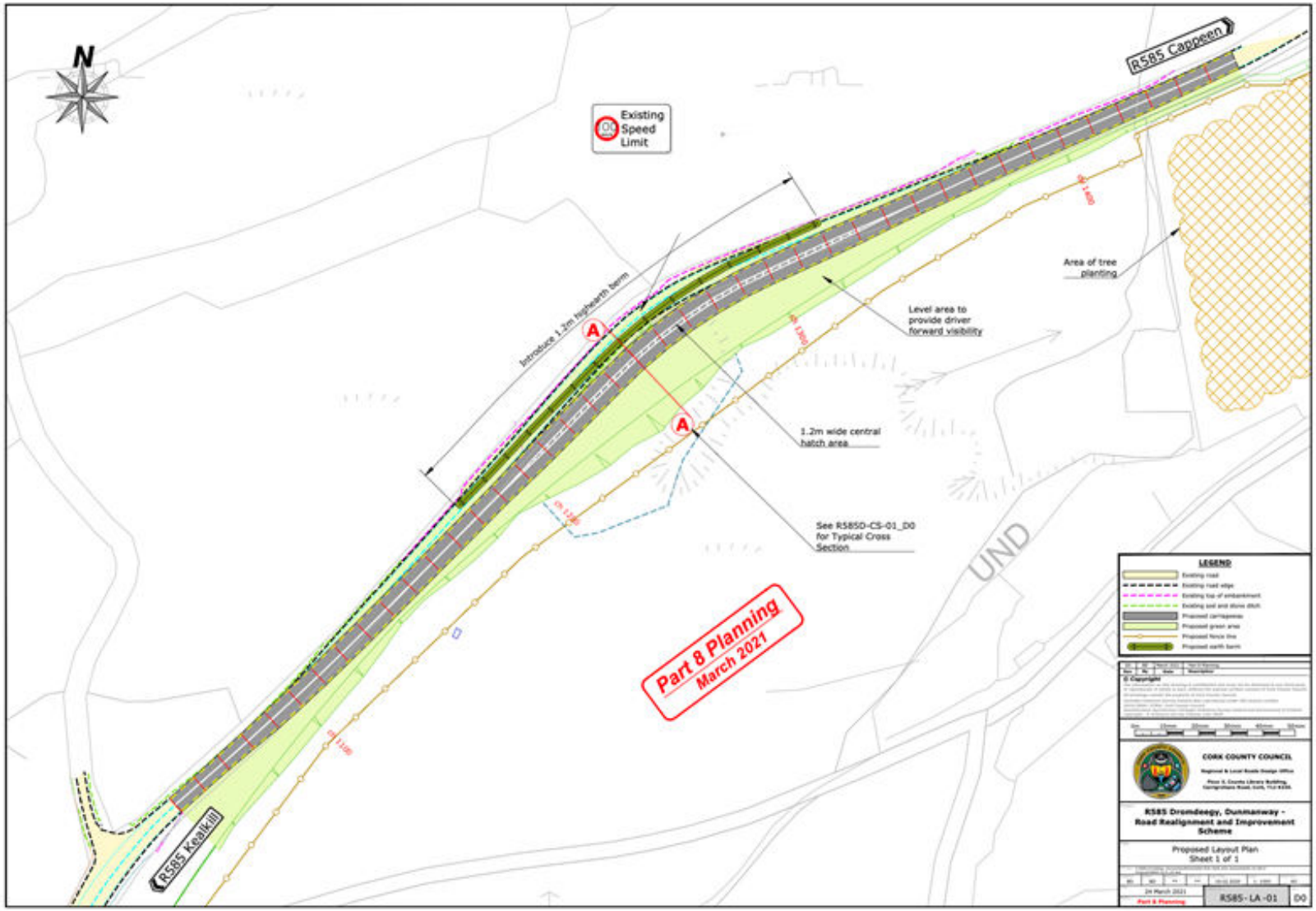


Figure 2. Site location and local enviros | Source: Cork County Council

4. Stage 1 - Screening for Appropriate Assessment

4.1 Introduction

This section contains the information required for the competent authority to undertake screening for AA for the proposed development.

The aims of this section are to:

- Determine whether the proposed development is directly connected with, or necessary to, the conservation management of any Natura 2000 sites;
- Provide information on, and assess the potential for the proposed development to significantly effect on Natura 2000 Sites (also known as European sites); and
- Determine whether the proposed development, alone or in combination with other projects, is likely to have significant effects on Natura 2000 sites in view of their conservation objectives.

The proposed development is not directly connected with, or necessary to the conservation management of any Natura 2000 sites.

4.2 Zone of Impact

The likely Zone of Impact (ZoI) comprises the area within which the proposed development may potentially affect the conservation objectives (or qualifying interests) of a Natura 2000 site. There is no recommended zone of impact, and guidance from the National Parks and Wildlife Service (NPWS) recommends that the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects (cumulative).

In ecological and environmental impact assessment, for an effect to occur there must be a risk enabled by having a source (e.g. construction works at a proposed development site), a 'receptor' (e.g. SAC or other ecologically sensitive feature), and a pathway between the source and the receptor (e.g. a watercourse which connects the proposed development site to the SAC, *ex situ* foraging habitat for SCI birds). A 'receptor' is defined as the Special Conservation Interest (SCI) of SPAs or Qualifying Interest (QI) of SACs for which conservation objectives have been set for the European sites being screened.

Consideration is therefore given to the source-pathway-receptor linkage and associated risks between the proposed development and Natura 2000 sites. For a significant effect to occur there needs to be an identified risk whereby a source (e.g. contaminant or pollutant arising from construction activities) affects a particular receptor (i.e. Natura 2000 site) through a particular pathway (e.g. a watercourse which connects the proposed development with the Natura 2000 site).

The identification of risk does not automatically mean that an effect will occur, nor that it will be significant. The identification of these risks means that there is a possibility of environmental or ecological damage occurring. The level and significance of the effect depends upon the nature of the consequence, likelihood of the risk and characteristics of the receptor.

The precautionary principle is applied for the purposes of screening to ensure that consideration and pre-emptive action is undertaken where there is a lack of scientific evidence. It is noted that mitigation measures are not taken into account in the AA screening assessment process.

4.3 Natura 2000 Sites

4.3.1 Natura 2000 Sites within likely Zone of Impact

In accordance with the European Commission Methodological Guidance (EC 2018), a list of Natura 2000 Sites that can be potentially affected by the proposed project has been complied. All candidate SAC's (cSAC) and SPAs sites within the likely zone of impact for the proposed development have been identified. These are listed in **Table 1** and illustrated in **Figure 3**.

The proposed road realignment and improvement works site is not located within or adjacent to a Natura 2000 site. The closest Natura 2000 site is the Bandon River SAC (Site code 002171), located 2.1km southeast of the site. The Caha River is located approximately 200m northeast of the works area. The Caha River is a tributary of the Bandon River, with the confluence located approximately 2.8km downstream of the works area. During construction and operation, surface water runoff could potentially impact on water quality within the Caha River and the Bandon River SAC. The improvement works could also potentially increase the hard surfaces at the site, increasing the rate of run-off from the site and potentially impact the hydrology of the Caha River.

Therefore, a source-pathway-receptor link has been identified between the source (proposed development) and the receptor (Bandon River SAC) via a potential pathway (impacts on water quality, hydrology and spread of invasive species during construction). Further information on Bandon River SAC is provided below and a full site synopsis is included **Appendix 1**.

Given the distance from the proposed development and the lack of hydrological or other pathways, no potential impacts on any other Natura 2000 site within the zone of influence has been identified.

Table 1. Natura 2000 sites and their location relative to the proposed development site

Natura 2000 Site	Site Code	Distance at closest point and potential source-pathway-receptor link	Qualifying Interests (* denotes a priority habitat)
Special Area of Conservation (SAC)			
Bandon River SAC	002171	2.1km southeast. A source-pathway-receptor link has been identified between the source (proposed development site) and the receptor (Bandon River SAC) via a potential pathway (impacts on water quality and hydrology during construction or operational	**Habitats** 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*

Natura 2000 Site	Site Code	Distance at closest point and potential source-pathway-receptor link	Qualifying Interests (* denotes a priority habitat)
		phase and spread of invasive species).	**Species** 1096 Brook Lamprey (*Lampetra planeri*) 1029 Freshwater Pearl Mussel (*Margaritifera margaritifera*)
The Gearagh SAC	000108	11.km north. No hydrological or other pathway exists	**Habitats** 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation 3270 Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* **Species** 1355 Otter (*Lutra lutra*)
Special Protection Area (SPA			
The Gearagh SPA	004109	13.1km north. No significant pathway.	**Birds** A052 Teal (*Anas crecca)* A050 Wigeon (*Anas penelope*) A125 Coot (*Fulica atra*) A053 Mallard (*Anas platyrhynchos*) **Habitats** Wetlands

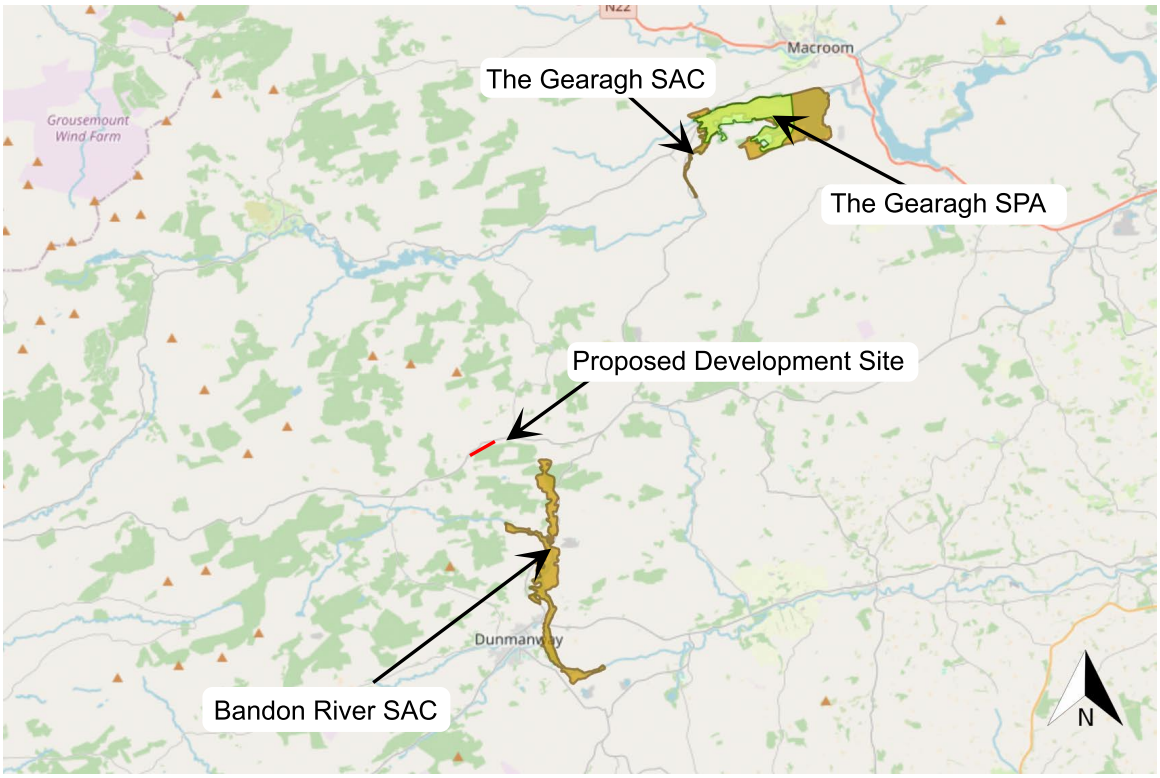


Figure 3. Location of the proposed development boundary and Natura 2000 sites within potential zone of influence | Source: EPA Envision mapping https://gis.epa.ie/EPAMaps/) | Not to scale

4.3.2 Bandon River SAC

Below is an extract from the Bandon River SAC site synopsis (NPWS). The full site synopsis for the Bandon River SAC is presented in **Appendix 1**.

The Bandon River SAC consists of relatively short adjoining stretches of the Bandon and Caha Rivers. These rivers flow in a southerly direction to the east of Dunmanway, Co. Cork. Towards the southern end of the site the Bandon River takes an easterly course.

The east-west exposure of Old Red Sandstone to the north of Dunmanway displays distinct ridgelines of bare rock with poor pasture and scrub. In this area around Lovers Leap the Bandon River cuts a narrow channel southward, cascading over a series of rock steps through a narrow valley. Below this and above Long Bridge the river widens and meanders through a fertile floodplain. Immediately south of Long Bridge the reduced flow gradient and broad, flat valley permit the main channel to split and extend into a network of braided streams forming islands.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [3260] Floating River Vegetation, [91E0] Alluvial Forests*, [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera)* and [1096] Brook Lamprey (*Lampetra planeri)*

Wet broadleaved semi-natural woodland is found in an undisturbed area of braided river channels and islands below Dunmanway. The river channels are well defined and the islands appear solid. Floating river vegetation is found along the length of the river and is dominated

by water-crowfoots. Heath in mosaic with wet grassland, exposed rock, scrub and improved grassland covers up to 30% of the site north of Long Bridge. Some small areas of woodland occur within the site north of Long Bridge.

A population of Freshwater Pearl Mussel is found in the river. This species is listed on Annex II of the E.U. Habitats Directive. The river also supports populations of protected fish species, notably Brook Lamprey and Salmon (*Salmo salar*), both of which are also listed on Annex II of the E.U. Habitats Directive.

The site also supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Badger, Irish Hare, Daubenton's Bat and Pipistrelle bat. The two bat species can be seen feeding along the river and roosting under the old bridges. Otter, another species listed on Annex II of the EU Habitats Directive, is also found within the site.

This site contains good examples of two habitats listed on Annex I of the E.U. Habitats Directive - alluvial forest and floating river vegetation - and supports populations of four Annex II species - Otter, Salmon, Brook Lamprey and Freshwater Pearl Mussel. The presence of a number of Red Data Book plant and animal species adds further interest to the site.

4.3.3 Natura 2000 sites – Features of interests and conservation objectives

The EU Habitats Directive contains a list of habitats (Annex I) and species (Annex II) for which SACs must be established by Member States. Similarly, the EU Birds Directive contains lists of important bird species (Annex I) and other migratory bird species for which SPAs must be established. Those that are known to occur at a site are referred to as 'qualifying interests' and are listed in the Natura 2000 forms which are lodged with the EU Commission by each Member State. A 'qualifying interest' is one of the factors (such as the species or habitat that is present) for which the site merits designation. The National Parks and Wildlife Service (NPWS) are responsible for the designation of SACs and SPAs in Ireland.

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network. European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as Special Areas of Conservation and Special Protection Areas. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Favourable conservation status of a habitat is achieved when its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that 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 data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or 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 for the Bandon River SAC are included in NPWS (2019) *Conservation Objectives: Bandon River SAC 002171. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.*

The species and habitats listed as QIs for the Bandon River SAC and specific conservation objectives are included in **Tables 2 and 3**.

Table 2. Qualifying habitats for the Bandon River SAC

Habitat Code	Habitat	Conservation objective
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Restore
91E0	Alluvial forests with Alnus glutinosa and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)*	Restore

Restore = Restore favourable conservation condition, Maintain = Restore favourable conservation condition

Table 3. Qualifying Species for the Bandon River SAC

Species code	Species	Scientific name	Conservation objective
1029	Freshwater Pearl Mussel	*Margaritifera margaritifera*	Restore
1096	Brook Lamprey	*Lampetra planeri*	Maintain

Restore = Restore favourable conservation condition, Maintain = Restore favourable conservation condition

4.5 Baseline Data

The ecological baseline for the proposed development site was based on a desktop review and direct surveys of the relevant works area and areas proximate to same. This focused on habitats and species that are listed as Qualifying Interests (QI) (in the case of SACs) and Special Conservation Interests (SCI) (in the case of SPAs) in the designations for the European sites. Surveys for habitats, mammals, birds and invasive species were undertaken within the study area.

4.5.1 Habitats

Site surveys were carried out on the 29th of March 2022, 21st July 2022 and 26th November 2022. Habitat mapping was carried out in line with the methodology outlined in the Heritage Council Publication, *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). The terrestrial and aquatic habitats within or adjacent to the proposed development site was classified using the classification scheme outlined in the Heritage council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and cross referenced with Annex I Habitats where required. The habitats recorded on site are described below in **Table**

4. Site photographs are also included below. No habitats listed on Annex I of the Habitats Directive or listed as qualifying habitats for Natura 2000 sites were recorded.

The proposed development area consists of an existing road and adjoining area of hardcore. In the wider landscape habitats include a mixture of immature and semi-mature conifer plantations, areas of wet heath with exposed bedrock and semi-intensive grassland. The Caha River is the most prominent potential ecological receptor in the wider landscape and potential hydrological connections to this watercourse are shown in **Figure 4**.

A site survey was specifically carried out during a period of heavy rainfall in November 2022 when water had ponded on local roads and some flooding was evident of low lying fields. The purpose of this site visit was to assess flow patterns during periods of high rainfall. The Caha River was in spate during the site visit.

There was extensive flooding of the low-lying Wet willow-alder-ash woodland WN6 which adjoins the Caha River downstream (north) of the site, with water levels over large areas averaging 0.5m. Although the channels which flow through the woodland convey water directly to the Caha River, these channels are relatively narrow and a therefore only a small proportion of the surface water run-off was conveyed directly to the river.

It was also noted that the coniferous woodland WD4 (to the south of proposed development site) which adjoins a drain discharging to the Caha River downstream of the proposed development, had been felled prior to the November 2022 site visit. There was no buffer in place between the felled woodland and the drain and as conveyance of surface water run-off is restricted by the limited size of the drainage channel, water was back flooding into the felled woodland area. Within the felled woodland, some siltation was evident where the backfilled water came into contact with the bare soil. In general the Wet willow-alder-ash woodland WN6 will flood during spate conditions, which would allow a high proportion of the silt in surface run-off during spate events to settle on the woodland floor rather than discharging directly to the Caha River. High levels of soft mud were recorded in this woodland area during site surveys. During drier conditions, most of the flow will be confined to the drainage channels and in such circumstances this will discharge directly to the river via the existing network of drainage channels. It is noted that silt fences which have been located on drainage channels within the coniferous woodland adjoining the works area, were in place during the November site visit however and were generally functional.

Table 4. Habitat recorded with proposed development site

Habitat	Comments
Buildings and artificial surfaces BL3 /Spoil and bare ground ED2/ Dry meadow and grassy verge GS2 Within works area	The proposed development area consists of the existing tarmac road (R585) and a narrow strip of adjoining land to the south. This narrow strip of land has been highly modified and consists of hardcore which it is now proposed to tarmac as part of the road improvement works. The hardcore area is relatively flat and some early successional species have become established including Willowherb and Ragwort. This habitat is of negligible ecological value. The existing road is in active usage and is also of negligible ecological value. Topsoil from the hardcore area has been stockpiled and is now becoming vegetated. The topsoil is peaty in nature and species noted include Cocksfoot, Yorkshire Fog, Rush, Foxglove, Sow Thistle, Ragwort, Spear Thistle and Creeping Buttercup. This habitat is of low ecological value. This is not an Annex I habitat or a qualifying habitat for the Bandon River SAC.
Drainage ditches FW4 Outside works area	There are a number of small drainage ditches in proximity to the development which all ultimately drain into the Caha River, to the northeast of the site. These are small localised drains which are likely to have minimal flows during any prolonged period of dry weather but have substantial, temporary flows during periods of high rainfall. In the southwestern section of the proposed development site, a small open drain with existing silt fences runs along part of the southern boundary of the site and is then piped under the hardcore area and existing road. It subsequently runs in an easterly direction towards the Caha River. Flows are sluggish as it moves through wet grassland and a wet wooded area close to the Caha River Ultimately this drain discharges to the Caha River. In the north-eastern section of the proposed development site, a second more distinct drainage ditch arises to the south and runs along the boundary of a section of conifer woodland WD4 (recently felled), is piped under the road and then flows northeast for approximately 92m before joining the Caha River. This stream is not directly affected by the site works and also passes through the native woodland noted above before reaching the Caha River. This is not an Annex I habitat or a qualifying habitat for the Bandon River SAC.
Acid oligotrophic lakes FL2 Outside works area	A small pond of standing water is located adjacent to the existing hardcore area. It supports some aquatic vegetation including Bog Pondweed *Potamogeton polygonifolius* and Rush *Juncus sp.* No signs of breeding frog were recorded. This is not a qualifying habitat for the Bandon River SAC. This habitat has links with Annex I: Acid oligotrophic lakes correspond to two annexed habitats, 'oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) (3110)' and 'oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea (3130)'. However, the FL2 habitat within the survey area is not an example of this habitat type.

Habitat	Comments
Wet willow-alder-ash woodland WN6/ Oak-birch-holly woodland WN1 Outside works area	To the northeast of the proposed development site is an area of wet woodland which grades into drier woodland dominated by Silver birch. The broad category Wet willow-alder-ash woodland WN6 includes woodlands of permanently waterlogged sites that are dominated by willows (Salix spp.), Alder (*Alnus glutinosa*) or Ash (*Fraxinus excelsior*), or by various combinations of some or all of these trees. It includes woodlands of lakeshores, stagnant waters and fens, known as carr, in addition to woodlands of spring-fed or flushed sites. The wet woodland in proximity and downgradient of the proposed development is dominated by Willow and the ground layer includes areas of deep sediment with Golden Saxifrage. Purple Moorgrass and Bog Myrtle are also present. On patches of drier ground closer to the Caha River Silver Birch has become established and the woodland can be classified as Oak-birch-holly woodland WN1 although the correspondence is loose. As it is dominated by Birch it is not a significant example of this habitat type. Two drains flow indistinctly through this woodland area before ultimately discharging to the Caha River. The qualifying interests for the Bandon River SAC includes Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]. The closest point of the Bandon River SAC is located approximately 2.8km downstream of the Poulnaberry Bridge. This Wet willow-alder-ash woodland WN6 is not a significant example of this habitat type.
Depositing Lowland River FW2 Outside works area	The Caha River is located approximately 200m from the closest point of the works area where it crosses beneath Poulnaberry Bridge This stretch of the river has a low gradient and flows are sluggish. Growth of Water Crowfoot *Ranunculus aquatilis* is extensive and this is the dominant aquatic flora. Other species recorded within this section of the river were Starwort *Callitriche* sp. and pondweed *Potamogeton* sp. The substrate consists primarily of relatively clean gravels. The works area located approximately 200 m from the Caha River which is not within the Bandon River SAC this high up the catchment. The closest point of the Bandon River SAC is located approximately 2.8km downstream of Poulnaberry Bridge. The qualifying interests for the Bandon River SAC includes Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] and two aquatic species *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] and *Lampetra planeri* (Brook Lamprey) [1096]. Freshwater Pearl Mussel and River Lamprey could occur in the Caha River in proximity to the proposed development, however conditions for Freshwater Pearl Mussel in particular are not ideal. The habitat *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] could also occur, although the dominance of Water Crowfoot is likely to reduce to value of this habitat in this section of the river.

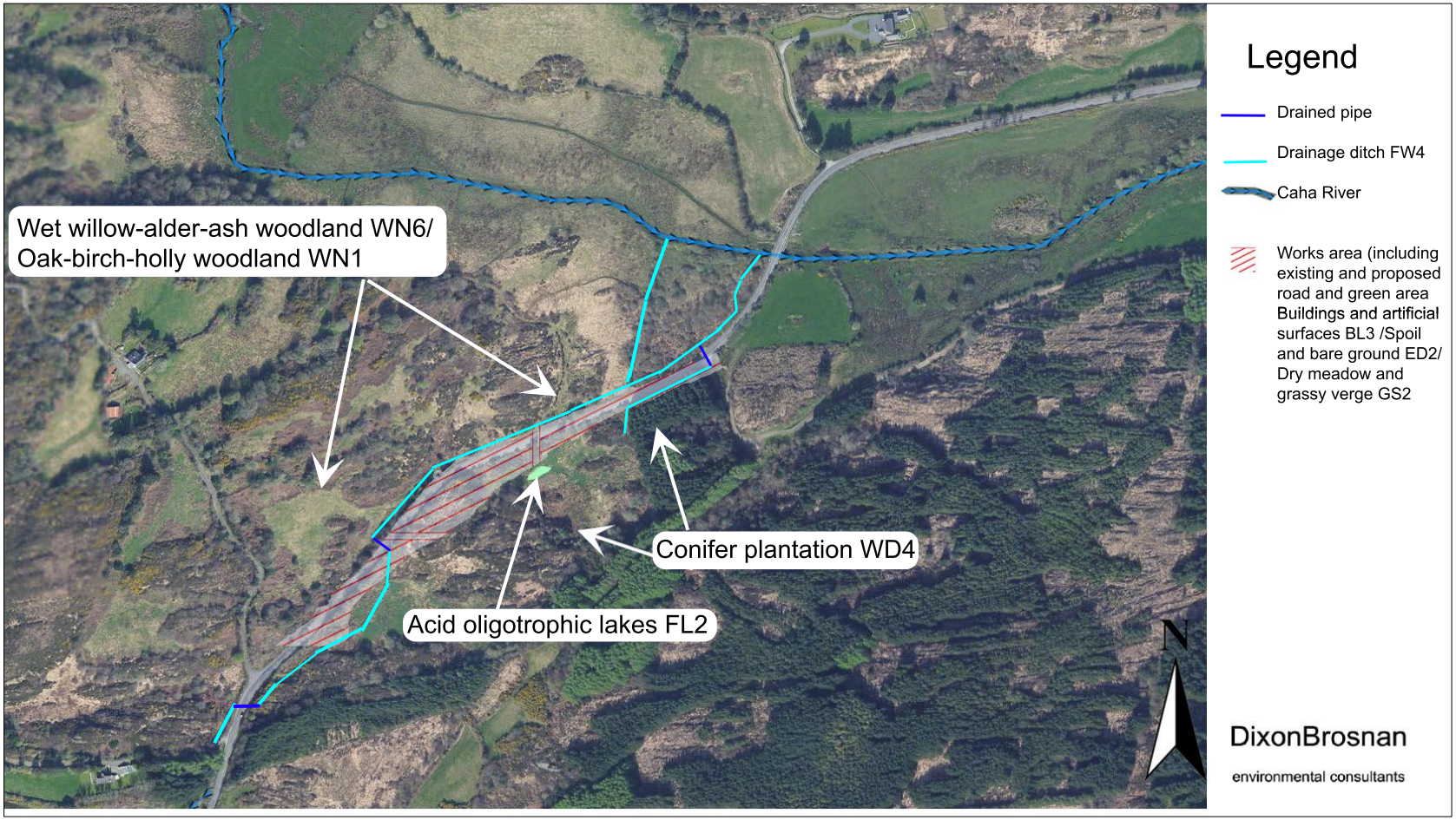


Figure 4. Drainage channels at proposed development site

Plate 1. Conifer plantation to south of works area with existing silt fencing on drains (looking east)

Plate 2. Wet woodland on norht of existing road (looking west)

Plate 3: Wet woodland providing high degree of natural filtration

Plate 4. Existing hardcore with stockpiles becoming naturally vegetated.

Plate 5: Drainage ditch which is piped under hardcore and existing road.

Plate 6: Caha River upstream of bridge into which drainage ditches discharge. Sluggish flows and dense macrophyte growth

Plate 7: Northern section of works with conifers evident in wider landscape.

Plate 8. Felling of forestry south of R585 observed during November site visit

Plate 9. Strong flows during November visit in the drainage ditch to south of site

Plate 10. Flow rapidly dissipates within wet woodland habitat

Plate 11. Caha River downstream of proposed development site

4.5.2 Otter

A mammal survey was undertaken at the site and surrounding area during the site inspection. The main focus of the mammal survey was Otter, which is listed on Annex II of the Habitats Directive. Although rare in parts of Europe, Otters are widely distributed in the Irish countryside in both marine and freshwater habitats. Otters are solitary and nocturnal and as such are rarely seen. Thus, surveys for Otters rely on detecting signs of their presence. These include spraints (faeces), anal gland secretions, paths, slides, footprints and remains of prey items. Spraints are of particular value as they are used as territorial markers and are often found on prominent locations such as grass tussocks, stream junctions and under bridges. In addition, they are relatively straightforward to identify.

It is noted that Otters are largely nocturnal, particularly in areas subject to high levels of disturbance as evidenced by the presence of Otters in the centre of Irish cities. Thus, Otters are able to adapt to increased noise and activity levels; however, breeding holts are generally located in areas where disturbance is lower. A review of NBDC records within the 2km square (W25E), which overlaps with the proposed development site has no records of Otter. However, Otters are known to forage in the Caha River and within the W25 hectad (Source NDBC). No Otter holts were recorded during site surveys within 150m of the proposed development site.

4.5.3 Birds

A bird survey was carried out in conjunction with habitat surveys in March 2022, July 2022 and November 2022. During the survey, all birds seen or heard within the development site were recorded. The majority of birds utilising the proposed works areas were common in the local landscape.

Bird species listed in Annex I of the Birds Directive are considered a conservation priority. During the survey, all birds seen or heard within the development site were recorded. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists (Gilbert *et al.* 2021). Red List bird species are of high conservation concern and the Amber List species are of medium conservation. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable. Species recorded within the site are shown in **Table 5**.

Table 5. Bird Species recorded within proposed development site

Species		Birds Directive Annex	BOCCI	
		I	Red List	Amber List
Blackbird	*Turdus merula*			
Robin	*Erithacus rubecula.*			
Wood Pigeon	*Columba palumbus*			
Hooded Crow	*Corvus cornix*			

Wren	*Troglodytes troglodytes*			
Goldcrest	*Regulus regulus*			x
Goldfinch	*Carduelis carduelis*			

The species noted are generally common in forestry/agricultural habitats. None of the bird species recorded are particularly rare or uncommon.

4.5.4 Invasive Species

Non-native plants are defined as those plants which have been introduced outside of their native range by humans and their activities, either purposefully or accidentally. Invasive non-native species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and, (3) resistance to standard weed control methods.

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality.

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that

'Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic species thereof']][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed and Himalayan Balsam, as follows: "any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence."

No third schedule or any other invasive species were recorded within the proposed development site.

4.6 Water Quality

The Water Framework Directive (WFD) sets out the environmental objectives which are required to be met through the process of river basin planning and implementation of those plans. Specific objectives are set out for surface water, groundwater and protected areas. The challenges that must be overcome in order to achieve those objectives are very significant. Therefore, a key purpose of the River Basin Management Plan (RBMP) is to set out priorities and ensure that implementation is guided by these priorities.

The third-cycle RBMP aims to build on the progress made during the first cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates

Action Programme (Good Agricultural Practice Regulations). The former measure has resulted in significant progress in terms both of compliance levels and of the impact of urban waste-water on water quality. The latter provides a considerable environmental baseline which all Irish farmers must achieve and has resulted in improving trends in the level of nitrates and phosphates in rivers and groundwater. It is acknowledged, however, that sufficient progress has not been made in developing and implementing supporting measures during the first and second cycles.

Overall, RBMP assesses the quality of water in Ireland and presents detailed scientific characterisation of our water bodies. The characterisation process also takes into account wider water quality considerations, such as the special water-quality requirements of protected areas. The characterisation process identifies those water bodies that are At Risk of not meeting the objectives of the WFD, and the process also identifies the significant pressures causing this risk. Based on an assessment of risk and pressures, a programme of measures has been developed to address the identified pressures and work towards achieving the required objectives for water quality and protected areas. Data relating to the 3rd Cycle of the WFD is provided in **Table 6** and the location of these shown in **Figure 5**.

Table 6. WFD Status

Catchment: Bandon-Ilen (Code 20_8) –3rd Cycle

This catchment includes the area drained by the Rivers Bandon and Ilen, and all streams entering tidal water between Templebreedy Battery and Mizen Head, Co. Cork, draining a total area of 1,803 km2. The largest urban centre in the catchment is Bandon. The other main urban centres are Kinsale, Clonakilty, Skibbereen and Dunmanway. The total population of the catchment is approximately 71,210 with a population density of 39 people per km2.

The Bandon River rises on the slopes of the Maughanaclea Hills and flows east where it is joined by the Shanacrane East, Shehy Beg and Caha Rivers. The Bandon then flows past Dunmanway, before turning east and flowing along a limestone-floored valley lying between ridges of sandstone uplands, typical of the south Munster landscape.

The Bandon Ilen catchment comprises 17 subcatchments with 87 river water bodies, six lakes, 25 transitional and coastal water bodies, and five groundwater bodies. There are no heavily modified or artificial water bodies in the Bandon Ilen Catchment.

Proposed Development Site

The proposed development site is located within the Bandon_SC_010 sub-catchment. One out of four river water bodies is AT RISK, Caha_020 due to not meeting its High Ecological Status objective. Lake water body Coolkellure is also AT RISK due to Moderate ecological status (driven by chlorophyll, phytoplankton and ammonia).

Siltation may be an issue within Caha_020 with quarries and forestry identified as likely significant pressures. Forestry was also identified as the likely significant pressure within Coolkellure.

Waterbodies relevant to the proposed project (2nd Cycle)

Waterbody	WFD Risk	WFD Status (2013-2018)	Significant Pressure	Pressure Category WFD Status
Caha_010	Not at risk	High	No	NA

Caha_020	At risk	Good	Yes	Forestry, agriculture, extractive industry, other anthropogenic pressures
Bandon_020	Not at risk	Good	No	NA

Source: EPA envision mapping and www.catchments.ie : Accessed: 27/04/22

Figure 5. WFD 3rd cycle - waterbodies in the vicinity of the proposed development | Source: EPA Envision mapping |

4.7 Potential Impact of Proposed Development Bandon River SAC

4.7.1 Loss of habitat

Any habitat loss of Natura 2000 sites or deterioration in habitat quality would reduce the extent of habitat available for SCI/QI species. This could potentially decrease the viability of existing QI habitats and increase the pressure on existing habitat and may result in further deterioration.

The proposed development site does not overlap with any Natura 2000 site. The Bandon River SAC is located approximately 2.1km from proposed development site. An ecological appraisal of the proposed development site indicates that it supports common habitats which are not of high value and are not qualifying habitats for Natura 2000 sites. The proposed development will not result in any significant deterioration in habitat quality, loss of habitat or loss of connectivity within Bandon River SAC. Therefore, it has been concluded that the proposed development will not result in any loss or deterioration of habitat within Natura 2000 sites.

4.7.2 Impacts from Noise and Disturbance

Potentially increased noise and disturbance associated with the site works could cause disturbance displacement of fauna. If of sufficient severity, there could be impacts on

reproductive success. The potential effects and impacts of disturbance have been widely recognised in wildlife conservation legislation, as has the need to develop conservation measures for qualifying species whilst taking human activities into account.

It is noted that the Bandon River SAC has no terrestrial qualifying species. The two qualifying species for this SAC i.e., Freshwater Pearl Mussel *Margaritifera margaritifera* and Brook Lamprey *Lampetra planeri* are exclusively aquatic species. There is no potential for disturbance to these species.

Therefore, there will be no impact on the Bandon River SAC from disturbance during construction works.

4.7.3 Impacts from Surface Water Runoff

Surface water run-off during the construction and operational phase could potentially be contaminated with silt, hydrocarbons or other chemicals. Given the connection to the Bandon River SAC via the Caha River, this runoff has the potential to impact on water quality and hydrology within the river and subsequently impact aquatic habitats, i.e., Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation and qualifying species which use these habitats, *Margaritifera margaritifera* (Freshwater Pearl Mussel) and *Lampetra planeri* (Brook Lamprey).

The conservation objectives of the Bandon River SAC may be impacted by surface water runoff from the proposed development. Therefore, changes in water quality during construction and operation have been screened in for further assessment.

4.7.4 Spread of Invasive Species

Construction works have the potential to spread invasive species outside a works area, particularly in the vicinity of a watercourse. Disturbance of invasive species within the proposed development area could lead to the dispersal of scheduled invasive species either via machinery, materials, clothing or wild animals.

No invasive species were recorded within the prosed development site boundary. No impact from the spread of invasive species on the Bandon River SAC will occur.

4.7.5 In-combination Impacts

In-combination impacts refer to a series of individual impacts that may, in combination, produce a significant effect. The underlying intention of this in combination provision is to take account of in-combination impacts from existing or proposed plans and projects and these will often only occur over time.

The area surrounding the proposed development is heavily agriculturalized. Intensive agriculture in particular can have significant impacts on aquatic ecology by increasing nutrients and sediment loads. Wastewater is also discharged from settlements such as Dunmanway and Bandon. Surface water run-off during the construction phase could potentially be contaminated with silt, hydrocarbons or other chemicals. This could potentially lead to in-combination impacts within the Bandon River SAC. Therefore, further investigation is required to examine potential in-combination impacts on qualifying habitats and species within the Bandon River SAC.

4.8 Stage One Appropriate Assessment Conclusions

4.8.1 Screening of Relevant Natura 2000 Sites and Qualifying Interests/Special Conservation Interests

Potential impacts, although improbable, have been identified for the Bandon River SAC. Screening conclusions with regard to the qualifying species and habitats for these Natura 2000 sites is provided in **Table 7**.

Table 7. Identification of relevant Natura 2000 sites. All Natura 2000 sites and QI's screened in for AA are highlighted (in bold).

Natura 2000 site	Qualifying Interest/Special Conservation Interest* (*Screened in QI's/SCI's In Bold)	Potential Impacts	Screened In/Out
Bandon River SAC	**Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]**	A deterioration in water quality and sedimentation arising from the project could have the potential to adversely affect the Conservation Objectives for this Qualifying Interest.	Screened in
	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	It is noted that there are no 91E0 *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) mapped in the vicinity of the proposed development site (NPWS 2019). No direct or indirect impacts have been identified. No significant impact on the conservation objectives of these QIs have been identified	Screened out
	***Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]** ***Lampetra planeri* (Brook Lamprey) [1096]**	These species inhabit and/or migrate through freshwater and thus could be adversely affected by impacts on water quality.	Screened In

4.8.2 Screening conclusion

The aims of this screening section of this report were as follows:

- Determine whether the proposed development, alone or in combination with other projects, is likely to have significant effects on Natura 2000 sites in view of their conservation objectives.
- Provide information on and assess the potential for the proposed development to significantly impact on Natura 2000 Sites (also known as European sites).
- Determine whether the proposed development is directly connected with, or necessary to the conservation management of any Natura 2000 sites.

It has been objectively concluded that:

- The proposed development is not directly connected with, or necessary to the conservation management of any Natura 2000 sites.
- On the basis of objective information, the possibility of significant effects from the proposed development on European sites cannot be ruled out. There is potential for the proposed development to significantly impact the Bandon River SAC via impacts on water quality (surface water runoff).
- The proposed development, alone or in combination with other projects could potentially impact on the qualifying interests for the Bandon River SAC

On the basis of objective information and in view of best scientific knowledge, the possibility of significant effects from the proposed project on a European site, the Bandon River SAC, cannot be ruled out and therefore an Appropriate Assessment is required.

The NIS has been prepared to inform and assist the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.

5. Stage 2 – Natura Impact Statement

5.1 Introduction

The main objective of this stage (Stage 2, Natura Impact Statement) in the Appropriate Assessment process is to determine whether the completion of road realignment and improvement works, at the R585 Dromdeegy and Cooranig, Dunmanway, Co. Cork (either alone or in combination with other plans, programmes and projects) will result in significant adverse effects to the integrity of the Natura 2000 sites identified in the previous section i.e., Bandon River SAC with respect to the site's structure, function and/or conservation objectives. This stage also outlines the mitigation measures that should be taken in order to avoid any negative impacts associated with the proposed development.

5.2 Status of qualifying species and habitats potentially affected by the proposed development – Bandon River SAC

5.2.1 Brook Lamprey

Brook lampreys are listed under Annex II of the EU Habitats Directive. The brook lamprey is native to Ireland, and it is distributed throughout Europe. Like all lampreys, they lack gill covers or paired fins and have an oral sucker disc instead of a mouth with jaws. Brook lamprey live exclusively in freshwater and can be found in both large and small river channels, although they are more typically found in smaller rivers. The adults spawn in early summer in nests called redds, which they evacuate from the bed of gravelly or sandy rivers using their suckers to remove stones. After hatching, larval lamprey drift downstream until they find a suitable muddy or silty part of the riverbed to burrow into. Lamprey then spend several years in a blind, worm-like juvenile form known as ammocoetes, which filter feed microscopic organisms from the water and mud. After about five or six years, brook lamprey ammocoetes develop eyes and turn silvery, transforming into free-swimming adults. Adult brook lamprey do not feed and live for only about six months.

Although they are not considered to be at risk in Ireland, they may be threatened by factors impacts on rivers such as pollution, instream works in river channels and barriers to migration.

5.2.2 Freshwater Pearl Mussel

Freshwater Pearl Mussel (*Margaritifera margaritifera*) is listed on Annexes II and V of the EU Habitats Directive (1992). Annex II of the Habitats Directive requires that listed species' habitats are maintained or, where appropriate, restored to favourable conservation status. Under Annex V of the Habitats Directive this species is listed as ‘a species of community interests whose taking in the wild and exploitation may be subject to management measures.’ This species is also listed on Appendix III of the Bern Convention which requires that ‘any exploitation of wild fauna specified in Appendix III must be regulated in order to keep the populations out of danger (temporary or local prohibition of exploitation, regulation of transport or sale, etc.)’. The Freshwater Pearl Mussel is listed as ‘Critically Endangered’ in the Republic of Ireland according to the ‘Ireland Red List No. 2: Non-Marine Molluscs’ (Byrne et al., 2009). This species is legally protected in Ireland under Schedule 1 of the Wildlife Act (1976) (Protection of Wild Animals) (S.I. No. 112, 1990) as per the requirements of Section 23 of the Wildlife Act (1976), amended under Section 31 of the Wildlife Act (2000).

The transposition of the EU Water Framework Directive (2000) into Irish legislation, as the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) and the more recent European Communities Environmental Objectives (Surface Waters) Regulations (S.I. No. 272 of 2009) require the achievement of ‘good ecological status’ in Irish waterbodies by 2015. Further measures for the protection of Freshwater Pearl Mussel are set out in the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations (S.I. 296 of 2009). This legislation sets environmental quality objectives for ‘the habitats of the Freshwater Pearl Mussel populations that are within the boundaries of a site notified in a candidate list of European sites, or designated as a Special Area of Conservation, under the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94/1997). The purpose of these Regulations is to support the achievement of favourable conservation status for Freshwater Pearl Mussels.

Pearl mussels have been known from the Bandon River and its tributaries the Blackwater and Caha for many years, but as yet there has not been a full survey of the mussel distribution or potential habitat in the catchment. Survey work was carried out on a 1.5 km section upstream of Dunmanway for an Environmental Impact Assessment for the Bandon River (Dunmanway) Drainage Scheme to relieve flooding in the Dunmanway area (RPS Cairns, 1996). Ninety-four cross-sections of 1.5m in width were surveyed (Gittings *et al.,* 1998). Three monitoring exercises were carried out on permanently marked transects (Ross, 2001, 2003, 2005). The spatial distribution of mussels in the Caha River was mapped out in 2002 (McMahon, 2003). NPWS staff also completed a Stage 2 survey of the Blackwater in 2004.

Although incomplete, the distribution of pearl mussel in the Bandon River is known to be widespread, with records from as high as Cullenagh Lake to as low as Bandon Town. The Caha and Blackwater Rivers also have wide distributions of the mussel. Where surveyed, the pearl mussel in the Bandon main channel was found to be abundant in places, with up to 75 individuals per metre square in places (Ross, 2005).

In the Caha River, mussels occur from approximately five kilometres upstream of the confluence of the Caha and Bandon. Therefore, Freshwater Pearl Mussle could potenaily be present approximately 700m downstream of Poulnaberry Bridge. A size profile of the Caha River population has not been carried out, but some mussels visible at the surface were removed and measured (McMahon, 2003). Only size classes rather than lengths were noted, the majority being between 50-100mm and some at 100- 150mm and 150-200mm. The surveyors considered that the individuals of the population were likely to be all over 30 years of age.

5.2.3 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation.

The EU (2003) definition of the habitat water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation is very broad. There is no satisfactory definition of the habitat and its sub-types or their distribution in Ireland and a lack of relevant monitoring data concerning the habitat. This habitat can occur over a wide range of physical conditions, from acid, oligotrophic, flashy upland streams dominated by bryophytes to more eutrophic, slow flowing streams dominated by Ranunculus and Callitriche species. While the former will be sensitive to diffuse pollution the latter, especially in shallow streams, will be relatively more resistant.

This habitat type is commonly distributed along the main Bandon channel and within tributaries and includes species such as Pond Watercrowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* sp.), Canadian Waterweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*) and Water Milfoil (*Myriophyllum* spp.).

5.2.4 Qualifying interests potentially impacted by the proposed development

Based on the information outlined above, in the absence of mitigation measures, potential impacts could theoretically arise in relation to Brook Lamprey, Freshwater Pearl Mussel and Watercourses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation. No significant potential risk to the remaining qualifying species and habitats has been identified. The NPWS conservation objectives for the Bandon River SAC (NPWS 2012) details the following targets for these species and habitats (**Tables 8 and 9**).

Table 8. QI species for which a potential adverse effect has been identified – specific targets

Species	Attribute	Measure	Target
Brook Lamprey	Distribution	% of river accessible	Access to all water courses down to first order streams
	Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present
	Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 5/m²
	Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive.
Freshwater Pearl Mussel	Distribution	Kilometres	Restore distribution to 12.2km
	Population size	Number of adult mussels	Restore population to at least 50,000 adult mussels
	Population Structure: recruitment	Percentage per size class	Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length
	Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution
	Habitat extent	Kilometres	Maintain habitat extent at 12.2km in the Bandon system (see map 3) and

Species	Attribute	Measure	Target
			any additional stretches necessary for salmonid spawning
	Suitable habitat: condition	Kilometers	Restore condition of suitable habitat
	Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality-macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR greater than 0.93

Table 9. QI habitats for which a potential impact has been identified – specific targets

Habitats	Attribute	Measure	Target
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Habitat area	Kilometers	Area stable or increasing, subject to natural processes
	Habitat distribution	Occurrence	No decline, subject to natural processes
	Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes
	Hydrological regime: groundwater discharge	Metres per second	Maintain appropriate hydrological regimes
	Substratum composition: particle size range	Millimetres	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (typically sands, gravels and cobbles)
	Water quality:	Milligrammes per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition
	Typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition

Habitats	Attribute	Measure	Target
	Floodplain connectivity: area	Hectares	The area of active floodplain at and upstream of the habitat should be maintained
	Riparian habitat corridor	Hectares	Restore the area and condition of fringing habitats necessary to support the habitat and its sub-types

6. Assessment of Potential Impacts

All potential impacts relate to potential surface water runoff effects during the construction and operational phase. Based on the *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (European Commission (EC), 2018 and CIEEM guidelines '*Guidelines for Ecological Impact Assessment'* (CIEEM, 2019) impacts are listed as significant using a combination of professional judgement and criteria or standards where available, if impacts have the potential to have a significant adverse effect on the ecological integrity on the habitats and species for which the site is designated.

The potential impacts associated with the proposed development are discussed in the following section with respect to their likelihood to have significant impacts on the Bandon SAC.

As part of the assessment direct, indirect and in-combination impacts were considered. Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development. Indirect and secondary impacts do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect impacts of the project/plan - in combination with other plans and projects have been established.

Potential impacts were identified as follows:

- Impacts on water quality during construction
- Impacts on water quality during operation
- In-combination Impacts

6.1 Impacts on Water Quality

6.1.1 Impacts on Water Quality during Construction

Potential impacts on aquatic habitats which can arise from surface water emissions associated with the construction phase of the proposed development include increased silt levels in surface water run-off, inadvertent spillages of hydrocarbons from fuel and hydraulic fluid and spillage of cement.

Inadvertent spillages of hydrocarbon and/or other chemical substances during construction could introduce toxic chemicals into the aquatic environment via direct means, surface water run-off or groundwater contamination. Some hydrocarbons exhibit an affinity for sediments and thus become entrapped in deposits from which they are only released by vigorous erosion or turbulence. Oil products may contain various highly toxic substances, such as benzene, toluene, naphthenic acids and xylene which are to some extent soluble in water; these penetrate fish and can have a direct toxic effect. The lighter oil fractions (including kerosene, petrol, benzene, toluene and xylene) are much more toxic to fish than the heavy fractions (heavy paraffins and tars). In the case of turbulent waters, the oil becomes dispersed as droplets into the water. In such cases, the gills of fish can become mechanically contaminated and their respiratory capacity reduced (Svobodova *et al*, 1993). However, any such spills, in the unlikely event of their occurrence, would be minor in the context of the available dilution in the River Bandon.

High levels of silt can impact on fish species, in particular salmonids. If of sufficient severity, adult fish could theoretically be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels and aquatic invertebrates may be smothered by excessive deposits of silt. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Significant impacts on fish stocks could impact on Otter due to a reduction in prey availability.

Silt can be extremely harmful to Freshwater Pearl Mussel. Silt deposition on the riverbed results in formerly clean gravels become clogged with fine sediment. This prevents oxygen movement into the waters in the riverbed (interstitial) that feed the juvenile mussels, and they quickly die. Each time siltation of gravels occurs, all juvenile mussels below five years of age are killed, and in rivers with chronic siltation problems, juvenile recruitment is rare and unsustainable, and existing adult populations face extinction. Fine sediment, once introduced to a pearl mussel river, can continue to cause very serious effects on a long-term basis (Ellis 1936, Marking & Bills 1979, Naden *et al.* 2003, Araujo & Ramos 2001, Killeen *et al.* 1998. All referenced in DEHLG, 2010).

Siltation is damaging to all stages of a pearl mussel's lifecycle. Direct ingestion of silt by adult mussels can lead to rapid death. Turbidity, particularly from fine peat entering the water, causes adult mussels to clam up (they close their shells tightly and do not filter water through their siphons), a response that provides a protection against ingesting damaging fine particles. If the river water remains strongly turbid for a number of days, mussels can die from oxygen starvation, either from remaining clammed, or from ingesting contaminated water while stressed. The fine sediment subsequently provides a medium for macrophyte growth, which makes the riverbed habitat unsuitable for pearl mussels.

Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted, and photosynthesis may be reduced. Such run-off if severe could potentially impact on water quality and thus could impact on aquatic qualifying species and habitats for the Bandon River SAC including Freshwater Pearl Mussel, Brook Lamprey, and Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation.

Due to the hydrological connection to the Caha River via the existing drainage network, there is the potential for silt in surface water run-off to impact the Caha River and Bandon River SAC. A range of mitigation procedures, including silt fencing and the use of a flood warning system, will be employed during construction to minimise the potential for impacts on water quality. Further details on surface water mitigation measures are included in **Section 7** of this report.

Following the implementation of mitigation measures there will be no significant effects on water quality during construction and it has been concluded that construction works will not have a significant adverse effect on the conservation objectives for any of qualifying species for Bandon River SAC. Surface water runoff during the construction phase. will not have an adverse effect on the integrity of the Bandon River SAC.

6.1.2 Impacts on Water Quality During Operation

Chemical contaminants in operational surface water runoff such as hydrocarbons could potentially impact on water quality and thus could impact on water quality within the Caha River and downstream within the Bandon River SAC. It is noted that the proposed road alternations will replace an existing road. The current road alignment is dangerous and the higher risk of road collision on this stretch of road leads to a potential hydrocarbon contamination risk in the event of a road traffic accident. The realignment works will reduce the risk of collision on this stretch of road and therefore reduce the risk of hydrocarbon spillage.

The existing tarmac road surface on the section of the R585 to be replaced covers an area of 2,125m². Following development, the total road area (new and existing road) will cover an area of 5,700m². As noted in **Section 3.2**, the existing road which will no longer be in active usage will not be excavated. It is expected that this will be colonised by a mixture of early successional species and scrub over time. This will minimise the earthworks/waste storage requirements of the project. Once this area has recolonised, the total road surface will be 3,575m^2 which will represent a minor increase in hard surfaces. In the medium to long-term there will be no significant change in surface water runoff volume or quality from the proposed development site. Surface water runoff from the works area drains through an area of wet woodland before meeting the Caha River. Large areas of this woodland flood during high rainfall conditions which naturally reduces silt levels in surface water run-off discharging to the Caha River. Given the existing drainage at the site and the small change from baseline conditions, no significant impact on hydrological regimes or water quality within the Caha River are predicted during the operational phase. Surface water runoff during the operational phase. will not have an adverse effect on the integrity of the Bandon River SAC.

7. Mitigation Measures

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage. It is clear that the mitigation measures are designed to achieve a lowering or reducing of the risk of impact to acceptable levels. The risk that the mitigation measures will not function effectively in preventing significant ecological impacts is low. The likely success of the proposed mitigation measures is high. The following mitigation measures will be implemented.

These mitigation measures take into account of CIRIA Guidelines *C532 Control of Pollution from Construction Sites* and CIRIA 2010 (Third Edition C692) *Environmental Good Practice*

on Sites CIRIA UK in its preparation and the execution plan shall be prepared in full compliance with these guidelines.

Construction best practice measures (of relevance in respect of any potential ecological impacts) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- NRA (2010) *Guidelines for the Management of Noxious Weeds and Non- Native Invasive Plant Species on National Roads*. National Roads Authority, Dublin.
- Murphy, D. (2004) *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites*. Eastern Regional Fisheries Board, Dublin.
- IFI (2016) *Guidelines on protection of fisheries during construction Works in and adjacent to waters* (IFI, 2016)
- IFI (2021). *Planning for watercourses in the urban environment.*
- E. Murnane, A. Heap and A. Swain. (2006) *Control of water pollution from linear construction projects. Technical guidance (C648). CIRIA.*
- E. Murnane et al., (2006) *Control of water pollution from linear construction projects. Site guide (C649). CIRIA.*

All personnel involved with the project will receive an on-site induction relating to operations and the environmentally sensitive nature of the proximity the Caha River and other watercourses and Natura 2000 sites to re-emphasize the precautions that are required as well as the mitigation to be implemented. All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding pollution on-site, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to their line manager;
- Monitor the workplace for potential environmental risks and alert the immediate line manager if any are observed; and
- Co-operate as required, with site inspections.

7.1 Surface Water – Construction

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, seawater or groundwater. The Construction Industry Research and Information Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (Masters-Williams et al 2001).

- The site boundary will be established before works commence and this boundary will be adhered to for the duration of works with no works or other site activities occurring outside this boundary.
- No machinery will be stored onsite as they will return to an off-site compound at the end of each working day
- Measures shall be put in place to minimise surface water run-off from the works area. The most vulnerable element to be protected on the site is the Caha River to the northeast of the site and the drainage ditches connecting to the river. Silt fencing along the existing drains will be upgraded as required and the need for additional silt fencing within the drainage network will be assessed. Terrastop Premium Silt Fence (or similar) will be used.
- An earth berm (shown **Figure 2**) along the northern boundary of the existing road and will prevent diffuse runoff to northern drainage ditch.
- Mixing of materials will occur within the site compound and all wash water and waste/grey water will be stored securely.
- Soil excavation will be completed during dry periods and undertaken with excavators and dump trucks.
- Excavated material will be removed on an ongoing basis and storage of excavation is unlikely to be required.
- Vegetated topsoil (as described in **Table 4**) will be remain *in situ* and allowed to recolonise naturally. No topsoil storage will be required onsite for the completion of works.
- Waste separation shall follow standard construction site protocols.
- Welfare facilities shall be provided in accordance with legal requirements. Sanitary facilities shall have proprietary foul water storage facilities which shall be tankered away on a regular basis.
- During construction, all activities will cease when a flood event arises. Cork County Council maintain an early warning system flood events for the Bandon catchment. In the event of a flood warning, mobile plant will be removed from potential flood affected areas. Operatives will also be evacuated from that portion of the site and any static plant or temporary works components will be made safe.

7.2 Management of hydrocarbons and concrete

No hydrocarbons will be stored onsite as all machinery will be taken off site at the end of each working day.

A hydrocarbon spill kit shall be available on site at all times to deal with any minor hydrocarbon spill or hydraulic fluid leakage. A detailed spillage procedure will be put in place and all will be trained with respect to the relevant procedures to be undertaken in the event of the release of any sediment, hydrocarbons into a watercourse. Spill kits will be maintained on site and

relevant staff will be trained in their effective usage. All site personnel will be trained and aware of the appropriate action in the event of an emergency, such as the spillage of potentially polluting substances. In the event of spillage of any polluting substance and/or pollution of a watercourse, Environment Protection Agency, Cork County Council, Inland Fisheries Ireland and the NPWS shall be notified.

A 'just in time' delivery policy will operate for all materials required onsite e.g., tarmacadam cement etc. This will ensure that the no storage of materials is required onsite.

All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site.

Machinery including hand-tools will never be washed in watercourses or drainage ditches.

Works will not take place during heavy rain when runoff is likely due to excess water. Shuttering will be designed to accommodate small increases in the volume of material contained within the shuttered area due to rainfall. Any excess tarmacadam or other construction material will be disposed of by removal offsite.

7.3 Ecology and Landscaping

All personnel involved with the project will receive an on-site induction relating to operations and the environmentally sensitive nature of retained habitats onsite as well as the proximity of aquatic habitats and Natura 2000 sites.

The old road will be decommissioned and securely fenced to allow habitats to recolonise naturally. This will reduce the amount of excavation works required.

No significant landscaping works are required. However, disturbed areas on the periphery of the site, including the pond (oligotrophic lake habitat), will remain *in situ* and be left to recolonise naturally following construction works.

The pond (oligotrophic lake habitat) to the south of the works area will be securely fenced to protect this habitat during construction works.

8. In-combination impacts

In combination impacts refer to a series of individual impacts that may, in combination, produce a significant impact. The underlying intention of this in combination provision is to take account of in-combination impacts from existing or proposed plans and projects and these will often only occur over time. The proposed works could theoretically create an in-combination impact. Other developments relevant to the proposed development and potential in-combination impacts are listed in **Table 10**.

The assessment of in-combination effects has considered likely significant effects that may arise during construction and operation of the proposed development. The assessment specifically considered whether any of the permitted or relevant proposed developments in the local or wider area have the potential to exacerbate (i.e., alter the significance of) effects associated with the proposed development based on best scientific knowledge. Existing projects, not identified in this report, are included in the baseline or have been assessed as not having the potential to exacerbate effects.

Table 10. Other developments near site and potential in-combination impacts

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
River Basin Management Plan 2022-2027	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2027. Ensure full compliance with relevant EU legislation Prevent deterioration Meeting the objectives for designated protected areas Protect high status waters Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination or cumulative impacts with the proposed development.
Inland Fisheries Ireland Corporate Plan 2021-2025	To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and that pristine aquatic habitats are also enjoyed for other recreational uses. To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a sustainable conservation focused manner. EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed works.

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
	fisheries and ecosystems and protect spawning salmon and trout.	
Irish Water Capital Investment Plan 2020-2024	Proposals to upgrade and secure water services and water treatment services countrywide.	Likely net positive impact due to water conservation and more effective treatment of water.
Water Services Strategic Plan (WSSP, 2015)	Irish Water prepared a Water Services Strategic Plan (WSSP, 2015), under Section 33 of the Water Service No. 2 Act of 2013 to address the delivery of strategic objectives which will contribute towards improved water quality and biodiversity requirements through reducing: Habitat loss and disturbance from new / upgraded infrastructure; Species disturbance; Changes to water quality or quantity; and Nutrient enrichment /eutrophication.	The WSSP forms the highest tier of asset management plans (Tier 1) which Irish Water prepare and it sets the overarching framework for subsequent detailed implementation plans (Tier 2) and water services projects (Tier 3). The WSSP also sets out the strategic objectives against which the Irish Water Capital Investment Programme is developed. The current version of the CAP outlines the proposals for capital expenditure in terms of upgrades and new builds within the Irish Water owned assets. Therefore, no adverse significant in-combination effects are envisaged.
NPWS Conservation Management Plans	Conservation Management Plans have not been fully prepared for the European sites being assessed. However, conservation objectives along with supporting documents for the Bandon River SAC has not yet been published.	The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. The resultant effects of conservation objectives are a net positive and there is no potential for in combination effects on European sites.
Other developments	A search of the Cork County Council planning database for Cooranig and Dromdeegy was carried out for the past 24-month period. One other development has been granted planning during this period.	Future developments will only be granted permission where they satisfy planning regulations. No significant in-combination impact has been identified.

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
	Ref 22159: Martin Hurley, Oonagh Cahill. Cooranig, Dunmanway, Co. Cork Construct dwelling, detached garage and all associated site works	
Coillte Forestry	The clear-felling of forestry adjacent to the proposed development site has led to siltation effects within the adjacent drainage ditches.	While siltation effects on the local drainage ditch was noted following the felling works, a range of mitigation measures have been specified for the current project to ensure there will be no impact on water quality. Given the existing drainage patters onsite (including wet woodland) and the proposed mitigation measures, no significant in-combination effects with the forestry planation have been identified.

A planning search of Cork County Council planning portal was conducted to identify permitted projects. Projects which, due to their nature or scale were unlikely to result in an in-combination impact, or to which there was no pathway, were excluded. These projects and potential in-combination impacts are detailed in **Table 10.**

A range of mitigation measures will be implemented during construction to effectively prevent adverse effects on water quality during construction. The measures to be implemented will effectively prevent any significant discharges of hydrocarbons or excess levels of silt from the individual elements of the project thus ensuring that no in-combination impacts will occur. Furthermore, operational design measures, will ensure there are no impacts on local water quality or flooding risk and therefore no in-combination impacts from operational surface water discharges will occur.

In the absence of any significant potential impacts or adverse effects on the on the qualifying interests and conservation interests for the Bandon River SAC and in the absence of significant impacts on its overall integrity, no potential in-combination impact from the proposed works has been identified.

8. Conclusions

The AA screening concluded, on the basis of objective information and in view of best scientific knowledge, the possibility of significant effects from the proposed project on European sites could not be ruled out and therefore an Appropriate Assessment was required. The AA screening concluded that there was potential for the proposed development to significantly impact the Bandon River SAC, via surface water runoff during construction and operation.

The NIS has been prepared to inform and assist to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on the Bandon River SAC or any other European sites.

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to Bandon River SAC within the potential zone of impact of the proposed development, the potential effect pathways, how these could impact on qualifying species or habitats and whether the predicted effects would adversely affect the integrity of the Bandon River SAC.

Mitigation measures are set out in **Section 7** of the NIS and they ensure that any effects on the conservation objectives of the Bandon River SAC will be avoided during the proposed development such that there will be no risk of adverse effects on the integrity of these European sites.

It has been objectively concluded following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted effects from the proposed development and with the implementation of the mitigation measures proposed, that the construction, operation and decommissioning of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects. There is no reasonable scientific doubt in relation to this conclusion. The competent authority will make the final determination in this regard.

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Appendices

Appendix 1 – Site synopsis

Bandon River SAC Site Code: 002171

The Bandon River SAC consists of relatively short adjoining stretches of the Bandon and Caha Rivers. These rivers flow in a southerly direction to the east of Dunmanway, Co. Cork. Towards the southern end of the site the Bandon River takes an easterly course. The predominant rock formations are Old Red Sandstone to the north and Carboniferous slate stretching south of Dunmanway. Soils in the northern section consist of peats, podzols and skeletal soils. The southern section consists of alluvial soils and Brown Podzolics.

The east-west exposure of Old Red Sandstone to the north of Dunmanway displays distinct ridgelines of bare rock with poor pasture and scrub. In this area around Lovers Leap the Bandon River cuts a narrow channel southwards, cascading over a series of rock steps through a narrow valley. Below this and above Long Bridge the river widens and meanders through a fertile floodplain. Immediately south of Long Bridge the reduced flow gradient and broad, flat valley permit the main channel to split and extend into a network of braided streams forming islands.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[3260] Floating River Vegetation
[91E0] Alluvial Forests*
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1096] Brook Lamprey (*Lampetra planeri*)

Wet broadleaved semi-natural woodland is found in an undisturbed area of braided river channels and islands below Dunmanway. The river channels are well defined and the islands appear solid. Canopy dominants are Hazel (*Corylus avellana*) and Sessile Oak (*Quercus petraea*), with scattered Downy Birch (*Betula pubescens*), Ash (*Fraxinus excelsior*), Rusty Willow (*Salix cinerea* subsp. *oleifolia*) and Alder (*Alnus glutinosa*). There is a very sparse understorey composed of Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*) and saplings of Hazel and Sessile Oak. Epiphytes are abundant on trees, including species such as Ivy (*Hedera helix*), Honeysuckle (*Lonicera periclymenum*) and bryophytes such as *Isothecium myosuroides*. The ground flora is dominated by Ramsons (*Allium ursinum*), Wood Anemone (*Anemone nemorosa*) and Ivy, along with Lesser Celandine (*Ranunculus ficaria*) and Irish Spurge (*Euphorbia hyberna*). Goldilocks Buttercup (*Ranunculus auricomus*), a very rare plant in Co. Cork, has been recorded from this woodland.

Floating river vegetation is found along the length of the river and is dominated by water-crowfoots (*Ranunculus* spp). Other aquatic plants found include Alternate Water-milfoil (*Myriophyllum alterniflorum*), Broad-leaved Pondweed (*Potamogeton natans*) and at least four water-starwort species (*Callitriche* spp.). Mosses present on rocks and attached to tree roots include *Fontinalis antipyretica* in slack flow areas, and *Fontinalis squamosa, Rhynchostegium riparioides* and *Amblystegium riparium* in moderate flows. The landward fringe of deep pools supports Yellow Water-lily (*Nuphar lutea*), Bogbean (*Menyanthes trifoliata*), Marsh-marigold (*Caltha palustris*), Water Mint (*Mentha aquatica*) and Fool's Water-cress (*Apium nodiflorum*). Shoreweed (*Littorella uniflora*) and Six-stamened Waterwort (*Elatine hexandra*) are two species of local importance which are found in the river. In moderate current flow below the Long Bridge, the larger stones are covered by the moss *Brachythecium rivulare* and the liverwort *Chiloscyphus polyanthos* var. *polyanthos.* Boulders covered in *Nostoc* algae are probably of local occurrence in Ireland. The liverwort *Riccardia chamaedryfolia* and the moss *Fissidens crassipes* found under the Long Bridge are considered to be rare in Ireland.

Heath in mosaic with wet grassland, exposed rock, scrub and improved grassland covers up to 30% of the site north of Long Bridge. Typical heath plants growing in association with the rocks are abundant Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Cross-leaved Heath (*Erica tetralix*), Tormentil (*Potentilla erecta*), Heath-grass (*Danthonia decumbens*), stonecrops (*Sedum* spp.), small amounts of St Patrick's-cabbage (*Saxifraga spathularis*) and many lichen species.

Some small areas of woodland occur within the site north of Long Bridge. Tree species such as Sessile Oak, Beech (*Fagus sylvatica*), Scots Pine (*Pinus sylvestris*) and Downy Birch are found with an understorey of Holly, Hazel, Rowan and Rusty Willow.

Two Red Data Book plant species have been recorded in the past from within or close to the site - Greater Broomrape (*Orobanche rapum-genistae*), a species that grows on the roots of legumes, and Small-white Orchid (*Pseudorchis albida*), a species of upland pastures and heaths that is protected under the Flora (Protection) Order, 1999.

The river below Long Bridge is an important inland site in Cork for Mute Swan and approximately 20 individuals are present throughout the year along this stretch. Several hundred Snipe use the site during the winter. Other birds seen regularly within the site are Grey Heron, Cormorant and Mallard, while low numbers of Lapwing and Teal visit during the winter. The Kingfisher, listed under Annex I of the E.U. Birds Directive, breeds along the river.

A population of Freshwater Pearl Mussel is found in the river. This species is listed on Annex II of the E.U. Habitats Directive. The river also supports populations of protected fish species, notably Brook Lamprey and Salmon (*Salmo salar*), both of which are also listed on Annex II of the E.U. Habitats Directive.

The site also supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Badger, Irish Hare, Daubenton's Bat and Pipistrelle bat. The two bat species can be seen feeding along the river and roosting under the old bridges. Otter, another species listed on Annex II of the E.U. Habitats Directive, is also found within the site.

Land use at the site consists mainly of sheep grazing in the northern section and cattle grazing on improved grasslands below Lovers Leap and further south. In the area between Milleenanannig and Bealaboy Bridge land reclamation and drainage is taking place. In the area of exposed rock on the higher terrain above Ardcahan Bridge some land reclamation and forestry is carried out.

This site contains good examples of two habitats listed on Annex I of the E.U. Habitats Directive - alluvial forest and floating river vegetation - and supports populations of four Annex II species - Otter, Salmon, Brook Lamprey and Freshwater Pearl Mussel. The presence of a number of Red Data Book plant and animal species adds further interest to the site.