Appropriate Assessment Screening for Ardcahan Bridge, Co. Cork

Prepared by Triturus Environmental Ltd. for Fehily Timoney and Company

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1. Introduction

1.1 Background

Triturus Environmental Ltd. were contracted by Fehily Timoney and Company on behalf of Cork County Council ('competent authority') to produce, on its behalf, an Appropriate Assessment (AA) screening for proposed repair works at Ardcahan Bridge, approximately 3km north of Dunmanway, Co. Cork. The bridge is located on the Bandon River (EPA code: 20B02) and is crossed by the R587 road, directly downstream of its confluence with the Caha River (EPA code: 20C01) (**Figure 2.1**).

This report, and the best available scientific information contained within, is intended to determine whether or not the works, either individually or in combination with other plans or projects, are likely to have a significant effect on areas designated as being of European importance for nature conservation (i.e., 'Natura 2000' or European sites). This report provides information to enable the competent authority to perform screening for AA, thereby enabling the competent authority to comply with Article 6(3) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('Habitats Directive'), in addition to the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015.

To evaluate the potential impact(s) of the proposed bridge repair works on the European sites, all sites located within a 15km radius of the work, or those which are ecologically linked, were considered. Please note that whilst a 15km buffer is recommended for plans, there is no ordinance for buffer size (EPA, 2009). However, the applied 15km radius provides a robust target to screen in European sites which could potentially be impacted when considered in isolation or in combination with others plans and projects.

The proposed works area at the Ardcahan Bridge is located within the Bandon River SAC (002171). In total, two European sites fall within a 15km buffer of the site (see **Figure 4.1**), namely;

- Bandon River SAC (002171)
- The Gearagh SAC (000108)

1.2 Need for Appropriate Assessment and legislative requirements

Special Areas of Conservation (SACs) and Special Protection Areas for birds (SPAs) are sites that form part of a network, known as Natura 2000 sites, to be designated across Europe in order to protect biodiversity within the EU. SACs are designated under the EU Habitats Directive (92/43/EEC), as transcribed into Irish law by the European Communities (Natural Habitats) Regulations, 1997, while SPAs are designated under the EU Birds Directive (79/4089/EEC, as amended and codified in 2009/147/EC). The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/2011) revoked the 1997 Regulations (and amendments) as well as the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010. The purpose of the 2011 Regulations was to address transposition failures identified in the Court of Justice of the European Union (CJEU) judgements.

Following additional amendments in 2013 (S.I. 499/2013), 2015 (S.I. 355/2015) and 2021 (S.I. 293/2021), the regulations are now cited as the European Communities (Birds and Natural Habitats) Regulations 2011-2021.

Article 6(3) of the EU Habitats Directive states that: "*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] 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*." Such an assessment is known as an Appropriate Assessment (AA). This provision is transposed into Irish legislation by Part XAB of the Planning and Development Acts, Section 177U(4) of which provides for AA screening as follows: "The competent authority shall determine that an appropriate assessment of [...] a proposed development [...] is required if it cannot be excluded, on the basis of objective information, that the [...] development, individually or in combination with other plans or projects, will have a significant effect on a European site."

The stages of the Appropriate Assessment for the proposed Ardcahan Bridge repair works are described in the methodology section below.

2. Methodology

2.1 Guidance

This report has been prepared using the following guidance documents;

- DEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.
- European Commission (2019). Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC. Brussels, (2019/C 33/01). OJ C 33, 25.1.2019.
- European Commission (2021). Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC.
- Fry & Scott (2011). Developing IBIA: A standardised AA review package. In Impact Assessment and Responsible Development for Infrastructure, Business & Industry: 31st Annual meeting of IAIA, Puebla, Mexico (Vol. 29).
- Möckel, S. (2017). The European ecological network "Natura 2000" and the appropriate assessment for projects and plans under Article 6(3) of the Habitats Directive. In: Möckel S (Ed.) 'Natura 2000 appropriate assessment and derogation procedure – legal requirements in the light of European and German case-law'. Nature Conservation 23: 1–29.
- NPWS (2019a). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.
- NPWS (2019b). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.
- OPR (2021). Appropriate Assessment Screening for Development Management
- Recent Irish and European case law on the Habitats Directive.

2.2 Appropriate Assessment methodology

The screening process to facilitate appropriate assessment has four main steps (after European Commission, 2001) (**Table 2.1**). This methodology was followed in preparation of this report.

Table 2.1 Stages in the Appropriate Assessment process (after DEHLG, 2009).

Stage 1	Screening for Appropriate Assessment
Stage 2	Appropriate Assessment
Stage 3	Alternative solutions
Stage 4	Imperative Reasons of Overriding Public Interest (IROPI)

The aforementioned guidance documents set out a staged approach for undertaking the Appropriate Assessment (AA) process, the first stage of which is referred to as 'screening'. This stage identifies the likely significant impacts on European sites, if any, which would arise from a proposed plan or project either alone or in combination with other plans and projects.

If the conclusions at the end of screening are that there is no likelihood of significant effects occurring on any European sites as a result of the proposed plan or project, either alone or in combination with other plans and projects, then there is no requirement to undertake AA. However, even if screening makes a finding of no likely significant effects, and therefore concludes that AA is not required, these findings must be clearly documented in order to provide transparency of decision-making, and to ensure the application of the so-called 'precautionary principle'.

Screening for AA involves the following;

- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites
- Describing the details of the project/plan proposals and other plans or projects that may cumulatively affect any European sites;
- Describing the characteristics of relevant European sites
- Appraising likely significant effects of the proposed project or plan on relevant European sites.

2.3 Desktop study

In order to complete the Screening for Appropriate Assessment, certain information on the existing environment is required. A desktop study was carried out to collate available information on the site's existing environment. This comprised a review of the following publications, data sources and datasets:

- Cork County Development Plan 2022-2028
- County Cork Biodiversity Action Plan 2009-2014
- Cork County Council Planning Enquiry System
- National Parks and Wildlife Service (NPWS) website and metadata available
- OSI Aerial photography and 1:50,000 mapping
- National Biodiversity Data Centre (NBDC) on-line map-viewer
- DAFM Forestry Licence viewer
- BirdWatch Ireland website
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) water quality data
- River Catchment & Sub-catchment WFD datasets

2.4 Site surveys

The scope of the site surveys carried out for the ecological appraisal of the bridge repair works area is detailed below. Terrestrial and aquatic ecological surveys were undertaken at Ardcahan Bridge on the 3rd July 2022. The objective of this site visit was to establish the presence of qualifying interest habitats and or species in the footprint of the proposed bridge works. This included a Stage I & Stage II site survey for the freshwater pearl mussel (*Margaritifera margaritifera*) in the footprint of the bridge structure. This was undertaken by pearl mussel specialist Pascal Sweeney on the 3rd July 2022. Further details are provided in the accompanying Stage II Appropriate Assessment report prepared for the project. A full list of previous ecological surveys undertaken as part of the project is summarised below.

Stage I & stage II freshwater pearl mussel surveys covering a larger section of the Bandon River up and down stream of the bridge were completed under NPWS licence C165/2019 on 11th and 12th July 2019 to establish the full extent of pearl mussel outside the immediate zone of influence (Triturus, 2019a).

Aquatic ecology walkover surveys were conducted on 12th and 13th May 2019, with survey effort focused on both instream and riparian habitats at each site. Surveys focused on 150m both upstream and downstream of the bridge site (Triturus, 2019b).

Terrestrial ecological surveys were undertaken on 8th May 2019. Further ecological information in light of advanced project design was gathered during the onsite consultation meeting on 8th July 2023, and previously recorded baseline conditions were also confirmed.

The objective of these visits was to gain an overview of the bridge location regarding the presence of invasive plant species; and habitats or species that are protected. The area surveyed was the riparian corridor surrounding the bridge, defined as up to 10m either side from the riverbanks and 150 m upstream and 150 m downstream of the bridge. The following were assessed during the walkover: habitats, mammals (excluding bats), avifauna, and other terrestrial taxa (Fehily Timoney, 2020).

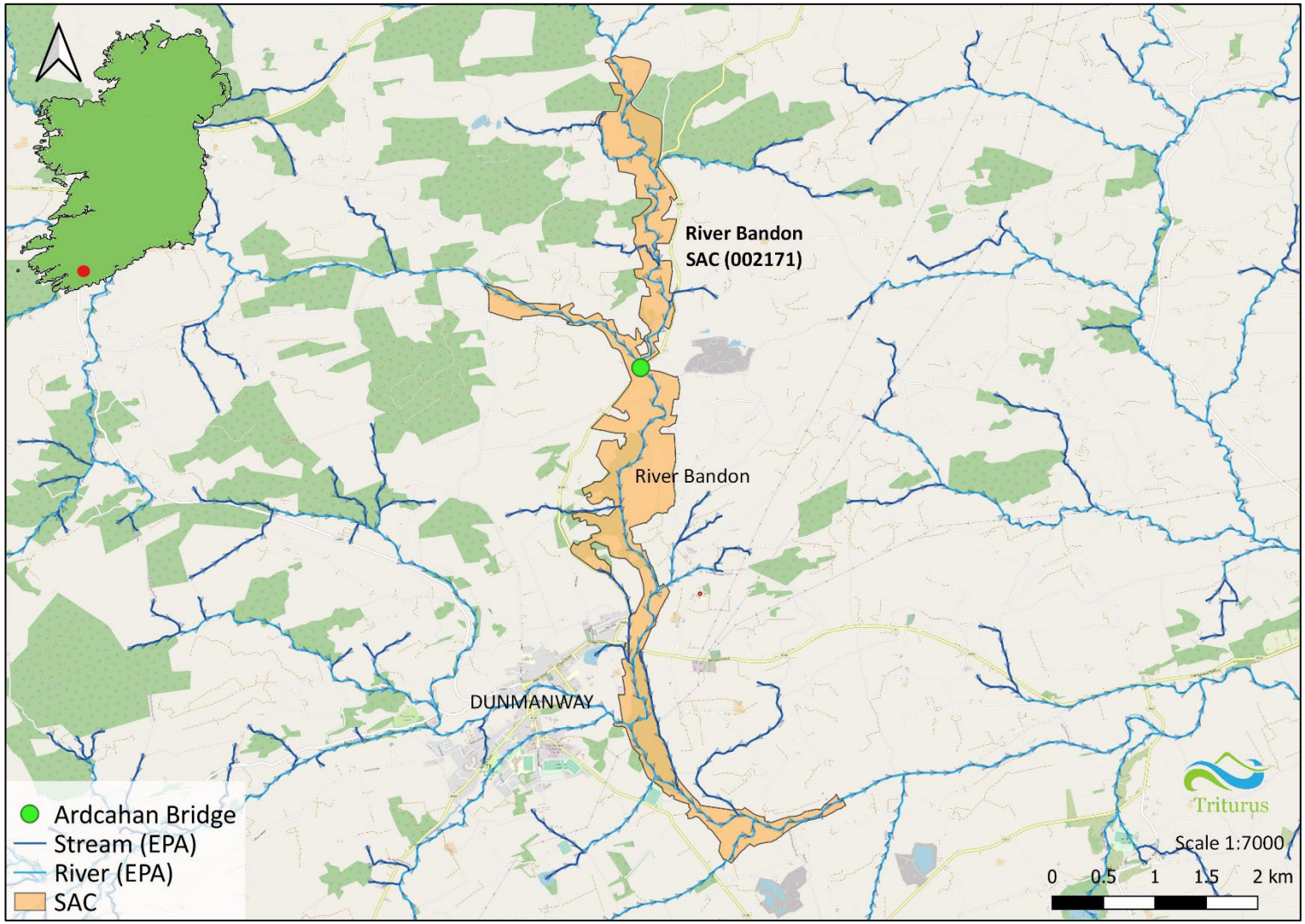

Figure 2.1 Location of the proposed works area at Ardcahan Bridge, 3km north of Dunmanaway, Co. Cork.

3. Development description

In summary, the rehabilitation at Ardcahan Bridge will require the following works according to P1959 Ardcahan CEMP;

3.1 Temporary Site Compound

During the construction phase, it will be necessary to provide temporary facilities for construction personnel. This project will have 1 no. temporary compound located near the entrance to the site which will include welfare facilities. The location of the temporary site compound is proposed to be set back c. 30m from the south west corner of the bridge, as shown in Figure 3 1. The temporary compound shall be constructed with crushed rock aggregate hard standings with low dust content. Temporary facilities will be removed, and the lands reinstated upon completion of the construction phase.

Facilities to be provided in the temporary site compounds will include the following:

- Welfare facility
- Employee parking
- Contractor lock-up facility
- Bottled water for potable supply
- Water tanker to supply water used for other purposes
- Fuel storage
- Diesel generator
- Storage areas
- Waste management areas

The site compound is located in agricultural land inside the Bandon River SAC (see Figure 2-1).

Figure 3.1 Site compound location south west of Ardcahan Bridge

3.2 Corrosion Repairs & Minor Parapet Repairs

1. To facilitate the installation of the scaffold, vegetation within a 2-meter width on either side of the bridge face will be cut back.
2. A scaffold shall be installed to allow access to the underside of the bridge arches.
3. Steel beams to be sandblasted to SA2.5 as per detail provided in Drawings P1959-ARDH-0004. Note that one operator will carry out the sandblasting using appropriate sandblasting equipment accessing the beams surface from the scaffold provided. Sandblasting equipment typically consists of a chamber in which sand and air are mixed. The mixture travels through a hand-held nozzle to direct the particles toward the surface of work.
4. Welding of additional steel plate at the bottom flange of existing steel beams as shown in Drawings P1959-ARDH-0004. One operative will carry out the welding using portable electric welding equipment accessing the beams surface from the scaffold provided.
5. A protective paint system to be applied to all exposed steel work, Hempel Hempadur Mastic 45880/1 or similar approved to be applied by brush in 2 coats of minimum 190 micron DFT (dry film thickness). One operative will paint the steel beams accessing them from the scaffold provided.
6. Steel Drip Strips will be positioned along the bottom edge of the bridge parapet on both sides of the bridge, the holes will be drilled along the bridge as per the spacing shown in drawing P1959-ARDH-0004 and bolted through with post-fixed mechanical anchors as shown in drawings P1959-ARDH-0004. The position of these elements is shown on drawings P1959-ARDH-0004.
7. Cracking at Deck Pier interface to be injected with Epoxy Resin. Prior the injection, the crack and surrounding surface will be cleaned to allow the paste-over to bond to sound concrete. The epoxy resin will be pressure pumped locally (directly into the cracks) to close the cracks at the Deck Pier interface. The deck/pier interface is above the waterline.
8. Vegetation on the internal side of the existing parapet and drainage outlets to be cleared from structure.
9. Minor repairs to missing sections of render shall be carried out along the parapet as shown in P1959-ARDH-0003. Repairs to be carried out by hand by an operator accessing the parapet surface from the deck/scaffolding level.
10. New Black PVC drain pipe to be positioned in the existing drainage outlets location and fixed in place with mortar from the deck level.
11. Scaffold to be removed.

3.3 Deck Works

1. Upon completion of the corrosion repairs it is proposed to repair the road surfacing on this bridge. A road closure and diversion will be required to facilitate these works.
2. The existing road surface shall be scarified, and the existing surface shall be removed and the concrete surface of the bridge deck exposed.
3. Any defects encountered when deck is exposed to be repaired using an appropriate concrete repair mortar. This will only include small localised repairs with concrete repair mortar, limited to the top side of the deck.

4. A trial hole and rebar scan shall be completed to confirm deck reinforcement and strength. The trial hole will be superficial and will not penetrate the entire thickness of the deck. If this investigation is unsatisfactory, Cork County Council may introduce a weight limit to the bridge.
5. A spray applied bridge deck waterproofing system shall be installed.
6. Kerb drain (feeding to new Black PVC drainage outlet) and concrete rubbing strip to be installed by an operator accessing the area from the deck level.
7. The pavement surface shall be laid, sand asphalt followed by HRA, high friction colour contract surfacing shall be applied.

3.4 Construction Programme

In order to avoid periods of high-water level it is proposed that the construction will take place over a 6 to 10 week period (July to September inclusive) to coincide with low river water levels.

4. Stage One – screening report

4.1 Brief description of existing site

The Ardcahan Bridge is a six-arch structure with each spanning approx. 5-6m located approximately 3km north of Dunmanway, Co. Cork. The bridge is located on the upper Bandon River (20B02), within the River Bandon SAC (002171) on the R587 road, directly downstream of the Bandon River/Caha River (20C01) confluence. The Bandon River at this location is approx. 25m wide and averaging 0.3-0.5m deep. The bridge is situated within a rural landscape dominated by improved agricultural grassland (GA1). The land use classification for the surrounding area of the bridge site, as defined by the CORINE 2018 land cover dataset, is agricultural pasture (231) with coniferous forest (312) present upstream near the Caha River confluence. The area is underlain by Green-grey sandstone & purple siltstone based on examination of available Geological Survey of Ireland data.

Plate 4.1 Representative image of the Bandon River immediately downstream of the Ardcahan Bridge (facing downstream) showing floating river vegetation communities in flower.

4.2 Brief description of the European sites within 15km of the development

The screening process has identified a total of two European sites (or part thereof) within a 15km radius of the proposed Ardcahan Bridge works area (see **Figure 4.1** and **Table 4.1** below). **Table 4.1** lists the European sites located within 15km of the bridge, including their qualifying interests, conservation objectives and known threats (according to information provided by the NPWS). The sites are as follows;

- Bandon River SAC (002171) (Ardcahan Bridge lies within this European site).
- The Gearagh SAC (000108) (**13km** direct distance north-west, no hydrological connectivity)

4.2.1 Hydrological linkage distances

The proposed works area at Ardcahan Bridge is located within Bandon River SAC (002171) and the SAC boundary extends approximately 3.5km upstream and 6.3km downstream of the bridge. Following a precautionary approach, the construction phase of the proposed development may result in likely significant effects on the qualifying interests of the Bandon River SAC (002171) following the source, pathway receptor model. In this respect construction works on the bridge structure could result in the deterioration of water quality within the Bandon River and direct impacts on qualifying interest water dependant species and habitats. Further details for screening of qualifying interests of the Bandon River SAC (002171) are discussed in **Table 4.1 below**.

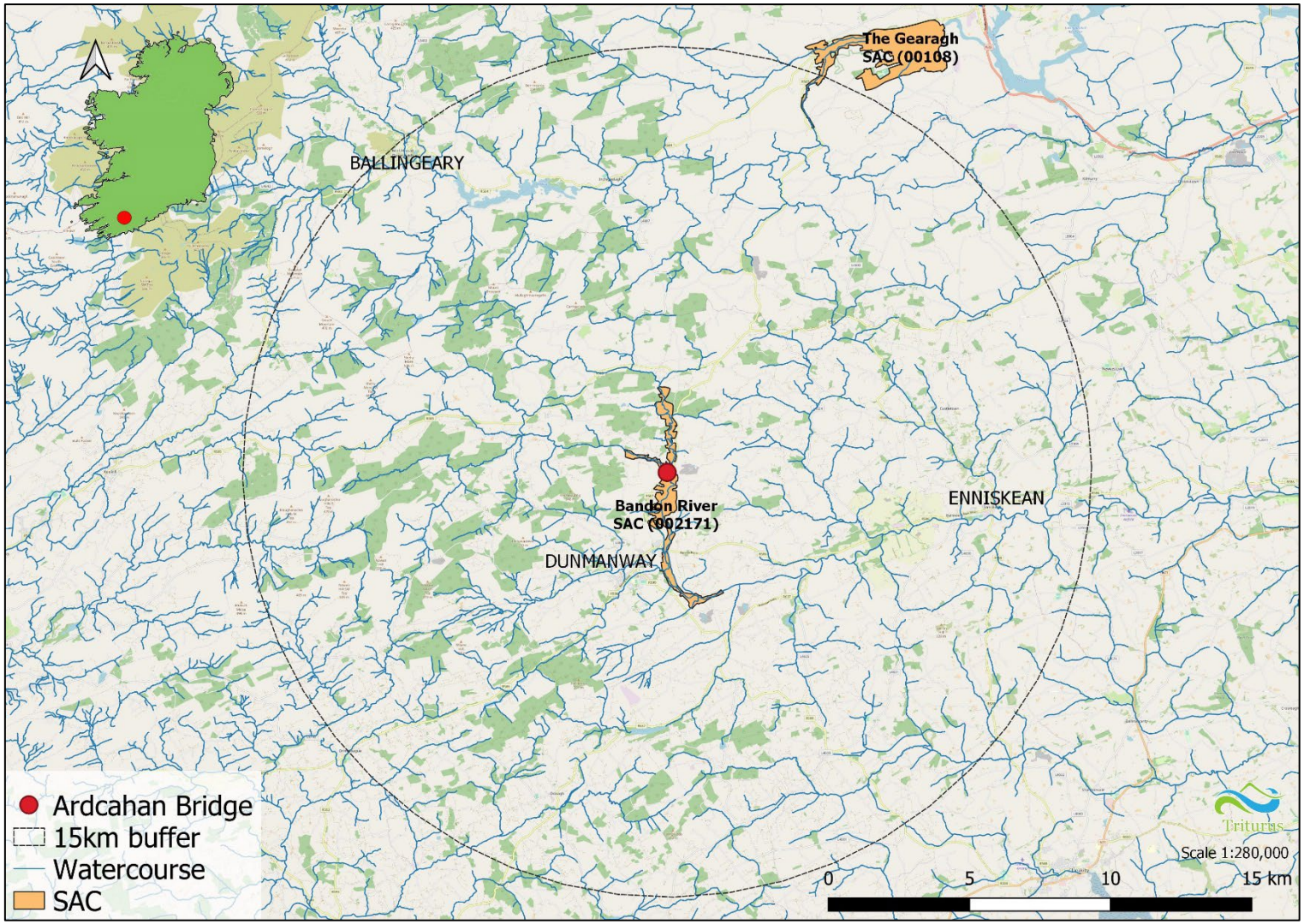

Figure 4.1 Location of Ardcahan Bridge relative to European sites within a 15km buffer.

Table 4.1 Summary of European sites within 15km of Ardcahan Bridge on the River Bandon site.

Designated site (site code)	Distance from development (km)	Conservation objective(s)	Qualifying Interests	Screening rationale
Bandon River SAC (002171)	The Ardcahan Bridge site lies within this SAC	To maintain or restore the favourable conservation status of habitats and species listed as qualifying interests (NPWS, 2019)	**Habitats** Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Species** *Margaritifera margaritifera* (freshwater pearl mussel) [1029] *Lampetra planeri* (brook lamprey) [1096]	The proposed development is located within the boundary of the Bandon River SAC (002171). It is considered that three of the four qualifying interest habitats and species may be impacted through water quality impacts from the proposed works; • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • *Margaritifera margaritifera* (freshwater pearl mussel) [1029] • *Lampetra planeri* (brook lamprey) [1096] The proposed works will involve bridge corrosion repairs, minor parapet repairs and deck repairs. Scaffolding will be erected as a base to complete construction works for corrosion and minor parapet repairs**.** This will involve sand blasting steel, painting of steel with protective coating, and the injection of epoxy resin at deck pier interface. Sections of missing render on the parapet surface will be replaced and drainage outlets will be upgraded. Heavy machinery will be required to scarify bridge for deck repairs inclusive of resurfacing. Water pollution from the proposed work could impact the quality of bed materials supporting qualifying interest brook lamprey and freshwater pearl mussel. This may also impact Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] given FRV communities requires low turbidity and a clean stable gravel bed.

Designated site (site code)	Distance from development (km)	Conservation objective(s)	Qualifying Interests	Screening rationale
				Tree limb cutting to facilitate scaffold construction may also impact the following qualifying interest terrestrial habitat; • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] The nearest definitive example of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] is 2.8km direct distance south of Ardcahan Bridge, i.e. Dunmanaway area). However, narrow strips of riparian woodland (WN5) dominated by grey willow (*Salix cinerea*) forming gallery woodland are present upstream and downstream of the bridge on both the east and west banks. This habitat has potential links with the Annex I Habitat, of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] and as such tree limb cutting may impact the condition and quality of this habitat.
Gearagh SAC (000108)	Approx. 13km direct distance north-east of Ardcahan Bridge (no hydrological linkage)	To maintain the favourable conservation status of habitats and species listed as qualifying interests (NPWS, 2016)	**Habitats** Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation [3270]	This site is **screened out** for the following reasons: The location of the bridge site approx. 13km direct distance from the SAC with no hydrological connectivity. Otter ranges are known to be up to 20km (for males), although are frequently less (Ó Néill, 2008). Therefore, given the large geographic separation with no hydrological connectivity to facilitate commuting otter, there is not considered any means of the proposed works impacting the Gearagh SAC (000108) otter population.

Designated site (site code)	Distance from development (km)	Conservation objective(s)	Qualifying Interests	Screening rationale
			Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae [91E0] **Species** Otter (*Lutra lutra*) [1355]	**No direct or indirect impact will occur on this site's qualifying interests.**

4.3 European sites with connectivity to the proposed works

As outlined in **Table 4.1** above, Ardcahan Bridge lies within the Bandon River SAC (002171). Potential impacts to this European site as a result of the proposed works are assessed further in **Table 4.2**.

4.4 Potential In-combination effects

In theory, it is possible for negligible individual impacts to interact with the other developments to cause impacts that are more than just simple additive impacts of the developments considered in isolation. The predicted impacts of disturbance, run-off from construction work, and surface water drainage are indirect and localised given the local scale of the proposed bridge works (i.e., only indirect connectivity via water). Therefore, potential for synergistic cumulative impacts may exist by itself or in combination with other plans and projects. To assess potential impacts the following information sources were reviewed;

- Cork County Development Plan 2022-2028
- Cork County Biodiversity Action Plan 2009-2014
- Cork County Council Online Planning Query System
- National Planning Application Map Viewer
- DAFM Forestry Licence viewer

A planning search limited to applications submitted within the areas overlapping and surrounding Ardcahan Bridge during the previous 5 years was conducted on the 10th June 2023. Recent developments within 0.5km of Ardcahan Bridge were restricted to a number of permitted developments and planning retentions, including a 10-year permission for the proposed development of a 110kV electricity substation including 2 no. control buildings associated electrical plant and equipment, underground electricity cabling, fencing, alterations to a previously permitted borrow pit, permission granted in April 2018 (planning ref. 17431).

There is an application for an afforestation project consisting of 13.22ha which received approval on 6th May 2022 (project no. CN85109), and an application for an afforestation project consisting of 10.55ha which received approval on 28th September 2022 (project no. CN87623).

4.5 Screening assessment criteria

The information provided below in **Table 4.2** follows the guidance document '*Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*', (European Commission, 2001). The standard '*Screening Matrix*' and '*Finding of No Significant Effects Report Matrix*' in Annex 2 of this same guidance document are also followed.

As set out in NPWS guidance (DEHLG, 2009), the task of establishing whether a plan or project is likely to have an effect on a European site(s) is based on an evaluation using available information and data, supplemented, as necessary, by local site information and ecological surveys. This results in a determination by the competent authority as to whether there may be a significant effect on the designated site. A precautionary approach is required.

Examples of effects likely to be significant include, but are not limited to, any impact to Annex I habitat; direct or indirect damage to the physical quality of the environment (e.g., water quality and supply) in the European site; serious or ongoing disturbance to species or habitats for which the European site is selected (e.g., increased noise) and/or direct or indirect damage to the size, characteristics or reproductive ability of populations in the European site.

4.6 Screening matrix

Table 4.2 Screening matrix - assessment of the potential impact of the proposed project either alone or in combination with other plans or projects on European sites.

Assessment criteria	Consideration of potential impacts
Brief description of the European site assessment	The following European site is located within 15km of the proposed bridge repair works area and has been **screened out**: • The Gearagh SAC (000108) The bridge repair works area is located within the following European site and has been **screened in**: • Bandon River SAC (002171) Bandon River SAC (002171) qualifying interest freshwater pearl mussel (*Margaritifera margaritifera*) are known from the Bandon River within the footprint of the bridge repair works including under Ardcahan Bridge itself, upstream of the bridge and directly downstream of Ardcahan Bridge (Triturus, 2019; P. Sweeney 2022). Given the location of the bridge works within the Bandon River SAC (002171), its location in relation to known pearl mussel population and the potential for water quality impacts, there is considered potential for direct impacts to highly sensitive Bandon River SAC (002171) qualifying interest freshwater pearl mussel. This would occur through direct mortality to mussel from hydrocarbons, bridge debris, resin or concrete into the Bandon River or potential reduction in water or bed quality (e.g. sedimentation). Freshwater pearl mussel can also be indirectly impacted if their glochidial host species (salmonids) are affected as a result of the proposed project works. Therefore, the protection of salmonids within the Bandon River is intrinsically linked to the protection of freshwater pearl mussel and water quality impacts on salmonid spawning areas, associated recruitment etc. could indirectly impact pearl mussel. Sediment, hydrocarbon and other water quality inputs as a result of bridge works have the potential to impact on qualifying interest brook lamprey (*Lampetra planeri*) downstream within the Bandon River SAC (002171) site. This would occur through excessive siltation of spawning areas used by brook lamprey and associated change in the bed composition. Other pollution from cement, hydrocarbons and or resins and paint used during construction could cause the direct mortality of lamprey should a significant spill occur as with freshwater pearl mussel. Water pollution from the proposed work could impact the quality of bed materials supporting qualifying interest brook lamprey and freshwater pearl mussel. This may also impact Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] given FRV communities requires low turbidity and a clean stable gravel bed.

	Given that examples of gallery woodland with links to the qualifying interest habitat 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)' are present in the vicinity of Ardcahan Bridge there is potential to impact this habitat during scaffold construction. The proposed tree limb cutting to facilitate scaffold access to the bridge may impact the habitat structure and quality.
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European sites	Given the location of Ardcahan Bridge within the Bandon River SAC (2171), there is potential to impact on freshwater pearl mussel populations that occur in the direct footprint of the bridge, and 'Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation' and brook lamprey within the Bandon River SAC (002171) that occur immediately downstream of the bridge structure. This is primarily through the release of constructed related compounds i.e. sediment, resin, paint, cement and hydrocarbons that could inadvertently be released during construction works. Given that examples of gallery woodland with links to the qualifying interest habitat 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)' are present in the vicinity of Ardcahan Bridge there is potential to impact this habitat during scaffold construction. The proposed tree limb cutting to facilitate scaffold access to the bridge may impact the habitat structure and quality.
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of: • Size and scale; • Land-take; • Distance from European site or key features of the site; • Resource requirements; • Emissions; • Excavation requirements; • Transportation requirements; • Duration of construction, operation etc.; • Other	**Size and scale, land-take and distance from European sites** **Potential impacts:** none There will be no land-take from any European site and no direct impact on the size and scale of any European site as a result of the proposed works. **Resource requirements and excavation requirements** **Potential impacts:** none There will be no excavation requirements as there are no proposed instream works. **Transportation requirements** **Potential impacts:** significant As Ardcahan bridge is located within the Bandon River SAC (002171), the transportation of equipment and materials has the potential to impact on QI habitats and/or species of the SAC. This would include the inadvertent release of invasive species during access and egress.

	Emissions **Potential impacts:** significant There is considered potential for harmful emissions (e.g., surface water run-off conveying sediment, hydrocarbons, cement, paint and resin) resulting from bridge repair works at Ardcahan Bridge to impact freshwater pearl mussel, 'Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation' and brook lamprey within the Bandon River SAC (002171) given the location of Ardcahan Bridge within the SAC. **Duration of construction and operation** **Potential impacts:** significant Whilst the duration of works is expected to be short-term only (i.e., maximum of 10 weeks) there is potential for the bridge repair works to cause permanent impacts to Bandon River SAC (002171) freshwater pearl mussel and brook lamprey via sedimentation and water quality impacts given the location of Ardcahan Bridge within the SAC. There is also potential for medium term impacts to "Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation' and 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)' due to water pollution and tree limb cutting. **Other (invasive species)** **Potential impacts:** none **Cumulative impacts** **Potential impacts:** none The proposed repair works at Ardcahan Bridge are not likely to cause any direct or indirect in-combination impacts to any European site additively or synergistically; given the review conducted (this is discussed in section 4.4 above). This is concluded based on a planning search that was conducted on the 10th June 2023. No other planned or permitted projects of a scale which could act cumulatively with the proposed works were identified.
Describe any likely changes to the site arising as a result of: • Reduction of habitat area; • Disturbance of key species; • Habitat or species fragmentation; • Reduction in species density;	Given the location of Ardcahan Bridge within the Bandon River SAC (002171) there is potential for proposed works at Ardcahan Bridge to cause disturbance to key species and reduction in species density in relation to qualifying interest freshwater pearl mussel, brook lamprey, 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)' a=nd Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation within the Bandon River SAC (002171) via water quality impacts and or localised tree limb cutting (as discussed above).

• Changes in key indicators of conservation value; • Climate change	
Describe any likely impacts on the European site as a whole in terms of: • Interference with the key relationships that define the structure of the site; • Interference with key relationships that define the function of the site.	Given the location of Ardcahan Bridge within the Bandon River SAC (002171), there is potential for proposed works at Ardcahan Bridge (primarily via water quality impacts) to interfere with key relationships that define the structure or functioning of Bandon River SAC (002171) given the potential for impacts to qualifying interest freshwater pearl mussel, Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation and brook lamprey and also 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)'. The cutting back of limbs in alluvial woodland areas may alter water flow pathways, reduce the capacity for local development of this habitat while also increasing light penetration to the bed, increasing algal proliferation and or the surface area of water crowfoot (*Ranunculus* vegetation).
Provide indicators of significance as a result of the identification of effects set out above in terms of: • loss, • fragmentation, • disruption, • disturbance, • change to key elements of the site (e.g., water quality etc.).	Given the location of Ardcahan Bridge within the Bandon River SAC (002171), there is potential for proposed works at Ardcahan Bridge to cause to cause changes in the key elements of the Bandon River SAC (002171) via water quality impacts. The loss of local lamprey populations may impact overall recruitment in the local populations and reduce genetic fitness. Similarly the hydromorphological character of river is defined by bed quality and vegetation composition. Disruptions to bed quality would influence fish abundance and or floating river vegetation composition and or cover which would influence water quality, species abundance, influence fragmentation of local populations of fish, pearl mussel etc. In a similar fashion tree limb removal may alter water flow pathways, reduce the capacity for local development of this habitat while also increasing light penetration to the bed, increasing algal proliferation and or the surface area of water crowfoot (*Ranunculus* vegetation).
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale of magnitude of impacts is not known.	The potential for water quality-related impacts (e.g., sedimentation, cement, paint, hydrocarbons and resin) to impact the Bandon River SAC (002171) as a result of the proposed works at Ardcahan Bridge are considered to be **significant** (in the absence of mitigation) given the location of Ardcahan Bridge within the Bandon River SAC (002171), its location in relation to high-sensitivity of qualifying interest freshwater pearl mussel, downstream brook lamprey populations and the Annex I Habitat "Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation'. Potential significant effects may also occur to the structure and function of riparian gallery woodland with links to the Annex I habitat, 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)' as a result of limb cutting.

4.7 Screening conclusion

In consideration of the best available scientific knowledge, on the basis of objective information specific to the conservation objectives and qualifying interests of the relevant European sites, and by applying the precautionary principal, it **cannot** be concluded beyond reasonable scientific doubt that the proposed works, individually or in combination with other plans and projects, will not have a likely significant effect on a European site.

Given the location of Ardcahan Bridge within the Bandon River SAC (002171), it is considered that significant effects to freshwater pearl mussel populations in the footprint of Ardcahan Bridge may occur because of water pollution. There is also potential for likely significant effects to the Annex I Habitat, "Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation' that occurs immediately downstream of the bridge and also brook lamprey populations that also occur immediately downstream of the bridge. This would occur through sedimentation of lamprey spawning habitat and or contamination of gravels that would contribute to spawning aggregates. Increases in the sediment supply and or turbidity would disrupt the structure floating river vegetation communities and impact river hydromorphology which is an important indicator of the presence of healthy FRV communities. Furthermore, tree limb removal may alter water flow pathways, reduce the capacity for local development of the Annex I Habitat 'Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)' while also increasing light penetration to the bed, increasing algal proliferation and or the surface area of water crowfoot (*Ranunculus* sp.) vegetation).

Therefore, there is requirement to undertake an appropriate assessment (Stage 2) to ascertain if the proposed project (either alone or in combination with other plans and projects) will adversely affect the integrity of the Bandon River SAC (002171).

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