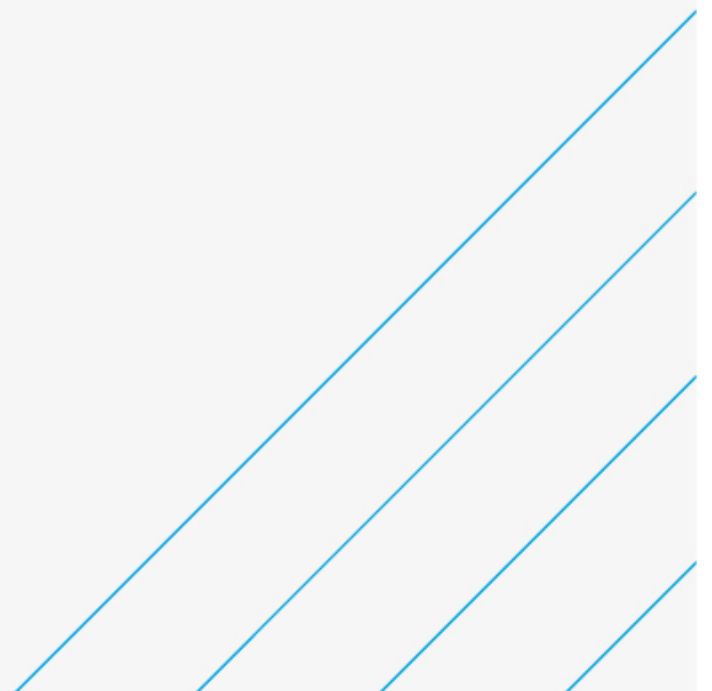


TO 334 Munster Bridges Term Maintenance 4

Natura Impact Statement for Munster Bridges
(2023, Year 1)

Transport Infrastructure Ireland (TII)

12/02/2024



Notice

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Contents

Chapter	Page
1. Introduction	1
1.1. Project Background and Context	1
2. Project Description	5
2.1. Proposed Works	5
2.2. Bridge Descriptions	20
3. Scope of Study	36
3.1. Legislative Context	36
3.2. Appropriate Assessment Process	37
4. Methods	40
4.1. Legislation and Guidance	40
4.2. Desk Study and Consultation	41
4.3. Data Collation	41
4.4. Statement of Authority	47
5. Appropriate Assessment	48
5.1. Connectivity of the Works Area to European Sites	48
5.2. Description of the Special Areas of Conservation	53
5.3. Description of the Special Protection Areas	68
5.4. Conservation Objectives	77
5.5. Other Ecological Data	81
5.6. Identification of Potential Impacts on European sites	101
5.7. In-combination Impacts	115
5.8. Mitigation Measures	117
6. Conclusions	194
References	195

Tables

Table 1.1	EIRSPAN bridge components and works.
Table 2.1	Summary details of bridges requiring Appropriate Assessment.
Table 2.2	Summary Table of Work Categories for each bridge.
Table 4.1	Conservation Objectives for Otter in the Blackwater River (Cork/Waterford) SAC (from NPWS, 2012).
Table 5.1	Bridge location relative to European sites and surface water connectivity.
Table 5.2	Conservation Objectives documents of SACs.
Table 5.3	Conservation Objectives documents of SPAs.
Table 5.4	Review of Structures with respect to Otter.
Table 5.5	Freshwater pearl mussel QIs downstream of bridges. [CONFIDENTIAL]
Table 5.6	Results of Freshwater Pearl Mussel Surveys 2023. [CONFIDENTIAL]
Table 5.7	Potential negative impacts of work items.
Table 5.8	Work items identified in Year 1 of Term Maintenance Contract No. 4 works orders as having negative impacts to be considered further.
Table 5.9	Works categories, potential impacts and receptors.
Table 5.10	Potential Impacts to European sites at each bridge.
Table 5.11	Bridges within / upstream of an OPW works scheme.
Table 5.12	TII Road Schemes in the Munster Region.
Table 5.13	Killeagh River Bridge: work elements and potential for likely significant effects.
Table 5.14	Duncannon Bridge: work elements and potential for likely significant effects.
Table 5.15	Ahane Bridge: work elements and potential for likely significant effects.
Table 5.16	Boland's Bridge: work elements and potential for likely significant effects.
Table 5.17	Lombardstown Bridge: work elements and potential for likely significant effects.
Table 5.18	Firville Culvert: work elements and potential for likely significant effects.
Table 5.19	Castletownroche Bridge: work elements and potential for likely significant effects.
Table 5.20	Fermoy Bridge: work elements and potential for likely significant effects.
Table 5.21	Bunrane Bridge: work elements and potential for likely significant effects.
Table 5.22	Kilkee Bridge: work elements and potential for likely significant effects.
Table 5.23	Kilneedan Bridge: work elements and potential for likely significant effects.
Table 5.24	Woodford Bridge: work elements and potential for likely significant effects.
Table 5.25	Cloghane Culvert: work elements and potential for likely significant effects.
Table 5.26	Curraglass Culvert: work elements and potential for likely significant effects.
Table 5.27	Poulgorm Bridge: work elements and potential for likely significant effects.
Table 5.28	Corranmore Bridge: work elements and potential for likely significant effects.
Table 5.29	Listowel Bridge: work elements and potential for likely significant effects.
Table 5.30	Glenbeigh National School Bridge: work elements and potential for likely significant effects.
Table 5.31	Waterville Bridge: work elements and potential for likely significant effects.
Table 5.32	Work elements and potential for likely significant effects.
Table 5.33	Ardteegalvan Bridge: work elements and potential for likely significant effects.
Table 5.34	Knockeenagowan Bridge: work elements and potential for likely significant effects.
Table 5.35	Gortanahaneboy Bridge: work elements and potential for likely significant effects.
Table 5.36	Blennerville Bridge: work elements and potential for likely significant effects.
Table 5.37	Blennerville Bridge Relief Arch: work elements and potential for likely significant effects.
Table 5.38	Enrights Bridge: work elements and potential for likely significant effects.

Table 5.39 Rincullia Bridge: work elements and potential for likely significant effects.

Figures

Figure 2.1	Cork Bridges.
Figure 2.2	Limerick and Clare Bridges.
Figure 2.3	Kerry Bridges.
Figure 2.4	South Tipperary Bridges.
Figure 3.1	Stages of the Appropriate Assessment process (EC, 2021a).

Plates

Plate 2.1	Killeagh River Bridge.
Plate 2.2	Duncannon Bridge.
Plate 2.3	Ahane Bridge.
Plate 2.4	Boland's Bridge.
Plate 2.5	Lombardstown Bridge under the arch.
Plate 2.6	Firville Culvert.
Plate 2.7	Castletownroche Bridge.
Plate 2.8	Fermoy Bridge.
Plate 2.9	Burrane Bridge.
Plate 2.10	Kilkee Bridge.
Plate 2.11	Kilneedan Bridge.
Plate 2.12	Woodford Bridge.
Plate 2.13	Cloghane Culvert.
Plate 2.14	Curraglass Culvert.
Plate 2.15	Poulgorm Bridge.
Plate 2.16	Corranmore Bridge.
Plate 2.17	Listowel Bridge.
Plate 2.18	Glenbeigh National School Bridge.
Plate 2.19	Waterville Bridge.
Plate 2.20	Derreenamacken Bridge.
Plate 2.21	Ardteegalvan Bridge.
Plate 2.22	Knockeeennagowan Bridge.
Plate 2.23	Gortanahaneboy Bridge.
Plate 2.24	Cullavaw Bridge.
Plate 2.25	Blennerville Bridge.
Plate 2.26	Blennerville Bridge Relief Arch.
Plate 2.27	Enrights Bridge.
Plate 2.28	Rincullia Bridge.
Plate 2.29	Canal Bridge.

1. Introduction

The EIRSPAN Bridge Management System covers all aspects of bridge management including routine maintenance. Over the past number of years routine maintenance contracts have been undertaken by private contractors under Bridge Term Maintenance contracts. In the Munster Region the most recent contract concluded in December 2022. A Bridges Term Maintenance Contract for 659 bridges in the Munster Region is being progressed by Transport Infrastructure Ireland (TII) under a new contract. An Additional 15 bridges were subsequently added bringing the new total to 674 bridges.

TII have appointed Atkins as the consultant to provide services including bridge inspections and reporting, ecological assessment, production of contract documents, tender assessment and contract administration and site supervision.

As part of this contract, Atkins Ireland was commissioned by TII to provide a report to support TII in making a screening decision as to whether Appropriate Assessment of proposed routine maintenance works to bridges in Munster (i.e. Task Order 334) under the Munster Bridges Term Maintenance Contract No.4 would be required. TII undertook the Screening for Appropriate Assessment and issued determinations for each structure.

TII determined that likely significant effects could not be ruled out for 29 bridges in Munster and thus require Appropriate Assessment. This report is a Natura Impact Statement and provides supporting information to TII in making their Appropriate Assessment decision on these 29 bridges.

1.1. Project Background and Context

The Bridge Term Maintenance Contract for the Munster region includes 659 No. bridges, which are located on the national road network across Munster in Counties Cork, Clare, Kerry, Limerick, Tipperary and Waterford.

Each of these bridges has been inspected in 2023 and will be inspected annually over the 4-year term of the contract. Each and every structure has been inspected in 2023 Q1. When data from the inspections is entered into the database Works Orders are generated and it is intended that annual routine maintenance work will be undertaken by an appointed Contractor between 1st March and 30th September in 2024. It is these Works Orders that are subject to appropriate assessment.

The maintenance operations (or Works Orders) to be carried out as part of the Project are generally minor, routine and non-structural works. The Works Orders are generated through the EIRSPAN database, which contains 14 bridge components and categories of works that can potentially be carried out to that bridge component, for example: -

- Removal of vegetation from the bridge surface, parapets and embankments.
- Sweeping and cleaning the bridge deck.
- Patching of potholes, surface dressing and sealing of pavement cracks.
- Masonry repair and repointing.
- Patch-painting of steel.
- Repair of parapets, fences and safety barriers.
- Clearance of debris from the watercourse.
- Scour repairs.

Year 1 of the contract is underway, and Screening for AA has been conducted for each bridge to determine the likelihood of proposed works causing significant effects on a European site. Proposed 2024 works at bridges that did not 'Screen out' are the subject of this assessment.

Throughout the project, progress meetings are regularly held during the year between Atkins, TII and the Contractor. During these meetings all aspects of the project are discussed, including those relevant to ecological assessments. This is to ensure that all aspects of the project are being accounted for and consistency is being maintained throughout.

The full list of EIRSPAN bridge components and works are listed in Table 1.1 below.

Table 1.1 EIRSPAN bridge components and works.

Bridge Component	Works
1.0 Bridge Surface	12 Sealing of pavement cracks
	15 Maintenance of kerb stones
	16 Patching of potholes
	20 Pavement remedial works
	21 Sweeping and cleaning
	30 Cleaning of drain gullies
	32 Establish drainage facility
	34 Hosing of drainage system
	99 Miscellaneous works
2.0 Expansions Joints	10 Cleaning of expansions joints
	14 Maintenance of joint
	99 Miscellaneous works
3.0 Footways/ median	12 Sealing of pavement cracks
	02 Installation of rubbing strip
	21 Sweeping and cleaning
	22 Maintenance of surface
	99 Miscellaneous works
4.0 Parapets/ Safety barrier	03 Removal of vegetation
	50 Concrete repairs
	54 Maintenance of bedding mortar
	55 Repair of parapet
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	70 Patch-painting of steel
	72 Replacement of guardrail
	74 Tightening of bolts
	99 Miscellaneous works
5.0 Embankments/ Revetments	03 Removal of vegetation

Bridge Component	Works
	33 Establish drainage channel
	44 Maintenance of gabion
	45 Maintenance of slope protection
	47 Reshaping (imported materials)
	59 Removal of graffiti
	99 Miscellaneous works
6.0 Wing/Spandrel/Retaining Walls	03 Removal of vegetation
	50 Concrete repairs
	52 High-pressure hosing of surface
	53 Maintenance of joints
	56 Establish base protection
	57 Maintenance of base protection
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	99 Miscellaneous
7.0 Abutments	03 Removal of vegetation
	35 Maintenance of drainage channel
	50 Concrete repairs
	52 High-pressure hosing of surface
	53 Maintenance of soft joints
	56 Establish base protection
	57 Maintenance of base protection
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	99 Miscellaneous works
8.0 Piers	03 Removal of vegetation
	35 Maintenance of drainage channel
	50 Concrete repairs
	52 High-pressure hosing of surface
	56 Establish base protection
	57 Maintenance of base protection
	59 Removal of graffiti

Bridge Component	Works
	60 Masonry repointing
	61 Masonry repairs
	99 Miscellaneous works
9.0 Bearings	50 Concrete repairs
	54 Maintenance of bedding mortar
	58 Cleaning of bearings
	70 Patch-painting of steel
	99 Miscellaneous works
10.0 Deck/slab/arch barrel	31 Cleaning of drip-tubes
	50 Concrete repairs
	52 High-pressure hosing of surface
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	70 Patch-painting of steel
	99 Miscellaneous
11.0 Beams/girders/transverse beams	50 Concrete repairs
	52 High-pressure hosing of surface
	59 Removal of graffiti
	70 Patch-painting of steel
	99 Miscellaneous works
12.0 Riverbed	01 Clearance of watercourse
	04 Scour repairs
	99 Miscellaneous works
13.0 Other elements	50 Concrete repairs
	59 Removal of graffiti
	80 Repair of lighting
	99 Miscellaneous works
14.0 Structure in general	05 Removal of signage
	50 Concrete repairs
	59 Removal of graffiti
	81 Maintenance of structure ID
	99 Miscellaneous works

2. Project Description

This section describes the different elements of the routine maintenance works. A more detailed description of each element is in the Work Requirements Specifications. As the Bridge Term Maintenance contract is a four-year contract, the Work Requirements detail the full scope of works that may be utilised by a Contractor during that time. However, it is important to note that not all work items will be carried out at a bridge within a specific year of the contract. It may also be the case, depending on the condition of a bridge, that certain work items may not be necessary at a bridge during the duration of the contract. Thus, the works detailed in the Work Orders are specific to each bridge for a specific year of the contract.

In order to carry out the proposed works, access to a bridge is via existing road networks, as all bridges under the Contract are located on national roads. Given the nature and scale of the proposed works, access to the bridge will be in the immediate vicinity of the bridge. As detailed under 'Clearance of Watercourse', obstructions up to 20m upstream or downstream of the bridge may require removal. However, that is the maximum distance envisaged from a bridge where works are likely. Thus, all works are localised and specific to that bridge.

The frequency and duration of works at a bridge will be over a short time period. The Contractor will schedule the works required at a bridge based on the availability of work crews and resources. Thus, the Contractor may visit a bridge once and carry out the works detailed in the Work Order for that bridge, or the Contractor may visit the bridge on multiple occasions and only carry out particular work items on each occasion. With both scenarios the duration of work at a bridge will be short and temporary but may vary from 1-2 hours over a number of visits or 1-2 days on a single visit.

2.1. Proposed Works

As detailed above, the Year 1 Work Orders were screened for AA and TII issued determinations for each structure. This resulted in 29 bridges being 'Screened In', i.e., where likely significant effects could not be ruled out, requiring those structures to undergo Appropriate Assessment. This report is a Natura Impact Statement and provides supporting information to TII in making their Appropriate Assessment decision on these 29 bridges.

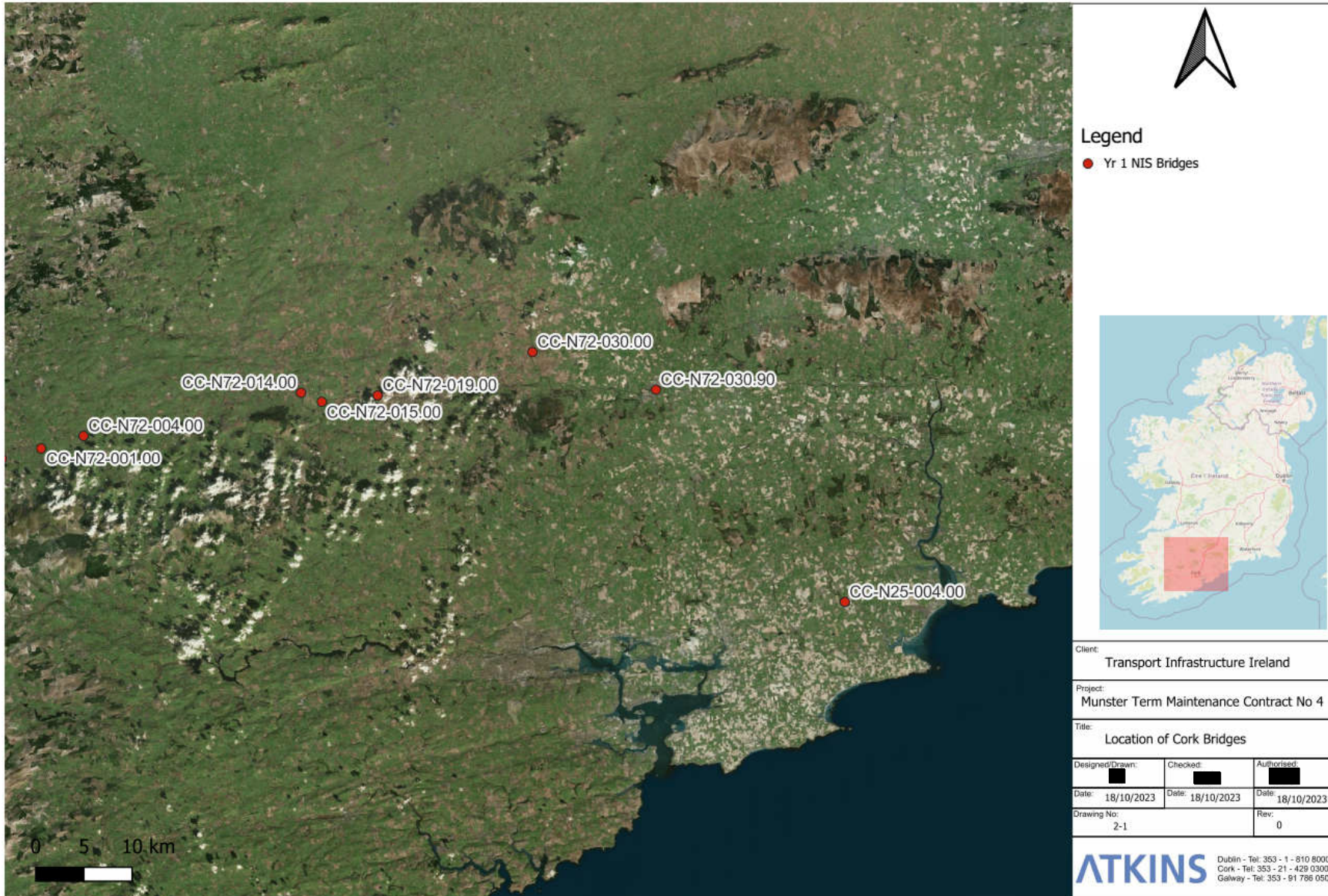
These 29 bridges are located in Counties Clare (no. 2), Cork (no. 8), Kerry (no. 17), Limerick (no. 1) and Tipperary (no. 1). There are no bridges in Waterford or Cork City which require Appropriate Assessment. Table 2.1 summaries the main details pertaining to each of the 29 bridges; and which is illustrated in Figure 2.1 to 2.6.

The Work Orders detail the bridge identification number and name, the component of the bridge to which a work item is proposed, the work item and the quantity (m²) expected to be carried out. A summary of the work categorises proposed at each bridge is detailed in Table 2.1. A description of the works is given in Section 2.1.1.

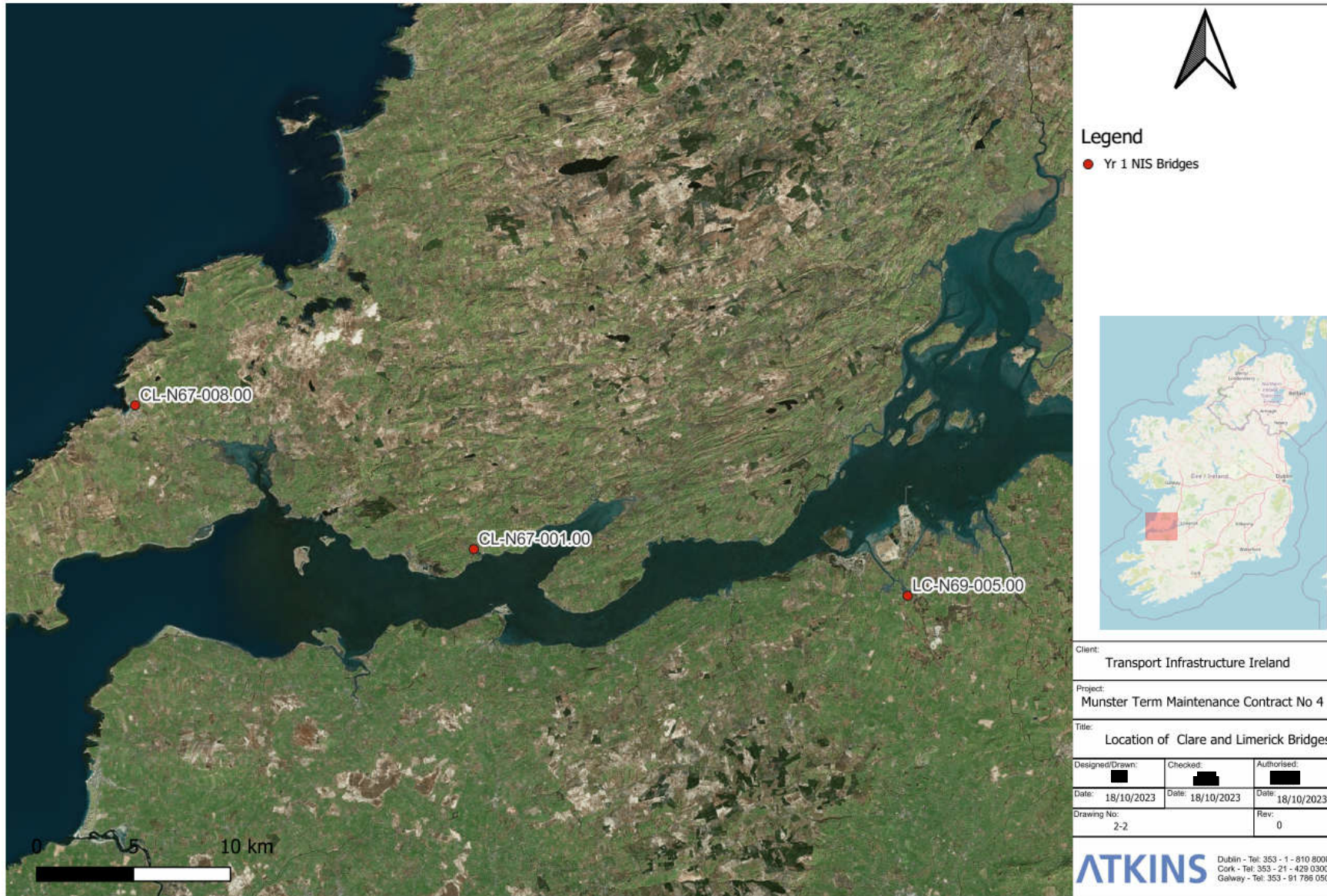
Table 2.1 Summary details of bridges requiring Appropriate Assessment.

County	Structure ID	Structure Name	Road / River Bridge	Watercourse Name (EPA)	Water Framework Directive Sub Catchment	GPS Co-ordinates (ITM)	
						X	Y
Cork County	CC-N25-004.00	Killeagh River Bridge	River	Dissour	Womanagh_SC_010	600526	576698
Cork County	CC-N72-001.00	Duncannon Bridge	River	Blackwater [Munster]	Blackwater[Munster]_SC_010	517998	593188
Cork County	CC-N72-004.00	Ahane Bridge	River	Owentaraglin 18	Blackwater[Munster]_SC_020	522375	594400
Cork County	CC-N72-014.00	Boland's Bridge	Non-EPA	Non-Listed	Blackwater[Munster]_SC_090	544745	598519
Cork County	CC-N72-015.00	Lombardstown Bridge	River	Woodpark Lombardstown	Blackwater[Munster]_SC_090	546873	597572
Cork County	CC-N72-019.00	Firville Culvert	River	Scarteen 18	Blackwater[Munster]_SC_090	552606	598170
Cork County	CC-N72-030.00	Castletownroche Bridge	River	Awbeg [Buttevant]	Blackwater[Munster]_SC_100	568513	602478
Cork County	CC-N72-030.90	Fermoy Bridge	River	Blackwater [Munster]	Blackwater[Munster]_SC_110	581152	598562
Clare	CL-N67-001.00	Burrane Bridge	River	Tonavoher	Cloon[Clare]_SC_010	506097	652585
Clare	CL-N67-008.00	Kilkee Bridge	River	Dough 27	Doonah_SC_010	488851	660360
Kerry	KY-N22-013.00	Kilkneedan Bridge	River	Leamnagulla 22	Laune_SC_020	494480	598841
Kerry	KY-N22-019.00	Woodford Bridge	River	Woodford 22	Flesk[Kerry]_SC_020	499209	590510
Kerry	KY-N22-021.00	Cloghane Culvert	River	Ardeegalvan 22	Flesk[Kerry]_SC_020	503091	587967
Kerry	KY-N22-025.00	Curraglass Culvert	River	Flows to Rusheen_Beg	Flesk[Kerry]_SC_020	505416	585900
Kerry	KY-N22-027.00	Poulgorm Bridge	River	Flesk [Kerry]	Flesk[Kerry]_SC_010	509682	581910
Kerry	KY-N22-029.00	Corranmaree Bridge	River	Ford Currimeenavrick	Flesk[Kerry]_SC_010	513100	581784
Kerry	KY-N69-017.00	Listowel Bridge	River	Feale	Feale_SC_040	499489	633226

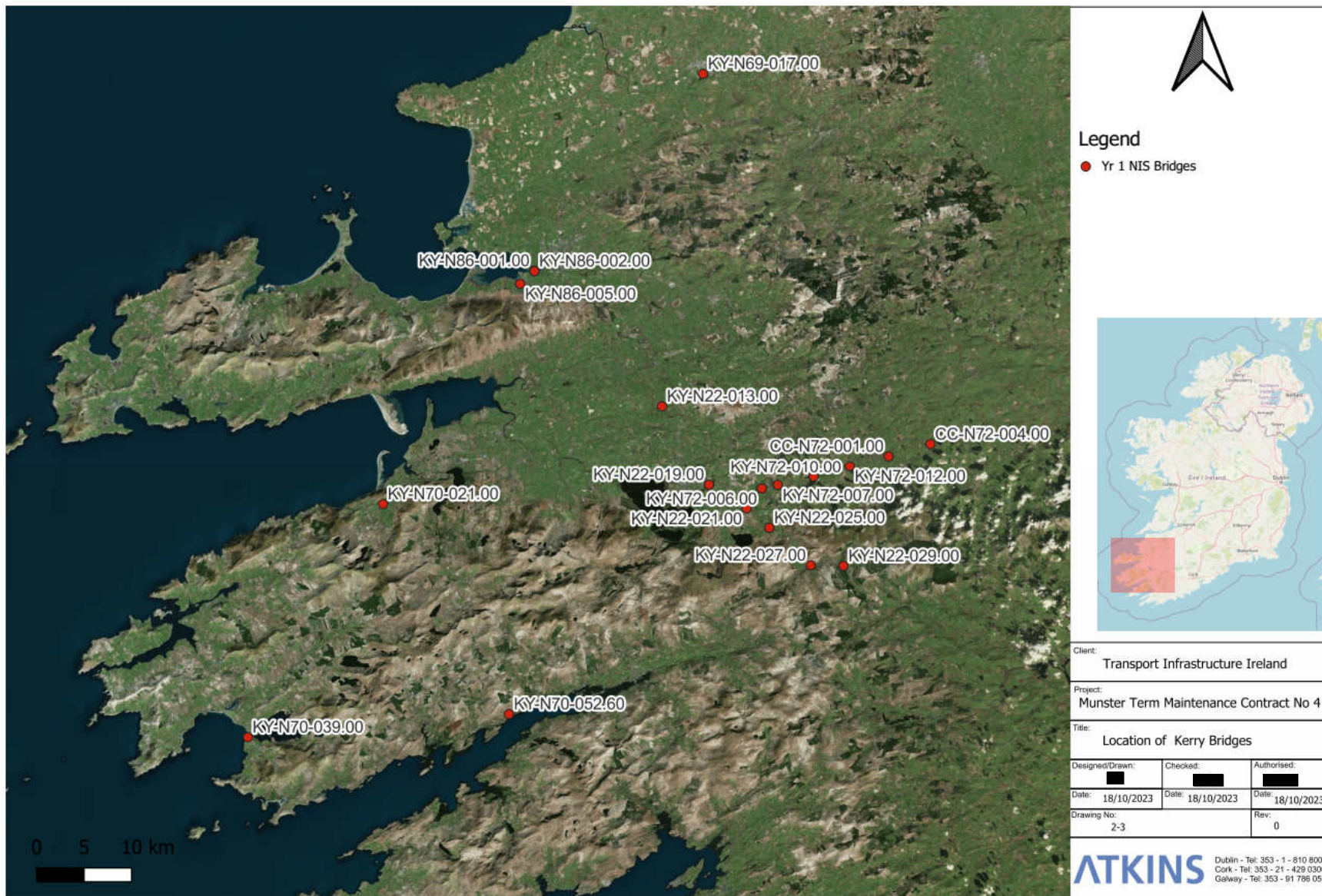
County	Structure ID	Structure Name	Road / River Bridge	Watercourse Name (EPA)	Water Framework Directive Sub Catchment	GPS Co-ordinates (ITM)	
						X	Y
Kerry	KY-N70-021.00	Glenbeigh National School Bridge	River	Coolroe_Lower	Caragh_SC_010	465129	589299
Kerry	KY-N70-039.00	Waterville Bridge	River	Waterville	Finglasriver[Waterville]_SC_01	450294	565359
Kerry	KY-N70-052.60	Derreenamacken Bridge	River	Derreenamackan	Kealduff_SC_010	477745	567042
Kerry	KY-N72-006.00	Ardteegalvan Bridge	River	Ardteegalvan 22	Flesk[Kerry]_SC_020	504719	590010
Kerry	KY-N72-007.00	Knockeennagowan Bridge	River	Knockanarroor	Flesk[Kerry]_SC_020	506383	590348
Kerry	KY-N72-010.00	Gortanahaneboy West Bridge	River	Beheenagh 22	Quagmire_SC_010	510134	591143
Kerry	KY-N72-012.00	Cullavaw Bridge	River	Cullavaw (Stream)	Blackwater[Munster]_SC_010	513943	592188
Kerry	KY-N86-001.00	Blennerville Bridge	River	Lee (Tralee)	Lee[Tralee]_SC_010	481517	613225
Kerry	KY-N86-002.00	Blennerville Bridge Relief Arch	River	Lee (Tralee)	Lee[Tralee]_SC_010	481524	613166
Kerry	KY-N86-005.00	Enrights Bridge	River	Undefined	Lee[Tralee]_SC_010	480007	611888
Limerick	LC-N69-005.00	Rincullia Bridge	River	Ahacronane	Shanagolden[Stream]_SC_010	528368	649814
Tipperary South	TS-N24-006.00	Canal Bridge	River	Flows to Suir	Suir_SC_150	624661	623256



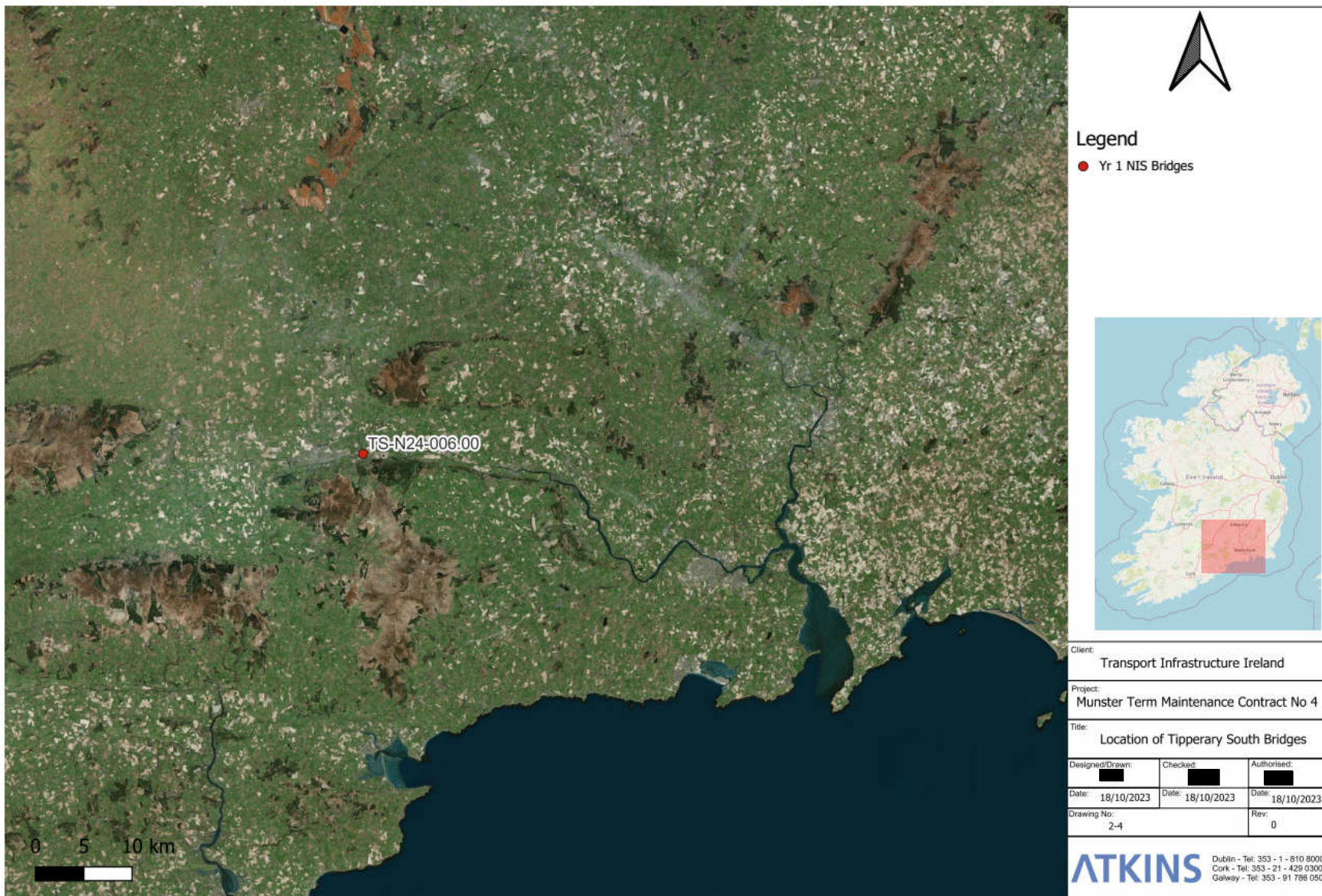
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2.1.1. Works Descriptions

2.1.1.1. Sweeping and Cleaning

All debris, silt and vegetation shall be removed from the bridge surface (i.e. the bridge deck) using a mechanical road sweeper or other appropriate means. No road sweepings are to be allowed enter the river.

2.1.1.2. Patching of potholes, surface dressing and sealing of pavement cracks

All dirt, debris and vegetation shall first be removed from the bridge surface either by sweeping with a brush, using a power hose (airline) or manual raking out. No dirt, debris and / or vegetation will enter a watercourse. Cracks shall be sealed with hot poured bitumen or similar approved product. Potholes will be cleaned of loose debris, broken back and reinstated in accordance with CC-SCD-00705 using macadam or similar approved surfacing material compatible with the existing. Surface dressing shall be carried out by applying a bituminous coat and then dressing with stone similar in size to the existing road surface.

2.1.1.3. Cleaning of Drains and Gullies

All drain gullies on or adjacent to structures shall be cleaned of silt, debris and vegetation and all deposits removed for off-site disposal in line with Waste Regulations. The contents of any rodded gully / outlet material cannot be pushed out into / discharged to the watercourse; where required it may be necessary to plug the end of a gully / drain when completing works to prevent material entering the river before such material can be safely removed from site (e.g. by suction).

All gully connections and outlet pipes shall be cleared to ensure the unimpeded flow of water from the gullies and through the drainage outlets. No discharge of waste is permitted on site. Where existing drainage channels are present, these shall be re-profiled. Where drainage channels do not exist and are required, these shall be established by excavating a water cut in the soft verge and drain into the road embankment. Drainage channels will not drain directly to a watercourse.

2.1.1.4. Cleaning and Maintenance of Expansion Joints

Expansion joints will be cleaned by either sweeping clean with a brush or airline/ hose. No arisings are to be allowed enter the river. Damaged joints shall be repaired using a macadam material or one compatible with the existing material. Seals that are missing or in poor condition shall be removed, cleaned, and replaced. There shall be no discharge of waste on site. Note that expansion joints are not hydrologically linked to the watercourse being crossed.

2.1.1.5. Installation of rubbing strips

Rubbing strips are concrete verges on the bridge put in place to keep traffic away from the bridge parapet. Rubbing strips will be installed at bridges by extending the existing road pavement. Where required, the existing surface will be broken up and removed. All excavated material will be disposed of off-site. There will be no discharge of waste on-site.

2.1.1.6. Vegetation Removal & use of herbicides

On embankments and revetments, all trees, bushes, ivy, and deep-rooted vegetation within 1m of a structure shall be removed down to ground level. If vegetation greater than 1m from a structure is deemed a threat to the integrity of a structure, this shall also be removed. In the case of wing/spandrel and retaining walls, all vegetation rooted in, undermining, or otherwise affecting their integrity shall be removed to avoid damage to the walls.

The stumps of vegetation with a diameter greater than 100mm shall have horizontal saw cuts made into the stump to promote natural rotting. The removal of mould/fungus or algae will be achieved using high pressure hosing, stiff brush, or hand-scraper. Herbicide will not be used on vegetation which is not on the bridge structures.

Removal of Ivy and similar plants from bridge surfaces may include the use of herbicide prior to mechanical removal. The use of any chemical to assist in the removal of vegetation from structures must be approved by the Employer's Representative and be undertaken under the advice of an appropriately trained and registered pesticide advisor. Herbicides must be of a type approved for use near water and must be used in accordance with the manufacturer's instructions. Only appropriately trained and registered users may carry out the application of herbicides. There will be no discharge of waste on-site.

The legislation around the permitted use of pesticides and plant protection products is complex and evolving. For details of the Sustainable Use of Pesticides please refer to the DAFM webpage at: - <http://www.pcs.agriculture.gov.ie/sud/>. This includes a link to the *Irish National Action Plan for the Sustainable Use of Pesticides (Plant Protection Products)* published in February 2019.

The legislation governing the sustainable use of pesticides includes the following: -

- Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides ('Sustainable Use of Pesticides Directive'); and,
- European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012).
- European Communities (Sustainable Use of Pesticides) (Amendment) Regulations, 2019 (S.I. No. 438 of 2019).

The legislation governing the use of plant protection products includes: -

- Regulation (EC) No. 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC (hereinafter referred to as the 'Plant Protection Products Regulation'); and,
- European Communities (Plant Protection Products) Regulations, 2012 (S.I. No. 159 of 2012).

Article 12 (1) (b) of the European Communities (Plant Protection Products) Regulations, 2012 states that pesticides and / or plant protection products cannot be applied within a *European site within the meaning of Regulation 2 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)*.

Use of pesticides within Natura 2000 sites is to be avoided. However, Article 12 (2) states: - "*Where a person, having completed a risk assessment, is obliged to use a pesticide in an area referred to in paragraph (1), he or she shall ensure that preference is given to the use of low risk plant protection products or biological and cultural control measures and where such measures are not capable of performing the necessary function, a person shall prioritise the use of plant protection products that are not classified as R50 in accordance with Directive 1999/45/EC of the European Parliament and of the Council of 31 May 19993 as amended by Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 . (3) Where a person uses a pesticide in an area referred to in paragraph (1) the onus of proof will lie with that person to show that there was no viable alternative and appropriate risk management measures were put in place.*

As such, herbicides will not be applied within SACs unless it is deemed by the Contractor's risk assessment to be the only viable option due to structural concerns. In such a case, a risk assessment and proposed materials must be approved by Atkins/TII.

In the wider environment, we would recommend that where possible the use of pesticides and plant protection products is avoided. Priority should be given to the use of non-chemical and natural alternatives. Where the use of pesticides and / or plant protection products cannot be avoided the importance of ensuring that products are used in accordance with the product label cannot be over emphasised.

The Plant Protection Products Regulations provides that the Minister for Agriculture, Food and the Marine may establish a register of authorised products. If the Contractor is proposing to use any such products, they should check to ensure that the product proposed is entered on the register (see <http://www.pcs.agriculture.gov.ie/products/>). Specifically, under Regulation 12(2) the user shall ensure that preference is given to the use of low-risk plant protection products or biological and cultural control measures. Where measures are not capable of performing the necessary function, a person shall prioritise the use of plant protection products that are not classified as R50 in accordance with Directive 1999/45/EC of the European Parliament.

Furthermore, under Regulation 5(1) of the Sustainable Use of Pesticides Regulations 2012, the user of pesticides shall, subject to exception, “*hold a certificate confirming that the professional user has trained to a standard determined by the Minister in the subjects listed in Annex I of the Directive*”, and “*comply with any additional training requirements as determined by the Minister*”. The Contractor must be able to demonstrate that any staff applying pesticides and / or plant protection products carries such certification.

Should the Contractor propose to use pesticides and / or plant protection products they must set details such as maximum dose / hectare in each application; number of applications; period between applications etc. as part of an Integrated Pest Management Plan / Invasive Species Management Plan, with records of usage to be retained in line with Article 67(1) of the Regulations.

If it is proposed that an herbicide will be used to remove vegetation from masonry, this will be a herbicide approved for use near water, such as certain glyphosate products. Glyphosate has a low known toxic effect on aquatic life. The water required to make a solution in line with the product label will be sourced from a private source (pre-collected and stored) and not from the river.

With respect to the bridges being considered in the current assessment, herbicides are only to be used at a single location – Bunrane Bridge (CL-N67-001.00). In this instance it is necessary to treat the stump of a previously cut tree by drilling into an injecting herbicide directly into stump. Herbicide application is not needed for other structures.

2.1.1.7. Clearance of watercourse

Many watercourses support in-stream vegetation, including examples of the Annex I habitat watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (3260); also known as floating river vegetation.

The purpose of this work item is to clean a channel of all obstructions, debris and vegetation that may impede flow. This includes items such as household or domestic items dumped in the channel, tree branches, concrete or masonry rubble or other objects that have become lodged between abutments and/or piers, within pipes, or debris build up under the structure. This may also include obstructions up to 20m upstream or downstream of the bridge. Naturally occurring aquatic vegetation growth in the channel shall not be cut back.

Excessive overgrowth of brambles etc. from adjacent embankments, which is impeding flow, will be cut back by manual means only. Heavy machinery is not permitted in the channel.

For de-silting of heavily silted culverts, the use of specialist drain clearing suction rigs will be required. No discharge of waste is permitted on site. Resulting deposits will be transported to and disposed of at a licensed waste facility.

2.1.1.8. Masonry repair and repointing

Repointing will be undertaken by stonemasons who have attended the TII approved ‘Masonry Arch Bridge Repair Workshop’ or are members of the Guild of Master Craftsmen. Repointing will be done by hand only. Masonry will be repointed by first cleaning the area by removing all vegetation and algae from the wall faces and arch barrel soffits, as described above.

Lime mortar will be used for all masonry repointing and repair. Where large areas are to be repointed, repointing must be undertaken in a fashion that prevents lime mortar from entering the aquatic ecosystems.

2.1.1.9. Cleaning of graffiti

The general approach to be taken is that if graffiti is not visible to the public and is not offensive it will be left in place. Where practical the preferred option is to overpaint graffiti. Where this is not possible there are a number of techniques available to remove graffiti. These are outlined below.

Grffiti can be removed using a variety of techniques depending on the structure. These may include water-soluble sprays and aerosols, gels and poultices, and high-pressure hosing, stiff brush and abrasives when so approved by the Employers Representative. Mechanical abrasive graffiti removal shall be carried out as a last resort by specialist firms and should only be carried out on uncoated concrete substrates. Typical methods include lower pressure water cleaning with or without detergents as well as sand or grit blasting. Note that certain methods of graffiti removal and / or graffiti removers may harm the surrounding finish and therefore will not be permitted for use. In contrast, others might be too weak and ineffective against spray paint.

The majority of graffiti encountered on bridge structures consist of spray-applied paint. Graffiti caused by spray-applied paints shall be removed using a water-based cleaning gel. The gel shall be applied to the affected area with a brush in a circular motion. After a short waiting time (generally ca. 20 minutes) the mixture of paint and gel shall be washed off with water (either by hand or using low pressure hosing), collected and disposed of offsite in a suitable waste disposal facility. No wastewater containing removal agents will be allowed to enter the surrounding environment. This approach is compatible with most sites, where graffiti is predominantly encountered on dry bridges (e.g. footpaths) and on those parts of the bridge structure away from the water.

In all cases the appointed Contractor will confirm the approach they propose to use for graffiti removal and what chemicals, if any, are to be used. This is to be reviewed and signed off by the Resident Engineer on behalf of TII, with ecological advice sought as appropriate. Where working closer to water only those chemicals/ gels approved for use near water can be used to remove graffiti.

With respect to this assessment graffiti removal is only proposed at two locations – Fermoy Bridge (CC-N67-001.00) and Listowel Bridge (KY-N69-017.00). Chemicals will not be used in either instance when cleaning graffiti on these structures.

2.1.1.10. Maintenance of gabions

Damaged gabions shall be repaired wherever feasible using similar wire to the original. Missing stone infill shall be made good with stone of similar type and size. Gabions considered beyond repair shall be carefully removed so as to avoid all undue disturbance to the embankment and new gabions filled with the recovered or similar stone installed. New gabions shall have a Roads and Bridges Agreement Certificate and shall match as closely as possible the existing gabions.

Gabions showing signs of or being at risk of excessive settlement shall be carefully removed, footings/foundations made good and compacted and the gabions reinstated. Any actual or likely significant slope instability shall be reported to the Employers Representative.

It should be noted for the Bridge Term Maintenance Contract for the Munster region, the scope of works for maintenance of gabions is limited to the removal of vegetation.

2.1.1.11. Reshaping (imported materials)

Earth embankments and slopes shall be re-profiled to the original slope using recovered soil or suitable imported fill if soil is not available on site. All imported material is subject to approval by the Employers Representative.

2.1.1.12. Maintenance of slope protection

Slope protection includes gabions, rock revetments, paving slabs, paviors, in situ concrete, stone or other materials placed specifically to protect an embankment slope. Slope protection shall be maintained by replacing missing, damaged, or otherwise poor condition units. Unstable or displaced units shall be reinstated in a manner to match the existing bedding. Soft spots occurring beneath unstable or displaced units shall be excavated out and replaced with suitable compacted stone fill to cl.804 of TII Specification for Works.

2.1.1.13. Concrete Repairs

Concrete repairs can be carried out to bridge elements such as wing and spandrel walls, abutments, piers, arch barrels and transverse beams and girders. Concrete repairs will be carried out where minor areas of defective concrete are identified as needing repair.

Cracked, honeycombed, delaminated, contaminated or otherwise defective concrete will be broken out by hand-held drill/impact hammer, taking due care to avoid damage to sound concrete and reinforcement.

Before cutting out, the Contractor shall determine the position and depth of the reinforcement. The perimeter of the concrete to be removed shall be saw cut perpendicularly to the face of the concrete to a depth of not less than 10 mm or to within 10mm of the reinforcement, whichever is the lesser. The concrete shall be removed using suitable hand or mechanical tools or high-pressure water jetting. Where concrete is removed by high pressure water jetting a lightweight electric demolition hammer may be used for final trimming of the area broken out.

Waste material from the above operations shall be removed offsite. The Site shall be kept free of debris or standing water arising from the jetting activities. All proprietary materials shall be stored in a dry weather-proof lock up store free from extremes of cold or heat in accordance with the manufacturer's instructions. The materials shall not be removed from the store for use until immediately prior to mixing. Repairs shall only be undertaken by Contractors who are able to demonstrate suitable experience and a proven track record dealing with concrete repairs.

2.1.1.14. Establishing base protection

Base protection is likely to be required around wing/ spandrel/ retaining walls, abutments, and piers.

Bridge components that have been identified as at risk of undermining, by washout, embankment instability or other means, will have mass concrete of not less than Grade C20/25 placed and compacted in any void on an apron of not less than 300mm depth (below ground level) and 300mm width provided immediately in front of the bridge component, as specified by the Works Orders. When working within the river channel the Contractor shall adhere to the requirements listed in the relevant sections of the Works Requirements Specification.

Scour holes will be filled with Class C1 material as per the TII Specification for Road Works Series 600. C1 material is dry coarse granular material for use as a general fill material.

2.1.2. Biosecurity protocols

Biosecurity protocols shall be implemented during the construction phase of the proposed project to prevent the introduction of invasive species listed on the 3rd Schedule of the 2011 Regulations (S.I. 477 of 2011) to site and the further spread of diseases.

The current list of watercourses where crayfish plague has been recorded can be viewed at the National Biodiversity Data Centre webpage at –

<https://www.biodiversityireland.ie/projects/invasive-species/crayfish-plague/>

The following biosecurity measures will be adopted: -

1. All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.
2. Prior to being brought on site, equipment should be: -
 - i. power steam washed at a suitably high temperature or at least 65 degrees, or
 - ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer's instructions are followed and if required, the correct contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant
3. During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.
4. Appropriate facilities shall be used for the containment, collection, and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.
5. Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

With respect to invasive species key species of concern in Munster, include knotweeds such as Japanese knotweed (*Fallopia japonica*), as well as Himalayan balsam (*Impatiens glandulifera*), Giant hogweed (*Heracleum mantegazzianum*) and Giant rhubarb (*Gunnera* spp.). Data on invasive alien species which has been collected by TII was available for review and formed part of the GIS which informed this study. We were also able to review site photos taken by the engineers, which again showed no evidence of invasive species at the works location; as well as online sources such as NBDC; Google Earth etc.

However, as the situation on the ground can change over time (i.e. between initial site visits by the engineers to inspect the bridge; writing of the NIS and mobilisation of the Contractor), the works area at each bridge will be rechecked for invasive species prior to the commencement of works. Should any invasive species be recorded close to but not within the works, they will be fenced off using a 7m buffer from the outermost edges of invasive species such that they will not be impacted by proposed works. It is not part of the current Contract to undertake chemical control of invasive species.

If, however, an invasive species is located that impinges upon proposed works area, then the design of works may need to be revisited. In this instance the NIS would also be revisited allowing both TII, NPWS and IFI an opportunity to comment on such changes, and in the case of TII allow for the Determination to be revisited.

IFI Biosecurity protocols will be followed for the duration of the works on each bridge. This is particularly critical given the recent record of Crayfish plague in the River Blackwater¹ in Co. Cork.

¹ <https://www.npws.ie/news/water-users-urged-take-precautions-due-outbreak-crayfish-plague-munster-blackwater-catchment> and <https://www.fishhealth.ie/fhu/news-media/news/update-crayfish-plague-ireland-0>

Table 2.2 Summary Table of Work Categories for each bridge.

County	Structure ID	01, 04 Works to Riverbed	03 Removal of vegetation	30 - 35 Clean drains & gullies	60, 61 Masonry Repointing /Repair	44,45,47 Embankm ent Structural Work	50 Concrete Repairs	52,99 High Pressure Hosing	56,57 Establish/ Maintain base protection	54, 55 Repair to parapet	99 Miscellane ous	59 Removal of graffiti
Cork County	CC-N25-004.00	Yes	Yes	Yes	Yes							
Cork County	CC-N72-001.00	Yes	Yes		Yes							
Cork County	CC-N72-004.00		Yes		Yes		Yes					
Cork County	CC-N72-014.00	Yes	Yes			Yes				Yes		
Cork County	CC-N72-015.00		Yes	Yes	Yes							
Cork County	CC-N72-019.00	Yes	Yes		Yes							
Cork County	CC-N72-030.00	Yes	Yes		Yes							
Cork County	CC-N72-030.90	Yes	Yes		Yes							Yes
Clare	CL-N67-001.00		Yes	Yes	Yes				Yes		Yes	
Clare	CL-N67-008.00		Yes				Yes					
Kerry	KY-N22-013.00		Yes	Yes	Yes	Yes			Yes			
Kerry	KY-N22-019.00	Yes	Yes		Yes							
Kerry	KY-N22-021.00		Yes	Yes		Yes					Yes	
Kerry	KY-N22-025.00		Yes	Yes		Yes	Yes			Yes		
Kerry	KY-N22-027.00		Yes		Yes				Yes		Yes	
Kerry	KY-N22-029.00	Yes	Yes		Yes						Yes	
Kerry	KY-N69-017.00	Yes	Yes	Yes	Yes			Yes	Yes			Yes

County	Structure ID	01, 04 Works to Riverbed	03 Removal of vegetation	30 - 35 Clean drains & gullies	60, 61 Masonry Repointing /Repair	44,45,47 Embankm ent Structural Work	50 Concrete Repairs	52,99 High Pressure Hosing	56,57 Establish/ Maintain base protection	54, 55 Repair to parapet	99 Miscellane ous	59 Removal of graffiti
Kerry	KY-N70-021.00	Yes	Yes		Yes				Yes			
Kerry	KY-N70-039.00		Yes	Yes					Yes			
Kerry	KY-N70-052.60		Yes		Yes							
Kerry	KY-N72-006.00	Yes	Yes	Yes	Yes		Yes					
Kerry	KY-N72-007.00	Yes	Yes	Yes			Yes			Yes		
Kerry	KY-N72-010.00		Yes		Yes	Yes						
Kerry	KY-N72-012.00		Yes		Yes		Yes		Yes		Yes	
Kerry	KY-N86-001.00		Yes	Yes	Yes		Yes				Yes	
Kerry	KY-N86-002.00		Yes	Yes			Yes				Yes	
Kerry	KY-N86-005.00		Yes	Yes	Yes				Yes			
Limerick	LC-N69-005.00		Yes		Yes		Yes					
Tipperary South	TS-N24-006.00	Yes	Yes		Yes	Yes	Yes					

2.2. Bridge Descriptions

2.2.1. Cork County

2.2.1.1. Killeagh River Bridge (CC-N25-004.00)

Killeagh River Bridge is a 3-span masonry arch bridge over the Dissour River. Each span is 4.8m of arch barrel which comprises concrete, the remainder is stone masonry. Plate 2.1 shows Killeagh Bridge. A recently constructed metal pedestrian bridge can be seen to the left. Killeagh River Bridge is hydrologically connected to Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPA. A Japanese knotweed sign is located at the bridge.



Plate 2.1 Killeagh River Bridge.

2.2.1.2. Duncannon Bridge (CC-N72-001.00)

The Duncannon Bridge is a 3-span masonry arch bridge with masonry parapets carrying N72 over the River Blackwater. Each span is 9.1m and the rise of arch barrel at crown is 1.77m. The bridge is within the Blackwater River (Cork/Waterford SAC. It is hydrologically connected to Blackwater Callows SPA. Plate 2.2 shows the north elevation. [REDACTED]. However, 2023 targeted survey work found no mussels present within 100m upstream and downstream of the bridge. [REDACTED]



Plate 2.2 Duncannon Bridge.

2.2.1.3. Ahane Bridge (CC-N72-004.00)

Ahane Bridge is a double span masonry arch bridge with a concrete slab secondary structure with an overall length of 19.5m. There are spalled concrete parapet walls along the carriageway. The bridge carries the N72 over the Owentara lin River within the Blackwater River (Cork/Waterford) SAC. Plate 2.3 shows the north elevation.

[REDACTED]. Pearl mussel is a QI of the Blackwater River (Cork/Waterford) SAC.



Plate 2.3 Ahane Bridge.

2.2.1.4. Boland's Bridge (CC-N72-014.00)

The Boland's Bridge is a single span masonry arch bridge with in-situ reinforced concrete extension. The original arch barrel has a span of 1.2m. The concrete slab extension has a clear span of 1.258m and measures 2.25m to the barrel of the slab. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 2.4 shows the concrete section at north side. There are no records of pearl mussel from Boland's Bridge.

[REDACTED] Pearl mussel is a QI of the Blackwater River (Cork/Waterford) SAC.



Plate 2.4 Boland's Bridge.

2.2.1.5. Lombardstown Bridge (CC-N72-015.00)

Lombardstown Bridge consists of a masonry arch structure with a large concrete deck extension to the upstream elevation. There are low concrete parapet walls on both sides behind crash barriers. Plate 2-5 shows Lombardstown Bridge. The structure is not within the Blackwater River (Cork/Waterford) SAC. It carries water under the N72 just over 35m from the River Blackwater. There are no records of pearl mussel from Lombardstown Bridge.

Pearl mussel is a QI of the Blackwater River (Cork/Waterford) SAC.



Plate 2.5 Lombardstown Bridge under the arch.

2.2.1.6. Firville Culvert (CC-N72-019.00)

The structure is a 2-span masonry structure with masonry parapets. The maximum span is 1.17m and the minimum span is 0.67m. The structure is located 600m upstream of the Blackwater River (Cork/Waterford) SAC on the N72. Plate 2 shows the north side of this structure. There are no records of pearl mussel from Firville Bridge.

Pearl mussel is a QI of the Blackwater River (Cork/Waterford) SAC.



Plate 2.6 Firville Culvert.

2.2.1.7. Castletownroche Bridge (CC-N72-030.00)

The Castletownroche Bridge is a 5-span masonry arch bridge with masonry parapets. The maximum span is 5.6m and the minimum span is 2.33m. The rise of arch barrel for the maximum span at crown is 1.56m. There is water pipe strapped to the south of the bridge. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 2 shows the south elevation. There are no records of pearl mussel from Castletownroche Bridge.

Pearl mussel is a QI of the Blackwater River (Cork/Waterford) SAC.



Plate 2.7 Castletownroche Bridge.

2.2.1.8. Fermoy Bridge (CC-N72-030.90)

The Fermoy Bridge is a 7-span masonry arch bridge with masonry parapets which carries N72 over the River Blackwater. The maximum span is 14.6m and the minimum span is 11.52m. The river is accessible by using a bridge inspection unit. The structure is within Blackwater River (Cork/Waterford) SAC and located 1.6km upstream of the Blackwater Callows SPA. Plate 2.8 shows the west elevation. There are no records of pearl mussel from Fermoy Bridge.

Pearl mussel is a QI of the Blackwater River (Cork/Waterford) SAC.



Plate 2.8 Fermoy Bridge.

2.2.2. Clare

2.2.2.1. Burrane Bridge (CL-N67-001.00)

The Burrane Bridge is a 2-span bridge comprised by corrugated steel arch on the south side and masonry arch on the north side. The span is 3.1m each and rise of arch barrel at crown is 1.34m. There is steel safety barrier on the south side and steel parapet on the north side. The structure is located on the Shannon estuary and is on the upstream boundary of both the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. Plate 2.9 shows the north elevation.



Plate 2.9 Burrane Bridge.

2.2.2.2. Kilkee Bridge (CL-N67-008.00)

The Kilkee Bridge is a single span bridge. It is a masonry arch in the south side, and it has been widened using a reinforced concrete slab in the north side. The span is 2.53m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 200m upstream of Kilkee Reefs SAC. Plate 2.10 shows the south elevation.



Plate 2.10 Kilkee Bridge.

2.2.3. Kerry

2.2.3.1. Kilkneedan Bridge (KY-N22-013.00)

The Kilkneedan Bridge is a 2.94m single span masonry arch bridge with in-situ reinforced concrete extension. The structure carries N22 over the Leamnaguila 22 which is a tributary of the Gweestin River. The bridge is within the Castlemaine Harbour SAC. Castlemaine Harbour SPA is ca. 30km downstream of the bridge. Plate 2.11 shows the masonry arch at east side, with a concrete slab at west side.



Plate 2.11 Kilkneedan Bridge.

2.2.3.2. Woodford Bridge (KY-N22-019.00)

The Woodford Bridge is a 2-span masonry arch bridge with corrugated steel arch extension on both ends. Each span is 5.7m. The parapets are masonry stone with steel railing. The bridge is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC and is located 5.2km upstream of the Killarney National Park SPA (just over 2.5km straight line distance at its nearest point). Plate 2.12 illustrates Woodford Bridge. There are no records of pearl mussel from Woodford Bridge.

_____ Pearl mussel is a _____ of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.

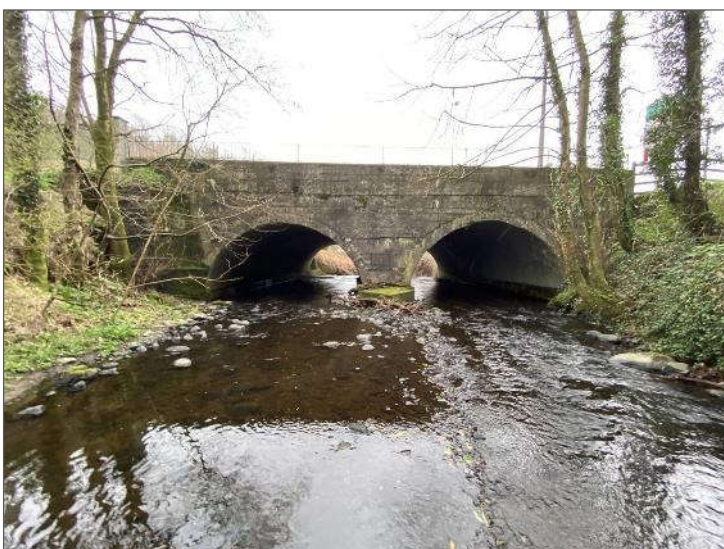


Plate 2.12 Woodford Bridge.

2.2.3.3. Cloghane Culvert (KY-N22-021.00)

Cloghane Culvert is a concrete culvert over the Ardeegalvan 22 watercourse. It crosses under the N22 on the eastern side of Killarney. It is located within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and is located 11.8km upstream of the Killarney National Park SPA. Plate 2 13 shows Clo hane Culvert. There are no records of earl mussel from Clo hane Brid e.

Pearl mussel is a of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.



Plate 2.13 Cloghane Culvert.

2.2.3.4. Curraglass Culvert (KY-N22-025.00)

Curraglass Culvert is a corrugated steel culvert with a concrete invert over a stream which flows to Rusheen_Beg. It is not located within a Natura 2000 site, but the stream enters Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 250m downstream of the bridge. It is located 16km upstream of the Killarney National Park SPA. Plate 2 14 shows Cura lass Culvert. There are no records of earl mussel from Curra lass Culvert.

Pearl mussel is a of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.

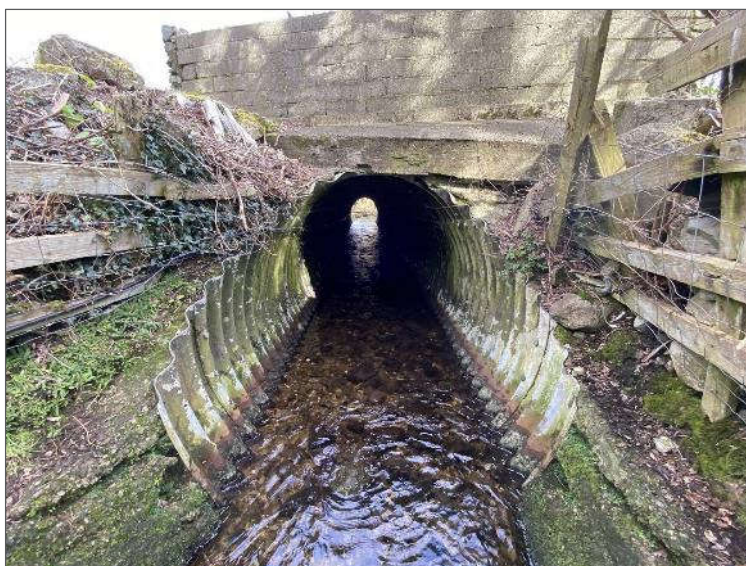


Plate 2.14 Curraglass Culvert.

2.2.3.5. Poulgorm Bridge (KY-N22-027.00)

The Poulgorm Bridge is a 23.90m single span concrete bridge which carries the N22 over the River Flesk in Co. Kerry. The parapets comprise heavy steel rails over the deck with a masonry parapet at top of the wing walls. The bridge is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC. It is located 24.2km upstream of the Killarney National Park SPA. Plate 2.15 shows the south elevation. There are no records of Pearl mussel from Poulgorm Bridge.

Pearl mussel is a QI of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.



Plate 2.15 Poulgorm Bridge.

2.2.3.6. Corranmaree Bridge (KY-N22-029.00)

Corranmore Bridge is a single span masonry arch bridge over the Ford Currimeenavrick. It lies 400m upstream of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC. It is located 30km upstream of the Killarney National Park SPA. It includes both a masonry arch and corrugated culvert extension. Plate 2.16 shows Corranmaree Bridge. There are no records of Pearl mussel from Corranmaree Bridge.

Pearl mussel is a QI of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.

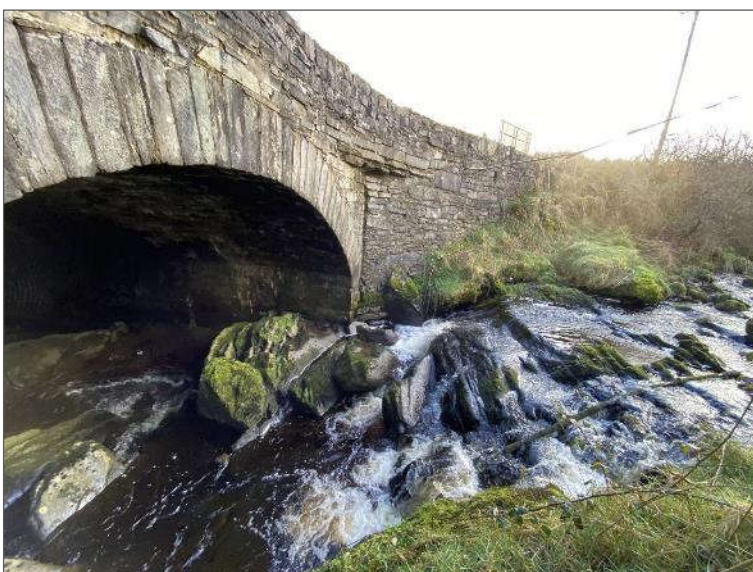


Plate 2.16 Corranmore Bridge.

2.2.3.7. Listowel Bridge (KY-N69-017.00)

The Listowel Bridge is a 5-span stone masonry arch bridge. The span lengths are 15.2m each. The substructure consists of 2 masonry abutments and 4 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Lower River Shannon SAC. Plate 2 shows the west elevation. There are no pearl mussel at Listowel Bridge; [REDACTED] Pearl mussel is a QI of Lower River Shannon SAC.



Plate 2.17 Listowel Bridge.

2.2.3.8. Glenbeigh National School Bridge (KY-N70-021.00)

Glenbeigh National School Bridge is a single span masonry arch bridge over the Coolroe_Lower watercourse which discharges to Dingle Bay. Plate 2.18 shows Glenbeigh National School Bridge. The bridge is not located within a Natura 2000 site, but the stream discharges into Castlemaine Harbour SAC and Castlemaine Harbour SPA (4km downstream). [REDACTED] it is not, however, a QI of a Natura 2000 site.

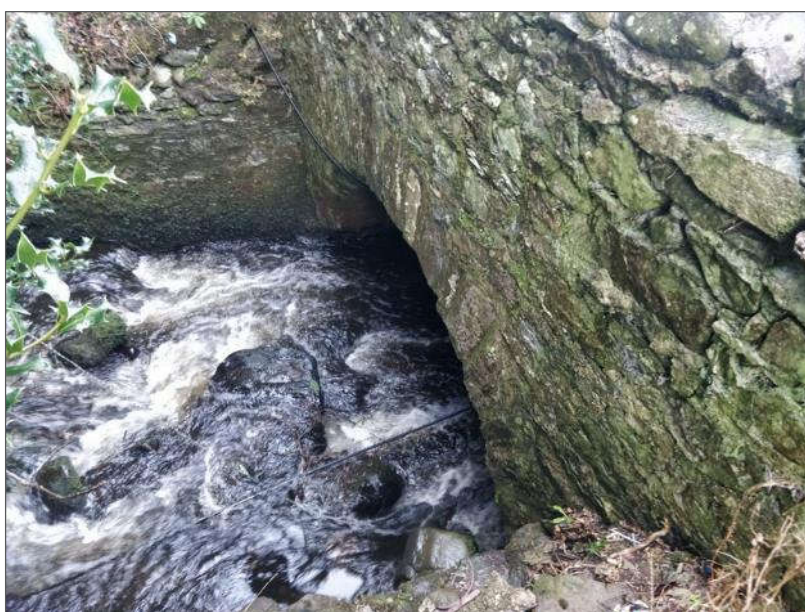


Plate 2.18 Glenbeigh National School Bridge.

2.2.3.9. Waterville Bridge (KY-N70-039.00)

The Waterville Bridge is a 3-span stone masonry arch bridge. The spans are of similar around 7.13m. The substructure consists of 2 masonry abutments and 2 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Ballinskelligs Bay and Inny Estuary SAC. Killarney National Park SAC is located immediately upstream of the bridge. Plate 2.19 shows the east elevation.



Plate 2.19 Waterville Bridge.

2.2.3.10. Derreenamacken Bridge (KY-N70-052.60)

The Derreenamacken Bridge is a single span stone masonry arch bridge. The span is 3.04m. Two box culverts are located close to the arch. There are no parapets on the structure. The structure is located 150m upstream of the Kenmare River SAC and 1.2km west of Blackwater River (Kerry) SAC. Plate 2.20 shows the north elevation.



Plate 2.20 Derreenamacken Bridge.

2.2.3.11. Ardteegalvan Bridge (KY-N72-006.00)

The Ardteegalvan Bridge is three arch masonry bridge. There are adjacent to the bridge three precast reinforced concrete pipes in the north side. The span is 2.94m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 2km upstream of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and 15km upstream of Killarney National Park SPA. Plate 2.21 shows the north elevation. There are no records of pearl mussel from Ardteegalvan Bridge.

Pearl mussel is a of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.



Plate 2.21 Ardteegalvan Bridge.

2.2.3.12. Knockeennagowan Bridge (KY-N72-007.00)

Knockeennagowan Bridge is a concrete culvert over the Knockanaroor watercourse. It is not located with a Natura 2000 site. The structure is located 2.8km upstream of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and 17km upstream of Killarney National Park SPA. Plate 2.22 shows Knockeennagowan Bridge. There are no records of pearl mussel from Knockeennagowan Bridge.

Pearl mussel is a of Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC.



Plate 2.22 Knockeennagowan Bridge.

2.2.3.13. Gortanahaneboy West Bridge (KY-N72-010.00)

The Gortanahaneboy West Bridge is a 2.95m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 1.40m. The structure is within the Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC. Killarney National Park SPA is over 20km downstream of the bridge. Plate 2.23 shows the deck, abutments and riverbed of the bridge. There are no records of pearl mussel from Poulorm Bridge.

Pearl mussel is a of Killarney National Park, Macgillicuddy's Reeks and Caragh River catchment SAC.



Plate 2.23 Gortanahaneboy Bridge.

2.2.3.14. Cullavaw Bridge (KY-N72-012.00)

The Cullavaw Bridge is a 2-span masonry arch bridge with reinforced concrete arch extension to the north end. The maximum span is 4.14m and the minimum span is 3.60m. The structure carries N72 over the Cullavaw stream which is a tributary of the River Blackwater. The bridge is located 1.5km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 2.24 shows the north elevation.

There are no records of pearl mussel from Cullavaw Bridge.

Pearl mussel is a of the Blackwater River (Cork/Waterford) SAC



Plate 2.24 Cullavaw Bridge.

2.2.3.15. Blennerville Bridge (KY-N86-001.00)

The Blennerville Bridge is a 5-span stone masonry arch bridge. The span lengths vary between 7.4m and 4.8m. The substructure consists of 2 masonry and concrete abutments and 4 masonry and concrete piers. There are masonry parapets on both sides of the carriageway. The structure is within Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA. Plate 2.25 shows the west elevation.



Plate 2.25 Blennerville Bridge.

2.2.3.16. Blennerville Bridge Relief Arch (KY-N86-002.00)

Blennerville Bridge Relief Arch is a two-span masonry and concrete arch structure located approximately 21m south of the main bridge. The masonry arch structure comprises two spans of 2.74m and 2.88m respectively with a total length of 6.9m. Both arches are gunnited throughout. Similar to the main bridge, the original masonry structure was widened with a single span reinforced concrete arch as part of the Blennerville Bridge Widening Scheme in the 1990's. The structure is within Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA. Plate 2.26 shows Blennerville Bridge Relief Arch.

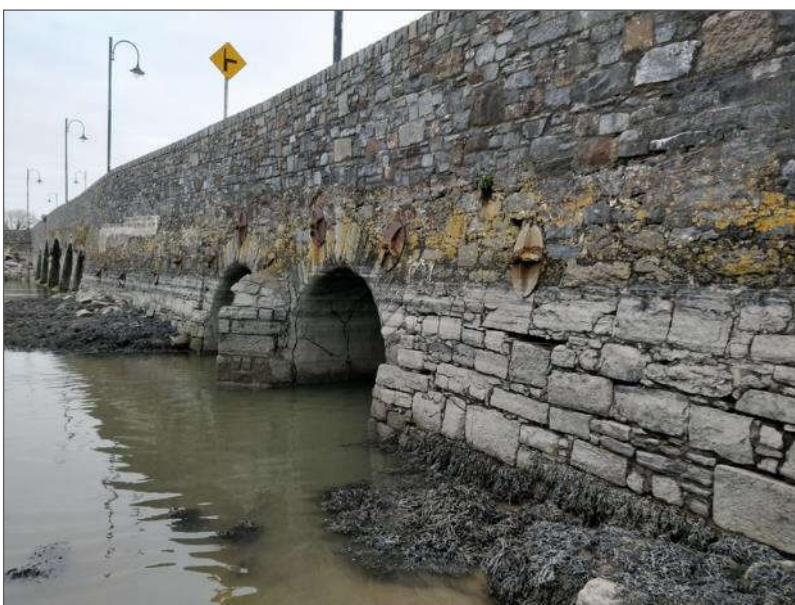


Plate 2.26 Blennerville Bridge Relief Arch.

2.2.3.17. Enrights Bridge (KY-N86-005.00)

Enrights Bridge is a single span stone masonry structure on the N86 west of Blennerville. The stream discharges to Tralee Bay and Magharees Peninsula, West to Cloghane SAC immediately at the downstream face of the structure and Tralee Bay Complex SPA c. 0.1km downstream. Plate 2.27 shows Enrights Bridge.



Plate 2.27 Enrights Bridge.

2.2.4. Limerick

2.2.4.1. Rincullia Bridge (LC-N69-005.00)

Rincullia Bridge is a three-span masonry and concrete bridge with a span of 6.2m. Masonry parapets line the carriageway above the structure. The bridge carries the N69 over the Ahacronane River within the Lower River Shannon SAC and 300m upstream of the River Shannon and River Fergus Estuaries SPA. Plate 2.28 shows the face of the bridge.



Plate 2.28 Rincullia Bridge.

2.2.5. Tipperary South

2.2.5.1. Canal Bridge (TS-N24-006.00)

The Canal Bridge is a 6.1m single span concrete slab. The parapets are masonry with steel railing. The structure is within the Lower River Suir SAC. Plate 2.29 shows the south elevation.



Plate 2.29 Canal Bridge.

3. Scope of Study

This report comprises the NIS in respect of the proposed works intended to provide supporting information to assist TII, in its capacity as the competent authority, in making its AA Determination in respect of the proposed works.

3.1. Legislative Context

3.1.1. Natura 2000

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) is a legislative instrument of the European Union (EU) which provides legal protection for habitats and species of Community interest. Article 2 of the Directive requires the maintenance or restoration of such habitats and species at a favourable conservation status, while Articles 3 to 9, inclusive, provide for the establishment and conservation of an EU-wide network of special areas of conservation (SACs), known as Natura 2000, which also includes special protection areas (SPAs) designated under Article 4 of Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (“the Birds Directive”). Both SACs and SPAs are commonly referred to as “European sites” or “Natura 2000 sites”.

SACs are selected for natural habitat types listed on Annex I to the Habitats Directive and the habitats of species listed on Annex II to the Habitats Directive. SPAs are selected for species listed on Annex I to the Birds Directive and other regularly occurring migratory species. The habitats and species for which a Natura 2000 site is selected are referred to as the “qualifying interests” of that site and each is assigned a “conservation objective” aimed at maintaining or restoring its “favourable conservation condition” at the site, which contributes to the maintenance or restoration of its “favourable conservation status” at national and European levels.

3.1.2. Appropriate Assessment

Article 6 of the Habitats Directive deals with the management and protection of Natura 2000 sites. Articles 6(3) and (4) set out the decision-making process, known as “Appropriate Assessment” (AA), for plans or projects in relation to Natura 2000 sites. Article 6(3) states: -

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

The first sentence of Article 6(3) provides a basis for determining which plans and projects require AA, i.e., those “not directly connected with or necessary to the management of [one or more Natura 2000 sites] but likely to have a significant effect thereon, either individually or in combination with other plans or projects”. In *Waddenzee* (C-127/02), the Court of Justice of the European Union (CJEU) ruled that significant effects must be considered “likely” if “it cannot be excluded, on the basis of objective information”, that they would occur. This clearly sets a low threshold, such that AA is required wherever there is a reasonable possibility of significant effects on a Natura 2000 site. In the same judgment, the CJEU established that the test of significance relates specifically to the conservation objectives of the site concerned, i.e., “significant effects” are those which, “in the light, inter alia, of the characteristics and specific environmental conditions of the site”, could undermine the site’s conservation objectives. In addition to the effects of the plan or project on its own, the combined effects arising from the plan or project under consideration and other plans and projects must also be assessed (see Section 7 for more details).

The last part of the first sentence of Article 6(3) defines AA as an assessment of the “*implications [of the plan or project] for the site in view of the site’s conservation objectives*”. In the second sentence, Article 6(3) requires that, prior to agreeing to a plan or project, the competent authority must “ascertain” that “*it will not adversely affect the integrity of the site concerned*”. In *Sweetman v. An Bord Pleanála* (C-258/11), the CJEU ruled that a plan or project “*will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of sites*”. On that basis, EC (2018) described the “integrity of the site” as “*the coherent sum of the site’s ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated*”. As such, the “integrity” of a specific site is defined by its conservation objectives and is “adversely affected” when those objectives are undermined. In *Waddenzee*, the CJEU ruled that the absence of adverse effects can only be ascertained “*where no reasonable scientific doubt remains*”.

The “precautionary principle” applies to all of the legal tests in AA, i.e., in the absence of objective information to demonstrate otherwise, the worst-case scenario is assumed. Where the tests established by Article 6(3) cannot be satisfied, Article 6(4) applies (see explanation in Section 2.2, below).

3.1.3. Competent authority

The requirements of Articles 6(3) and (4) are transposed into Irish law by, inter alia, Part 5 of the European Communities (Birds and Natura Habitats) Regulations, 2011 (as amended) (“the Habitats Regulations”) and Part XAB of the Planning and Development Act, 2000 (as amended) (“the Planning and Development Acts”). As per the second sentence of Article 6(3), it is the “competent national authorities” who are responsible for carrying out AA and, by extension, for determining which plans and projects require AA. The competent authority in each case is the authority responsible for consenting to or licensing a plan or project, e.g., local authorities, An Bord Pleanála, Transport Infrastructure Ireland (TII) or a Government Minister. In all cases, it is the competent authority who is ultimately responsible for determining whether or not a plan or project requires AA and for carrying out the AA, where required.

3.2. Appropriate Assessment Process

The AA process can be described as being made up of three distinct stages, as described below, the need to progress to each stage being determined by the outcome of the preceding stage.

Stage 1: Screening – This stage involves a determination by the competent authority as to whether or not a given plan or project required AA. As explained in Section 2.1, AA is required in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site, but for which the possibility of likely significant effects on one or more Natura 2000 sites cannot be excluded. The CJEU’s Judgment on *Eco Advocacy v. An Bord Pleanála* (C-721/21) and the Opinion of Advocate General Kokott in the same case set out the principles for identifying any aspects of a plan or project which may constitute what the CJEU termed in *People Over Wind* (C-323/17) “*measures intended to avoid or minimise harmful effects on a Natura 2000 site*” and, as such, cannot be taken into account in making an AA Screening determination. Consideration of the potential for in-combination effects is also required at this stage.

Stage 2: Appropriate Assessment – This stage involves a detailed assessment of the implications of the plan or project, individually and in combination with other plans and projects, for the integrity of the Natura 2000 site(s) concerned. This stage also involves the development of appropriate mitigation to address any adverse effects and an assessment of the significance of any residual impacts following the inclusion of mitigation. In *Kelly v. An Bord Pleanála* (IEHC 400), the High Court ruled that a lawful AA must contain complete, precise, and definitive findings based on examination and analysis, and conclusions and a final determination based on an evaluation of the findings. In the same judgment, the High Court stressed that, in order for the findings to be complete, precise, and definitive, the AA must be carried out in light of best scientific knowledge in the field and cannot have gaps or lacunae. In *Holohan v. An Bord Pleanála* (C-461/17), the CJEU clarified that AA must “*catalogue the entirety of habitat types and species for which a site is protected*” (i.e. the qualifying

interests of the site) and assess the implications of the plan or project for the qualifying interests, both within and outside the site boundaries, and other, non-qualifying interest habitats and species, whether inside or outside the site boundaries, “*provided that those implications are liable to affect the conservation objectives of the site*”. The proposer of a plan or project requiring AA is furnishes the competent authority with the scientific evidence upon which to base its AA by way of a Natura Impact Statement (NIS) or Natura Impact Report (NIR). If it is not possible to ascertain that the plan or project will not adversely affect one or more Natura 2000 sites, authorisation can only be granted subject to Article 6(4).

Stage 3: Article 6(4) – If a plan or project does not pass the legal test at Stage 2, alternative solutions to achieve its aims must be considered and themselves subject to Article 6(3). If no feasible alternatives exist, authorisation can only be granted where it can be demonstrated that there are imperative reasons of overriding public interest (IROPI) justifying its implementation. Where this is the case, all compensatory measures must be taken to protect the overall coherence of Natura 2000.

The three stages described above are illustrated in Figure 3.1.

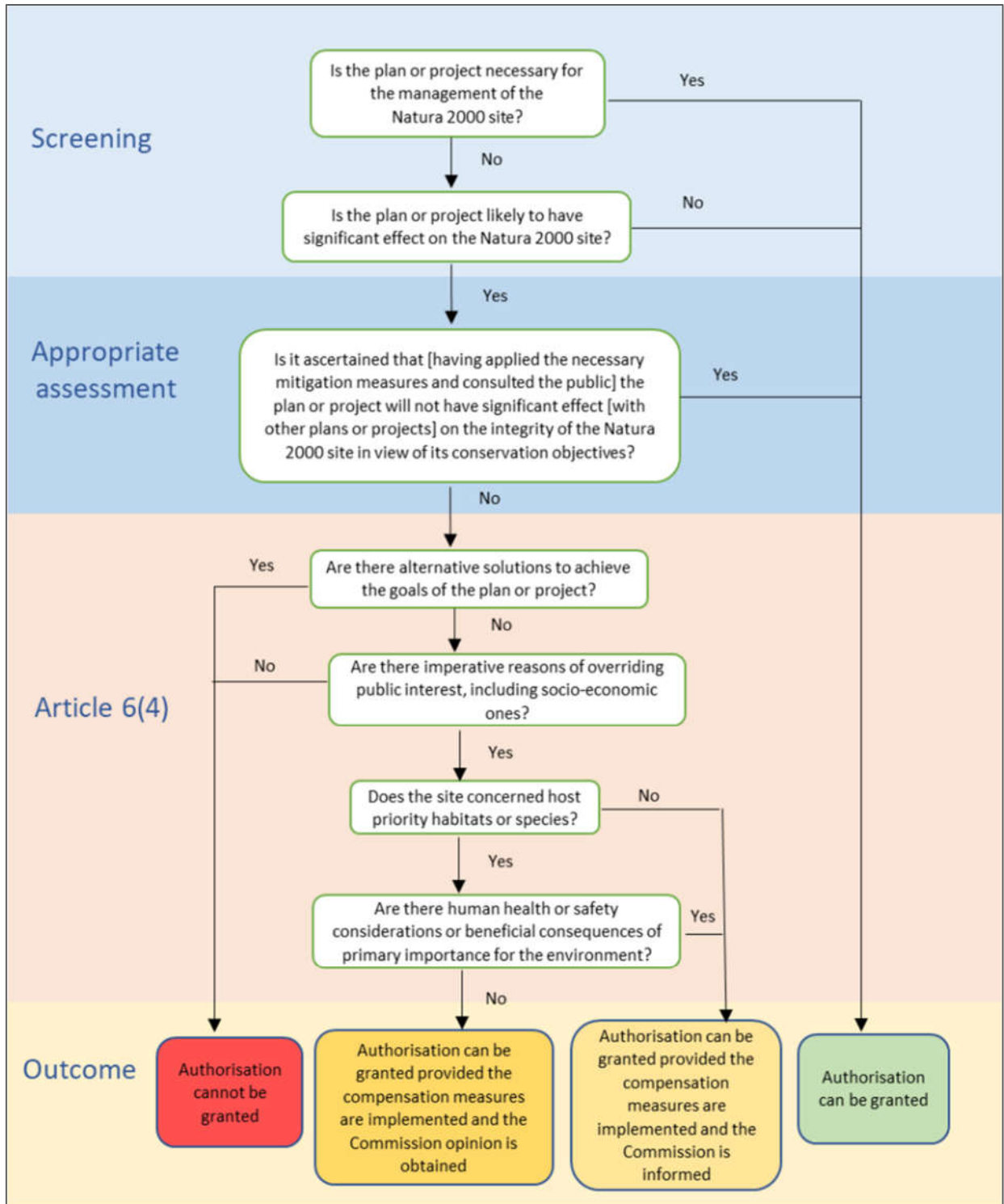


Figure 3.1 Stages of the Appropriate Assessment process (EC, 2021a).

4. Methods

4.1. Legislation and Guidance

This report was prepared with due regard to the relevant European and Irish legislation, case law and guidance, including but not limited to: -

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna. *Official Journal of the European Communities* L 206/7-50.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. *Official Journal of the European Union* L 20/7-25.
- European Communities (Birds and Natural Habitats) Regulations, 2011. *S.I. No. 77/2011* (as amended) (“the Habitats Regulations”).
- Planning and Development Act, 2000. *No. 30 of 2000* (as amended) (“the Planning and Development Acts”).
- Planning and Development Regulations, 2001. *S.I. No. 600/2001* (as amended) (“the Planning Regulations”).
- EC (2018) *Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC*. European Commission, Brussels.
- EC (2021a) *Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC*. *C(2021) 6913*. European Commission, Brussels.
- EC (2021b) *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive*. *C(2021) 7301*. European Commission, Brussels.
- DEHLG (2010a) *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Revised 11/02/2010*. Department of the Environment, Heritage and Local Government, Dublin.
- DEHLG (2010b) *Circular NPW 1/10 & PSSP 2/10. Dated 11/03/2010*. Department of the Environment, Heritage and Local Government, Dublin.
- NPWS (2012a) *Marine Natura Impact Statements in Irish Special Areas of Conservation. A Working Document. April 2012*. National Parks & Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.
- NPWS (2021) *Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland. National Parks & Wildlife Service Guidance Series 1*, Department of Housing, Local Government and Heritage, Dublin.
- Mullen, E., Marnell, F. and Nelson, B. (2021) *Strict Protection of Animal Species – Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a Public authority. National Parks & Wildlife Service Guidance Series 2*, Department of Housing, Local Government and Heritage, Dublin.
- OPR (2021) *Appropriate Assessment Screening for Development Management. OPR Practice Note PN01*. Office of the Planning Regulator, Dublin.
- *Applications for Approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment) – Guidelines for Local Authorities*.

- Case law, including *Waddenzee* (C-127/02), *Sweetman v. An Bord Pleanála* (C-258/11), *Kelly v. An Bord Pleanála* (IEHC 400), *Commission v. Germany* (C-142/16), *People Over Wind* (C-323/17), *Holohan v. An Bord Pleanála* (C-461/17), *Eoin Kelly v. An Bord Pleanála* (IEHC 84) and *Heather Hill* (IEHC 450).
- Sundseth, K. and Roth, P. (2014) *Article 6 of the Habitats Directive – Rulings of the European Court of Justice*. Ecosystems LTD (N2K Group), Brussels.

4.2. Desk Study and Consultation

A desktop study was carried out to collate information available on European sites in the vicinity of the proposed project. These areas were viewed using Google Earth, Google maps and Bing maps (last accessed on the 11th of October 2023).

The National Parks and Wildlife Service (NPWS) and National Biodiversity Data Centre (NBDC) online databases were reviewed concerning European sites and their features of interest in the vicinity of the proposed project.

The locations and boundaries of Natura 2000 sites in relation to the proposed works were reviewed on the NPWS Designations Viewer (NPWS, 2023c). Information on the qualifying interests and the structures and functions of the relevant Natura 2000 sites was found in the Site Synopsis, Natura 2000 Standard Data Form, Conservation Objectives and supporting documents for each site. Reporting under Article 17 of the Habitats Directive (NPWS, 2019a-c; ETC/DB, 2023a) and Article 12 of the Birds Directive (NPWS, 2023d; ETC/BD, 2023b) provided further information on the habitats and species concerned at the national level.

Spatial and other data regarding rivers and other waterbodies were obtained from the Environmental Protection Agency (EPA) using its online facility EPA Maps: Water (EPA, 2023). Other sources consulted included the National Biodiversity Data Centre (NBDC) Biodiversity Maps (NBDC, 2023), the Ordnance Survey Ireland (OSi) GeoHive Map Viewer (OSi, 2023) and the Environmental Sensitivity Mapping Tool (ESM Webtool, 2023).

Other plans and projects in the surrounding area were identified using the Cork City County Council planning enquiry system. Search criteria were implemented to identify other plans and project with potential, in combination with the proposed works, to adversely affect the integrity of European sites.

Baseline data regarding the receiving environment, including Natura 2000 sites, was gathered through desk study and consultation with relevant bodies, most importantly the National Parks & Wildlife Service (NPWS).

4.3. Data Collation

As part of the assessment of the proposed project, Atkins developed a Geographic Information System (GIS) to store all ecological data relating to the bridge structures to facilitate the easy interrogation of data, both within the dataset and spatially.

The dataset contains information specific to each bridge, such as name, ID number, location co-ordinates, work order data (i.e. proposed works), subcatchment, location with respect to European sites, hydrological connectivity and ecological data (either 3rd party data or data obtained from surveys conducted under the current contract). This GIS is regularly updated with data such as incoming survey data on bats, invasive species and freshwater pearl mussel, obtained as a result of site surveys conducted by the Contractor's appointed ecologist.

At the outset, a desk study was carried out to collate information available on European sites in the vicinity of bridge sites. These areas were viewed using Google Earth, Google maps² and Bing maps³

² <https://www.google.ie/maps>

³ <http://www.bing.com/maps/>

and NBDC mapviewer. All bridge locations were also stored as *.kml* files in GoogleEarth to allow sites to be easily located and reviewed.

Data sources for the GIS include: -

- EIRSPAN bridge locations and Work Orders.
- National Parks and Wildlife Parks (NPWS) spatial data: Natura 2000 boundaries, nationally designated site boundaries, Article 17 reporting records, *Margaritifera* sensitive areas.
- Environmental Protection Agency datasets; Water/ Water Framework Directive datasets.
- National Biodiversity Data Centre online data.
- TII invasive species database.
- Species specific datasets obtained from NPWS, as a result of data requests. Some of these datasets are sensitive in nature, such as the distribution of freshwater pearl mussel in the region.
- Species specific data collected as part of ongoing ecological studies or site visits (e.g. data on invasive species collected by Contractor or Resident Engineer).

Geospatial analysis of all data was carried out using MapInfo v.16. In line with established best practice, locations and boundaries of all European sites connected via watercourses to proposed works were identified to establish surface water connectivity between work areas and European sites. The Environmental Protection Agency (EPA) Envision mapping⁴ system and datasets were used to identify any hydrological connection between the proposed project and European sites.

Desktop information on relevant European sites were reviewed, including the site synopsis for each SAC/SPA, the conservation objectives, the site boundaries as shown on the NPWS online map viewer, the standard Natura 2000 Data Form for the SAC/SPA which details conditions and threats of the sites, and published information and unpublished reports on the relevant European sites.

Planning information from the surrounding area, dated within the last 5 years, was reviewed using the planning enquiry system [MyPlan.ie](http://myplan.ie). Search criteria were implemented to screen out such projects or plans that would not be relevant to this study. This was used to determine potential cumulative impacts from other plans / projects near the proposed works.

4.3.1. Consultation

At the outset of the Munster Term Maintenance Contract No. 4 a consultation letter was sent to NPWS via the Development Applications Unit (DAU). Atkins / TII also met with Inland Fisheries Ireland at the outset of the project.

4.3.2. Procurement of Specialist Surveys

Specialist surveys are procured for each year of the contract, in particular for bats and freshwater pearl mussel. The bridges surveyed each year are dependent on the nature and extent of works to be carried out and the potential for such species to be present at the site, and in the case of freshwater pearl mussel, downstream of the site. Where relevant, the results of these surveys inform the Screening for Appropriate Assessment decisions. All survey data is inputted to the project Geographical Information System database on an ongoing basis.

Under the contract the Contractor has to appoint a suitably qualified ecologist for the duration of the contract to carry out pre-construction surveys, including but not limited to groups such as invasive species and bats surveys, along with checks for any other protected species which may be present

⁴ <http://gis.epa.ie/Envision>

in the area and oversee the ecological requirements of the project. All generated reports relating to AA, TII AA determinations and survey data are provided to the Contractor and their appointed ecologist.

In addition to recording information on bats, the ecologists undertaking the bat survey work also recorded other ecological data, including signs of protected species such as Otter (*Lutra lutra*); nesting birds; and invasive species.

4.3.3. Protected Species

TII recently consulted with the Department for Housing, Local Government and Heritage (DHLGH) pursuant to the requirements of Regulation 49(9)(c) of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). This consultation related to works on structures in Year 3 of the EIRSPAN Bridge repair project which required preparation of a Natura Impact Statement as well as a number of additional projects to repair damaged culverts. All comments received across these consultations have been considered in the current assessment.

Regulation 51 of the Habitats Regulations prohibits the damaging or destruction of a breeding site or resting place referred to in Part 1 of the First Schedule, otherwise known as strictly protected species (species listed in Annex IV of the Habitats Directive). Of particular relevance to this project are strictly protected species such as otter and all bat species. These are discussed below.

4.3.3.1. Otter

The Eurasian Otter is widespread throughout all Irish freshwater and most estuarine and coastal habitats (Chapman & Chapman, 1982; Marnell, 2016). The overall conservation status of the otter population in Ireland is reported as being 'Favourable' (NPWS, 2013a; NPWS, 2019) with an overall trend in conservation status of 'Improving' (NPWS, 2019; see also Reid *et al.*, 2013).

Otter are protected by a number of legal instruments. Key amongst these is protection under Annex II & IV of the EU Habitats Directive (92/43/EEC), which was transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) and further amended in 2015. Otters, including their breeding and resting places, are also protected under national legislation such as the Habitats Regulations and the Wildlife Act, 1976 (as amended).

Threats and pressures to otter populations include habitat destruction due to human activity, disease, road casualties and the degradation of water quality which in turn can affect fish biomass (Chanin, 2003). NPWS (2013a) listed a number of pressures on otter, which included road mortalities through road collisions. Roadkill data from 2007-2013 reported 10-30 otters killed on Irish roads each year and road mortalities were considered a medium pressure in 2013. Otters are still killed on Irish roads, however it is not considered to pose a risk to the national conservation status of otter, as road design and the network of mammal underpasses on new roads are positive examples of measures that have been implemented to reduce the mortality of otter on roads (NPWS, 2019). Other threats such as entanglement in fishing nets and diffuse and point-source pollution of freshwater and coastal waterbodies can indirectly impact on otter. However, these threats listed above are considered to be pressures impacting otter on a local rather than a national scale (NPWS, 2019).

The National Roads Authority, now Transport Infrastructure Ireland, has produced guidance documents regarding the crossing of watercourses and considerations for otter during the construction of road schemes; '*Guidelines for the crossing of watercourses during the construction of national road schemes*' and '*Guidelines for the treatment of otters prior to the construction of national road schemes*' (NRA, 2009a & 2009b). These guidelines detail procedures to be taken during construction in the vicinity of otter holts, the destruction of holts under licence, provision of a means of passage at crossing points (in particular at watercourses) and installation of mammal resistant fencing.

Many of the bridges which are part of this assessment cross rivers where Otter is a qualifying interest of a riverine SAC. In such cases, the Conservation Objective is *to restore the favourable conservation condition of Otter in the SAC*, which is defined by the list of attributes as set out in the

Conservation Objectives document for the specific SAC. Rivers / estuaries where this is relevant include: -

- Blackwater River (Cork/Waterford) SAC (002170)
- Castlemaine Harbour SAC (000343)
- Glengarriff Harbour and Woodland SAC (000090)
- Kenmare River SAC (002158)
- Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)
- Lower River Shannon SAC (002165)
- Lower River Suir SAC (002137)
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)

As example of the relevant Attributes, in this case for the Blackwater River (Cork/Waterford) SAC (002170), is presented in Table 4.1. This is extracted from the Conservation Objectives for the Blackwater River (Cork/Waterford) SAC (002170) as prepared by NPWS (2012).

Table 4.1 Conservation Objectives for Otter in the Blackwater River (Cork/Waterford) SAC (from NPWS, 2012).

Conservation objectives for: Blackwater River (Cork/Waterford) SAC [002170]			
1355 Otter <i>Lutra lutra</i>			
To restore the favourable conservation condition of Otter in the Blackwater River (Cork/Waterford) SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range in south-west estimated at 74.5% (Bailey & Rochford 2006)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 103ha above high water mark (HWM); 1165.7ha along river banks/ around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 647.2ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 599.54km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman & Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 25.06ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk & Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey & Rochford 2006) and wrasse and rockling in coastal waters (Kingston et al. 1999)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh & O'Neill, 2010). It is important that such commuting routes are not obstructed

Each bridge location was considered for its potential to support Otter and in particular for the potential that an Otter holt might be recorded close to the bridge. This matter is returned to in detail below.

4.3.3.1. Freshwater Pearl Mussel

Regarding freshwater pearl mussel (*Margaritifera margaritifera*), each year bridges to be repaired are assessed for the potential to negatively impact upon freshwater pearl mussel. As such, some bridges included in this report required pearl mussel surveys to inform this assessment.

A data request was submitted to NPWS in January 2023 and updated files on pearl mussel records and suitable habitat was provided by NPWS (data to be treated as confidential). In addition, pearl mussel data collated during surveys undertaken as part of the Term Maintenance Contract No. 3 (2018 – 2022) and Year 1 (2023) Term Maintenance Contract No. 4 of were reviewed. Where freshwater pearl mussel are a qualifying interested of the associated Special Area of Conservation and have been recorded at, in the vicinity, or downstream of a bridge for which instream works or works over water have been called up, surveys at these locations were required to inform the Appropriate Assessment of works at these locations.

The results inform what repair works can be undertaken and whether mitigation measures are required.

4.3.3.2. Bats

In the case of **bats**, each year bridges to be repaired are assessed for the potential to negatively impact upon bats. This involves checking of the structure for potential bat roosts / roosting bats and where necessary a bat emergence survey is undertaken to determine if bats are roosting at a structure. Specialist bat surveyors are procured by Atkins on behalf of TII to undertake this work. Copies of bat survey reports can be provided to the Department if deemed appropriate.

The results inform what repair works can be undertaken and whether e.g. a derogation licence application needs to be submitted to the Department for Housing, Local Government and Heritage (refer to <https://www.npws.ie/licences/disturbance/bats-or-otters>).

In addition, data collated during bat surveys undertaken as part of the Term Maintenance Contract No. 3 (2018 – 2022) and Year 1 (2023) Term Maintenance Contract No. 4 of were reviewed.

Furthermore, the appointed Contractor has an ecologist on their team who has extensive experience in bat survey and ecology (Caroline Shiel). They co-ordinate any preconstruction checks called up in the bat reports; oversees any mitigation measures required and also oversees the application for derogation licence(s) as appropriate.

As noted, in addition to recording information on bats, the ecologists undertaking the bat survey work also record other ecological data, including signs of protected species such as Otter.

4.3.3.3. Nesting Birds

In the correspondence noted above, the Department notes that while works are to take place between July 1st and September 30th, that this is within the nesting period for birds (i.e. 1st March to 31st August). It should be noted, however, that the proposed works window coincides with the Fisheries Open Season for instream works as defined by Inland Fisheries Ireland (July- September; IFI, 2016) in order to avoid negative impacts to watercourses and fisheries. This does, as noted, present a potential conflict with nesting birds which must be accounted for.

Of particular note is Grey Wagtail (*Motacilla cinerea*), which is Red listed in Birds of Conservation Concern in Ireland (BoCCI) (Gilbert *et al.* 2021). Dipper (*Cinclus cinclus*) also routinely nests on bridges. Both Dipper nests and nest boxes have been encountered during survey work. Dipper is an early nesting species with clutches often started as early as February / March. Other species can, however, also nest on bridges, including for example pied Wagtail (*M. alba*) and Wren (*Troglodytes troglodytes*); on occasion species such as Swallow (*Hirundo rustica*) or House martin (*Delichon urbicum*) can often nest under bridge; including under new concrete bridges. Particular attention was drawn by the Department to Kingfisher (*Alcedo atthis*), a species listed on Annex I of the EU Birds Directive). Kingfisher breed in vertical sand / clay riverbanks rather than in or on the bridge itself.

A similar approach to the protection of bats is taken to nesting birds.

As noted, in addition to recording information on bats, the ecologists undertaking the bat survey work also record other ecological data, including signs of nesting birds. Where relevant mitigation measures, such as for example the placement of nest boxes for Dipper, are also recommended.

It is a requirement of the Contractor that any nests identified are avoided.

4.3.3.4. Vegetation

In their submission on behalf of the Department (DHLGH), NPWS noted that *“Masonry bridges are a valuable habitat for a myriad of saxicolous vascular, bryophyte and lichen species.”* The Department’s comments that the *“Removal of vegetation from the bridge surface, parapets and embankments”, should be carried out judiciously so as to avoid the wholesale removal of small vascular plants, bryophytes and lichens – their removal should be deemed necessary only for imperative reasons of engineering integrity.”*

Section 2.2 presents a short summary of each bridge as well as a recent photograph of the structure. As can be seen from these the bridges subject to works proposals in this assessment support limited amounts of vegetation on the bridge proper. However, these concerns have been noted and communicated to TII with a view to exploring how the need to protect *saxicolous vascular, bryophyte and lichen species* can be integrated into the need to protect a bridge from damage and structural deterioration.

Bridges located within SACs that are designated for species or habitats that may constitute *saxicolous vascular, bryophyte and lichen species*, will be subject to surveys prior to the commencement of works (please see Section 5.8 ‘Mitigation Measures’).

4.4. Statement of Authority

This report was prepared by Sinéad Kinsella and Paul O’Donoghue. This report was reviewed by Paul O’Donoghue.

Sinéad Kinsella has a BSc in Applied Freshwater and Marine Biology. She has experience in preparing Appropriate Assessment Screening Reports, Natura Impact Statements and prepares Ecological Impact Assessment Reports and undertakes a range of ecological surveys (e.g., mammal and bat surveys) for a range of proposed developments.

Paul O’Donoghue is an Associate Director at Atkins. Paul holds a BSc (Zoology), MSc (Behavioural Ecology) and a PhD (Avian Ecology and Genetics). Paul is a Chartered member of the Society for the Environment (CEnv) and a Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Paul has over 18 years’ experience in ecology; including extensive experience in the preparation of Habitat Directive Assessments / Natura Impact Statements (i.e., Appropriate Assessment under Article 6(3) of the EU Habitats Directive).

Owen O’Keefe is a Senior Ecologist at Atkins. Owen holds a BSc (Hons) in Ecology from University College Cork (2015) and is a Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). He has 8 years’ professional experience in ecological consultancy, specialising river ecosystems and Appropriate Assessment.

5. Appropriate Assessment

5.1. Connectivity of the Works Area to European Sites

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

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

Given nature and scale of the proposed works and localised access requirements for the 29 bridges being considered in this assessment, the maximum distance where works are likely from a bridge is 20m upstream or downstream of a bridge. Thus, direct impacts are anticipated to occur within the immediate vicinity of the bridge.

All bridges being considered in this assessment span watercourses. Therefore, any European site located downstream of a bridge has the potential to be indirectly impacted by proposed works.

Thus, given the nature of the proposed project the potential zone of influence will be limited to European sites the encompass or are immediately adjacent to a bridge, or to those hydrologically connected to the proposed works at a bridge. Table 5.1 details the bridges, their location relative to European sites and surface water connectivity to a European site.

Table 5.1 Bridge location relative to European sites and surface water connectivity.

Structure ID	Structure Name	River	WFD Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
CC-N25-004.00	Killeagh River Bridge	Dissour	Womanagh_SC_010	No	N/A	No	N/A	Ballymacoda (Clonpriest and Pillmore) SAC ca. 7.2km d/s of bridge	Ballymacoda Bay SPA ca. 6.5km d/s of bridge
CC-N72-001.00	Duncannon Bridge	Blackwater [Munster]	Blackwater[Munster]_SC_010	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within Blackwater River (Cork/Waterford) SAC	Blackwater Callows SPA >70km d/s of bridge
CC-N72-004.00	Ahane Bridge	Owentaraglin 18	Blackwater[Munster]_SC_020	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within Blackwater River (Cork/Waterford) SAC	No
CC-N72-014.00	Boland's Bridge	Non-Listed	Blackwater[Munster]_SC_090	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within Blackwater River (Cork/Waterford) SAC	No
CC-N72-015.00	Lombardstown Bridge	Woodpark Lombardstown	Blackwater[Munster]_SC_090	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 35m d/s of bridge	No
CC-N72-019.00	Firville Culvert	Scarteen 18	Blackwater[Munster]_SC_090	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 600m d/s of bridge	No
CC-N72-030.00	Castletownroche Bridge	Awbeg [Buttevant]	Blackwater[Munster]_SC_100	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within Blackwater River (Cork/Waterford) SAC	No
CC-N72-030.90	Fermoy Bridge	Blackwater [Munster]	Blackwater[Munster]_SC_110	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within Blackwater River (Cork/Waterford) SAC	Blackwater Callows SPA ca. 1.6km d/s of bridge
CL-N67-001.00	Burrane Bridge	Tonavoher	Cloon[Clare]_SC_010	Yes	Lower River Shannon SAC	No	N/A	Within Lower River Shannon SAC	River Shannon and River Fergus Estuaries SPA ca. 0.07km d/s of bridge
CL-N67-008.00	Kilkee Bridge	Dough 27	Doonah_SC_010	No	N/A	No	N/A	Kilkee Reefs SAC ca. 200m d/s of bridge	

Structure ID	Structure Name	River	WFD Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
KY-N22-013.00	Kilkneedan Bridge	Leamnaguila 22	Laune_SC_020	Yes	Castlemaine Harbour SAC	No	N/A	Within Castlemaine Harbour SAC	Castlemaine Harbour SPA greater than 30km d/s of bridge
KY-N22-019.00	Woodford Bridge	Woodford 22	Flesk[Kerry]_SC_020	Yes	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	No	N/A	Within Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Killarney National Park SPA ca. 5.2km d/s of bridge
KY-N22-021.00	Cloghane Culvert	Ardteegalvan 22	Flesk[Kerry]_SC_020	Yes	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	No	N/A	Within Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Killarney National Park SPA ca. 11.8km d/s of bridge
KY-N22-025.00	Curraglass Bridge	Flows to Rusheen_Beg	Flesk[Kerry]_SC_020	No	N/A	No	N/A	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC ca. 250m d/s of bridge	Killarney National Park SPA ca. 16km d/s of bridge
KY-N22-027.00	Poulgorm Bridge	Flesk [Kerry]	Flesk[Kerry]_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	No	N/A	Within Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Killarney National Park SPA ca. 24.2km d/s of bridge
KY-N22-029.00	Corranmaree Bridge	Ford Currimeenavrick	Flesk[Kerry]_SC_010	No	N/A	No	N/A	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC ca. 400m d/s of bridge	Killarney National Park SPA greater than 30km d/s of bridge
KY-N69-016.00	Listowel Bridge	Feale	Feale_SC_040 (This is a dry arch adjacent to the bridge that conveys water during high/ flood flows)	Yes	Lower River Shannon SAC	No	N/A	Within Lower River Shannon SAC	No

Structure ID	Structure Name	River	WFD Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
KY-N70-021.00	Glenbeigh National School Bridge	Coolroe_Lower	Caragh_SC_010	No	N/A	No	N/A	Castlemaine Harbour SAC ca. 4km d/s of bridge	Castlemaine Harbour SPA ca. 4km d/s of bridge
KY-N70-039.00	Waterville Bridge	Waterville	Finglasriver[Waterville]_SC_01	Yes	Ballinskelligs Bay and Inny Estuary SAC	No	N/A	Within Ballinskelligs Bay and Inny Estuary SAC	No
KY-N70-052.60	Derreenmacken Bridge	Derreenmackan	Kealduff_SC_010	No	N/A	No	N/A	Kenmare River SAC ca. 150m d/s of bridge	No
KY-N72-006.00	Ardteegalvan Bridge	Ardteegalvan 22	Flesk[Kerry]_SC_020	No	N/A	No	N/A	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC ca. 2km d/s of bridge	Killarney National Park SPA ca. 15km d/s of bridge
KY-N72-007.00	Knockeenagowan	Knockanarroor	Flesk[Kerry]_SC_020	No	N/A	No	N/A	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC ca. 2.8km d/s of bridge	Killarney National Park SPA ca. 17km d/s of bridge
KY-N72-010.00	Gortanahaneboy West Bridge	Beheenagh 22	Quagmire_SC_010	Yes	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	No	N/A	Within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Killarney National Park SPA greater than 20km d/s of bridge
KY-N72-012.00	Cullavaw Bridge	Cullavaw (Stream)	Blackwater[Munster]_SC_010	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 1.5km d/s of bridge	No
KY-N86-001.00	Blennerville Bridge	Lee (Tralee)	Lee[Tralee]_SC_010	Yes	Tralee Bay and Magharees Peninsula, West To Cloghane SAC	Yes	Tralee Bay Complex SPA	Within Tralee Bay and Magharees Peninsula, West To Cloghane SAC	Within Tralee Bay Complex SPA
KY-N86-001.00	Blennerville Bridge Relief Arch	Lee (Tralee)	Lee[Tralee]_SC_010	Yes	Tralee Bay and Magharees Peninsula, West To Cloghane SAC	Yes	Tralee Bay Complex SPA	Within Tralee Bay and Magharees Peninsula, West To Cloghane SAC	Within Tralee Bay Complex SPA

Structure ID	Structure Name	River	WFD Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
KY-N86-005.00	Enrights Bridge	Undefined	Lee[Tralee]_SC_010	Yes	Tralee Bay and Magharees Peninsula, West To Cloghane SAC	No	N/A	Within Tralee Bay and Magharees Peninsula, West To Cloghane SAC	Tralee Bay Complex SPA ca. 0.1km d/s of bridge
LC-N69-005.00	Rincullia Bridge	Ahacronane	Shanagolden[Stream]_SC_010	Yes	Lower River Shannon SAC	No	N/A	Lower River Shannon SAC immediately d/s of bridge	River Shannon and River Fergus Estuaries SPA ca. 300m d/s of bridge
TS-N24-006.00	Canal Bridge	Flows To Suir	Suir_SC_150	Yes	Lower River Suir SAC	No	N/A	Within Lower River Suir SAC	No

5.2. Description of the Special Areas of Conservation

5.2.1. Ballymacoda (Clonpriest and Pillmore) SAC (000077)⁵

Site Overview

“This coastal site stretches north-east from Ballymacoda to within about 6 km of Youghal, Co. Cork. Though moderate in size, it has a good diversity of coastal habitats, including several listed on Annex I of the E.U. Habitats Directive.

The site comprises the estuary of the Womanagh River, a substantial river which drains a large agricultural catchment. Part of the tidal section of the river is included in the site and on the seaward side the boundary extends to the low tide mark. The inner part of the estuary is well sheltered by a stabilised sandy peninsula (Ring peninsula). Intertidal mudflats and sandflats, which form part of the overall estuarine habitat, are well represented. The sediment types vary from muds to muddy sands in the inner part, to fine rippled sands in the outer exposed part. The macro-invertebrate fauna of the intertidal flats is well-developed, with the following species occurring: Corophium volutator, Hediste diversicolor, Arenicola marina, Macoma balthica, Scrobicularia plana, Cerastoderma edule and Lanice conchilega. In the more sheltered areas, the intertidal flats are colonised by mats of green algae (mostly Enteromorpha spp.), with brown seaweeds occurring on the rocky shores of the shingle spits.

The main channel is flanked by saltmarshes and wet fields, much of the latter being improved for agriculture. The saltmarshes are mainly classified as Atlantic salt meadows, with such species as Sea Purslane (Halimione portulacoides), Lax-flowered Sea Lavender (Limonium humile) and Sea Milkwort (Glaux maritima). A large area of Mediterranean salt meadows is found on the island at Clonpriest East. This saltmarsh is well-established and has a well-developed topography with a highly representative vegetation cover. There is some saltmarsh dominated by dense Sea Rush (Juncus maritimus). This is a typical grassy upper Mediterranean salt meadow community and is located along the terrestrial grassy ridge and represents one of the upper saltmarsh communities in the overall saltmarsh zonation. The habitat is not grazed, and a generally tall sward height is present. Other species present include frequent Red Fescue (Festuca rubra) and smaller amounts of Creeping Bent (Agrostis stolonifera), Saltmarsh Rush (Juncus gerardii), Common Scurvy-grass (Cochlearia officinalis), Sea Milkwort, Sea Plantain (Plantago maritima) and Sea Arrowgrass (Triglochin maritima). Curled Dock (Rumex crispus) is also present on some mounds.”

Qualifying Interests

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]

Linkage to Bridges

Ballymacoda (Clonpriest and Pillmore) SAC is located –

- ca. 7.2km downstream of CC-N25-004.00 - Killeagh River Bridge.

⁵ NPWS (2015). Conservation Objectives: Ballymacoda (Clonpriest and Pillmore) SAC 000077. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

5.2.2. Blackwater River (Cork/Waterford) SAC (002170)⁶

Site Overview

“The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and parts of Cos. Kerry, Limerick, Tipperary and Waterford. The site consists of most of the freshwater stretches of the system as well as the estuarine component at Youghal. Tidal influence extends almost to Cappoquin. The Blackwater rises in the east Kerry uplands where Namurian grits and shales build the low heather-covered plateaux. In the lowlands in the Mallow district it passes over limestone and later cuts through ridges of Old Red Sandstone to the south of Cappoquin. Main tributaries include the Rivers Lickey, Bride, Allow and Awbeg. A wide range of habitats associated with the rivers are included within the site, including substantial areas of woodland (deciduous, mixed), scrub, wet grassland, swamp and marsh vegetation, bog, salt marshes and intertidal sand and mud flats. Areas of improved grassland, arable land and coniferous plantations are included in the site for water quality reasons.

The site supports important examples of a range of Annex I habitats, notably estuaries, intertidal mudflats and sandflats, perennial vegetation of stony banks, salt meadows, floating river vegetation, alluvial forests and oak woodlands. Most of these are of good quality and extensive in area. The Blackwater system is an important salmonid fishery and is of high conservation value for *Salmo salar*. Also supports important populations of *Lampetra planeri*, *L. fluviatilis*, *Petromyzon marinus* and *Alosa fallax*. Substantial populations of *Margaritifera* occur, while *Austropotamobius pallipes* is found in the Awbeg River. *Lutra* is widespread throughout the site and has been subject to detailed surveys. *Trichomanes speciosum* occurs at one location. Annex I bird species present in the site include breeding *Egretta garzetta*, *Alcedo atthis* and *Falco peregrinus* and wintering *Cygnus cygnus* and *Pluvialis apricaria*. A good diversity of other winter waterfowl species also occurs.”

Qualifying Interests

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Perennial vegetation of stony banks [1220]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- 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]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]

⁶ NPWS (2012.) Conservation Objectives: Blackwater River (Cork/Waterford) SAC 002170. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaiite Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]

Linkage to Bridges

The following bridges are located within Blackwater River (Cork/Waterford) SAC (002170): -

- CC-N72-001.00 - Duncannon Bridge.
- CC-N72-004.00 - Ahane Bridge.
- CC-N72-014.00 - Boland's Bridge.
- CC-N72-030.00 - Castletownroche Bridge.
- CC-N72-030.90 - Fermoy Bridge.

Blackwater River (Cork/Waterford) SAC (002170) is located: -

- ca. 35m downstream of CC-N72-015.00 - Lombardstown Bridge.
- ca. 600m downstream of CC-N72-019.00 - Firville Culvert.
- ca. 1.5km downstream of KY-N72-012.00 - Cullavaw Bridge.

5.2.3. Castlemaine Harbour SAC (000343)⁷

Site Overview

*“This is a large coastal site occupying the innermost part of Dingle Bay in Co. Kerry. The site comprises the estuaries of the Rivers Maine and Laune, both substantial rivers, and has very extensive areas of intertidal sand and mud flats. The site has a significant sand dune element in the form of Inch and Rosbehy sand spits. These spits, which overlie shingle bars, form the western boundary to the site and provide effective shelter for Castlemaine Harbour. The Inch sand spit, c.5 km in length, has a particularly well developed dune system which grades into salt marsh and *Spartina* swards on the sheltered east side. A further spit on shingle protrudes into the site at Cromane. Salt marsh fringes this spit and continues almost uninterrupted along the south shore to the mouth of the River Laune. All of the River Laune from the estuary to Lough Leane is included in the site. Other habitats which have a minor presence include wet grassland, reedbeds, heath, scrub and wet woodland. Land uses include fishery and aquaculture activities, grazing, and recreational activities.*

Site is of major ecological importance for its diversity and range of coastal habitats and species. The Inch sand spit is the largest and arguably one of the best remaining intact dune systems in the country. The dune systems are highly dynamic and possess very fine examples of embryonic dunes, shifting marram dunes, fixed dunes and dune slacks. Salt marshes, both of the Atlantic and Mediterranean types, are also particularly well developed and extensive in

⁷ NPWS (2011). Conservation Objectives: Castlemaine Harbour SAC 000343 and Castlemaine Harbour SPA 004029. Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

area. The site has one of the largest expanses of intertidal sand and mud flats in the country. A fine stand of native alluvial forests occurs on the River Laune. The fixed dunes have *Petalophyllum ralfsii* and three Red Data Book vascular plant species are known from the site. Castlemaine Harbour supports important populations of wintering waterfowl, with internationally important numbers of *Branta bernicla hrota* and nationally important populations of a further 16 species. *Pluvialis apricaria* and *Limosa lapponica*, both listed on Annex I of the EU Birds Directive, occur regularly. The site provides habitat for *Bufo calamita*, a very localised species in Ireland and listed in the Red Data Book. The site is also utilized by *Lutra lutra* and supports important populations of *Salmo salar*, *Petromyzon marinus* and *Lampetra fluviatilis*.”

Qualifying Interests

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]
- Humid dune slacks [2190]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Petalophyllum ralfsii* (Petalwort) [1395]

Linkage to Bridges

The following bridges are located within Castlemaine Harbour SAC (000343): -

- KY-N22-013.00 - Kilneedan Bridge.

Castlemaine Harbour SAC (000343) is located: -

- ca. 4km downstream of KY-N70-021.00 - Glenbeigh National School Bridge.

5.2.4. Kenmare River SAC (002158)⁸

Site Overview

“Kenmare River is a long and narrow south-west facing bay situated in the south-west of Ireland. It is a deep, drowned glacial valley, approximately 12 km wide at the mouth and 55 km long. Durseley Island marks the south-west point. The bedrock is mainly Old Red Sandstone with Devonian - Carboniferous marine clastics on the south-west coast. It is deeply fissured in a NE/SW direction. The bedrock is emergent throughout the length of the bay. Exposure to prevailing winds and swells at the mouth diminishes toward the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur. The coastal fringe is dominated by a mosaic of dry and wet heath, along with patches of blanket bog, coastal grassland and exposed rock. The heath is particularly well developed at Derrynane Bay, which supports a fine dune system. Also present are small areas of deciduous woodland and fresh-water marsh.

*Kenmare River has very high conservation interest, with very good quality examples of large shallow bays, reefs, and marine caves. It has a very wide range of communities from exposed coast to ultra-sheltered areas, and there is an extremely high number (24) of rare and notable species. The sea fan *Swiftia pallida* is only known in Ireland from Kenmare River, where it is recorded in several circalittoral sites. *Eunicella verrucosa*, a widespread but locally distributed sea fan, is recorded at two sites in the lower circalittoral reef. At both sites, it occurs with *Swiftia pallida*, the only place where this association is known to occur. Important habitat forming species present are the seagrass, *Zostera marina*, and the coralline algae, *Lithothamnion corallioides*, which form biogenic reefs. Kenmare River is the only area where the brachiopod, *Neocrania anomala*, is commonly found and, unusually, it occurs in exposed areas. There are two good examples of vegetated shingle banks, and at least 6 separate salt meadows, with both Atlantic and Mediterranean types represented. Shifting marram dunes, fixed dunes and dry heath, the latter with the legally protected plant *Simethis planifolia*, are well represented, while a small though significant example of vegetated sea cliffs occurs in the Derrynane area. The site includes many areas of coastal dry heath. There is a long established population of the mollusc *Vertigo angustior* in the dunes at Derrynane. The site includes areas of Calaminarian grassland about Allihies. The site has internationally important summer and winter roosting sites for *Rhinolophus hipposideros*. It also supports important populations of *Lutra lutra* and *Phoca vitulina*. *Sterna terns* breed on the islands, mainly *S. paradisaea* but *S. hirundo* in some years and *S. albifrons* at least in 1995.”*

Qualifying Interests

- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

⁸ NPWS (2013). Conservation Objectives: Kenmare River SAC 002158. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- European dry heaths [4030]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Calaminarian grasslands of the *Violetalia calaminariae* [6130]
- Submerged or partially submerged sea caves [8330]
- *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

Kenmare River SAC (002158) is located: -

- ca. 150m downstream of KY-N70-052.60 - Derreenamacken Bridge.

5.2.5. Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)⁹

Site Overview

“This is the largest terrestrial site in Ireland and encompasses the mountains and lakes of the Iveragh Peninsula and the Paps range. It is the most mountainous region of Ireland, and includes the highest peak Carrauntoohil at 1039 m. The underlying rock is almost entirely Old Red Sandstone, although carboniferous limestone occurs on the east side of Lough Leane. Glacial processes have shaped the sandstone into dramatic ridges and valleys, including the well wooded Killarney valley. A wide range of semi-natural habitats are present, along with some improved land and forestry in the Caragh River catchment. Generally, the proximity of the site to the Atlantic in the south-west ensures a strong oceanic influence.

This site is of great ecological importance. It includes the most extensive oakwoods in the country, with some of the best bryophyte communities in Europe; Ireland's only sizable stand of Yew; excellent examples of blanket bog, alluvial woodland; good quality oligotrophic lakes, some of which support rare glacial relicts; unpolluted rivers with aquatic vegetation and rare invertebrates and fish; and several other annexed habitats. The site also supports 12 Annex II species of flora and fauna, six Annex I bird species and at least 33 Irish Red Data Book species. Many rare bryophytes and invertebrates are also present, several at their only known Irish locations.”

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]

⁹ NPWS (2017). Conservation Objectives: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Alpine and Boreal heaths [4060]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Calaminarian grasslands of the *Violetalia calaminariae* [6130]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) [6410]
- Blanket bogs (* if active bog) [7130]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- 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]
- *Taxus baccata* woods of the British Isles [91J0]
- *Geomalacus maculosus* (Kerry Slug) [1024]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Euphydryas aurinia* (Marsh Fritillary) [1065]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]
- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]
- *Najas flexilis* (Slender Naiad) [1833]
- *Alosa fallax killarnensis* (Killarney Shad) [5046]

[Linkage to Bridges](#)

The following bridges are located within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365): -

- KY-N22-019.00 - Woodford Bridge.
- KY-N22-021.00 - Cloghane Culvert.
- KY-N22-027.00 - Poulgorm Bridge.

- KY-N72-010.00 - Gortanahaneboy West Bridge.

Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365) is located: -

- ca. 250m downstream of KY-N22-025.00 - Curraglass Bridge.
- ca. 400m downstream of KY-N22-029.00 - Corranmaree Bridge.
- ca. 2km downstream of KY-N72-006.00 - Ardteegalvan Bridge.
- ca. 2.8km downstream of KY-N72-007.00 - Knockeenagowan Bridge.

5.2.6. Lower River Shannon SAC (002165)¹⁰

Site Overview

“A very large, long site approximately 14 km wide and 120 km long, encompassing: the drained river valley which forms the River Shannon estuary; the broader River Fergus estuary, plus a number of smaller estuaries e.g. Poulmasherry Bay; the freshwater lower reaches of the Shannon River, between Killaloe and Limerick, plus the freshwater stretches of much of the Feale and Mulkear catchments; a marine area at the mouth of the Shannon estuary with high rocky cliffs to the north and south; ericaceous heath on Kerry Head and Loop Head; and several lagoons. The underlying geology ranges from Carboniferous limestone (east of Foynes) to Namurian shales and flagstones (west of Foynes) to Old Red Sandstone (at Kerry Head). The salinity of the system varies daily with the ebb and flood of the tide and with annual rainfall fluctuations seasonally.

The site contains many Annexed habitats, including the most extensive area of estuarine habitat in Ireland. A good range of Annexed species are also present, including the only known resident population of Tursiops truncatus in Ireland, all three Irish species of lamprey, and a good population of Salmo salar. A number of birds listed on the EU Birds Directive either winter or breed in the site. The site is internationally important for waterfowl with more than 50,000 individuals occurring in winter. Several species listed in the Irish Red Data Book are present, perhaps most notably the only known Irish populations of Scirpus triquetus.”

Qualifying Interests

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]

¹⁰ NPWS (2012). Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

The following bridges are located within Lower River Shannon SAC (002165): -

- CL-N67-001.00 - Burrane Bridge.
- KY-N69-016.00 - Listowel Bridge.
- LC-N69-005.00 - Rincullia Bridge.

5.2.7. Lower River Suir SAC (002137)¹¹

Site Overview

“A very large, long site approximately 14 km wide and 120 km long, encompassing: the drained river valley which forms the River Shannon estuary; the broader River Fergus estuary, plus a number of smaller estuaries e.g. Poulmasherry Bay; the freshwater lower reaches of the Shannon River, between Killaloe and Limerick, plus the freshwater stretches of much of the Feale and Mulkear catchments; a marine area at the mouth of the Shannon estuary with high rocky cliffs to the north and south; ericaceous heath on Kerry Head and Loop Head; and several lagoons. The underlying geology ranges from Carboniferous limestone (east of Foynes) to Namurian shales and flagstones (west of Foynes) to Old Red Sandstone (at Kerry Head). The salinity of the system varies daily with the ebb and flood of the tide and with annual rainfall fluctuations seasonally.

The site contains many Annexed habitats, including the most extensive area of estuarine habitat in Ireland. A good range of Annexed species are also present, including the only known resident population of *Tursiops truncatus* in Ireland, all three Irish species of lamprey, and a good population of *Salmo salar*. A number of birds listed on the EU Birds Directive either winter or breed in the site. The site is internationally important for waterfowl with more than 50,000

¹¹ NPWS (2017). Conservation Objectives: Lower River Suir SAC 002137. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

individuals occurring in winter. Several species listed in the Irish Red Data Book are present, perhaps most notably the only known Irish populations of *Scirpus triqueter*.”

Qualifying Interests

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

The following bridges are located within Lower River Suir SAC (002137): -

- TS-N24-006.00 - Canal Bridge.

5.2.8. Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)¹²

Site Overview

“Tralee Bay and Magharees Peninsula west to Cloghane SAC comprises a very diverse area of important coastal habitats. The site forms a unit of interconnecting coastal habitats stretching from inner Tralee Bay west to Fenit Harbour and Brandon Bay. The Magharee peninsula consists of Lower Carboniferous limestone. Bedrock in the rest of the bay is composed of Middle Carboniferous limestone and Old Red Sandstone. Tralee Bay itself is shallow, sheltered and sedimentary. Subsidiary inlets within Tralee Bay (Bealathaleen Creek and Barrow Harbour) are extremely sheltered. Within the site there are several types of coastal habitat, the dominant and most ecologically important of which are estuarine habitats (mudflats and sandflats not covered by water at low tide, Atlantic and Mediterranean salt meadows & Salicornia swards), dune-complexes ('white-dunes', grey-dunes and dune-slacks) and a lagoon. The site features large expanses of intertidal mudflats, often fringed with saltmarsh vegetation. Distinct areas of estuarine habitat within the site have their own unique characteristics, e.g. Derrymore Island, is unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there are some Eel-grass beds (*Zostera* spp.) and patches of green algae (e.g. *Ulva* sp. and *Enteromorpha* sp.). The main macro-invertebrate community, which has been noted from the mud-flat areas are a *Hediste-Macoma-Nephtys* community. The dominant invertebrate communities of sandflats within the site are *Polychaetes* and *Cerastoderma edule* in medium to fine sandy shores and *Arenicola marina* and bivalves in mid to lower shore muddy flats. In the transition zone between mudflats and saltmarsh, specialised colonisers of mud predominate: swards of *Spartina anglica* frequently occur in sheltered areas of mudflat particularly in the vicinity of Derrymore Island. Less common are swards of *Salicornia europaea* agg. Saltmarsh vegetation frequently fringes the mudflats & the most important and extensive areas of this habitat are around Blennerville, Derrymore Island and Fermoy. The dominant type of saltmarsh present is Atlantic salt meadow over mud. Turf fucoids (*Fucus* spp.) are associated with areas of Atlantic salt meadow in the site. Areas of Mediterranean salt meadows are sometimes associated with the above habitat. The site contains a large, shallow, natural sedimentary lagoon Lough Gill (circa. 170ha-200ha). The lagoon has a long artificial sluiced outlet and salinity is rather low (<1% except near the outlet). Shoreline vegetation is composed mainly of reed beds, while aquatic vegetation in the lagoon includes typical species such as *Ruppia maritima*. The fauna includes one lagoon specialist, *Lekanesphaera hookeri*. Sand dunes comprise a significant portion of the terrestrial habitat of this site, including four Annexed habitats: Shifting Dunes along the shoreline with *Ammophila arenaria* (white dunes), Humid dune slacks, Dunes with *Salix repens* and the priority habitat Fixed Dunes with herbaceous vegetation (grey dunes). The dune complex stretches along the southern shoreline of the site from the seaward side of Derrymore Island westward to Cloghane. The most extensive and most important area of the dune complex comprises the Magharees Tombola and it is here that the priority Fixed dune habitat is most extensive within the site.

The site is very important in terms of (a) the variety of sublittoral sediment communities in which a number of rare species occur and good examples of littoral and sublittoral reef communities; (b) the extensive intertidal habitats, which support internationally important numbers of wintering waders and wildfowl, including several which are listed in Annex I of the EU Birds Directive, and (c) the fringing coastal habitats, which provide excellent examples of a number of Annexed habitats (most notably the fixed dunes & dune slacks at Maherabeg, which are among the most species-rich examples of these habitats in Ireland, and the lagoon known as Lough Gill, which is important geomorphologically). These coastal habitats also support populations of the Annex II species *Petalophyllum ralfsii*, along with a range of other interesting species of flora and fauna, including the largest Irish breeding population of the Red Data Book species, Natterjack Toad (*Bufo calamita*). This site contains a stand of alluvial woodland that is assigned to the *Corylo-Fraxinetum deschampsietosum* sub-association. While small in area and subject to disturbance, wet woodland is rare on the Dingle peninsula.

¹² NPWS (2014). Conservation Objectives: Tralee Bay and Magharees Peninsula, West to Cloghane SAC 002070. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The site includes areas of species-rich wet grassland referable to EU Habitats Directive Annex I habitat, *Molinia* meadows. *Lutra lutra* has a regular presence within the site. The importance of the SAC is enhanced by the fact that it contains two SPAs (Tralee Bay and Lough Gill), two nature reserves (Derrymore Island and Tralee Bay) and a wildfowl sanctuary (Lough Gill).”

Qualifying Interests

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Annual vegetation of drift lines [1210]
- Perennial vegetation of stony banks [1220]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]
- Humid dune slacks [2190]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Lutra lutra* (Otter) [1355]
- *Petalophyllum ralfsii* (Petalwort) [1395]

Linkage to Bridges

The following bridges are located within Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070): -

- KY-N86-001.00 - Blennerville Bridge.
- KY-N86-001.00 - Blennerville Bridge Relief Arch.
- KY-N86-005.00 - Enrights Bridge.

5.2.9. Kilkee Reefs SAC (002264)¹³

Site Overview

“The Kilkee Reefs are situated north of the River Shannon Estuary on the Co. Clare coast. The site stretches for approximately 12 km from Ballard Bay to Castle Point. The reefs are exposed to the full force of Atlantic swells from the west. A small shallow bay, Moore Bay, offers some shelter from wave action and a beach is present. The bedrock is Carboniferous millstone grit and flagstone. A few small islands are included, the largest being Bishop’s Island.

*The reefs are very exposed to wave action and support excellent examples of communities for this habitat, including one dominated by the mussel *Mytilus edulis*. Deep rock pools have the brown alga *Bifurcaria bifurcata*, whereas the shallower pools towards the low shore have the sea urchin *Paracentrotus lividus*. The low shore has communities characterised by the brown thong weed *Himanthalia elongata* and *Alaria esculenta*. These communities, which are typical of western Ireland, are quite distinct from communities in similar habitats elsewhere in Ireland or north-west Europe. Sub-tidally there are good examples of a variety of reef communities. In shallow water the reefs are steeply sloping with kelp forests of algal species tolerant to sand scour. Communities with less dense kelp and red foliose algae occur and may be very species rich. In deeper water the gently sloping rock is characterised by good examples of the Axinellid sponge community with the sea-fan *Eunicella verucosa*. The sponge *Phakellia vermiculata* which is rare in shallow water is present. Vertical cliff faces are characterised by the jewel anemone *Corynactis viridis* in both shallow and deep water.*

*The rocky shores within the site are extensive platforms with short vertical steps and have good examples of the range of communities found on shores that are extremely exposed to wave action. There are extensive zones of lichens, channel wrack (*Pelvetia canaliculata*) and barnacles. The upper shore has an extensive community (300 m) of barnacles and limpets on an even platform of bedrock. Cracks and crevices provide a refuge for anemones (e.g. *Actinia equina*), mussels and snails (e.g. *Littorina saxatilis* and *Nucella lapillus*). The mid shore has an extensive community of *Fucus vesiculosus*, with the barnacles *Chthamalus montagui*, *C. stellatus* and *Semibalanus balanoides*, and the limpet *Patella vulgata*. Deep rock pools are characterised by pink encrusting coralline algae and *Corallina officinalis* under a canopy of brown algae (*Laminaria saccharina*, *Himanthalia elongata*, *Bifurcaria bifurcata*, *L. digitata* and *Fucus serratus*).*

*The lower mid shore is characterised by extensive, dense beds of mussels, mixed with barnacles on higher, less exposed rock and with *Corallina officinalis* in damp, protected areas. This zone may also be very wide (300 m). Shallow pools with pink coralline crusts and the Purple Sea Urchin (*Paracentrotus lividus*) living in pits, are abundant. The subtidal fringe is characterised by a narrow band of *Himanthalia elongata* and *Alaria esculenta* on exposed vertical faces and *Laminaria hyperborea* and *L. digitata* on horizontal surfaces. The walls of a surge gully are characterised by a dense faunal turf with the hydroid *Tubularia indivisa* and the jewel anemone *Corynactis viridis* the most abundant species. The boulders at the base of the gully support a kelp community with foliose and filamentous red algae, snails and crabs. The surge gully contains a diverse biota, with 86 species recorded.*

*The shallow sublittoral reefs are steeply sloping and extremely or moderately exposed to wave action. They are characterised by communities typical of this level of wave exposure. Cliff faces are populated by the jewel anemone *Corynactis viridis*. Red algae grow on the ledges and the overhanging faces support the sponge *Haliclona viscosa* and bryozoans (*Scrupocellaria scruposa* and *Crisia eburnea*). These reef communities may be very species rich. *Laminaria hyperborea* and sand scour tolerant red algae such as *Polyides rotundus* and *Ahnfeltia plicata* characterise the horizontal surfaces in moderately exposed areas of Moore Bay. The kelp species *Laminaria saccharina* and *Saccorhiza polyschides* are also present. With increasing depth the *L. hyperborea* forest thins to a park and the brown alga *Dictyota dichotoma* becomes more common. The kelp was not recorded below 24 m. Horizontal*

¹³ NPWS (2014). Conservation Objectives: Kilkee Reefs SAC 002264. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

surfaces are dominated by red algae (Delesseria sanguinea, Rhodymenia pseudopalmata, Heterosiphonia plumosa and Rhodophyllis divaricata). With a further increase in depth there are fewer algae and sponges (Polymastia boletiformis and Cliona celata); bryozoans become more common on the ledges and the sea fan Eunicella verrucosa and sea slug Crimora papillata are present. Vertical surfaces are colonized by the sponges Pachymatisma johnstonia and Thymosia guernei, while the sea cucumber Aslia lefevrei occupies the crevices.”

Qualifying Interests

- Large shallow inlets and bays [1160]
- Reefs [1170]
- Submerged or partially submerged sea caves [8330]

Linkage to Bridges

Kilkee Reefs SAC (002264) is located: -

- ca. 200m downstream of CL-N67-008.00 - Kilkee Bridge.

5.2.10. Ballinskelligs Bay and Inny Estuary SAC (000335)¹⁴

Site Overview

“This site is located at the western end of the Iveragh Peninsula, Co. Kerry, close to the town of Waterville. It comprises the marine waters of Ballinskelligs Bay, as far out as the five-fathom line, some adjoining terrestrial areas and the estuary of the River Inny upstream to Breahig townland. The site extends from Horse Island at the western end of the bay round to Rineen Point at its south-eastern side. Much of the site comprises shallow marine water, Ballinskelligs Bay, but it also supports a wide variety of other habitats, including intertidal mud/sand flats, sandy beaches, shingle, tidal river channels, sea cliffs, wet and dry grassland, freshwater marshes, swamps, cut-away bog, scrub, Bracken and saltmarsh.

*Two types of saltmarsh occur on the site. Mediterranean salt meadows are characterised by the presence of Sea Rush (*Juncus maritimus*), while species such as Thrift (*Armeria maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*) are typical of Atlantic salt meadows. A small area of sand dunes near to the mouth of the estuary supports a population of the rare liverwort species, Petalwort (*Petalophyllum ralfsii*). This species is protected under the Flora (Protection) Order, 1999 and is also listed on Annex II of the E.U. Habitats Directive.*

The site is used in the winter by nationally important numbers of Common Scoter (953 individuals) and Ringed Plover (147 individuals), both counts from 1994/95-96/97. The site is also commonly used by waders such as Oystercatcher (130 individuals) and Curlew (140 individuals). A colony of Grey Seal, a protected species, occurs within the bay.

Human usage of the site includes fishing and tourist activities.

*The site is of considerable conservation significance, particularly for the presence of two types of saltmarsh listed on Annex I of the E.U. Habitats Directive and of a population of *Petalophyllum ralfsii*, a species listed on Annex II of this Directive.*

Additionally, the site is of significance for the nationally important populations of Common Scoter and Ringed Plover that use it.”

¹⁴ NPWS (2014). Conservation Objectives: Ballinskelligs Bay and Inny Estuary SAC 000335. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Qualifying Interests

- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- *Petalophyllum ralfsii* (Petalwort) [1395]

Linkage to Bridges

The following bridges are located within Ballinskelligs Bay and Inny Estuary SAC (000335) –

- KY-N70-039.00 - Waterville Bridge.

5.3. Description of the Special Protection Areas

5.3.1. Ballymacoda Bay SPA (004023)¹⁵

Site Overview

“This coastal site stretches north-east from Ballymacoda to within several kilometres of Youghal, Co. Cork. It comprises the estuary of the Womanagh River, a substantial river which drains a large agricultural catchment. Part of the tidal section of the river is included in the site and on the seaward side the boundary extends to, and includes Bog Rock, Barrel Rocks and Black Rock. The inner part of the estuary is well sheltered by the Ring peninsula, a stabilised sand spit with sand dunes at its northern end and salt marshes on the landward side. Sediment types vary from muds to muddy sands in the inner part to fine rippled sands in the outer exposed part. The macroinvertebrate fauna of the intertidal flats is well-developed, with the following species occurring: Ragworm (Hediste diversicolor), the crustacean Corophium volutator, Lugworm (Arenicola marina), Baltic Tellin (Macoma balthica), Peppery Furrowshell (Scrobicularia plana), Common Cockle (Cerastoderma edule) and the tubeworm Lanice conchilega. In the more sheltered areas, the intertidal flats are colonised by mats of green algae (mostly Ulva spp.), with brown seaweeds occurring on the rocky shores of the shingle spits. Common Cord-grass (Spartina anglica) has spread within the estuary since the late 1970s. The main channel is flanked by salt marshes and wet fields, much of the latter being improved for agriculture.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Wigeon, Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull and Lesser Black-backed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.”

Qualifying Interests

- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]

¹⁵ NPWS (2015). Conservation Objectives: Ballymacoda Bay SPA 004023. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Lesser Black-backed Gull (*Larus fuscus*) [A183]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Ballymacoda Bay SPA (004023) is located: –

- ca. 6.5km downstream of CC-N25-004.00 - Killeagh River Bridge.

5.3.2. Blackwater Callows SPA (004094)¹⁶

Site Overview

“The Blackwater Callows SPA comprises the stretch of the River Blackwater that runs in a west to east direction between Fermoy and Lismore in Counties Cork and Waterford, a distance of almost 25 km. The site includes the river channel and strips of seasonally-flooded grassland within the flood plain. Sandstone ridges, which run parallel to the river, confine the area of flooding to a relatively narrow corridor.

*The river channel has a well-developed aquatic plant community, which includes such species as Pond Water-crowfoot (*Ranunculus peltatus*), Canadian Pondweed (*Elodea canadensis*) and a variety of pondweeds (*Potamogeton spp.*), water-milfoils (*Myriophyllum spp.*) and water-starworts (*Callitriche spp.*).*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Wigeon, Teal and Black-tailed Godwit. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is of high ornithological interest on account of its wintering waterfowl populations. Whooper Swan occurs in numbers of international importance (212) - all figures are mean peaks for the five winters 1995/96 to 1999/2000. Bewick’s Swan were regularly recorded at the site up to the mid-1990s; however, in the winters of 1997/98 and 1998/99 only four and two individuals respectively were recorded, and the species is no longer considered to be a regular visitor. This decline is in line with a national decrease and a marked contraction in range. The site supports nationally important populations of Wigeon (2,313), Teal (898) and Black-tailed Godwit (251).

Other wintering species that occur include Mallard (398) Shoveler (26), Lapwing (191), Curlew (457) and Black-headed Gull (311).

Little Egret uses the site throughout the year as there is a nearby breeding colony downstream. The river system provides an important feeding area for these birds.

The Blackwater Callows SPA is of importance for its populations of wintering waterfowl, including an internationally important population of Whooper Swan and nationally important

¹⁶ NPWS (2022). Conservation objectives for Blackwater Callows SPA [004094]. First Order Site specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

populations of Wigeon, Teal and Black-tailed Godwit. The presence of Whooper Swan, as well as Little Egret, is of particular note as these species are listed on Annex I of the E.U. Birds Directive. Part of the Blackwater Callows SPA is a Wildfowl Sanctuary.”

Qualifying Interests

- Whooper Swan (*Cygnus cygnus*) [A038]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Blackwater Callows SPA (004094) is located –

- ca. 70km downstream of CC-N72-001.00 - Duncannon Bridge.
- ca. 1.6km downstream of CC-N72-030.90 - Castletownroche Bridge.

5.3.3. Blackwater Estuary SPA (004028)¹⁷

Site Overview

“The Blackwater Estuary SPA is a relatively small, sheltered south-facing estuary, which extends from below Youghal Bridge to the Ferry Point peninsula, close to where the river enters the sea. It comprises a section of the main channel of the River Blackwater. At low tide, intertidal flats are exposed. On the eastern side the intertidal channel extending as far as Kinsalebeg and Moord Cross Roads is included, while on the west side the site includes much of the estuary of the Tourig River. The intertidal sediments are mostly muds or sandy muds reflecting the sheltered conditions of the estuary. The sediments have a macrofauna typical of muddy sands, with polychaete worms and bivalves well-represented. Salt marshes occur along the sheltered inlets. A low-lying field which provides an important roost is included.

The Blackwater Estuary is of high ornithological importance for wintering waterfowl, providing good quality feeding areas for a diversity of waterfowl species. At high tide, the birds roost along the shoreline and salt marsh fringe. The site supports an internationally important population of *Limosa limosa* (over 5% of the national total). It supports a further eight species in numbers of national importance: *Tadorna tadorna*, *Anas penelope*, *Pluvialis apricaria*, *Vanellus vanellus*, *Calidris alpina*, *Numenius arquata*, *Tringa totanus* and *Tringa nebularia*. A population of *Limosa lapponica* exceeds the threshold for national importance in some winters. *Egretta garzetta* breeds locally and the Blackwater Estuary is a main feeding area. The site is important for gulls and attracts substantial numbers of *Larus fuscus* in autumn and winter. The Blackwater Estuary has been well-studied, with waterfowl counts extending back to 1974.”

Qualifying Interests

- Wigeon (*Anas penelope*) [A050]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]

¹⁷ NPWS (2012). Conservation Objectives: Blackwater Estuary SPA 004028. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Wetland and Waterbirds [A999]

Linkage to Bridges

The following bridges are located within Blackwater Estuary SPA (004028): -

- WC-N25-025.00 - Tourig River Bridge.

Blackwater Estuary SPA (004028) is located: -

- ca. 19.5km d/s of WC-N72-000.60 - Ballyvecane Upper Bridge.
- ca. 16km d/s of WC-N72-003.00 - Little Bridge.
- ca. 23km d/s of WC-N72-006.00 - Finisk Bridge.

5.3.4. Castlemaine Harbour SPA (004029)¹⁸

Site Overview

*“This is a large coastal site occupying the innermost part of Dingle Bay. It extends from the lower tidal reaches of the Rivers Maine and Laune to west of the Inch and Rossbehy peninsulas (c. 16 km from east to west). The average width of the estuary is 4-5 km though it is c. 11 km at the outer limit. The site comprises the estuaries of the Rivers Maine and Laune, both substantial rivers, and has extensive areas of intertidal sand and mud flats. Conditions are very sheltered due to the presence of three protruding sand spits (Rossbehy, Inch and Cromane), which overlie gravel bars, in the outer part of the Harbour. The intertidal flats are mostly muds or muddy sands and have high densities of polychaete worms, along with bivalves such as *Macoma balthica* and molluscs such as *Hydrobia ulvae*. *Zostera* is common in places. Salt marshes fringe much of the shoreline. A very large dune system occurs on the Inch peninsula. A substantial area of shallow marine water is included in the site.*

*Castlemaine Harbour SPA is one of the most important sites for wintering waterfowl in the south-west. The complex is of international importance as it regularly supports in excess of 20,000 waterfowl, as well as an internationally important population of *Branta bernicla hrota*. It supports nationally important populations of at least a further seven species: *Gavia stellata*, *Anas acuta*, *Anas penelope*, *Charadrius hiaticula*, *Calidris alba*, *Limosa lapponica* and *Tringa nebularia*. The population of *Anas penelope* is over 5% of the national total. The shallow marine waters support divers, and sea duck, including *Melanitta nigra*. The site provides both feeding and a range of roosting areas for the birds. *Pyrhacorax pyrrhacorax* utilise the dunes at Inch for feeding. It supports a population of *Petalophyllum ralfsii*, a species listed on Annex II of the Habitats Directive. *Lutra lutra* is also found within the site. The site has several Red Data Book plant species, as well as *Bufo calamita* and *Rana temporaria*.”*

¹⁸ NPWS (2011). Conservation Objectives: Castlemaine Harbour SAC 000343 and Castlemaine Harbour SPA 004029. Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Qualifying Interests

- Red-throated Diver (*Gavia stellata*) [A001]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Mallard (*Anas platyrhynchos*) [A053]
- Pintail (*Anas acuta*) [A054]
- Scaup (*Aythya marila*) [A062]
- Common Scoter (*Melanitta nigra*) [A065]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Sanderling (*Calidris alba*) [A144]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Turnstone (*Arenaria interpres*) [A169]
- Chough (*Pyrhacorax pyrrhacorax*) [A346]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Castlemaine Harbour SPA (004029) is located: -

- ca. 30km downstream of KY-N22-013.00 - Kilneedan Bridge.
- ca. 4km downstream of KY-N70-021.00 - Glenbeigh National School Bridge.

5.3.5. Killarney National Park SPA (004038)¹⁹

Site Overview

“This large site encompasses the lakes and part of the Macgillycuddy’s Reeks in the vicinity of Killarney. The underlying geology is Old Red Sandstone, although Carboniferous limestone occurs on the eastern shores of Lough Leane. Lough Leane is the most important and largest (8.6 km along its long axis) of the lakes, and is classified as a mesotrophic system. Muckross Lake and the Upper Lake are both high quality oligotrophic systems. Killarney National Park is perhaps best known for its Oak woodlands. They form the most extensive area of native woodland remaining in Ireland and include Derrycunihy Wood, described as perhaps the most

¹⁹ NPWS (2022). Conservation objectives for Killarney National Park SPA [004038]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

natural Sessile Oak wood in the country. The woods are typically dominated by Quercus petraea, with an understorey of Ilex aquifolium. Arbutus unedo is a notable component of the woods. The site supports the largest Taxus baccata woodland in Ireland. An extensive area of wet woodland, or carr, occurs within the flood plain of Lough Leane. The higher areas of the site are dominated by blanket bog and wet heath. Outcropping rock, cliffs and crags are features of the site.

The site is of importance as it supports a good diversity of upland and woodland birds, as well as wintering waterfowl. It is a traditional site for a population of Anser albifrons flavirostris - while the numbers are now low, the population is still of importance as it is the most southerly in the country and also feeds entirely on bogs. Upland species which breed within the site include Falco peregrinus, Falco columbarius, Lagopus lagopus and Turdus torquatus – the latter two species are Red-listed in Ireland. The extensive woodlands support some scarce breeding birds, notably Phoenicurus phoenicurus, Phylloscopus sibilatrix and Sylvia borin. Several research programmes have been carried out, including studies on the bird communities associated with the woodlands, and the wildfowl associated with the lakes. A range of other notable animal and plant species are associated with this site, including Salvelinus alpinus.”

Qualifying Interests

- Merlin (*Falco columbarius*) [A098]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

Linkage to Bridges

Killarney National Park SPA (004038) is located: -

- ca. 5.2km downstream of KY-N22-019.00 - Woodford Bridge.
- ca. 11.8km downstream of KY-N22-021.00 - Cloghane Bridge.
- ca. 24.2km downstream of KY-N22-027.00 - Poulgorm Bridge.
- ca. 16km downstream of KY-N22-025.00 - Curraglass Bridge.
- ca. 30km downstream of KY-N22-029.00 - Corranmaree Bridge.
- ca. 15km downstream of KY-N72-006.00 - Ardteegalvan Bridge.
- ca. 17km downstream of KY-N72-007.00 - Knockeenagowan Bridge.
- ca. 20km downstream of KY-N72-010.00 - Gortanahaneboy Bridge.

5.3.6. River Shannon and River Fergus Estuaries SPA (004077)²⁰

Site Overview

“The River Shannon and River Fergus Estuaries form the largest estuarine complex in Ireland. The site comprises all of the estuarine habitat west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores of the Shannon respectively (a distance of some 25 km from east to west). Also included are several areas in the outer Shannon estuary, notably Clonderalaw Bay and Poulnasherry Bay. The site has vast expanses of intertidal flats. The main macro-invertebrate community is a Macoma-Scrobicularia-Nereis community which provides a rich food resource for the wintering birds.

²⁰ NPWS (2012). Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Eelgrass (*Zostera spp.*) is present in places. The intertidal flats are often fringed with salt marsh vegetation, areas which provide important high tide roost sites for the birds. In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as *Phragmites australis* and *Scirpus spp.* *Spartina anglica* is frequent in parts.

This is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. It has internationally important populations of *Calidris alpina*, *Limosa* and *Tringa totanus*. A further 16 species have populations of national importance. The site is particularly significant for *Calidris alpina* (11% of national total), *Pluvialis squatarola* (7.5% of total), *Vanellus vanellus* (6.5% of total), *Tringa totanus* (6.1% of total) and *Tadorna tadorna* (6.0% of total). It has *Cygnus cygnus*, *Pluvialis apricaria* and *Limosa lapponica* in significant numbers. The site was formerly frequented by a population of *Anser albifrons flavirostris*, but these have now abandoned the area. The site provides both feeding and roosting areas for the wintering birds and habitat quality for most of the estuarine habitats is good.”

Qualifying Interests

- Cormorant (*Phalacrocorax carbo*) [A017]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Pintail (*Anas acuta*) [A054]
- Shoveler (*Anas clypeata*) [A056]
- Scaup (*Aythya marila*) [A062]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Knot (*Calidris canutus*) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

- Wetland and Waterbirds [A999]

Linkage to Bridges

River Shannon and River Fergus Estuaries SPA (004077) is located: -

- ca. 0.07km downstream of CL-N67-001.00 - Burrane Bridge.
- ca. 0.03km downstream of LC-N69-005.00 - Rincullia Bridge.

5.3.7. Tralee Bay Complex SPA (004188)²¹

Site Overview

“The Tralee Bay Complex SPA is located along the coast of north Co. Kerry between Ballyheige in the north, Tralee in the east and Stradbally in the west. The site includes the inner part of Tralee Bay, including Derrymore Island, the inlets of Barrow Harbour and Carrahane Strand, Akeragh Lough, Lough Gill, and much of the intertidal habitat from Scraggane Point at the northern end of the Magharees Peninsula around the coast to c. 2 km south of Ballyheige.

Tralee Bay Complex SPA is an international important site supporting over 20,000 wintering waterbirds, including an international important population of *Branta bernicla hrota*. Nationally important populations of 21 other species also occur at the site including *Cygnus cygnus*, *Pluvialis apricaria* and *Limosa lapponica*.”

Qualifying Interests

- Whooper Swan (*Cygnus cygnus*) [A038]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Pintail (*Anas acuta*) [A054]
- Scaup (*Aythya marila*) [A062]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Sanderling (*Calidris alba*) [A144]

²¹ NPWS (2014). Conservation Objectives: Tralee Bay Complex SPA 004188. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Wetland and Waterbirds [A999]

[Linkage to Bridges](#)

The following bridges are located within Tralee Bay Complex SPA (004188): -

- KY-N86-001.00 - Blennerville Bridge.
- KY-N86-001.00 - Blennerville Bridge Relief Arch.

Tralee Bay Complex SPA (004188) is located: -

- ca. 0.1km downstream of KY-N86-005.00 - Enrights Bridge.

5.4. Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. The maintenance of habitats and species within European sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Conservation objectives for SACs and SPAs are required to be set for the habitats and species for which the site has been designated. Detailed site-specific conservation objectives have been set for the majority of SACs and SPAs, which can be found within the Conservation Objectives document for each site on the NPWS website. Generic conservation objectives have been compiled for the remaining SACs and SPAs.

The overall aim of conservation objectives is for the maintenance or restoration of the favourable conservation conditions of the Annex I habitats and/ or Annex II species for which the SAC has been selected, under which the site-specific objectives contain more detailed attributes, measures and targets.

Favourable conservation status of a habitat is achieved when: -

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

The favourable conservation status of a species is achieved when: -

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

Table 5.2 displays links and citations to Conservation Objectives documents for each SAC. These were considered in the preparation of this report and assessment of effects of proposed works on SACs.

Table 5.2 Conservation Objectives documents of SACs.

SAC	Link to report	Citation
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000077.pdf	NPWS (2015). Conservation Objectives: Ballymacoda (Clonpriest and Pillmore) SAC 000077. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Blackwater River (Cork/Waterford) SAC (002170)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002170.pdf	NPWS (2012). Conservation Objectives: Blackwater River (Cork/Waterford) SAC 002170. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Castlemaine Harbour SAC (000343)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000343.pdf	NPWS (2011). Conservation Objectives: Castlemaine Harbour SAC 000343. Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Kenmare River SAC (002158)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf	NPWS (2013). Conservation Objectives: Kenmare River SAC 002158. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC (000365)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf	NPWS (2017). Conservation Objectives: Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
Lower River Shannon SAC (002165)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf	NPWS (2012). Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Lower River Suir SAC (002137)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002137.pdf	NPWS (2017). Conservation Objectives: Lower River Suir SAC 002137. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002070.pdf	NPWS (2014). Conservation Objectives: Tralee Bay and Magharees Peninsula, West to Cloghane SAC 002070. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Kilkee Reefs SAC (002264)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002264.pdf	NPWS (2014). Conservation Objectives: Kilkee Reefs SAC 002264. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Ballinskelligs Bay and Inny Estuary SAC (000335)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000335.pdf	NPWS (2014). Conservation Objectives: Ballinskelligs Bay and Inny Estuary SAC 000335. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The conservation objectives of SPAs are also to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests (SCIs) for SPAs, which are defined by the following list of attributes and targets: -

- Population trend: Measure or percentage change and whether the long-term population trend is stable or increasing.
- Distribution: Number, range, timing and intensity of use of areas. There is to be no significant decrease in the range, timing or intensity of use of areas by bird species, other than that occurring from natural patterns of variation.

The conservation objective for non-breeding birds of Special Conservation Interests of SPAs are as follows: -

- To maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for a SPA.
- To maintain the favourable conservation condition of the wetland habitat for a SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

Table 5.3 displays links and citations to Conservation Objectives documents for each SPA. These were considered in the preparation of this report and assessment of effects of proposed works on SPAs.

Table 5.3 Conservation Objectives documents of SPAs.

SPA	Link to report	Citation
Ballymacoda Bay SPA (004023)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004028.pdf	NPWS (2015). Conservation Objectives: Ballymacoda Bay SPA (004023). Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Blackwater Callows SPA (004094)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004094.pdf	NPWS (2022). Conservation objectives for Blackwater Callows SPA (004094). First Order Site specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.
Blackwater Estuary SPA (004028)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004028.pdf	NPWS (2012). Conservation Objectives: Blackwater Estuary SPA (004028). Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Castlemaine Harbour SPA (004029)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004029.pdf	NPWS (2011). Conservation Objectives: Castlemaine Harbour SPA (004029). Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Killarney National Park SPA (004038)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004038.pdf	NPWS (2022). Conservation objectives for Killarney National Park SPA (004038). Generic Version 8.0. Department of Housing, Local Government and Heritage.
River Shannon and River Fergus Estuaries SPA (004077)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf	NPWS (2012). Conservation Objectives: River Shannon and River Fergus Estuaries SPA (004077). Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Tralee Bay Complex SPA (004188)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004188.pdf	NPWS (2014). Conservation Objectives: Tralee Bay Complex SPA 004188. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

5.5. Other Ecological Data

5.5.1. Water Quality

5.5.1.1. Cork County

Killeagh River Bridge (CC-N25-004.00)

Killeagh River Bridge is located over the Dissour River and is located in Hydrometric Area no. 19 – the Lee, Cork Harbour and Youghal Bay catchment and the subcatchment Womanagh_SC_010.

Q-values, a biological water quality metric based on the composition of a river's macroinvertebrates community, detail the Dissour River as being of 'High' (4-5) ecological condition at 'Dissour – 1km South of Killeagh' in 2020 and also of 'Good' (Q4) ecological condition at the EPA sampling station 'Bridge just u/s of Womanagh River confluence,' which is located ca. 2.7km downstream of the proposed works on Killeagh River Bridge also in 2020.

Dissour River is classified as 'Moderate' by the Water Framework Directive (WFD) in 2016-2021. This watercourse is classified as 'Under Review' for reaching the 'Good' water quality status by the WFD by 2027.

Duncannon Bridge (CC-N72—001.00)

Duncannon Bridge is located over the Blackwater [Munster] River and is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_010.

Q-values detail the Blackwater [Munster] River as being of 'Good' (Q4) ecological condition at 'Blackwater (Munster) – Duncannon Bridge' in 2020.

The Blackwater [Munster] River is classified as 'Moderate' by the WFD in 2016-2021. This watercourse was also classified as 'At risk' of not reaching 'Good' water quality status by the WFD by 2027.

Ahane Bridge (CC-N72-004.00)

Ahane Bridge is located over the Owentaraglin_18 watercourse and is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_010.

Q-values detail the Owentaraglin_18 watercourse as 'Good' (Q4) ecological condition at the sampling station 'Bridge u/s Blackwater River confluence' in 2021.

The Owentaraglin_18 watercourse is classified as 'Good' by the WFD in 2016-2021. This watercourse was also classified as 'At risk' of not reaching 'Good' water quality status by the WFD by 2027.

Boland's Bridge (CC-N72—014.00)

Boland's Bridge is located over a Non-Listed EPA watercourse. The watercourse is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_010.

Lombardstown Bridge (CC-N72—015.00)

Lombardstown Bridge is located over Woodpark Lombardstown stream. The watercourse is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_010.

Q-values detail the Blackwater [Munster] River, which the Woodpark Lombardstown stream conjoins with, as 'High' (4-5) ecological condition at the EPA sampling station 'Longfield's Bridge,' ca. 6km downstream of the proposed works in 2021.

The Woodpark Lombardstown watercourse is classified as 'High' by the WFD in 2016-2021. This watercourse is under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Firville Culvert \(CC-N72-019.00\)](#)

Firville Culvert is located over Scarteen_18 watercourse. The watercourse is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_090.

Q-values detail the Blackwater (Munster) River as 'Good' (Q4) ecological condition at the EPA sampling station 'Blackwater(Munster) -2km u/s of Rly Bridge Mallow,' ca. 1.8km downstream of Firville Culvert in 1990.

Scarteen_18 is classified as 'Moderate' by the WFD in 2016-2021. This watercourse is 'At risk' of not reaching 'Good' water quality status by WFD by 2027.

[Castletownroche Bridge \(CC-N72-030.00\)](#)

Castletownroche Bridge is located over Awbeg (Buttevant) watercourse and is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_100.

Q-values detail the Awbeg (Buttevant) watercourse at the EPA sampling station at the location of the proposed works as being of 'Good' (Q4) ecological condition in 1990.

Awbeg (Buttevant) is classified as 'Good' by the WFD in 2016-2021. This watercourse is under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Fermoy Bridge \(CC-N72-030.90\)](#)

Fermoy Bridge is located over the Blackwater (Munster) River and is located in Hydrometric Area no. 18 – the Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_110.

Q-values detail the Blackwater (Munster) River as 'Good' (Q4) ecological condition at the EPA sampling station 'Fermoy Bridge (RHS),' ca. 87m downstream of Fermoy Bridge in 2015.

The Blackwater (Munster) River is classified as 'Good' by the WFD in 2016-2021. This watercourse is classified as 'Not at risk' of reaching 'Good' water quality status by the WFD by 2027.

5.5.1.2. Clare

[Bunrane Bridge \(CL-N67-001.00\)](#)

Bunrane Bridge is located over Tonahover watercourse and is located in Hydrometric Area no. 27 – the Shannon Estuary North catchment and the subcatchment Cloon(Clare)_SC_010.

There are no EPA Q-value results available for the Tonahover watercourse or in the vicinity of the proposed works.

The Tonahover_010 watercourse is classified as 'Moderate' by the WFD in 2016-2021. This watercourse is as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Kilkee Bridge \(CL-N67-008.00\)](#)

Kilkee Bridge is located over the Dough watercourse and is located in Hydrometric Area no. 27 – the Shannon Estuary North catchment and the subcatchment Doonah_SC_010.

There are no EPA Q-value results available for the Dough watercourse or in the vicinity of the proposed works.

The Dough watercourse is classified 'Moderate' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

5.5.1.3. Kerry

[Kilkneedan Bridge \(KY-N22-013.00\)](#)

Kilkneedan Bridge is located over the Leamnaguila watercourse and is located in Hydrometric Area no. 22 – the Laune-Maine Dingle Bay and the subcatchment Laune_SC_020.

Q-values detail the Gwestin River as 'Good' (Q4) ecological condition at the EPA sampling station 'Gwestin Bridge' ca. 2.7km downstream of the proposed works in 2022.

The Leamnaguila watercourse is classified 'Good' by the WFD in 2016-2021. This watercourse is classified as under 'Not at Risk' for not reaching 'Good' water quality status by the WFD by 2027.

[Woodford Bridge \(KY-N22-019.00\)](#)

Woodford Bridge is located over the Woodford Stream and is located in Hydrometric Area no. 22 – Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_020.

Q-values detail the Woodford Stream as 'Good' (Q4-5) ecological condition at the EPA sampling station 'Flesk(Kerry) -Bridge d/s Woodford River confluence' ca. 690m downstream of the proposed works in 1990.

The Woodford Stream is classified as 'Good' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Cloghane Culvert \(KY-N22-021.00\)](#)

Cloghane Culvert is located over the Ardteegalvan_22 watercourse and is located in Hydrometric Area no. 22 – Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_020.

Q-values detail the Flash (Kerry) River, which the Ardteegalvan_22 conjoins with, as being of 'Good' (Q4) ecological condition at an EPA sampling station 'Ford NE of Faghcullia,' ca. 4.2km downstream of the proposed works.

Ardteeglavan_22 stream is classified as 'High' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Curraglass Culvert \(KY-N22-025.00\)](#)

Curaglass Culvert is located over Rusheen_Beg watercourse and is located in Hydrometric Area no. 22– Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_020.

Q-values detail the Gortahoosh watercourse, which the Rusheen_Beg watercourse conjoins with, as being of 'Good' (Q4) ecological condition at an EPA sampling station 'Flesk (Kerry) – Flesk Bridge Gortahoosh' ca. 3.5km downstream of the proposed works in 2005.

Rushee_Beg watercourse is classified as 'High' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Poulgorm Bridge \(KY-N22-027.00\)](#)

Poulgorm Bridge is located over Flesk (Kerry) watercourse and is located in Hydrometric Area no. 22 – Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_010.

Q-values detail the Flesk (Kerry) watercourse as being of 'High' (Q5) ecological condition at the EPA sampling station 'Poulgorm Bridge' at the proposed works location in 2022.

Poulgorm Bridge is located directly between the 'Flesk (Kerry)_030' watercourse and the 'Flesk (Kerry)_040' watercourse. The Flesk (Kerry)_030 watercourse is classified as 'High' by the WFD in 2016-2021 directly upstream of the Flesk (Kerry)_040 watercourse is classified as 'High' status directly downstream of the bridge. The 'Flesk (Kerry)_030' watercourse is classified as 'Not at Risk' of not reaching 'Good' water quality status by the WFD by 2027 and the Flesk (Kerry)_040 is classified as 'At risk.'

[Corranmarree Bridge \(KY-N22-029\)](#)

Corranmarree Bridge is located over the Ford Currimeenavrick watercourse and is located in Hydrometric Area no. 22 – Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_010.

Q-values detail the Flash (Kerry) River, which the Ford Currimeenavrick conjoins with, as being of 'High' (Q5) ecological condition at the EPA sampling station 'Poulgorm Bridge' ca. 4.6km downstream of the proposed works in 2022.

Rushee_Beg watercourse is classified as 'High' (Q4) by the WFD in 2016-2021. This watercourse is classified as 'Not at Risk' of not reaching 'Good' water quality status by the WFD by 2027.

[Listowel Bridge \(KY-N69-017.00\)](#)

Listowel Bridge is located over the Feale River and is located in Hydrometric Area no. 23 – Tralee Bay Feale and the subcatchment Feale_SC_040.

Q-values detail the Feale River as being of 'Good' ecological condition at the EPA sampling station 'Listowel Bridge' at the proposed works site in 2020.

The Feale River is located directly between the Feale_080 watercourse and the Feale_090 watercourse. The Feal_080 watercourse is classified as 'Good' by the WFD in 2016-2021, directly upstream of the proposed works, and the Feale_090 watercourse is classified as 'Moderate' directly downstream of the proposed works. The Feale_080 is classified as 'Not at Risk' of not reaching 'Good' water quality status by the WFD by 2027 and the Feale_090 is classified as 'Not at risk' of not reaching 'Good' water quality status by the WFD by 2027 and the Feale_080 is classified as 'At risk.'

[Glenbeigh National School Bridge \(KY-N70-021.00\)](#)

Glenbeigh National School Bridge is located over Coolroe_Lower watercourse and is located in Hydrometric Area no. 22 - Laune-Maine-Dingle Bay and the subcatchment Caragh_SC_010.

Q-values detail the Behy (Kerry) River, which the Coolroe_Lower watercourse conjoins to, as being of 'High (Q4-5) ecological condition at an EPA Sampling station 'Behy (Kerry) -1.2km d/s of Glanbehy Bridge,' which is located ca. 1.3km downstream of the proposed works in 1990.

The Coolroe_Lower watercourse is classified as 'Moderate' by the WFD in 2016-2021. This watercourse is classified as 'At Risk' of not reaching 'Good' water quality status by the WFD by 2027.

[Waterville Bridge \(KY-N70-039.00\)](#)

Waterville Bridge is located over the Finglas (Waterville)_010 watercourse and is located in Hydrometric Area no. 21 – Dunmanus Bantry – Kenmare catchment and the subcatchment Finglasriver(Waterville)_SC_010.

There are no EPA Q-value results available for the Finglas (Waterville)_010 watercourse or in the vicinity of the proposed works.

The Finglas (Waterville)_010 watercourse is classified as 'Good' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Derreenamacken Bridge \(KY-N70-052.60\)](#)

Derreenamacken Bridge is located over the Blackwater (Kerry)_020 watercourse and is located in Hydrometric Area no. 21– Dunmanus Bantry – Kenmare catchment and the subcatchment Kealduff_SC_010.

There are no EPA Q-value results available for Blackwater (Kerry)_020 watercourse or in the vicinity of the proposed works.

The Blackwater (Kerry)_020 watercourse is classified as ‘Moderate’ by the WFD in 2016-2021. This watercourse is classified as under ‘Review’ for not reaching ‘Good’ water quality status by the WFD by 2027.

[Ardteegalvan Bridge \(KY-N72-006.00\)](#)

Ardteegalvan Bridge is located over the Flesk (Kerry)_050 watercourse and is located in Hydrometric Area no. 22 - Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_020.

Q-values detail the Flesk (Kerry) River as being of ‘Good’ (Q4) ecological condition at an EPA sampling station ‘Ford NE of Faghcullia’ ca.6.6km downstream of the proposed works in 2022.

The Flesk (Kerry)_050 watercourse is classified as ‘High’ by the WFD in 2016-2021. This watercourse is classified as under ‘Review’ for not reaching ‘Good’ water quality status by the WFD by 2027.

[Knockeennagowan Bridge \(KY-N72-007.00\)](#)

Knockeennagowan Bridge is located over the Knockanaroor River and is located in Hydrometric Area no. 22 - Laune-Maine-Dingle Bay and the subcatchment Flesk(Kerry)_SC_020.

Q-values detail the Flesk (Kerry) River as being of ‘Good’ (Q4) ecological condition at an EPA sampling station ‘Flesk (KERRY) – Flesk Bridge Gortahoosh’ ca. 4.8km downstream of the proposed works in 2005.

The Flesk (Kerry)_050 watercourse is classified as ‘High’ by the WFD in 2016-2021. This watercourse is classified as under ‘Review’ for not reaching ‘Good’ water quality status by the WFD by 2027.

[Gortanahaneboy West Bridge \(KY-N72-010.00\)](#)

Gortanahaneboy West Bridge is located over the Beheenagh_010 watercourse and is located in Hydrometric Area no. 22 - Laune-Maine-Dingle Bay and the subcatchment Quagmire_SC_010.

Q-values detail the Beehanagh_010 watercourse as being of ‘Good’ (Q4) ecological condition at an EPA sampling station ‘Bridge u/s Owneykeagh River confluence’ ca. 670m downstream of the proposed works in 2022.

The Beheenagh_010 watercourse is classified as ‘Moderate’ by the WFD in 2016-2021. This watercourse is classified as under ‘Review’ for not reaching ‘Good’ water quality status by the WFD by 2027.

[Cullavaw Bridge \(KY-N72-012.00\)](#)

Cullavaw Bridge is located over Cullavaw Stream and is located in Hydrometric Area no. 18 - Blackwater (Munster) catchment and the subcatchment Blackwater[Munster]_SC_010.

Q-values detail the Cullavaw Stream as being of ‘Good’ (Q4) ecological condition at an EPA sampling station ‘Cullavaw Stream – Cullavaw Bridge’ at the location of the proposed works in 1990.

The Cullavaw Stream is classified as ‘Moderate’ by the WFD in 2016-2021. This watercourse is classified as ‘At risk’ of not reaching ‘Good’ water quality status by the WFD by 2027.

[Blennerville Bridge \(KY-N86-001.00\) and Blennerville Bridge Relief Arch \(KY-N86-002.00\)](#)

Both Blennerville Bridge and Blennerville Bridge Relief Arch are located over the River Lee and are located in Hydrometric Area no. 23 – Tralee Bay-Feale and the subcatchment Lee(Tralee)_SC-010.

Q-values detail the River Lee, ca. 3.7km upstream from the proposed works, as being of 'Poor' (Q3) ecological condition at an EPA sampling station '2nd Bridge d/s of Ballymullen Mills' in 2020.

The River Lee, ca. 570m upstream of the proposed works, is classified as 'Moderate' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

[Enrights Bridge \(KY-N86-005.00\)](#)

Enrights Bridge is located over an undefined watercourse and is located in in Hydrometric Area no. 23 – Tralee Bay-Feale and the subcatchment Lee(Tralee)_SC-010.

There are no EPA Q-value results available for the watercourse or in the vicinity of the proposed works.

The watercourse is classified as 'Good' by the WFD in 2016-2021. This watercourse is classified as under 'Review' for not reaching 'Good' water quality status by the WFD by 2027.

5.5.1.4. Limerick

[Rincullia Bridge \(LC-N69.005.00\)](#)

Rincullia Bridge is located over the Ahacronane_020 watercourse and is located in Hydrometric Area no. 24 - Shannon Estuary South and the subcatchment Shanagolden[Stream]_SC_010.

Q-values detail Ahacronane watercourse as being of 'Poor' (Q3) ecological condition at an EPA sampling station 'Bridge SW of Barrigone' in 2020.

The Ahacronane is classified as 'Poor' by the WFD in 2016-2021. This watercourse is classified as 'At risk' of not reaching 'Good' water quality status by the WFD by 2027.

5.5.1.5. Tipperary South

[Canal Bridge \(TS-N24-006.00\)](#)

Canal Bridge is located over a canal which flows to the Suir River and is located in Hydrometric Area no. 16 – Suir catchment and the subcatchment Suir_SC_150.

Q-values detail the Suir River as being of 'Moderate' (Q3-4) ecological condition at an EPA sampling station 'Kilsheelan Bridge' ca. 4.4km downstream of the proposed works.

The Suir River is classified as 'Moderate' by the WFD in 2016-2021. This watercourse is classified as 'At Risk' of not reaching 'Good' water quality status by the WFD by 2027.

5.5.2. Otter

As discussed above a number of bridges are on rivers for which Otter is a qualifying interest. Table 5.4 presented the results of an assessment of the potential for otter holts to occur close to proposed bridge works. This was based on a review of a large number of photos of the bridge and its environs, including photographs of habitats / riverbanks at all four bridge corners.

5.5.3. Freshwater Pearl Mussel

The initial AA Screening exercise identified 29 structures required AA. 9 structures are not hydrologically connected to waters containing freshwater pearl mussel as a qualifying interest of the associated SAC and do not require a specialist survey to assist in assessing the proposed works. The remaining 20 structures are connected to SACs with freshwater pearl mussel as a qualifying interest and required specialist surveys to inform the assessment and development of mitigation measures.

Table 5.5 lists the bridges, pearl mussel data and the SAC for which the species is a QI. It should be noted that specialist surveys were not required for all these structures, based on the works proposed and knowledge gained through specialist surveys conducted in previous years.

Table 5.6 displays the results of freshwater pearl mussel surveys which were required to inform this Appropriate Assessment.

[Table 5.5 and 5.6 are to be treated as CONFIDENTIAL].

5.5.4. Vegetation

As noted, “Masonry bridges are a valuable habitat for a myriad of saxicolous vascular, bryophyte and lichen species”. These concerns have been noted and communicated to TII with a view to exploring how the need to protect saxicolous vascular, bryophyte and lichen species can be integrated into the need to protect a bridge from damage and structural deterioration.

From a review of bridge photographs very few structures supported significant growths of vegetation on the structure itself. It should be noted that these structures are subject to ongoing maintenance and so are not covered by large areas of vegetation. In cases where vegetation was present, the main species noted were moss, Ivy (*Hedera helix hibernica*), bramble (*Rubus fruticosus* agg.), polypody (*Polypodium* sp.), rustyback (*Ceterach officinarum*), ivy-leaved toadflax (*Cymbalaria muralis*), dandelion (*Taraxacum* agg.), grasses as well as trees such as ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*).

The only SAC in the Munster Region that has a qualifying interest that may constitute saxicolous vascular, bryophyte and lichen species and which would possibly grow on bridge structures is the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC (000365). Killarney Fern (*Trichomanes speciosum*) is a qualifying interest of the SAC and is present in eight hectads in the vicinity of Killarney, Muckross lake, Cloonaghlin lake and Lough Currane (NPWS, 2017; NBDC, 2021). Thus, as a precautionary measure, all masonry bridges located within the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC, where vegetation removal from the structure is proposed, will be subject to surveys prior to the commencement of works (please see Section 5.8 ‘Mitigation Measures’).

Masonry bridges located within the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC, where vegetation removal from the structure is proposed are: -

- KY-N22-019.00 - Woodford Bridge.
- KY-N22-027.00 - Poulgorm Bridge (A concrete bridge with masonry parapet).
- KY-N72-010.00 - Gortanahaneboy West Bridge.

Cloghane Culvert (KY-N22-021.00) is also located within the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC and vegetation removal is proposed for the bridge. However, this structure is a concrete box culvert.

A detailed review of photographs of the bridge surfaces was undertaken. Woodford Bridge is a concrete structure; apart from some mosses and ivy, there is no evidence of saxicolous vegetation (see Table 5.4; Plate 5.12).





Poulgorm Bridge is constructed from a mix of materials, include masonry parapet walls and metal railings; the bridge proper is made of large precast concrete sections sitting on concrete abutments; as well as areas of rock armour. Apart from some areas of moss, there is no evidence of saxicolous (see Table 5.4; Plate 5.15).

Gortanahaneboy West Bridge is a small single span masonry bridge. Bridge photos show no evidence of saxicolous vegetation growing on the structure (see Plate 5.23).




These structures do not provide the combination of very sheltered, very humid and low-light conditions required for this species to grow.




Table 5.4 Review of Structures with respect to Otter.




Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Duncannon Bridge (CC-N72-001.00)	Blackwater River (Cork/Waterford) SAC	Blackwater River (Cork/Waterford) SAC	Yes (2023)		No mention of otter in the bat survey report. Immediate environs of bridge sub-optimal location for an otter holt.
Ahane Bridge (CC-N72-004.00)	Blackwater River (Cork/Waterford) SAC	Blackwater River (Cork/Waterford) SAC	Yes (2023)		No mention of otter in the bat survey report. Immediate environs of bridge sub-optimal location for an otter holt.
Boland's Bridge (CC-N72-014.00)	Blackwater River (Cork/Waterford) SAC	Blackwater River (Cork/Waterford) SAC	No		Immediate environs of bridge sub-optimal location for an otter holt.




Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Lombardstown Bridge (CC-N72-015.00)	No	Blackwater River (Cork/Waterford) SAC ca. 35m d/s of bridge	Yes (2023)		An otter spraint was recorded on a ledge at the bridge. Habitat at the bridge location do not support any signs of a holt.
Firville Culvert (CC-N72-019.00)	No	Blackwater River (Cork/Waterford) SAC ca. 600m d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt.
Castletownroche Bridge (CC-N72-030.00)	Blackwater River (Cork/Waterford) SAC	Blackwater River (Cork/Waterford) SAC	Yes (2023)		No signs of otters were recorded in the vicinity of the bridge.
Fermoy Bridge (CC-N72-030.90)	Blackwater River (Cork/Waterford) SAC	Blackwater River (Cork/Waterford) SAC	Yes (2023)		No signs of otter were recorded in the vicinity of the bridge. Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Burrane Bridge (CL-N67-001.00)	Lower River Shannon SAC	Lower River Shannon SAC	No		Tidal waters downstream of bridge. Upstream bank and wall not suitable for otter holt near the bridge.
Cullavaw Bridge (KY-N72-012.00)	No	Blackwater River (Cork/Waterford) SAC ca. 1.5km d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt.
Kilneedan Bridge (KY-N22-013.00)	Castlemaine Harbour SAC	Castlemaine Harbour SAC	No		Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Glenbeigh National School Bridge (KY-N70-021.00)	No	Castlemaine Harbour SAC ca. 4km d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt.
Derreenamacken Bridge (KY-N70-052.60)	No	Kenmare River SAC ca. 150m d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt.
Woodford Bridge (KY-N22-019.00)	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	No		Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Cloghane Culvert (KY-N22-021.00)	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	No		Immediate environs of bridge sub-optimal location for an otter holt.
Poulgorm Bridge (KY-N22-027.00)	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	No		Immediate environs of bridge sub-optimal location for an otter holt.
Gortanahaneboy West Bridge (KY-N72-010.00)	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	No		Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Curraglass Bridge (KY-N22-025.00)	No	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC ca. 250m d/s of bridge	No		Immediate environs of bridge inferior location for an otter holt.
Corranmaree Bridge (KY-N22-029.00)	No	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC ca. 400m d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt.
Ardteegalvan Bridge (KY-N72-006.00)	No	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC ca. 2km d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
Knockeenagowan Bridge (KY-N72-007.00)	No	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC ca. 2.8km d/s of bridge	No		Immediate environs of bridge sub-optimal location for an otter holt. More cover is provided away from the bridge by hazel.
KY-N69-016.00. Listowel Bridge.	Lower River Shannon SAC	Lower River Shannon SAC	No		Immediate environs of bridge inferior location for an otter holt
LC-N69-005.00 Rincullia Bridge.	Lower River Shannon SAC	Lower River Shannon SAC	No		Immediate environs of bridge sub-optimal location for an otter holt


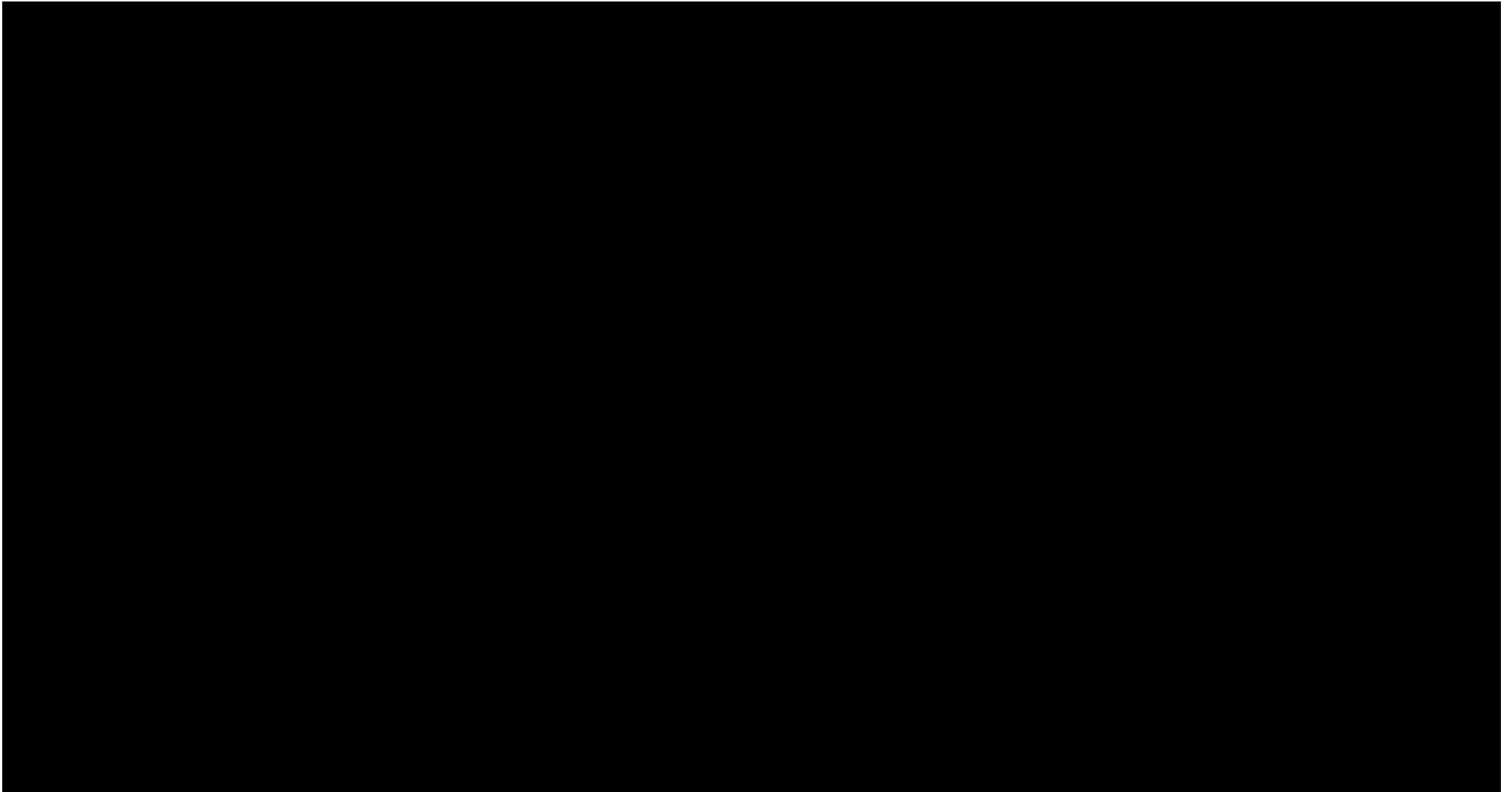
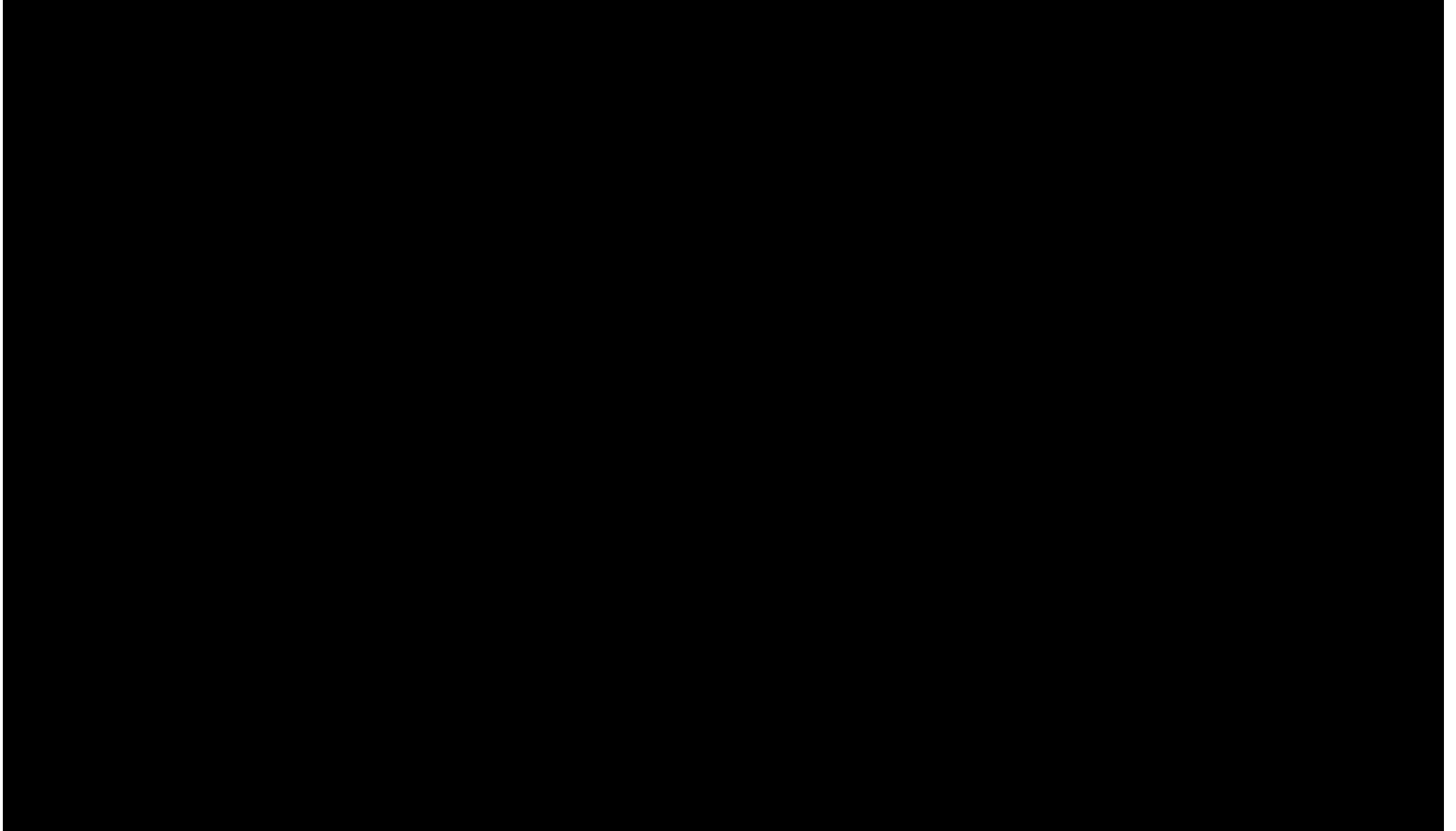
Structure ID	Within SAC where Otter is a QI	Hydrological link to SAC	Field Surveys undertaken by an Ecologist	Photo (showing both upstream & downstream)	Comment
TS-N24-006.00. Canal Bridge.	Lower River Suir SAC	Lower River Suir SAC	No		Immediate environs of bridge sub-optimal location for an otter holt

Table 5.5 Freshwater pearl mussel QIs downstream of bridges. **[CONFIDENTIAL]**





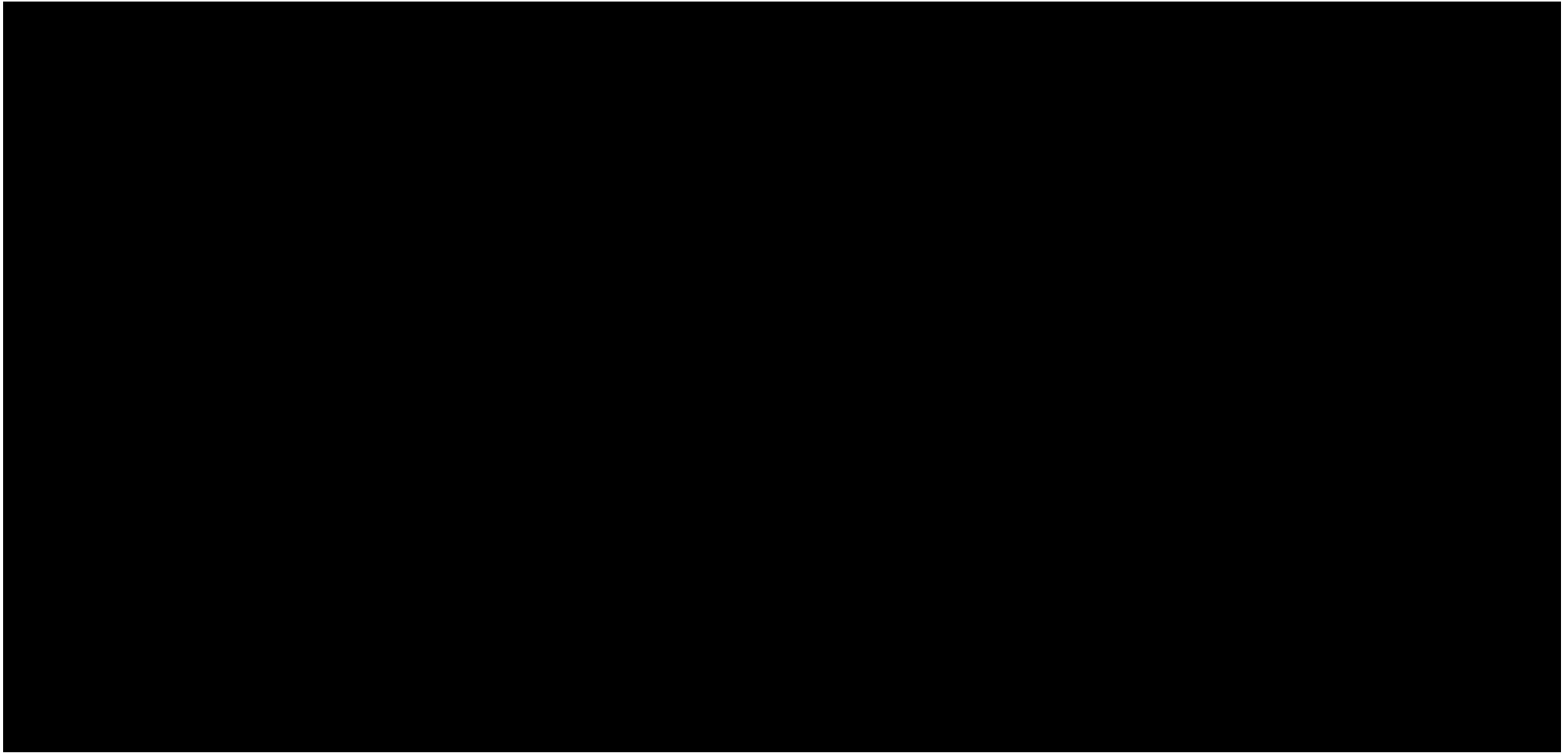
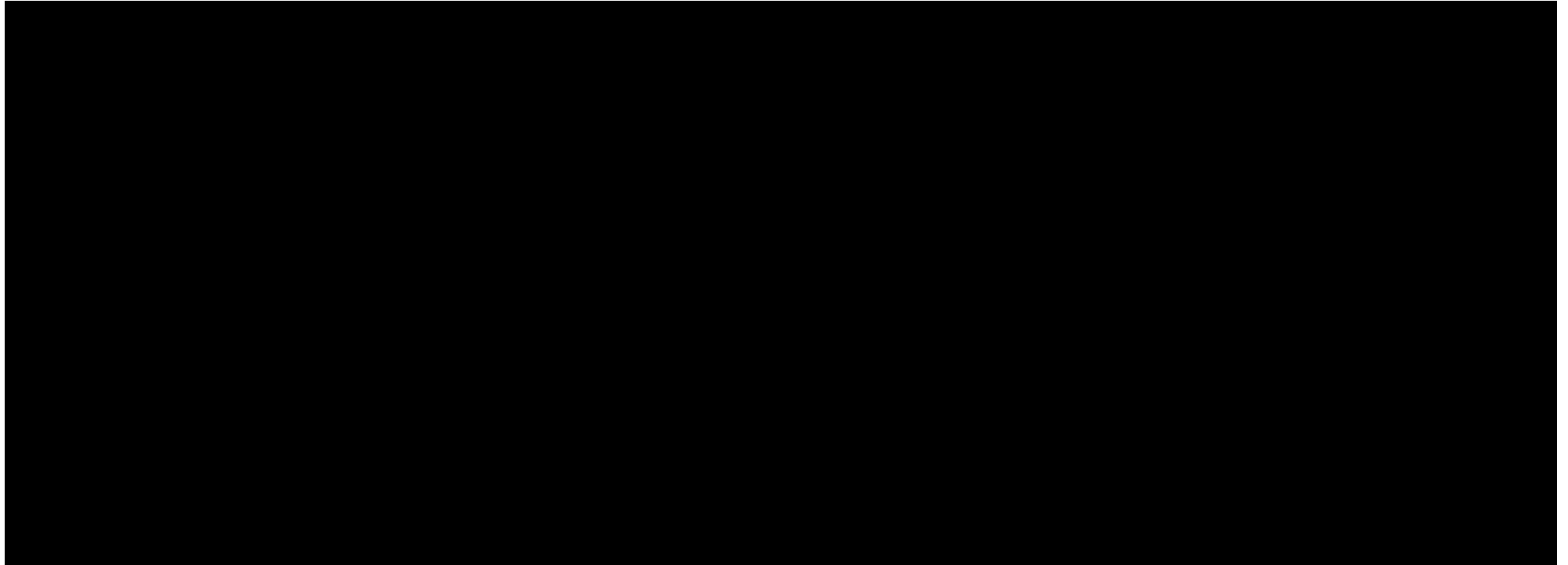


Table 5.6 Results of Freshwater Pearl Mussel Surveys 2023. [CONFIDENTIAL]



5.6. Identification of Potential Impacts on European sites

The available information on European sites was reviewed to establish whether or not the proposed works are likely to have a significant effect on the conservation objectives of the designated sites. The likelihood of impacts on the qualifying interests of the European sites identified in this report is based on information collated from the desk study, site plans and other available existing information.

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

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

- Direct impacts refer to impacts arising as a direct result of the works, such as physical disturbance of habitat, loss of habitat and direct mortalities of species.
- Indirect and secondary impacts do not have a straight-line route between cause and effect. It is potentially more challenging to ensure that all the possible indirect impacts of the project – in combination with other plans and projects - have been established. These can arise, for example, from works resulting in the deterioration of water quality of a waterbody, the introduction of invasive species within a European designated site, or the displacement of species through noise, vibration and increased activity associated with the works.

5.6.1. 'Do Nothing' Impact

The 'do nothing' impact would be not to carry out routine maintenance works on the bridge structures. This would result in no potential impacts being posed to ecological receptors.

5.6.2. Identification of potential impacts

5.6.2.1. Potential Impacts of proposed works

Impacts that could potentially occur as a result of the works can be categorised as follows: -

- Loss or modification of habitat
- Disturbance to key species
- Habitat or species fragmentation
- Reduction in species density
- Changes in key indicators of conservation value such as changes in water quality.

As described in Section 2 of this report, the purpose of the proposed works is to carry out routine maintenance works to keep the integrity of the structure in good condition. The proposed works are selected from the list of work items on the EIRSPAN database. The Work Orders are specific to each bridge, regarding the work items and quantities required. Thus, in terms of extent, the works are localised to each bridge and the duration is anticipated to vary from 1-2 hours over a number of visits or 1-2 days on a single visit to a bridge. As per the Contract, all instream works shall be conducted during the open fisheries season of July to September inclusive.

Loss or modification of habitat

Direct loss of habitat is caused where there is complete removal of a habitat type. Given the nature and extent of the proposed works, direct habitat loss will not occur as a result of the proposed works.

Habitat loss can also occur through the reduction of habitat quality and a loss of important habitat functions. The release and re-settling of suspended solids in a watercourse has the potential to indirectly affect instream habitat quality as it could modify the substrate composition of a riverbed or downstream instream habitats such as lake habitats (oligotrophic soft water lakes, soft water lakes with base rich influences, hard water lakes, natural eutrophic lakes). The works are not anticipated to introduce additional silts to the river; however, they may suspend silts accumulated upstream of and beneath obstructions such as fallen trees and gates, pallets or fencing across bridge arches. The scale of disturbance of accumulated silts as a result of the works is anticipated to be minor, however depending on the respective proximity and sensitivity of habitats and species to the works, uncertainty remains regarding the significance of the potential impact. Thus, the precautionary principle has been applied and this impact is considered further in this assessment.

Disturbance to key species

Key species are defined as those listed on the Annexes of the EU Habitats Directive and Birds Directive for which sites are designated. Disturbance to a species can be direct through the physical disturbance of that species, such as accessing the watercourse and erecting scaffolding where freshwater pearl mussel is present at the bridge or the repair and maintenance of embankment integrity.

Disturbance to a species can also be indirect. Sources of such disturbance could be increased levels of noise, vibration, light and presence of humans at a bridge during the works that could result in the displacement of species. However, given the location of these bridges on national roads, and the nature and duration of the works, the displacement of species from suitable habitat areas, e.g. wintering birds from feeding or roosting/breeding areas, is not anticipated to be significant.

Habitat / species fragmentation

Habitat and species fragmentation can occur through the disruption or loss of habitats that provide connectivity between existing ecological units. The proposed works will not result in the removal of habitats or linear landscape features such as hedgerows and treelines. Where vegetation is to be removed on the riverbank this is restricted to within 1m of the bridge structure under the Contract.

Rivers are corridors for the movement and migration of species. The nature of the proposed works is such that only localised de-watering will be required where necessary, e.g. repair of undermining to a pier or abutment.

The bridges that are single span at which scour repairs are called up are: -

- CC-N72-014.00
- KY-N70-021.00
- KY-N72-007.00
- KY-N22-029.00

The proposed works at these single span structures will involve localised dewatering. The works will not require the isolation of an entire channel to conduct works and therefore will not result in a barrier to the movement of species at these single span structures. Thus, impacts of habitat and species fragmentation are not anticipated.

Reduction in species diversity

Reduction in species density may result from a number of impacts discussed above. It may result from the loss and reduction of habitat area and type, disturbance, fragmentation or changes in the quality and functions of their supporting habitat.

As discussed above, the proposed works could potentially cause the modification of river substrates due to the disturbance and re-settling of accumulated silts upstream of and beneath obstructions in

the channel impeding flow, e.g., fallen trees. This impact could affect species such as freshwater pearl mussel, crayfish, salmon and lamprey and indirectly affect otter due to the biomass of their food source being affected.

Changes in water quality

The key indicators of conservation value for sites that could potentially be affected by the proposed works is the quality of surface waters. The works will not affect the hydrological regime of waterbodies that the bridges span or the waterbodies that have connectivity to the bridge site.

The works have the potential to impact upon the quality of surface waters through the disturbance of accumulated silts, runoff of waters resulting from power hosing, lime mortar and concrete used during masonry repointing and masonry and concrete repair. Although the release of any materials to a watercourse used during the works would be an accidental release of such materials, the scale of which is not likely to be significant, the precautionary principle has been applied and this potential impact is carried forward in this assessment.

5.6.3. Categorisation of EIRSPAN work types

Given the potential impacts described above, the EIRSPAN work types were categorised regarding their potential to give rise to negative impacts to a SAC and/or SPA.

Table 5.7 details the complete list of potential works that can be called up for each bridge component under the contract. Works that are contained to bridge components such as the Bridge Surface, Footways/median and Expansion Joints are contained in nature and thus, due to the nature of the works and the lack of pathway to a receptor, negative impacts are not anticipated as a result of these works.

The works identified as having potential for negative impacts (Table 5.7) are listed in the Work Orders of the bridges being considered in this assessment. Thus, the works called up for these bridges have the potential to have a negative impact on the receiving environment.

Table 5.7 Potential negative impacts of work items.

Work Item	Potential impacts	
	No negative impact anticipated	Potential for negative impact
01 Clearance of watercourse		X
02 Installation of rubbing strip	X	
03 Removal of vegetation		X
04 Scour repairs		X
05 Removal of signage	X	
10 Cleaning of expansions joints	X	
12 Sealing of pavement cracks	X	
14 Maintenance of joint	X	
15 Maintenance of kerb stones	X	
16 Patching of potholes	X	
20 Pavement remedial works	X	
21 Sweeping and cleaning	X	
22 Maintenance of surface	X	
30 Cleaning of drain gullies	X	
31 Cleaning of drip-tubes	X	
32 Establish drainage facility	X	
33 Establish drainage channel	X	
35 Maintenance of drainage channel	X	
44 Maintenance of gabion		X
45 Maintenance of slope protection		X
47 Reshaping (imported materials)		X
50 Concrete repairs		X
52 High-pressure hosing of surface		X
54 Maintenance of bedding mortar	X	
55 Repair of parapet		X
56 Establish base protection		X
57 Maintenance of base protection		X
58 Cleaning of bearings	X	
59 Removal of graffiti		X
60 Masonry repointing		X
61 Masonry repairs		X
70 Patch-painting of steel	X	
72 Replacement of guardrail	X	
74 Tightening of bolts	X	
80 Repair of lighting	X	
81 Maintenance of structure ID	X	

All of the work items listed in Table 5-7 above, which have been identified as having a potential to impact, are part of the Year 1 work order list. These works to have potential to negatively impact a SAC and/or SPA and are listed in Table 5-8.

Table 5.8 Work items identified in Year 1 of Term Maintenance Contract No. 4 works orders as having negative impacts to be considered further.

Work Item	Potential Impacts of proposed works
01 Clearance of watercourse	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
03 Removal of vegetation	Loss or modification of habitat Disturbance to key species Reduction in species diversity
04 Scour repairs	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
44 Maintenance of gabion	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
45 Maintenance of slope protection	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
47 Reshaping	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
50 Concrete repairs	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
52 High-pressure hosing of surface	Disturbance to key species Reduction in species diversity Changes in water quality
55 Repair of parapet	Disturbance to key species Reduction in species diversity Changes in water quality
56 Establish base protection	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
57 Maintenance of base protection	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality

Work Item	Potential Impacts of proposed works
59 Removal of graffiti	Disturbance to key species Changes in water quality
60 Masonry repointing	Disturbance to key species Changes in water quality
61 Masonry repairs	Disturbance to key species Changes in water quality

5.6.4. Potential impacts during the works

The above sections identify the potential impacts posed by the proposed works, which are summarised below:-

- Indirect modification of instream substrate quality and structure due to the disturbance of and re-settling of accumulated silts within a channel upstream of or beneath obstructions in a channel that impede flow e.g. fallen trees,
- Direct physical disturbance of aquatic species regarding access of personnel on foot, erection of scaffolding and instream works,
- Indirect reductions in species density, such as freshwater pearl mussel, crayfish, salmon, lamprey and otter, as a result of changes instream habitat quality (re-settling of disturbed silt accumulations) and/ or surface water quality,
- Impacts to surface water quality resulting from the disturbance of instream accumulated silts and the accidental release of work materials to a watercourse.

Table 5.9 below details the pathway, receptor and impact for each of the EIRSPAN work types called up in the Work Orders for the 29 bridges.

Table 5.10 details the potential impacts posed at a bridge and the QIs potentially affected. The geographic location of the bridge, proposed works, nature of connectivity to a European site, and the site’s structure, function and conservation objectives were considered when determining the potential impacts and QIs within the zone of influence (Zoi).

5.6.5. Freshwater pearl mussel considerations

The NPWS freshwater pearl mussel dataset and 2018/2019/2020 project survey data was examined for each bridge being considered in this assessment. The presence of freshwater pearl mussel both at a bridge and upstream and downstream of a bridge were reviewed in relation to the proposed works detailed in the Work Orders and the potential impact posed by those works. Relevant results are presented in Table 5.5. This lists the bridges, pearl mussel data and the SAC for which the species is a QI. Table 5.5 to be treated as CONFIDENTIAL]. [REDACTED]. The results for these surveys are summarised in Table 5.6 (this is also to be treated as confidential).

5.6.6. Otter

Otters have the potential to occur on most rivers in Ireland. The potential impacts on otters associated with bridge maintenance include disturbance and indirect impacts on prey availability. Disturbance can impact sensitive sites used by otters such as couches/holts or it can impact on movement within their territory. All bridges have been assessed for otter habitat suitability and signs of presence. This is summarised in Table 5.4. No evidence of any couches or holts were evident from the site images or from previous surveys. Prior to work at all bridges covered in this NIS the Contractor’s ecologist will survey 150m upstream and downstream of the bridge for signs of otters. As per TII guidance no works are to be carried out within 150m of a breeding holt and no wheeled or tracked vehicles should

be used with 20m of an active nonbreeding holt. As otters are mostly nocturnal the potential for interaction during the works is limited as they will be carried out during daylight hours, Due to this and the short duration of the works the potential for impact to otter during active periods is not considered to be significant. There will be no blockage to movement as it is not intended to completely block/dam any bridge. Water will either be locally diverted using sandbags or redirected to arches not being worked on.

The impacts to prey availability are related to potential release of silt or impacts on water quality. Mitigation measures have been included below to avoid adverse effects during instream or bankside works.

5.6.7. Potential impacts post completion of the works

The proposed works are to existing bridges on the national road network. The scope and nature of the proposed works are localised routine maintenance works to the structures. Thus, there shall be no alteration to the morphology or hydrological regime of the waterbodies in the vicinity of the bridges. The proposed works will not increase the usage of the riverbanks for agricultural or recreational purposes and there shall be no increased emissions to a watercourse post completion of the works. Therefore, direct and indirect impacts are not envisaged post completion of the works.

Table 5.9 Works categories, potential impacts and receptors.

Work Item	Pathway	Potential Impacts	Receptor
01 Clearance of watercourse	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
03 Removal of vegetation	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species) - Loss or modification of habitat	Annex II species
	Surface water	- Indirect reductions in species density - Indirect impacts to surface water quality (Disturbance to key species)	Surface water dependent Annex II species and Annex I habitats
04 Scour repairs	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
44 Maintenance of gabion	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species

Work Item	Pathway	Potential Impacts	Receptor
	Surface water	<ul style="list-style-type: none"> - Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality 	Surface water dependent Annex II species and Annex I habitats
45 Maintenance of slope protection	Land & Air	<ul style="list-style-type: none"> - Direct physical disturbance of aquatic species (Disturbance to key species) 	Annex II species
	Surface water	<ul style="list-style-type: none"> - Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality 	Surface water dependent Annex II species and Annex I habitats
47 Reshaping	Land & Air	<ul style="list-style-type: none"> - Direct physical disturbance of aquatic species (Disturbance to key species) 	Annex II species
	Surface water	<ul style="list-style-type: none"> - Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality 	Surface water dependent Annex II species and Annex I habitats
50 Concrete repairs	Land & Air	<ul style="list-style-type: none"> - Direct physical disturbance of aquatic species (Disturbance to key species) 	Annex II species
	Surface water	<ul style="list-style-type: none"> - Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality 	Surface water dependent Annex II species and Annex I habitats
52 High-pressure hosing of surface	Land & Air	<ul style="list-style-type: none"> - Direct physical disturbance of aquatic species (Disturbance to key species) 	Annex II species
	Surface water	<ul style="list-style-type: none"> - Indirect reductions in species density - Indirect impacts to surface water quality 	Surface water dependent Annex II species and Annex I habitats
55 Repair of parapet	Land & Air	<ul style="list-style-type: none"> - Direct physical disturbance of aquatic species (Disturbance to key species) 	Annex II species
	Surface water	<ul style="list-style-type: none"> - Indirect reductions in species density 	Surface water dependent Annex II

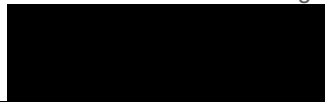
Work Item	Pathway	Potential Impacts	Receptor
		- Indirect impacts to surface water quality	species and Annex I habitats
56 Establish base protection	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
57 Maintenance of base protection	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
59 Removal of graffiti	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
60 Masonry repointing	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
61 Masonry repairs	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats

Table 5.10 Potential Impacts to European sites at each bridge.

County	Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration in surface water quality	QIs within ZoI (via direct or indirect impacts)	Rationale
Cork Co.	CC-N25-004.00	Killeagh River Bridge	No	No	Yes	Yes	Estuaries, Mudflats and sandflats, Salicornia, Salt meadows. Wetlands and Waterbirds.	Potential indirect impacts. Ballymacoda (Clonpriest and Pillmore) SAC ca. 7.2km d/s of bridge. Ballymacoda SPA ca. 6.5km d/s of bridge.
Cork Co.	CC-N72-001.00	Duncannon Bridge	Yes	Yes	Yes	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential direct/indirect impacts. Within Blackwater River (Cork/Waterford) SAC. Blackwater Callows SPA >70km d/s of bridge
Cork Co.	CC-N72-004.00	Ahane Bridge	Yes	Yes	No	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential direct/indirect impacts. Within Blackwater River (Cork/Waterford) SAC.
Cork Co.	CC-N72-014.00	Boland's Bridge	Yes	Yes	Yes	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential direct/indirect impacts. Within Blackwater River (Cork/Waterford) SAC.
Cork Co.	CC-N72-015.00	Lombardstown Bridge	Yes	Yes	No	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential direct/indirect impacts. Blackwater River (Cork/Waterford) SAC ca. 35m d/s of bridge
Cork Co.	CC-N72-019.00	Firville Culvert	Yes	No	Yes	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential indirect impacts. Blackwater River (Cork/Waterford) SAC ca. 600m d/s of bridge
Cork Co.	CC-N72-030.00	Castletownroche Bridge	Yes	Yes	Yes	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential direct/indirect impacts. Within Blackwater River (Cork/Waterford) SAC
Cork Co.	CC-N72-030.90	Fermoy Bridge	Yes	Yes	Yes	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter; Wetland SCIs of SPA	Potential direct/indirect impacts. Within Blackwater River (Cork/Waterford) SAC. Blackwater Callows SPA ca. 1.6km d/s of bridge.

County	Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration in surface water quality	QIs within ZoI (via direct or indirect impacts)	Rationale
Clare	CL-N67-001.00	Burrane Bridge	Yes	Yes	Yes	Yes	Estuaries; Mudflats and sandflats; Large shallow inlets and bays; Reefs; Water courses of plain to montane levels; Floating river vegetation; FWPM; Lamprey, Salmon; Dolphin; Otter; Wetland SCIs of SPA	Potential direct/indirect impacts. Within Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA ca. 0.07km d/s of bridge
Clare	CL-N67-008.00	Kilkee Bridge	No	No	Yes	Yes	Inlets and bays; Reefs; Sea caves	Potential indirect impacts. Kilkee Reefs SAC ca. 200m d/s of bridge
Kerry	KY-N22-013.00	Kilkneedan Bridge	Yes	Yes	Yes	Yes	Estuaries; Mudflats and sandflats; Annual and perennial vegetation; Sea cliffs; Salicornia; Salt meadows; Floating River vegetation; Lamprey; Salmon; Otter; Petalwort	Potential direct/indirect impacts. Within Castlemaine Harbour SAC. Castlemaine Harbour SPA greater than 30km d/s of bridge
Kerry	KY-N22-019.00	Woodford Bridge	Yes	Yes	Yes	Yes	Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug; Merlin; Greenland White-fronted Goose	Potential direct/indirect impacts. Within Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Killarney National Park SPA ca. 5.2km d/s of bridge
Kerry	KY-N22-021.00	Cloghane Culvert	Yes	Yes	Yes	Yes	Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug	Potential direct/indirect impacts. Within Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Killarney National Park SPA ca. 11.8km d/s of bridge
Kerry	KY-N22-025.00	Curraglass Culvert	Yes	No	Yes	Yes	Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon,	Potential indirect impacts. Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment

County	Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration in surface water quality	QIs within ZoI (via direct or indirect impacts)	Rationale
							Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug	SAC ca. 250m d/s of bridge. Killarney National Park SPA ca. 16km d/s of bridge.
Kerry	KY-N22-027.00	Poulgorm Bridge	Yes	Yes	Yes	Yes	Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; Kerry slug; FWPM; Lamprey; Salmon; Otter; Killarney Shad, Killarney Fern, Kerry slug	Potential direct/indirect impacts. Within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Killarney National Park SPA ca. 24.2km d/s of bridge
Kerry	KY-N22-029.00	Corranmaree Bridge	Yes	No	Yes	Yes	Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; FWPM; Lamprey; Salmon; Otter; Killarney Shad	Potential indirect impacts. Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC ca. 400m d/s of bridge. Killarney National Park SPA greater than 30km d/s of bridge
Kerry	KY-N69-017.00	Listowel Bridge	Yes	Yes	Yes	Yes	Estuaries; Large shallow inlets and bays; Reefs; Water courses of plain to montane levels; Floating river vegetation; FWPM; Lamprey, Salmon; Dolphin; Otter;	Potential direct/indirect impacts. Within Lower River Shannon SAC
Kerry	KY-N70-021.00	Glenbeigh National School Bridge	Yes	No	Yes	Yes	Estuaries; Annual and perennial vegetation; Sea cliffs; Salicornia; Floating River vegetation; Lamprey; Salmon; Otter; Mediterranean salt meadows	Potential indirect impacts. Castlemaine Harbour SAC ca. 4km d/s of bridge. Castlemaine Harbour SPA ca. 4km d/s of bridge.
Kerry	KY-N70-039.00	Waterville Bridge	Yes	Yes	Yes	Yes	Atlantic salt meadows; Mediterranean salt meadows; Petalwort	Potential direct/indirect impacts. Within Ballinskelligs Bay And Inny Estuary SAC

County	Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration in surface water quality	QIs within ZoI (via direct or indirect impacts)	Rationale
Kerry	KY-N70-052.60	Derreenamacken Bridge	Yes	Yes	Yes	Yes	Kenmare River SAC: Large shallow inlets and bays; Reefs; Otter; Harbour Seal; Lesser Horseshoe Bat Blackwater River SAC: Lesser Horseshoe Bat	Potential indirect impacts. Kenmare River SAC ca. 150m d/s of bridge & Blackwater River (Kerry) SAC 1.2km east of the bridge 
Kerry	KY-N72-006.00	Ardteegalvan Bridge	Yes	No	Yes	Yes	Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; FWPM; Lamprey; Salmon; Otter; Killarney Shad	Potential indirect impacts. Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC ca. 2km d/s of bridge. Killarney National Park SPA ca. 15km d/s of bridge
Kerry	KY-N72-007.00	Knockeennagowan Bridge	Yes	No	Yes	Yes	Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; FWPM; Lamprey; Salmon; Otter; Killarney Shad	Potential direct/indirect impacts. Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC ca. 2.8km d/s of bridge. Killarney National Park SPA ca. 17km d/s of bridge.
Kerry	KY-N72-010.00	Gortanahaneboy West Bridge	Yes	Yes	Yes	Yes	Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; Kerry slug; FWPM; Lamprey; Salmon; Otter; Killarney Shad, Killarney Fern, Kerry slug	Potential direct/indirect impacts. Within Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Killarney National Park SPA greater than 20km d/s of bridge.
Kerry	KY-N72-012.00	Cullavaw Bridge	Yes	No	Yes	Yes	Floating river vegetation; FWPM; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential indirect impacts. Blackwater River (Cork/Waterford) SAC ca. 1.5km d/s of bridge

County	Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration in surface water quality	QIs within ZoI (via direct or indirect impacts)	Rationale
Kerry	KY-N86-001.00	Blennerville Bridge	Yes	Yes	Yes	Yes	Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Floating river vegetation; Otter; Petalwort; Wetlands and SCIs of SPA	Potential direct/indirect impacts. Within Tralee Bay And Magharees Peninsula, West To Cloghane SAC. Within Tralee Bay Complex SPA.
Kerry	KY-N86-002.00	Blennerville Bridge Relief Arch	Yes	Yes	Yes	Yes	Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Floating river vegetation; Otter; Petalwort; Wetlands and SCIs of SPA	Potential direct/indirect impacts. Within Tralee Bay And Magharees Peninsula, West To Cloghane SAC. Within Tralee Bay Complex SPA.
Kerry	KY-N86-005.00	Enrights Bridge	Yes	Yes	Yes	Yes	Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Floating river vegetation; Otter; Petalwort; Wetlands and SCIs of SPA	Potential direct/indirect impacts. Within Tralee Bay And Magharees Peninsula, West To Cloghane SAC. Tralee Bay Complex SPA ca. 0.1km d/s of bridge
Limerick	LC-N69-005.00	Rincullia Bridge	Yes	Yes	Yes	Yes	Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Water courses of plain to montane level; Floating river vegetation; Freshwater pearl mussel; Lamprey; Salmon; Dolphin; Otter; Wetlands and SCIs of SPA	Potential direct/indirect impacts. Lower River Shannon SAC immediately d/s of bridge. River Shannon and River Fergus Estuaries SPA ca. 300m d/s of bridge
Tipperary South	TS-N24-006.00	Canal Bridge	Yes	Yes	Yes	Yes	Floating river vegetation; White-clawed Crayfish; Lamprey; Salmon; Otter	Potential direct/indirect impacts. Within Lower River Suir SAC

5.7. In-combination Impacts

Local Authorities prepare County and Development Plans and Local Action Plans that set out policies and objectives for the development of the County during the period of the Plan. The Plans seek to secure the sustainable development and improvement of economic, environmental, cultural and social assets of the counties. These Plans undergo Appropriate Assessment, for which a Natura Impact Report (NIR) was prepared for the Plans of the counties in the Munster Region. The findings of the NIR were integrated into the Plans, ensuring that potential impacts were avoided, reduced or offset. Thus, an AA determination was made by the Local Authorities that the Plans would not adversely affect the integrity of European sites due to the incorporation of mitigation measures built into the Plans as a result of the AA process.

The Office of Public Works (OPW) has 16 arterial drainage and embankment schemes in the Munster Region. A number of bridges are located within the same WFD catchment as the schemes but do not have hydrologically connectivity with the schemes²². Three bridges fall either within or are located upstream of a scheme. The OPW has carried out a Strategic Environmental Assessment and NIS of the drainage maintenance activities for 2022-2027 (JBA, 2022). Maintenance activities will have to under-go the AA process to ensure no adverse impacts to European sites and their designated habitats and species. Mitigation measures are set out in the SEA and NIS (JBA, 2022), which require further project-specific assessments to be carried out. Thus, given the nature and scale of the proposed routine maintenance bridge works, in-combination impacts with the OPW drainage programme are not anticipated.

Table 5.11 Bridges within / upstream of an OPW works scheme.

Bridge Code	Location relative to OPW scheme	OPW scheme (County)
KY-N69-017.00	On upper end of drainage scheme	Feale (Kerry)
LC-N69-005.00	Upstream of drainage channel	Ringmoylan Foynes (Limerick)
CC-N25-004.00	Upstream of drainage channel	Womanagh (Cork)

Farmers and landowners may also undertake general agricultural operations in areas adjacent to the proposed work areas at each bridge, which could potentially give rise to impacts of a similar nature to those arising from the proposed works. This could potentially result in an additional increased risk to water quality of the watercourses downstream of the bridges. Many agricultural operations are periodic, not continuous in nature, and qualify as a Notifiable Action that requires consultation with National Parks and Wildlife Service in advance of the works e.g. reclamation, infilling or land drainage within 30m of the river, removal of trees or any aquatic vegetation within 30m of the river, and harvesting or burning of reed or willow²³. Agricultural operations must also comply with the EC (Environmental Impact Assessment) (Agriculture) Regulations 2011 and amendment 2017 S.I. No. 456/2011 and 407/2017 in relation to activities covered by the regulations: -

- Restructuring of rural land holdings,
- Commencing use of uncultivated land or semi-natural areas,
- Land drainage works on lands used for agriculture.

A Natura Impact Statement is required under Regulation 9 if it is likely to have a significant effect on a European designated site. The drainage or reclamation of wetlands is controlled under the Planning and Development (Amendment) (No. 2) Regulations 2011 and the European Communities (Amendment to Planning and Development) Regulations 2011. Therefore, the in-combination effects of agricultural operations and the proposed culvert works are not likely to be significant.

Projects that have been granted planning permission in the vicinity of the structures in this assessment are located along the adjacent national and local roads. These generally include retention of existing developments, extensions to domestic dwellings, or the construction of new domestic dwellings or extensions to such dwellings. Regarding potential impacts to water quality, these projects will have to comply with the EPA's Code of Practice

²² OPW data on drainage schemes etc. was downloaded from - <https://data.gov.ie/organization/office-of-public-works>

²³ Notifiable Actions <https://www.npws.ie/farmers-and-landowners/notifiable-actions>

for Wastewater Treatment Systems for Single Houses (EPA, 2009; 2018) and abide by any conditions of the planning consent. [see [MyPlan.ie](https://www.tii.ie)].

A number of road schemes are proposed in the Munster Region²⁴. Examples of such infrastructure projects are listed below. These road projects are all at different stages of design and procurement. These projects will be or would have been subject to Screening for AA, at a minimum. However, as the proposed bridge maintenance works will be carried out during 2024, and due to their scale and temporary nature, in-combination impacts are not anticipated.

Table 5.12 TII Road Schemes in the Munster Region.

Road Scheme	Region	Phase
N22 Farranfore to Killarney	South West	Phase 2 - Options Selection
N69 Listowel Bypass	South West	Phase 6 – Construction. Due for completion in Q2 2024.
N86 Tralee to An Daingean	South West	Phase 6 – Construction. This major scheme is being advanced through Phase 6 construction as number of minor schemes. Two contracts have been completed and the third section from Ballinclare to Annascaul, which includes upgrade works through Annascaul Village, reached substantial completion in Aug/Sep 2023 – Contract documents are currently being prepared for the next of this scheme.
N70 Sneem to Blackwater Bridge	Southwest	Phase 5. Some advance site clearance works and fencing works has taken place. Some GI work is to be completed before the end of 2023.
N25 Middleton to Youghal	South West	Phase 1 – Scope and Pre Appraisal. Anticipated that Phase 1 will be completed in 2023, with Phase 2 to start in Q1 2023.
N22 Baile Bhúirne Macroom	South West	Phase 6 – Construction. Substantial Completion of the westernmost 8km anticipated 06 th November 2023 with maintenance responsibility to be handed over to the MMarC. Remainder of the scheme already open.

²⁴ <https://www.tii.ie/projects/road-schemes/>

5.8. Mitigation Measures

The following section gives a summary of each bridge, the works proposed and outlines mitigation measures for work elements in order to avoid adverse effects on the integrity of a European site.

5.8.1. Cork County

5.8.1.1. Killeagh River Bridge (CC-N25-004.00)

Killeagh River Bridge is a 3-span masonry arch bridge over the Dissour River. Each span is 4.8m of arch barrel which comprises concrete, the rest is stone masonry. Ballymacoda (Clonpriest and Pillmore) SAC is ca. 7.2km downstream of bridge. Ballymacoda Bay SPA ca. 6.5km downstream of bridge. Plate 5.1 shows Killeagh Bridge.



Plate 5.1 Killeagh River Bridge.

The qualifying interests of Ballymacoda (Clonpriest and Pillmore) SAC are listed in Section 5.2. The qualifying interests for Ballymacoda SPA are listed in Section 5.3. The qualifying interests that could be impacted are Estuaries, Mudflats and sandflats, Salicornia, Salt meadows and Wetlands and SCIs of the SPA. The potential indirect impacts to the SAC and SPA are the reduction in species density and deterioration of surface water quality. Japanese Knotweed (*Fallopia japonica*) was previously recorded (TII, 2016-2018) on both banks of the river <50m downstream of the bridge. Biosecurity measures, as outlined in Section 2.1.2, will be followed during the proposed works.

Proposed Works

The proposed works at this bridge are detailed in Table 5.13 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.13 Killeagh River Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Clearance of debris downstream of the structure (old harris fencing panel) (6m ²).	Screened out. Clearance of debris to be done manually. Biosecurity measures to be followed.
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. (20m ²).	Screened out. Vegetation is not QI of the SAC.
Parapet/ Safety barrier	Vegetation removal from the masonry parapets to both the internal and external faces. Works located over the embankments and access ramps. (3m ²)	Screened out. Vegetation is not QI of the SAC.
Wing/Spandrel/Retaining Walls	Removal of vegetation from spandrel walls and along stringer course on both elevations. Works located over the watercourse. (6m ²)	Screened out. Vegetation is not QI of the SAC.
Riverbed	Concrete repairs to damaged apron at downstream of both piers. Repair depth up to 100mm over 4m ² (4m ²)	Screened in. Significant in-stream concrete works are required to repair damaged apron.
Bridge surface	Clean 2no. drain gullies. (2 no)	Screened out. Works restricted to bridge deck – no power hosing permitted.
Parapet/ Safety barrier	Repointing to open joints following vegetation removal. Works located over land. (4m ²)	Screened out. Works located over land.

Mitigation Measures

Concrete repairs to riverbed

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works.

Where a dry working area is required, this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor’s ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to have a silt sock attached and be within a dedicated settlement area to prevent the discharge of silt-laden and/or highly alkaline water back into the watercourse. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor’s ecologist will advise on whether electrofishing is required to remove fish from within the area to be dewatered. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing

activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Dissour River, Ballymacoda (Clonpriest and Pilmore) SAC or Ballymacoda SPA.

5.8.1.2. Duncannon Bridge (CC-N72-001.00)

The Duncannon Bridge is a 3-span masonry arch bridge with masonry parapets carrying N72 over the River Blackwater. Each span is 9.1m and the rise of arch barrel at crown is 1.77m. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5.2 shows the north elevation.



Plate 5.2 Duncannon Bridge.

The qualifying interests of the River Blackwater within the Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation, freshwater pearl mussel, white-clawed crayfish, lamprey, salmon, otter. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.



Freshwater Pearl Mussel is a qualifying interest of the Blackwater River (Cork/ Waterford) SAC. During the 2023 survey, no signs of otter were recorded.

Proposed Works

The proposed works at this bridge are detailed in Table 5.14 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.14 Duncannon Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Removal of debris caught at pier cutwaters. (5m ²)	Screened in. Instream works required – sensitive aquatic QI of SAC within Zol.
Parapet/ Safety barrier	Vegetation removal from both parapets at the inner face and copings. (3m ²)	Screened out. Vegetation is not QI of the SAC.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip northeast, and to southern embankments. (30m ²)	Screened out. Vegetation is not QI of the SAC.
Wing/Spandrel/Retaining Walls	Localised areas of vegetation to be cleared during RM. Works over land. (3m ²)	Screened out. Vegetation is not QI of the SAC.
Parapet/Safety barrier	Masonry repointing to both parapets at the inner face and copings, including the cracks at the east side of the south parapet. (4m ²)	Screened out. Works over land after vegetation removal.
Wing/Spandrel/Retaining Walls	Minor masonry repointing following vegetation removal. Works over land. (2m ²)	Screened out. Works over land after vegetation removal.
Abutments	Minor masonry repointing required at both abutments. (1m ²)	Screened out. Works over land after vegetation removal.
Piers	Minor areas of masonry repointing required. (1m ²)	Screened in. Masonry works over water.
Deck/slab/arch barrel	Masonry repointing to the open joints throughout arch barrels, mainly at edges. (20m ²)	Screened in. Masonry works over water.

Mitigation Measures

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

For large areas of debris removal, such as fallen trees, any plant or machinery used in the removal process shall not be permitted to enter the watercourse. In such cases where there is a risk that large areas of silt have accumulated behind an obstruction, which could be released by its removal, these must be considered on a case by case basis and advice of the Contractor’s ecologist must be sought. Where there is a risk of significant silt release, which would result in a plume similar to that of Category 3 ‘A Lot of visible Silt’ (NS2, 2009), appropriate measures to contain such silt, such as the installation of a floating silt curtain, shall be placed downstream of the works area prior to the commencement of works.

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment, e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse

in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.1.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Masonry Repointing

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders, and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

Where a dry working area is required this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor's ecologist.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the River Blackwater or the Blackwater River (Cork/Waterford) SAC.

5.8.1.3. Ahane Bridge (CC-N72-004.00)

Ahane Bridge is a double span masonry arch bridge with a concrete slab secondary structure with an overall length of 19.5m. There are spalled concrete parapet walls along the carriageway. The bridge carries the N72 over the Owentaraglin River within the Blackwater River (Cork/Waterford) SAC. Plate 5.3 displays the north elevation.



Plate 5.3 Ahane Bridge

The qualifying interests of the Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation, freshwater pearl mussel, white-clawed crayfish, lamprey, salmon, otter. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, physical disturbance of species and deterioration of surface water quality.

[REDACTED] During the 2023 survey, no signs of otter were recorded.

Proposed Works

The proposed works at this bridge are detailed in Table 5.15 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.15 Ahane Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapet/ Safety barrier	Removal of vegetation from localised areas of parapets. Both faces, works over water. (2m ²)	Screened out. Vegetation is not QI of the SAC.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments. Masonry debris to be cleared. (28m ²)	Screened out. Vegetation is not QI of the SAC.
Wing/Spandrel/Retaining Walls	Remove Ivy for Southwest wing wall. (2m ²)	Screened out. Vegetation is not QI of the SAC.
Abutments	Masonry repointing to localised open joints to both parapets. (2m ²)	Screened out. Works over land.

Bridge Component	Work Element	Screening Recommendation
Piers	Masonry repointing to localised open joints to both piers. (2m ²)	Screened in. Extent of masonry works and access to riverbed within SAC.
Deck/slab/arch barrel	Masonry repointing to local areas of missing joints throughout the arch barrels and to circumferential crack at north end. (20m ²)	Screened in. Extent of masonry works and access to riverbed within SAC.
Piers	Masonry repair to missing stone at north pier cutwater. (0.2m ³)	Screened in. Extent of masonry works and access to riverbed within SAC.
Parapet/Safety barrier	Cracking to the roadside faces of both parapets. (0.3m ²)	Screened out. Works over land.

Mitigation Measures

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Owentaraglin River or the Blackwater River (Cork/Waterford) SAC.

5.8.1.4. Boland's Bridge (CC-N72-014.00)

The Boland's Bridge is a single span masonry arch bridge with in-situ reinforced concrete extension. The original arch barrel has a span of 1.2m. The concrete slab extension has a clear span of 1.258m and measures 2.25m to the barrel of the slab. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5.4 shows the concrete section at north side. As can be seen in Plate 5.4 the stream is small in scale with limited flow. Works will be undertaken during the summer months when river flows are at their lowest.



Plate 5.4 Boland's Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; freshwater pearl mussel; white-clawed crayfish; lamprey; salmon; otter. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.16 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.16 Boland's Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Repair to scour at south side of structure where erosion is evident. (8m ²)	Screened in. Instream works within SAC.

Bridge Component	Work Element	Screening Recommendation
Embankments/ Revetments	Removal of vegetation to embankments. 1m wide strip at each side of the bridge. (40m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/ Revetments	Reshaping of the northeast, northwest and southeast embankments with suitable imported material. Erosion to north embankments below drainage pipes. Installation of rock armour at southeast embankment. (12m ³)	Screened out. Works over land with imported material.
Parapet/Safety barrier	Repair to concrete fence at NE side of structure. Settlement caused by erosion to embankment. (2m)	Screened out. Works over land.

Mitigation Measures

Scour Repairs

All scour protection works will be done in the dry by placing and compacting mass concrete in any scour void less than 300mm depth and 300mm width provided immediately in front of the affected area over a length and width specified in the Work Order for that bridge. As can be seen in Plate 5.4, the stream is small in scale and supports low flows. Furthermore, works will be undertaken during the summer months when river flows will be low. It will be necessary to divert the river around the works are in order that the scour void can be filled in the dry. This in turn will prevent any concrete or cementitious product from entering the watercourse.

A dry working environment will be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. However, due to the very low water levels this may not be required. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Blackwater River (Cork/Waterford) SAC.

5.8.1.5. Lombardstown Bridge (CC-N72-015.00)

Lombardstown Bridge consists of a masonry arch structure with a large concrete deck extension to the upstream elevation. There are low concrete parapet walls on both sides behind crash barriers. Plate 5.5 shows Lombardstown Bridge. Blackwater River (Cork/Waterford) SAC located ca. 35m downstream of bridge.



Plate 5.5 Lombardstown Bridge under the arch.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; freshwater pearl mussel; white-clawed crayfish; lamprey; salmon; otter. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided. An otter spraint was recorded on a ledge at the bridge during the 2023 survey.

Proposed Works

The proposed works at this bridge are detailed in Table 5.17 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.17 Lombardstown Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapet/Safety barrier	Moss removal from the south parapet. (10m ²)	Screened out. Moss/vegetation to be removed is not a QI.
Embankments/Revetments	Removal of vegetation, 1m wide strip to embankments at each side of the bridge. (80m ²)	Screened out. Vegetation to be removed is not a QI.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Moss removal from the area at the top of the south spandrel wall. (2m ²)	Screened out. Moss/vegetation to be removed is not a QI.
Bridge surface	Remove vegetation from drainage holes at the south elevation. (2 no)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Masonry repointing to wing walls at south side of structure. Works over embankments. (2m ²)	Screened out. Works over land.
Abutments	Masonry repointing to open joints at the south side of the masonry abutments. (2m ²)	Screened out. Works over land.
Deck/slab/arch barrel	Masonry repointing to open joints at south side of the arch barrel. (4m ²)	Screened in. Masonry repointing over water.

Mitigation Measures

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Pre-construction Otter survey

A pre-construction survey for otter will be carried out upstream and downstream of the culvert within one month of commencement of works on site.

In accordance with the NRA guidelines, the following guidelines shall be followed: -

- No physical damage or disturbance to an otter holt shall occur.
- No works shall be undertaken within 150m of any holt at which breeding females or cubs are present.
- No wheeled or tracked vehicles should be used within 20m of an active non-breeding holt.

If an otter holt is recorded during the pre-construction survey and is likely to be damaged or disturbed by the proposed works, a derogation licence will be applied for from NPWS. Any further mitigation measures required by the derogation licence shall be implemented.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Blackwater River (Cork/Waterford) SAC.

5.8.1.6. Firville Culvert (CC-N72-019.00)

The structure is a 2-span masonry structure with masonry parapets. The maximum span is 1.17m and the minimum span is 0.67m. The structure is located over the Scarteen watercourse ca. 600m upstream of the Blackwater River (Cork/Waterford) SAC. Plate 5.6 shows the north side.



Plate 5.6 **Firville Culvert.**

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; freshwater pearl mussel; white-clawed crayfish; lamprey; salmon; otter. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

[REDACTED] . However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.18 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.18 Firville Culvert: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Clearance of watercourse at the north side of the structure to remove blockage. (4m ²)	Screened in. Instream works required in aquatic QI sensitive waters.
Embankments/Revetments	Removal of vegetation to embankments, 10m ² to northern embankment and 30m ² of vegetation clearance to south side of the structure. Debris should be cleared from embankments. (40m ²)	Screened out. Vegetation to be removed is not a QI.
Other elements	There is a concrete curtain wall located 5m North of the structure with evidence of spalled concrete. (0.2m ²)	Screened out. Works over land.

Mitigation Measures

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

For large areas of debris removal, such as fallen trees, any plant or machinery used in the removal process shall not be permitted to enter the watercourse. In such cases where there is a risk that large areas of silt have accumulated behind an obstruction, which could be released by its removal, these must be considered on a case by case basis and advice of the Contractor's ecologist must be sought. Where there is a risk of significant silt release, which would result in a plume similar to that of Category 3 'A Lot of visible Silt' (NS2, 2009), appropriate measures to contain such silt, such as the installation of a floating silt curtain, shall be placed downstream of the works area prior to the commencement of works.

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment, e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.1.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Blackwater River (Cork/Waterford) SAC.

5.8.1.7. Castletownroche Bridge (CC-N72-030.00)

The Castletownroche Bridge is a 5-span masonry arch bridge with masonry parapets. The maximum span is 5.6m and the minimum span is 2.33m. The rise of arch barrel for the maximum span at crown is 1.56m. There is water pipe strapped to the south of the bridge. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 5.7 shows the south elevation.



Plate 5.7 Castletownroche Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; freshwater pearl mussel; white-clawed crayfish; lamprey; salmon; otter. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density, physical disturbance of species and deterioration of surface water quality.

[REDACTED] However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

[REDACTED] Two crevices marked for retention. Himalayan Balsam recorded at bridge

A pair of Grey wagtails (*Motacilla cinerea*) were recorded feeding young in a void in the rock armour downstream of the bridge. No bats were recorded in the structure during the 2023 bat survey. One crevice was marked previously for retention for bats under the centre river arch and another crevice under the larger river arch.

Proposed Works

The proposed works at this bridge are detailed in Table 5.19 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.19 Castletownroche Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Clearance of trees from the north upstream watercourse. (6m ²)	Screened in. Instream works within SAC.
Parapet/Safety barrier	Vegetation removal from parapets, mainly moss. Works to outside face over water. (10m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments. (20m ²)	Screened out. Vegetation to be removed is not a QI.
Piers	Removal of moss from the pier cutwaters on the north side of structure. (5m ²)	Screened out. Vegetation/moss to be removed is not a QI.
Wings/Spandrel/Retaining Walls	Masonry repointing to open joints on NE wing wall. (4m ²)	Screened in. Masonry works over water within SAC.
Abutments	There's localised loss of pointing in the southeast corner between the facing stones and the barrel sheeting requiring repointing. (2m ²)	Screened in. Masonry works over water within SAC.
Piers	Masonry repointing to localised open joints to piers. (5m ²)	Screened in. Masonry works over water within SAC.
Deck/slab/arch barrel	Masonry repointing to areas of open joints to arch barrels. (5m ²)	Screened in. Masonry works over water within SAC.
Piers	Displaced stonework/gap and open joints to pier 4 requiring localised masonry repairs. (3m ³)	Screened in. Masonry works over water within SAC.

Mitigation Measures

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

For large areas of debris removal, such as fallen trees, any plant or machinery used in the removal process shall not be permitted to enter the watercourse. In such cases where there is a risk that large areas of silt have accumulated behind an obstruction, which could be released by its removal, these must be considered on a case by case basis and advice of the Contractor's ecologist must be sought. Where there is a risk of significant silt release, which would result in a plume similar to that of Category 3 'A Lot of visible Silt' (NS2, 2009), appropriate measures to contain such silt, such as the installation of a floating silt curtain, shall be placed downstream of the works area prior to the commencement of works.

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment, e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.1.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Blackwater River (Cork/Waterford) SAC.

5.8.1.8. Fermoy Bridge (CC-N72-030.90)

The Fermoy Bridge is a 7-span masonry arch bridge with masonry parapets which carries N72 over the River Blackwater. The maximum span is 14.6m and the minimum span is 11.52m. The river is accessible by using a bridge inspection unit. The structure is within Blackwater River (Cork/Waterford) SAC and located 1.6km upstream of the Blackwater Callows SPA. Plate 5.8 shows the west elevation.



Plate 5.8 Fermoy Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; freshwater pearl mussel; white-clawed crayfish; lamprey; salmon; otter. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density, physical disturbance of species and deterioration of surface water quality.

During the 2023 no freshwater pearl mussel were recorded. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5-17 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.20 Fermoy Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Clearance of the watercourse west upstream at south side. Trapped trees at spans. (50m ²)	Screened in. Instream works within SAC.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments. Including fallen trees and built-up debris. (30m ²)	Screened out. Vegetation to be removed is not a QI of SAC.
Wing/Spandrel/ Retaining Walls	Removal of vegetation from wingwalls and spandrel walls of structure. Works over water (50m ²)	Screened out. Vegetation to be removed is not a QI of SAC.
Wing/Spandrel/ Retaining Walls	Repointing to areas of localised open joints on wingwalls and spandrel walls. Works over water. (20m ²)	Screened in. Masonry works over water within SAC.
Abutments	Repointing to areas of localised open joints. (4m ²)	Screened in. Masonry works over/ close to water within SAC.
Piers	General repointing to areas of localised open joints on piers.	Screened in. Masonry works over/ close to water within SAC.

Bridge Component	Work Element	Screening Recommendation
	Loss of pointing between stones on pier 6 to be repointed. (10m ²)	
Piers	Removal of graffiti from pier 5. (3m ²)	Screened out. No chemicals to be used in the removal of graffiti.

Mitigation Measures

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

For large areas of debris removal, such as fallen trees, any plant or machinery used in the removal process shall not be permitted to enter the watercourse. In such cases where there is a risk that large areas of silt have accumulated behind an obstruction, which could be released by its removal, these must be considered on a case by case basis and advice of the Contractor's ecologist must be sought. Where there is a risk of significant silt release, which would result in a plume similar to that of Category 3 'A Lot of visible Silt' (NS2, 2009), appropriate measures to contain such silt, such as the installation of a floating silt curtain, shall be placed downstream of the works area prior to the commencement of works.

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment, e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.1.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and

taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Blackwater River (Cork/Waterford) SAC.

5.8.2. Clare

5.8.2.1. Bunrane Bridge (CL-N67-001.00)

The Bunrane Bridge is a 2-span bridge comprised by corrugated steel arch on the south side and masonry arch on the north side. The span is 3.1m each and rise of arch barrel at crown is 1.34m. There is steel safety barrier on the south side and steel parapet on the north side. The structure is within the Lower River Shannon SAC and is located ca. 80m upstream of the River Fergus Estuaries SPA. Plate 5.9 shows the north elevation.



Plate 5.9 Bunrane Bridge.

The qualifying interests of Lower River Shannon SAC and River Fergus Estuaries SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Estuaries; Mudflats and sandflats; Large shallow inlets and bays; Reefs; Water courses of plain to montane levels; Floating river vegetation; FWPM; Lamprey, Salmon; Dolphin; Otter and Wetland SCIs of the SPA. The potential direct/indirect impacts to the SAC and SPA are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no NPWS records for freshwater pearl mussel in the vicinity of the bridge. However, measures to protect water quality will still be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.21 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.21 Bunrane Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation clearance from south embankment, vegetation clearance from north embankments to maintain 1m clearance around structure. (120m ²)	Screened out. Vegetation to be removed is not a QI of SAC.
Bridge surface	Cleaning of blocked north-west drainage gully. (1 no)	Screened out. Works limited to bridge deck – no power hosing permitted.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Masonry repointing to north west wing wall adjacent to the previously cut back tree. Cross drill tree and treat with herbicide injection to prevent further growth. Repoint localised open joints... see Work Order (12m ²)	Screened out -Masonry repointing works after vegetation removal are over water but are localised, amounts of mortar used will be very small and there is a large dilution factor in the estuary. Scaffolding or an underbridge unit will be used; this can be used without disturbing any of the QIs of the SAC or habitats used by birds for which the SPA has been designated and will prevent any falling mortar from entering the water.
Abutments	Repointing to circumferential crack on the west abutment (2m ²)	Screened out -Masonry repointing works after vegetation removal are over water but are localised, amounts of mortar used will be very small and there is a large dilution factor in the estuary. Scaffolding or an underbridge unit will be used; this can be used without disturbing any of the QIs of the SAC or habitats used by birds for which the SPA has been designated and will prevent any falling mortar from entering the water.
Piers	Localised repointing to open joints recorded to the piers. (4m ²)	Screened out -Masonry repointing works after vegetation removal are over water but are localised, amounts of mortar used will be very small and there is a large dilution factor in the estuary. Scaffolding or an underbridge unit will be used; this can be used without disturbing any of the QIs of the SAC or habitats used by birds for which the SPA has been designated and will prevent any falling mortar from entering the water.
Deck/slab/arch barrel	Repointing to circumferential crack and further localised open joints to both spans. (6m ²)	Screened out -Masonry repointing works after vegetation removal are over water but are localised, amounts of mortar used will be very small and there is a large dilution factor in the estuary. Scaffolding or an underbridge unit will be used; this can be used without disturbing any of the QIs of the SAC or habitats used by birds for which the SPA has been designated and will prevent any falling mortar from entering the water.
Abutments	Maintenance of base protection required where localised undermining was recorded on the concrete scour protection in front of the pier and abutment in the main span. Undermining recorded to a depth of 450mm. (3m)	Screened in. Instream works will occur-creation of a dry works area and use of concrete.
Embankments/Revetments	Removal of fly tipped material under the dry span and on the adjacent embankment which included rubbish bags and a discarded tractor tyre. Circa 3m ³ of material to be removed	Screened out. Under dry span – does not require river access.

Bridge Component	Work Element	Screening Recommendation
	and disposed in a licensed facility. (1 it)	
Other elements	4no. missing bolts to the corrugated structure to be replaced. (1 it)	Screened out. Does not require river access.

Mitigation Measures

Concrete repairs to abutment scour protection

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

Where a dry working area is required this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor's ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All

surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Lower River Shannon SAC and/or the River Shannon and River Fergus Estuaries SPA.

5.8.2.2. Kilkee Bridge (CL-N67-008.00)

The Kilkee Bridge is a single span bridge. It is a masonry arch in the south side, and it has been widened using a reinforced concrete slab in the north side. The span is 2.53m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 200m upstream of Kilkee Reefs SAC. Plate 5.10 shows the south elevation.



Plate 5.10 Kilkee Bridge.

The qualifying interests of Kilkee Reefs are listed in Section 5.2. The qualifying interests that could be impacted are Inlets and bays; Reefs; Sea caves.

The potential indirect impacts to the SAC are reduction in species density and deterioration of surface water quality.

Proposed Works

The proposed works at this bridge are detailed in Table 5.22 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.22 Kilkee Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Clearance of 1m strip of vegetation from structure on all embankments. (20m ²)	Screened out. Vegetation to be removed is not a QI of SAC.
Deck/slab/arch barrel	Break out delaminating/hollow concrete to the slab at the downstream end of the structure, clean back and treat corroded reinforcement and reinstate concrete cover. (1m ²)	Screened in. Concrete works to slab at d/s end of structure requires breaking out delaminating/hollow concrete to the slab, cleaning back and treating corroded reinforcement before reinstating concrete cover - works over water and use of chemicals. Environmental protection measures will be required locally to prevent any negative impacts to water quality during works. However, Kilkee Reefs SAC is designated for offshore marine habitats. The substantial dilution offered by the river and coastal waters is such that any negative impacts to the SAC are highly unlikely, but they cannot be entirely ruled out.

Mitigation Measures

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor’s ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

Where a dry working area is required, this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor’s ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand

bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Kilkee Reefs SAC.

5.8.3. Kerry

5.8.3.1. Kilkneedan Bridge (KY-N22-013.00)

The Kilkneedan Bridge is a 2.94m single span masonry arch bridge with in-situ reinforced concrete extension. The structure carries N22 over the Leamnaguila 22 which is a tributary of the Gweestin River. The bridge is within the Castlemaine Harbour SAC. Plate 5.11 shows the masonry arch at east side; a concrete slab is located at the west side.



Plate 5.11 Kilkneedan Bridge.

The qualifying interests of Castlemaine Harbour SAC are listed in Section 5.2. The qualifying interests that could be impacted are Estuaries; Mudflats and sandflats; Annual and perennial vegetation; Sea cliffs; Salicornia; Salt meadows; Floating River vegetation; Lamprey; Salmon; Otter; Petalwort The potential indirect/direct impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

Proposed Works

The proposed works at this bridge are detailed in Table 5.23 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.23 Kilkneedan Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure , mostly tall grass and bush (20m ²)	Screened out. Vegetation to be removed is not a QI of SAC.
Wing/Spandrel/Retaining Walls	Moss and minor veg removal from all spandrel and wing walls (3m ²)	Screened out. Vegetation/moss to be removed is not a QI of SAC.
Abutments	Remove moss from both abutments at Eastern end (3m ²)	Screened out. Moss to be removed is not a QI of SAC.
Bridge surface	Clean drainage gully (1 no)	Screened out. Cleaning of gully on bridge deck – no power hosing permitted.
Wing/Spandrel/Retaining Walls	Allowance for repointing following the removal of vegetation from Eastern wing walls (1m ²)	Screened out. Masonry repointing after vegetation removal.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Partial undermining of both western embankments, install rock armour (3m ²)	Screened in. Installation of rock armouring to both western embankments may cause release of sediment to the river which could impact on a number of QIs for the Castlemaine Harbour SAC.
Abutments	Spalling on northern abutment base protection near centre of bridge (1 m)	Screened in. Requires instream works and so will require environmental measures to prevent impact on the SAC

Mitigation Measures

Installation of rock armour

This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

Spalling

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete (spalling repair) works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

Where a dry working area is required this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor’s ecologist.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Kilkee Reefs SAC.

5.8.3.2. Woodford Bridge (KY-N22-019.00)

The Woodford Bridge is a 2-span masonry arch bridge with corrugated steel arch extension on both ends. Each span is 5.7m. The parapets are masonry stone with steel railing. The bridge is within the Killarney National Park, Macgillycuddy’s Reeks And Caragh River catchment SAC and is located 5.2km upstream of the Killarney National Park SPA. Plate 5.12 shows the underside of east span.

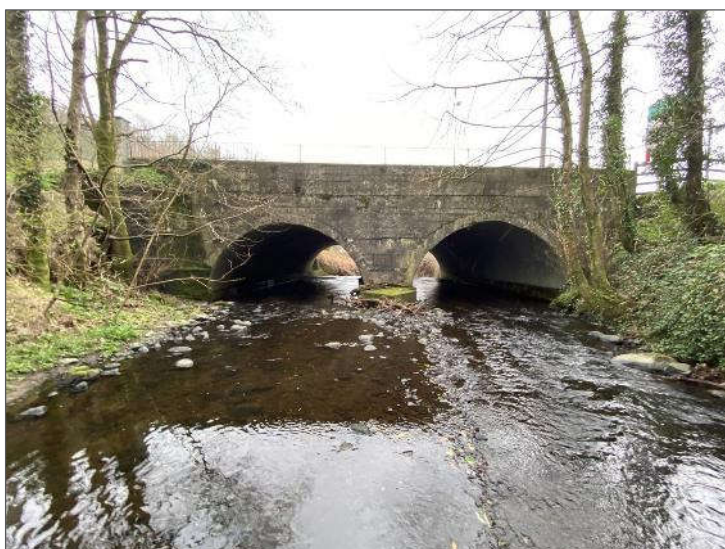


Plate 5.12 Woodford Bridge.

The qualifying interests of Killarney National Park, Macgillycuddy’s Reeks And Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern,

Kerry slug; Merlin and Greenland White-fronted Goose. The potential direct/indirect impacts to the SAC and SPA are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.24 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.24 Woodford Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove debris from upstream pier cutwater, mostly logs and branches (< 100 mm diameter) (3m ²)	Screened in. Removal of debris to be carried out manually.
Riverbed	300mm Scour below SE training wall to be infilled with rock armour (3m ²)	Screened in.
Parapet/Safety barrier	Removal of vegetation from inside and top faces of both parapets. Minor moss (2m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure, mostly tall grass and bush. Veg is overgrowing SE training wall (40m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Remove moss from all wingwalls (10 m ²)	Screened out. Vegetation to be removed is not a QI. Moss to be removed manually- no chemicals will be used.
Piers	Remove vegetation from both headwalls. Mostly moss and grasses (3m ²)	Screened out. Vegetation to be removed is not a QI. Moss to be removed manually- no chemicals will be used.
Deck/slab/arch barrel	Repointing to open joints on both arches, not marked bat holes (5m ²)	Screened out. Repointing on both arches, not marked bat holes.
Wing/Spandrel/Retaining Walls	Overgrowing veg at top of SE training wall has cracked and displaced the top of the wall. Top of wall to be rebuilt following veg removal (3m ³)	Screened out. Works carried out from the road.
Piers	Missing masonry to W face of pier at Southern corner to be installed (0.5m ³)	Screened in. Instream works are required within an SAC.
Deck/slab/arch barrel	Multiple locations on crown of arch with missing masonry. Install missing masonry to both arches (2m ³)	Screened in. Instream works are required within an SAC.

Mitigation Measures

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent

catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Scour Repairs

All scour protection works will be done in the dry by placing and compacting mass concrete in any scour void less than 300mm depth and 300mm width provided immediately in front of the affected area over a length and width specified in the Work Order for that bridge.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

For large areas of debris removal, such as fallen trees, any plant or machinery used in the removal process shall not be permitted to enter the watercourse. In such cases where there is a risk that large areas of silt have accumulated behind an obstruction, which could be released by its removal, these must be considered on a case by case basis and advice of the Contractor's ecologist must be sought. Where there is a risk of significant silt release, which would result in a plume similar to that of Category 3 'A Lot of visible Silt' (NS2, 2009), appropriate measures to contain such silt, such as the installation of a floating silt curtain, shall be placed downstream of the works area prior to the commencement of works.

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment, e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.1.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and Killarney National Park SPA

5.8.3.3. Cloghane Culvert (KY-N22-021.00)

Cloghane Culvert is a concrete culvert over the Ardteegalvan 22 watercourse. Plate 5.13 shows Cloghane Culvert. Cloghane Culvert is located within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA is located ca. 11.km downstream of the bridge.



Plate 5.13 Cloghane Culvert.

The qualifying interests of Killarney National Park, Macgillycuddy’s Reeks And Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug; Merlin and Greenland White-fronted Goose. The potential direct/indirect impacts to the SAC and SPA are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.25 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.25 Cloghane Culvert: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure including on top of structure , mostly tall grass and bush (15m ²)	Screened out. Vegetation to be removed is not a QI.
Bridge surface	Cleaning of storm water outlet in SE wing wall (diameter 400 mm) (1 no)	Screened out. Cleaning of storm water outlet to be done by rodding or suction.
Embankments/Revetments	Partially collapsed SW boulder wall to be rebuilt. Reset missing stone from SE boulder wall below stormwater outlet (4m ³)	Screened in. Extensive works over/close to water within SAC.
Bridge surface	Replace no.4 damaged cat eyes (total 6 , expected 4) (1 it)	Screened out. Works to be carried out from the bridge.

Mitigation Measures

Installation of rock armour

This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and Killarney National Park SPA.

5.8.3.4. Curraglass Culvert (KY-N22-025.00)

Curraglass Culvert is a corrugated steel culvert with a concrete invert over a stream which flows to Rusheen_Beg. Plate 5.14 shows Curaglass Culvert. Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC is located ca. 250m downstream of the bridge. Killarney National Park SPA is located ca. 16km d/s of bridge.



Plate 5.14 Curraglass Culvert.

The qualifying interests of Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug; Merlin and Greenland White-fronted Goose. The potential direct/indirect impacts to the SAC and SPA are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.26 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.26 Curraglass Culvert: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of minor vegetation from both parapets, mostly moss on exterior face. (0.5m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure including on top of structure, mostly tall grass. Remove fallen tree from N	Screened out. Vegetation to be removed is not a QI.

Bridge Component	Work Element	Screening Recommendation
	embankment. Remove loose concrete blocks from S embankments (20m ²)	
Wing/Spandrel/Retaining Walls	Remove veg (moss) from S training wall prior to concrete works (8m ²)	Screened out. Vegetation/moss to be removed is not a QI. Moss to be removed manually- no chemicals to be used.
Wing/Spandrel/Retaining Walls	Removal of moss from all wing walls (5m ²)	Screened out. Vegetation/moss to be removed is not a QI. Moss to be removed manually- no chemicals to be used.
Bridge surface	Establish drainage channels at each corner of the rubbing strips. (4 no)	Screened in. Potential downstream impacts.
Embankments/Revetments	Seal cracks on South slab above top of armco. Repair spall to same location. (2m ²)	Screened in. Potential for downstream impacts.
Wing/Spandrel/Retaining Walls	Spall and undermining along both sides of S training wall along full length to be repaired with concrete (8m ²)	Screened in. Concrete works over/close to water. Potential for downstream impacts.
Parapets/Safety barrier	Damaged timber fencing on SW embankment to be replaced (2m)	Screened out. Works over embankment from land.

Mitigation Measures

With respect to drainage channels these will be cut / opened by workers at each of the four corners of the bridge in order to prevent pooling of water at the edge of the road (i.e., against the parapet wall). The channels will discharge across vegetation growing at each corner of the bridge. This measure will not introduce a new emission to the stream; rather it is intended to facilitate flows and prevent pooling of rainwater on the road or hard standing surface. No further mitigation is proposed.

Removal of vegetation prior to concrete works

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

For large areas of debris removal, such as fallen trees, any plant or machinery used in the removal process shall not be permitted to enter the watercourse. In such cases where there is a risk that large areas of silt have accumulated behind an obstruction, which could be released by its removal, these must be considered on a case-by-case basis and advice of the Contractor's ecologist must be sought. Where there is a risk of significant silt release, which would result in a plume similar to that of Category 3 'A Lot of visible Silt' (NS2, 2009), appropriate measures to contain such silt, such as the installation of a floating silt curtain, shall be placed downstream of the works area prior to the commencement of works.

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment, e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.1.

For removal of any mosses the use of chemicals is not permitted. Moss must be removed by manual means only.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and Killarney National Park SPA.

5.8.3.5. Poulgorm Bridge (KY-N22-027.00)

The Poulgorm Bridge is a 23.90m single span concrete bridge which carries the N22 over the River Flesk in Co. Kerry. The parapets comprise heavy steel rails over the deck with a masonry parapet at top of the wing walls. The bridge is within the Killarney National Park, Macgillycuddy’s Reeks and Caragh River catchment SAC. Killarney National Park SPA is located ca. 24.2km downstream of the bridge. Plate 5.15 shows the south elevation.



Plate 5.15 Poulgorm Bridge.

The qualifying interests of Killarney National Park, Macgillycuddy’s Reeks And Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, reduction in species density, physical disturbance of species and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.27 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.27 Poulgorm Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapet/Safety barrier	Removal of light vegetation from the masonry parapets. (1m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments including removal of small trees behind SW wingwall along its length (80m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/Revetments	Remove overhanging trees from SW embankment (3m ²)	Screened out. Vegetation to be removed is not a QI.
Parapet/Safety barrier	Install missing masonry block to top corner of SE parapet edge (100 mm	Screened out. Masonry works on parapet from the road deck.

Bridge Component	Work Element	Screening Recommendation
	x 50 mm x 150 mm). Reset stone at NW parapet edge (0.2m ³)	
Wing/Spandrel/Retaining Walls	Infill scour hole at SE training wall (1m ³) with concrete (1 m)	Screened in. Works over water within SAC and sensitivity of river.
Bridge surface	1 No. missing cats-eye on WB Lane near SW edge	Screened out. Works will be carried out from the bridge.

Mitigation Measures

Scour Repairs

All scour protection works will be done in the dry by placing and compacting mass concrete in any scour void less than 300mm depth and 300mm width provided immediately in front of the affected area over a length and width specified in the Work Order for that bridge.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and Killarney National Park SPA.

5.8.3.6. Corranmarree Bridge (KY-N22-029.00)

Corranmore Bridge is a single span masonry arch bridge over the Ford Currimeenavrick. Plate 5.16 shows Corranmaree Bridge. The bridge located ca. 400m upstream of Killarney National Park, Macgillycuddy’s Reeks and Caragh River catchment SAC and ca. 30km upstream of Killarney National Park SPA.



Plate 5.16 Corranmore Bridge.

The qualifying interests of Killarney National Park, Macgillycuddy’s Reeks And Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels; Blanket bogs; Floating river vegetation; FWPM; Lamprey, Salmon, Lesser Horseshoe Bat, Otter, Killarney Shad, Killarney Fern, Kerry slug. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.28 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.28 Corranmore Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	600 mm undermining of northern apron slab, infill with rock armour along full width of apron (600 mm deep) (7m ²)	Screened in. Works over/close to water within SAC.
Parapet/Safety barrier	Remove vegetation from all faces of the southern parapet , mostly moss and grass (1m ²)	Screened out. Vegetation to be removed is not a QI. Moss to be removed manually- no chemicals will be used.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure , mostly tall grass and bush. Overhanging N end of armco (40m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Removal of vegetation from southern spandrel and wing walls (1m ²) . Remove vegetation from northern boulder walls (9m ²) (10m ²)	Screened out. Vegetation to be removed is not a QI.
Abutments	Remove vegetation from both Masonry abutments on southern side, mostly moss (5m ²)	Screened out. Vegetation to be removed is not a QI. Moss to be removed manually- no chemicals will be used.
Parapets/Safety barrier	Allowance for repointing following the removal of vegetation from the southern parapet (0.5m ²)	Screened out. Allowance for repointing following vegetation removal- works over land.
Wing/Spandrel/Retaining Walls	Allowance for repointing following the removal of vegetation from the southern spandrel and wing walls. Repointing to open joints at base of SE wing wall (2m ²)	Screened out. Allowance for repointing following vegetation removal- works over land.
Abutments	Allowance for repointing following the removal of vegetation. Repointing to Localised open joints (2m ²)	Screened out. Allowance for repointing following vegetation removal- works over land.
Deck/slab/arch barrel	Remove loose plywood formwork at interface between deck construction types. 2m ² total area. (1 it)	Screened out. Works to be carried out from land.

Mitigation Measures

Installation of rock armour

This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as

noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and Killarney National Park SPA

5.8.3.7. Listowel Bridge (KY-N69-017.00)

The Listowel Bridge is a 5-span stone masonry arch bridge. The span lengths are 15.2m each. The substructure consists of 2 masonry abutments and 4 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Lower River Shannon SAC. Plate 5.17 shows the west elevation.



Plate 5.17 Listowel Bridge.

The qualifying interests of the Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are Estuaries; Large shallow inlets and bays; Reefs; Water courses of plain to montane levels; Floating river vegetation; FWPM; Lamprey, Salmon; Dolphin; Otter. The potential indirect impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no records by the NPWS for freshwater pearl mussel in the vicinity of the bridge. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.29 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.29 Listowel Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Clearance of trapped branches on the upstream cutwaters (150m ²)	Screened out. Clearance of the trapped branches will be carried out manually.
Riverbed	Wash out of the masonry and concrete apron 2m wide x 3m long with no undermining under span 3. (6m ²)	Screened in. Instream works (scour repairs) required within SAC.
Embankments/Revetments	Vegetation should be cut back along the full length of the wingwalls at both sides of the structure, clearance should tie in with that carried out at structure 016 to the south. Fallen trees to be removed ... See Work Order (120m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Minor vegetation removal to wing walls. (20m ²)	Screened out. Vegetation to be removed is not a QI.
Bridge surface	Cleaning of drainage gully on north approach. (1 no)	Screened out. Vegetation to be removed is not a QI.
Bridge surface	Clear drainage units along both edges of the carriageway (200 m)	Screened out. Vegetation to be removed is not a QI.
Piers	Missing masonry at pier 4, 200 high x 100 wide requiring repair. Masonry damage at pier 1, 750 high x 500 wide which requires repair. Missing masonry at east end of pier 4. (1 m ³)	Screened in. Masonry works above water and within an SAC.
Piers	4m of scour protection required along the cutwater at pier 1 & pier 2. (4 m)	Screened in. Instream works required within SAC.
Wing/Spandrel/Retaining Walls	Removal of graffiti from north-west wing wall. (5m ²)	Screened out. Removal of graffiti will be carried out from the bridge – no chemicals to be used.

Mitigation Measures

Scour Repairs (including to Riverbed/apron)

All scour protection works will be done in the dry by placing and compacting mass concrete in any scour void less than 300mm depth and 300mm width provided immediately in front of the affected area over a length and width specified in the Work Order for that bridge.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water

will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Concrete repairs and new concrete scour protection

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling

through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

Where a dry working area is required, this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor's ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Lower River Shannon SAC.

5.8.3.8. Glenbeigh National School Bridge (KY-N70-021.00)

Glenbeigh National School Bridge is a single span masonry arch bridge over the Coolroe_Lower watercourse. Plate 2-18 shows Glenbeigh National School Bridge. Plate 5.18 shows Glenbeigh National School. Glenbeigh National School Bridge is located ca. 4km upstream of Castlemaine Harbour SAC and ca. 4km upstream of Castlemaine Harbour SPA.



Plate 5.18 Glenbeigh National School Bridge.

The qualifying interests of Castlemaine Harbour SAC and Castlemaine Harbour SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Estuaries; Annual and perennial vegetation; Sea cliffs; Salicornia; Floating River vegetation; Lamprey; Salmon; Otter; Mediterranean salt meadows. The potential indirect impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

[REDACTED]. A suitable habitat for freshwater pearl mussel is not present at the bridge

Proposed Works

The proposed works at this bridge are detailed in Table 5.30 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.30 Glenbeigh National School Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Scour repairs to the following: There is up to 500mm deep undermining at the north end of the concrete apron, which is located 1m from the north face of the structure. Two holes were noted in the concrete apron, wit ... See Work Order (3m ²)	Screened in. Working space is limited so it may be necessary to flume water through while undertaking works. [REDACTED] Aquatic species for which this is designated include - Sea Lamprey, River Lamprey, Salmon and Otter.
Embankments/Revetments	Removal of vegetation required on all embankments within 1m of bridge structure (20m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Remove light vegetation growth from outside faces of structure including upstream embankment walls. Works over water. (5m ²)	Screened out. Vegetation to be removed is not a QI. Works over water but will be carried out from the bankside.
Parapet/safety barrier	Rebuild of south-east parapet. Extent of repair: 0.9m high x 0.5m deep x 1.5m wide. (1m ³)	Screened out. Works on the parapet to be carried out from land.
Abutments	There is general dry stone with no mortar at the bottom of both abutments. Concrete protection needs to be extended down to the base of the abutments to protect from scour. (13 m)	Screened in. Working space is limited so it may be necessary to flume water through while undertaking works. [REDACTED] Aquatic species for which this is designated include - Sea Lamprey, River Lamprey, Salmon and Otter.

Mitigation Measures

Scour Repairs

All scour repairs will be done in the dry. In this instance there is up to 500mm deep undermining at the north end of the concrete apron, which is located 1m from the north face of the structure. Two holes were noted in the concrete apron (3m²) – as specified in the Works Order for the bridge.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor’s ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable

receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

Where a dry working area is required, this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor's ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All

surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Castlemaine Harbour SAC and/or Castlemaine Harbour SPA.

5.8.3.9. Waterville Bridge (KY-N70-039.00)

The Waterville Bridge is a 3-span stone masonry arch bridge. The spans are of similar around 7.13m. The substructure consists of 2 masonry abutments and 2 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Ballinskelligs Bay and Inny Estuary SAC. Plate 5.19 shows the east elevation.



Plate 5.19 Waterville Bridge.

The qualifying interests of Ballinskelligs Bay and Inny Estuary SAC are listed in Section 5.2. The qualifying interests that could be impacted are Atlantic salt meadows; Mediterranean salt meadows; Petalwort. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

Proposed Works

The proposed works at this bridge are detailed in Table 5.31 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.31 Waterville Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	All vegetation within 1m of structure to be cutback. (20m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Remove light vegetation growth from approach wingwalls over land and the spandrel walls over the watercourse. (22m ²)	Screened out. Vegetation to be removed is not a QI.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (4 no)	Screened out. Vegetation to be removed is not a QI.
Piers	Concrete repair to undermine scour protection to the north pier at the downstream end which also extends along the pier in the central span. (4 m)	Screened in. Concrete repair close to/ over water and within SAC. However, these works have been removed from proposed works as a new programme of works is now being considered for Waterville Bridge.

Mitigation Measures

Following the removal of proposed works to the Piers – no Mitigation measures are proposed. All remaining works Screen Out and it is submitted do not negatively impacted any Natura 2000 sites.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Ballinskelligs Bay and Inny Estuary SAC.

5.8.3.10. Derreenamacken Bridge (KY-N70-052.00)

The Derreenamacken Bridge is a single span stone masonry arch bridge with two stone culverts just west of the arch. The span is 3.04m. The substructure consists of 2 masonry abutments. There are no parapets on the structure. The structure is located 150m upstream of the Kenmare River SAC. Plate 5.20 shows the north elevation. The Blackwater River (Kerry) SAC is also located ca. 1.2km to the east of the bridge via straight line distance.



Plate 5.20 Derreenamacken Bridge.

The qualifying interests of Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are Large shallow inlets and bays, reefs, otter, harbour seal, lesser horseshoe bat. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

Derreenamacken Bridge was surveyed twice in 2020.

The site was visited again by Dr. Caroline Sheil in 2023 in order that Derreenamacken Bridge could be checked again for bats. No bats were recorded. It is, however, recommended that the bridge be surveyed again for bats before works are undertaken.

The NPWS Article 17 report from 2019²⁵ describes the “*population of this species has increased significantly since monitoring began. While individually managed roosts within the core area of this bat’s range continue to thrive, population overall is likely to continue to do well, despite the loss of some roosts around the periphery of the species’ range*”.

Proposed Works

The proposed works at this bridge are detailed in Table 5.32 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

²⁵ https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

Table 5.32 Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	All vegetation within 1m of structure to be cut back (6m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Masonry repointing to wingwall between the clapper beam and main arch span. (15m ²)	Screened in. Bat survey required prior to works.

Mitigation Measures

Masonry Repointing and Repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor’s ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

A further bat survey is required to determine the impacts from the proposed works on Lesser Horseshoe Bat which is a qualifying interest of Kenmare River SAC. With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation

measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Blackwater River (Kerry) SAC.

5.8.3.11. Ardteegalvan Bridge (KY-N72-007.00)

The Ardteegalvan Bridge is three arch masonry bridge. There are adjacent to the bridge three precast reinforced concrete pipes in the north side. The span is 2.94m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 2km upstream of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and ca. 15km upstream of Killarney National Park SPA. Plate 5.21 shows the north elevation.



Plate 5.21 Ardteegalvan Bridge.

The qualifying interests of Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; FWPM; Lamprey; Salmon; Otter; Killarney Shad. The potential indirect impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.33 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.33 Ardteegalvan Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Partially collapsed stone apron at outlet. Infill scour hole with rock armour (2mx1m x 0.5m deep) (2m ²)	Screened in. Instream works required.
Parapets/Safety barrier	Removal of moss from all faces of both parapets (3m ²)	Screened out. Removal of moss to be done manually- no chemicals to be used.
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure, dense	Screened out. Vegetation to be removed is not a QI.

Bridge Component	Work Element	Screening Recommendation
	vegetation on S embankments (20m ²)	
Wing/Spandrel/Retaining Walls	Remove overgrown veg from all boulder wingwalls (20m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Removal of moss from both headwalls (3m ²)	Screened out. Removal of moss to be done manually- no chemicals to be used.
Bridge surface	Clear drainage channels at the 2no. corners of the south verge. (2 no)	Screened out. Clearing of drainage channels to be done by suction or rodding – no power hosing permitted.
Abutments	Repointing to open joints in both abutments at bed level (12m ²)	Screened in. Works over water.
Parapets/Safety barrier	Seal multiple cracks in both parapets (2m ²)	Screened out. Works to be carried out from land.
Piers	Spall between concrete pipes on N elevation to be repaired (0.5m ²)	Screened in. Concrete works over water.

Mitigation Measures

All in-stream works

Where a dry working area is required, this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor's ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Masonry Repointing and Repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the

watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC

5.8.3.12. Knockeennagowan Bridge (KY-N72-007.00)

Knockeennagowan Bridge is a concrete culvert over the Knockanaroor watercourse. Plate 5.22 shows Knockeennagowan Bridge. This structure is located ca. 2.km upstream of Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and ca.17km upstream of Killarney National Park SPA.



Plate 5.22 Knockeennagowan Bridge.

The qualifying interests of Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; FWPM; Lamprey; Salmon; Otter; Killarney Shad. The potential indirect impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

[REDACTED]
[REDACTED]
 However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.34 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.34 Knockeennagowan Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Scour hole forming at outlet undermining both wingwalls. Up to 300mm scour below existing base protection. Install rock armour to fill scour hole. (6m ²)	Screened in. Instream works required.
Embankments/Revetments	Removal of vegetation to create 1m clearance strip from structure including on top of structure , mostly tall grass and bush (30m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Remove vegetation from all wing walls, mostly moss. (10m ²)	Screened out. Vegetation to be removed is not a QI. Removal of moss to be carried out manually – no chemicals to be used.
Embankments/Revetments	Perpendicular Stream is overflowing NW wing wall and flowing into stream between the wing wall and adjoining rock armour. There is also some evidence of ponding behind the wingwall. While it was proposed to establish concrete drainage channel (2 m), following consultation with the engineers this has been altered to placement of stone / filtration bed at the end of the stream to facilitate discharge and / or direct the stream past the end of the wing wall.	Screened in. Works on the riverbank required.
Deck/slab/arch barrel	Repair deck spall at 6th joint from S end (0.5m ²)	Screened in. Instream works required.
Other elements	150mm Scour below concrete apron at S end across full width. Infill with concrete (2m ²)	Screened in. Instream works required.
Parapet/Safety barrier	Reset fallen pallsade rail on northern side above headwall (1 m)	Screened out. Works to be carried out from land.

Mitigation Measures

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be

supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse

Scour Repairs

All scour protection works will be done in the dry by placing and compacting mass concrete in any scour void less than 300mm depth and 300mm width provided immediately in front of the affected area over a length and width specified in the Work Order for that bridge.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Wingwall

As noted, a small stream is overflowing NW wing wall and flowing into stream between the wing wall and adjoining rock armour (see Plate 5.22b). There is also some evidence of ponding behind the wingwall. While it was proposed to establish concrete drainage channel (2 m), following consultation with the engineers this has been altered to placement of stone / filtration bed at the end of the stream to facilitate discharge and / or direct the stream past the end of the wing wall. These works will be

undertaken on the river bank above the river. Precautions outlined for any works to embankments, slope protection etc. will be followed.



Plate 5.22b Small stream flowing over northern wingwall at Knockeennagowan Bridge.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC

5.8.3.13. Gortanahaneboy West Bridge (KY-N72-010.00)

The Gortanahaneboy West Bridge is a 2.95m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 1.40m. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC and Killarney National Park SPA is located over 20km downstream of the bridge. Plate 5.23 shows the deck, abutments and riverbed of the bridge.



Plate 5.23 Gortanahaneboy Bridge.

The qualifying interests of Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Water courses of plain to montane levels, Blanket bogs; Floating river vegetation; FWPM; Lamprey; Salmon; Otter; Killarney Shad. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, physical disturbance to species, reduction in species density and deterioration of surface water quality.

[REDACTED]. However, measures to protect water quality will be adopted which will ensure negative impacts on the species are avoided.

Proposed Works

The proposed works at this bridge are detailed in Table 5.35 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.35 Gortanahaneboy Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation from all faces of both parapets, mostly moss and grass (3m ²)	Screened out. Vegetation to be removed is not a QI. Removal of moss to be carried out manually- no chemicals required.
Wing/Spandrel/Retaining Walls	Remove minor vegetation from both spandrel and wingwalls (1m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Allowance for repointing following the removal of vegetation (0.5m ²)	Screened out. Allowance for repointing after the removal of vegetation.
Abutments	Repointing to local open joints at base of both parapets (1m ²)	Screened out. Works to be carried out from land/over land.
Embankments/Revetments	Partial collapse to rock armour on SW (around storm water outlet) and NE embankment, reinstate rock armour protection to both embankments (6m ²)	Screened in. Reinstatement of rock armour to be carried out within SAC.

Mitigation Measures

Installation of rock armour

This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC

5.8.3.14. Cullavaw Bridge (KY-N72-012.00)

The Cullavaw Bridge is a 2-span masonry arch bridge with reinforced concrete arch extension to the north end. The maximum span is 4.14m and the minimum span is 3.60m. The structure carries N72 over the Cullavaw stream which is a tributary of the River Blackwater. The bridge is located 1.5km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 5.24 shows the north elevation.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Poor concreting present throughout southern spandrel wall / parapet. Exposed rebar above E span, infill all areas between existing concrete and masonry spandrel walls with concrete. Along full length of wall (10m ²)	Screened in. Potential for impacts on d/s SAC.
Piers	Spall to base of pier on W face at transition between masonry-concrete. (0.5m ²)	Screened in. Potential for impacts on d/s SAC.
Piers	550 mm undermining of pier face at southern end, infill with concrete (2 m)	Screened in. Potential for impacts on d/s SAC.
Wing/Spandrel/Retaining Walls	Remove wooden shutter plank attached to NW wing wall (2m long) (1 it)	Screened out. Removal of wooden shutter plank can be carried out from land.

Mitigation Measures

All in-stream works

Where a dry working area is required, this is to be established using sealed sand bags to create a dry area within which to work. The design of such protection is to be agreed with the Contractor's ecologist.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and

cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse

It is essential that any temporary work platforms or support props will not block off access for bats to use the masonry arch or clapper culverts. The Contractor's ecologist will undertake a visual inspection of this bridge to monitor bat activity before works begin.

Following the pre-works site survey by the bat specialist, crevices in the bridge structure which either contain roosting bats or show evidence of regular bat usage (droppings/staining) will be marked with red paint by the ecologist prior to any works taking place. These crevices are to be retained to allow bats to continue to roost in the structure. Extreme care will be taken to ensure no mortar enters the crevices during repointing works. The Contractor's ecologist will be on site to supervise when the works are taking place. Mitigation measure required as part of the Derogation licence are outlined below.

Masonry Repointing and Repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

While Table 5.4 noted that the environs of the bridge provided suboptimal habitat for otter, the construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Blackwater River (Cork/Waterford) SAC.

5.8.3.15. Blennerville Bridge (KY-N86-001.00)

The Blennerville Bridge is a 5-span stone masonry arch bridge. The span lengths vary between 7.4m and 4.8m. The substructure consists of 2 masonry and concrete abutments and 4 masonry and concrete piers. There are masonry parapets on both sides of the carriageway. The structure is within Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA. Plate 5.25 shows the west elevation.



Plate 5.25 Blennerville Bridge.

The qualifying interests of Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt

meadows; Floating river vegetation; Otter; Petalwort; Wetlands and SCIs of SPA. The potential direct/indirect impacts to the SAC and/or SPA are the loss or modification of habitat, physical disturbance of species and reduction in species density and deterioration of surface water quality.

Proposed Works

The proposed works at this bridge are detailed in Table 5.36 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.36 Blennerville Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Removal of vegetation from wingwalls and spandrel walls of structure. Works over water. (10m ²)	Screened out. Vegetation to be removed is not a QI.
Bridge surface	Removal of debris and silt deposits from drainage gullies. 2 no. southern side of bridge and 1 no. Northern side (3 no)	Screened out. Cleaning of drainage gullies to be carried out by rodding or suction. No power hosing permitted.
Wing/Spandrel/Retaining Walls	Repointing of localised open joints following vegetation removal from wing and spandrel walls. Works over water (5m ²)	Screened out. Repointing following vegetation removal is over water but localised, amounts of mortar used will be very small and there is a large dilution factor in the estuary. An underbridge unit will be used; this can be used without disturbing any of the QIs of the SAC or habitats used by birds for which the SPA has been designated and will prevent falling mortar from entering the water.
Wing/Spandrel/Retaining Walls	Masonry loss at northwest wing wall (0.5m ³)	Screened in. Significant works over water within SAC/SPA.
Abutments	Repair to cracking and localised loss of gunite layer on structure abutments. (5m ²)	Screened in. Significant works over water within SAC/SPA.
Piers	Repair to cracking and localised loss of gunite to structure piers. (10m ²)	Screened in. Significant works over water within SAC/SPA.
Deck/slab/arch barrel	Repairs to cracks in gunite to all spans. (10m ²)	Screened in. Significant works over water within SAC/SPA.
Other elements	Cleaning and patch painting of 13 No. Patress plates on west side of structure. (1 it)	Screened out. Works to be carried out from the bridge.

Mitigation Measures

Masonry Repointing and Repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be

supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. Repairs to cracking and localised loss of gunite will utilise a low-shrinkage repair mortar which will be manually applied (i.e. the same product and method of application as a typical concrete repair). In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge, which are of short duration, will not result in adverse effects on Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA.

5.8.3.16. Blennerville Bridge Relief Arch (KY-N86-002.00)

Blennerville Bridge Relief Arch is a two-span masonry and concrete arch structure located approximately 21m south of the main bridge, within Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA. The masonry arch structure comprises two spans of 2.74m and 2.88m respectively with a total length of 6.9m. Both arches are gunnited throughout. Similar to the main bridge, the original masonry structure was widened with a single span reinforced concrete arch as part of the Blennerville Bridge Widening Scheme in the 1990's. Plate 5.26 shows Blennerville Bridge Relief Arch.



Plate 5.26 Blennerville Bridge Relief Arch.

The qualifying interests of Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Floating river vegetation; Otter; Petalwort; Wetlands and SCIs of SPA. The potential direct/indirect impacts to the SAC and/or SPA are the loss or modification of habitat, physical disturbance of species and reduction in species density and deterioration of surface water quality.

Proposed Works

The proposed works at this bridge are detailed in Table 5.37 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.37 Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation required from all embankments within 1m of bridge structure (8m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Removal of vegetation from spandrel walls and wingwalls on west of structure. Works over water. (2m ²)	Screened out. Vegetation to be removed is not a QI.
Bridge surface	Cleaning of drain gullies. 1no gully at east edge of the carriageway. 1no gully at west edge of carriageway. (2 no)	Screened out. Cleaning of drainage gullies to be carried out by rodding or suction. No power hosing permitted.
Wing/Spandrel/Retaining Walls	Repointing to localised open joints following vegetation removal on west of structure. (1m ²)	Screened out. Repointing following vegetation removal.
Piers	Masonry repointing to west pier cutwater. (2m ²)	Screened in. Significant works over water within SAC/SPA.
Wing/Spandrel/Retaining Walls	Masonry works (2m ³)	Screened in. Significant works over water within SAC/SPA.
Abutments	Repair to cracked gunite to both abutments. (2m ²)	Screened in. Significant works over water within SAC/SPA.
Piers	Repairs to cracked gunite on both faces of pier. (2m ²)	Screened in. Significant works over water within SAC/SPA.

Bridge Component	Work Element	Screening Recommendation
Deck/slab/arch barrel	Repair to cracked gunite on both spans. (2m ²)	Screened in. Significant works over water within SAC/SPA.
Other elements	Patch painting to 7no. Pattress plates on west wing walls. Works over water. (1 it)	Screened out. Works to be carried out from land.

Mitigation Measures

Masonry Repointing and Repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. Repairs to cracking and localised loss of gunite will utilise a low-shrinkage repair mortar which will be manually applied (i.e. the same product and method of application as a typical concrete repair). In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA.

5.8.3.17. Enrights Bridge (KY-N86-005.00)

Enrights Bridge is a single span stone masonry structure. Enrights Bridge is located within Tralee Bay and Magharees Peninsula, West to Cloghane SAC and ca. 100m upstream of Tralee Bay Complex SPA. Plate 5.27 shows Enrights Bridge.



Plate 5.27 Enrights Bridge.

The qualifying interests of Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA are listed in Section 5.2 and Section 5.3. The qualifying interests that could be impacted are Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Floating river vegetation; Otter; Petalwort; Wetlands and SCIs of SPA. The potential direct/indirect impacts to the SAC and/or SPA are the loss or modification of habitat, physical disturbance of species and reduction in species density and deterioration of surface water quality.

Proposed Works

The proposed works at this bridge are detailed in Table 5.38 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.38 Enrights Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments. (28m ²)	Screened out.
Bridge surface	Removal of debris and silt deposits from drainage gullies (1 no)	Screened out. Removal of debris from gullies carried out on bridge deck to be done by rodding or suction. No power hosing permitted.
Abutments	Masonry repointing to the north side of the west abutment. (4m ²) Repair to loose masonry behind scour protection on south side of east abutment. (0.2m ³)	Screened in. Instream works within an SAC/SPA.
Abutments	Repair to 3 meters of scour beneath base protection on south east of structure.	Screened in. Instream works within an SAC/SPA.

Bridge Component	Work Element	Screening Recommendation
	Repair to 4 meters of scour beneath base protection on north east of structure. (7m)	

Mitigation Measures

Masonry Repointing and Repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Scour Repairs

All scour protection works will be done in the dry by placing and compacting mass concrete in any scour void less than 300mm depth and 300mm width provided immediately in front of the affected area over a length and width specified in the Work Order for that bridge.

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of other commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Tralee Bay and Magharees Peninsula, West to Cloghane SAC and within Tralee Bay Complex SPA.

5.8.4. Limerick

5.8.4.1. Rincullia Bridge (LC-N69-005.00)

Rincullia Bridge is a three-span masonry and concrete bridge with a span of 6.2m. Masonry parapets line the carriageway above the structure. The bridge carries the N69 over the Ahacronane River and the Lower River Shannon SAC is located immediately downstream of the proposed works and is located ca. 300m upstream of the River Shannon and River Fergus Estuaries SPA. Plate 5.28 shows the face of the bridge.



Plate 5.28 Rincullia Bridge.

The qualifying interests of the Lower River Shannon SAC are listed in Section 5.2. The qualifying interests of the River Shannon and River Fergus Estuaries SPA are listed in Section 5.3. The qualifying interests that could be impacted are Estuaries; Coastal lagoons; Large shallow inlets and bays; Reefs; Salicornia; Salt meadows; Water courses of plain to montane level; Floating River vegetation; Freshwater pearl mussel; Lamprey; Salmon; Dolphin; Otter; Wetlands and SCIs of the SPA. The potential direct/indirect impacts to the SAC and/or the SPA are the loss or modification of habitat, reduction in species density, physical disturbance of species and deterioration of surface water quality.

There are no NPWS records for freshwater pearl mussel at the location of the proposed works or downstream of the bridge. However, measures to protect water quality will still be adopted which will ensure negative impacts on the species are avoided, as FWPM is a qualifying interest of the Lower River Shannon SAC, which the proposed works are located directly upstream of.

Proposed Works

The proposed works at this bridge are detailed in Table 5.39 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.39 Rincullia Bridge: work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapet/Safety barrier	Vegetation removal from faces and top of both parapets, including riverside overbuilt. Works over water. (5m ²)	Screened out. Vegetation to be removed is not a QI.
Embankment/Revetments	Removal of vegetation from wing embankments (30m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Removal of vegetation from north spandrel wall (10m ²) Removal of vegetation from wing walls. (8m ²)	Screened out. Vegetation to be removed is not a QI.
Piers	Removal of vegetation from pier cutwaters. (3m ²)	Screened out. Vegetation to be removed is not a QI.
Wing/Spandrel/Retaining Walls	Masonry repointing of localised areas of wing walls following vegetation removal. (8m ²)	Screened in. Masonry repairs over water within SAC and u/s of SPA.
Piers	Masonry repointing of minor open joints at piers. (1m ²) Masonry repairs (2m ³)	Screened in. Masonry repairs over water within SAC and u/s of SPA.
Piers	Concrete repair of localised spalled areas at both piers. (5m ²)	Screened in. Concrete repairs over water within SAC and u/s of SPA.

Mitigation Measures

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor’s ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Concrete repairs

Where personnel cannot reach the works area from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream.

Preparation for the concrete works may include vegetation removal. Loose and cracked material shall be raked out to sound material and the area cleaned by hand. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of materials shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no material or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

5.8.5. Tipperary South

5.8.5.1. Canal Bridge (TS-N24-006.00)

The Canal Bridge is a 6.1m single span concrete slab. The parapets are masonry with steel railing. The structure is within the Lower River Suir SAC. Canal Bridge is located over a canal which flows to the River Suir. Plate 5.29 shows the south elevation.



Plate 5.29 Canal Bridge.

The qualifying interests of the Lower River Suir SAC are listed in Section 5.2. The qualifying interests that could be impacted are Floating river vegetation; White-clawed Crayfish; Lamprey; Salmon; Otter. The potential direct/indirect impacts to the SAC are the loss or modification of habitat, reduction in species density, physical disturbance of species and deterioration of surface water quality.

There are no NPWS records for freshwater pearl mussel at the location of the proposed works or downstream of the bridge. However, measures to protect water quality will still be adopted which will ensure negative impacts on the species are avoided, as FWPM is a qualifying interest of the Lower River Suir SAC, which the proposed works are located within.

Proposed Works

The proposed works at this bridge are detailed in Table 5.38 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5.38 Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Clearance of vegetation including the removal of debris from the watercourse at the south elevation. (5m ²)	Screened out. Vegetation to be removed is not a QI.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments 20m ² Moss in concrete revetment should be removed 5m ² . (25m ²)	Screened out. Vegetation to be removed is not a QI.
Parapet/Safety barrier	Cracks in both parapets should be repointed. (0.5m ³)	Screened out. Works over land.
Wing/Spandrel/Retaining Walls	Undermining to the Northeast wing wall below water level underneath the	Screened in. Masonry repairs over water within SAC.

Bridge Component	Work Element	Screening Recommendation
	concrete pipe requires masonry repair. (2m ³)	
Embankments/Revetments	Reshape embankment at the Northwest. (5m ³)	Screened in. Reshaping of embankment within SAC.
Wing/Spandrel/Retaining Walls	Vertical Cracks in all wing walls should be injected. (15m ²)	Screened out. Works over land.

Mitigation Measures

Masonry Repointing and repair

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste material/mortar to be removed from site and disposed of appropriately at an approved site. The geotextile will extend up the sides of the platforms a minimum of 150mm to stop material falling off the edge. Removal of and cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

Preparation for the repointing work will include vegetation removal; loose and cracked pointing shall be raked out to sound material and the joint cleaned by hand. The joints will then be dampened, and mortar will be pointed flush with the masonry face. In the event of poor/unforeseen weather polythene or hessian covers shall be used to protect the work until the work has time to cure.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

A dry working environment will be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Reshaping of (embankment (Installation of rock armour)

This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence from the appropriate body as outlined above.

Mixing of mortar shall be carried out at least 25 metres away from the riverbank on an impermeable surface, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. The worker must also ensure that no lime mortar or debris enters the watercourse or cause pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste mortar entering the watercourse. Once the area has been repointed and brushed back to the desired finish the geotextile will be carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

The construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale, distance to the European sites and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with other plans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

6. Conclusions

This NIS provides the competent authority with supporting information to undertake Appropriate Assessment in relation to the proposed works at 29 bridges in the Munster region under the Munster Term Maintenance Contract No 4 (Year 1).

This NIS has examined the potential impacts of the proposed works on the integrity of European sites within the zone of influence of the 29 bridges, alone and in combination with other plans and projects, considering a sites' structure, function and conservation objectives. Where potential significant impacts were identified, mitigation measures have been recommended to preclude these impacts.

Thus, the potential direct, indirect and cumulative impacts on the qualifying interests, and their associated conservation objectives, for SACs and SPAs within the zone of influence of the proposed project, and the implementation of the proposed mitigation measures, it has been concluded by the authors of this report that the proposed project, i.e. maintenance works at 29 bridges, will not have an adverse effect on the integrity of those SACs and SPAs.

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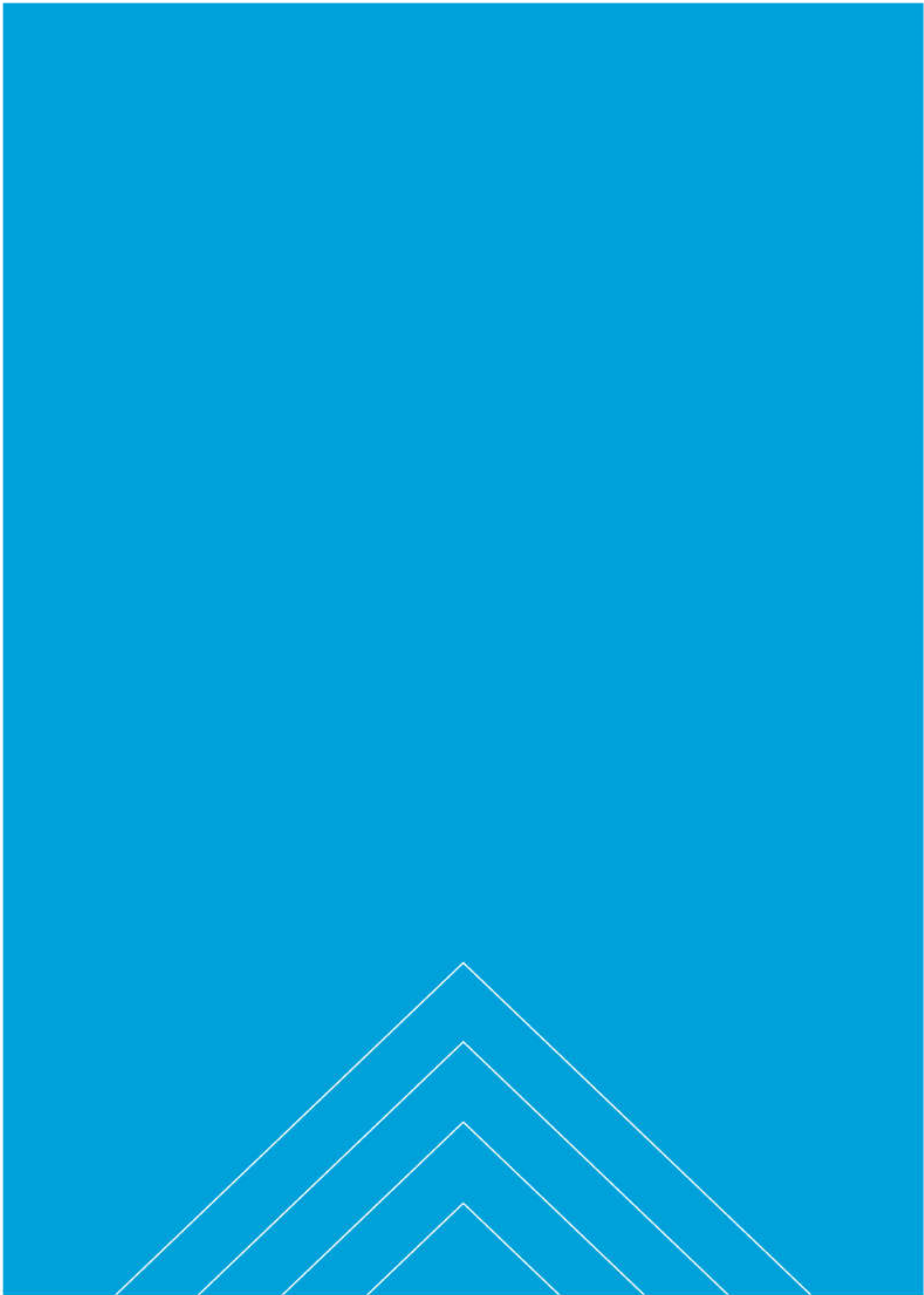
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