

# Munster Term Maintenance Contract No 3

Year 1 Structures - Natura Impact Statement  
Transport Infrastructure Ireland

8/01/2020



# Notice

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## Document history

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## Client signoff

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# Contents

Chapter	Page
<b>1. Introduction</b>	<b>1</b>
1.1. Project Background and Context	1
<b>2. Project Description</b>	<b>5</b>
2.1. Proposed Works	5
2.2. Bridge Descriptions	18
<b>3. Scope of Study</b>	<b>58</b>
3.1. Aims of the Report	58
3.2. Legislative Context	58
3.3. Appropriate Assessment Process	59
<b>4. Methods</b>	<b>61</b>
4.1. Guidance documents	61
4.2. Data Collation	61
4.3. Statement of Authority	62
<b>5. Appropriate Assessment</b>	<b>63</b>
5.1. Connectivity of the Works Area to Natura 2000 Sites	63
5.2. Description of the Special Areas of Conservation	72
5.3. Description of the Special Protection Areas	81
5.4. Conservation Objectives	88
5.5. Qualifying Interests	89
5.6. Identification of Potential Impacts on Natura 2000 sites	93
5.7. Cumulative impacts	115
5.8. Mitigation Measures	117
5.9. Waterford	287
<b>6. Conclusions</b>	<b>306</b>
<b>References</b>	<b>307</b>
<b>Appendix A. Qualifying Interests of Natura 2000 sites</b>	<b>309</b>

## Tables

Table 1-1	EIRSPAN bridge components and works.
Table 2-1	Summery details of bridges requiring Appropriate Assessment.
Table 2-2	Summary Table of Work Categories for each bridge.
Table 5-1	Bridge location relative to Natura 2000 Sites and Surface Water connectivity.
Table 5-2	SAC Qualifying Interests.
Table 5-3	SPA Qualifying Interests.
Table 5-4	Potential negative impacts of work items.
Table 5-5	Work items identified as having negative impacts to be considered further.
Table 5-6	Works categories, potential impacts and receptors.
Table 5-7	Potential Impacts to Natura 2000 sites at each bridge.
Table 5-8	Freshwater pearl mussel data at and/or downstream of bridges.
Table 5-9	Bridges within / upstream of an OPW works scheme.

## Figures

Figure 1-1 Year 1 NIS Structures

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

# 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 2016. A Bridges Term Maintenance Contract for 653 bridges in the Munster Region is being progressed by Transport Infrastructure Ireland (TII) under a new contract.

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 270) under the Munster Bridges Term Maintenance Contract No.3 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 70 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 70 bridges.

## 1.1. Project Background and Context

The Bridge Term Maintenance Contract for the Munster region includes 653 No. bridges, which are located on the national road network across Munster in Counties Cork (City and County), Kerry, Waterford, Tipperary, Limerick and Clare.

Each of these bridges will require four routine inspections. It is intended to inspect every structure in 2017 Q4, 2019 Q1, 2020 Q1 and 2021 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 1<sup>st</sup> March and 30<sup>th</sup> September in each of the years 2018, 2019, 2020 and 2021. It is these Works Orders that are subject to ecological 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; and
- Cleaning of graffiti.

Year 1 of the contract has been completed and routine maintenance works were conducted at bridges for which TII issued Screening for AA determinations where the proposed works were not likely to

have significant effects on a European site. Year 2 of the contract is currently being progressed. However, proposed 2018 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
	33 Establish drainage channel
	44 Maintenance of gabion
	45 Maintenance of slope protection
	47 Reshaping (imported materials)

Bridge Component	Works
	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
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
	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

Bridge Component	Works
	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

### 1.1.1. 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.

Under the contract the Contractor has to appoint an ecologist for the duration of the contract to carry out pre-construction surveys, such as invasive species and bats surveys, 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.



## 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 70 bridges being '*Screened In*', i.e. where likely significant effects could not be ruled out, requiring those structures to undergo Appropriate Assessment.

These 70 bridges are located in Counties Kerry (no. 29), Cork (no. 21), Tipperary (no. 8), Waterford (no. 7), Limerick (no. 4) and Clare (no. 1), which is illustrated in Figure 2-1. Table 2-1 summaries the main details pertaining to each of the 70 bridges.

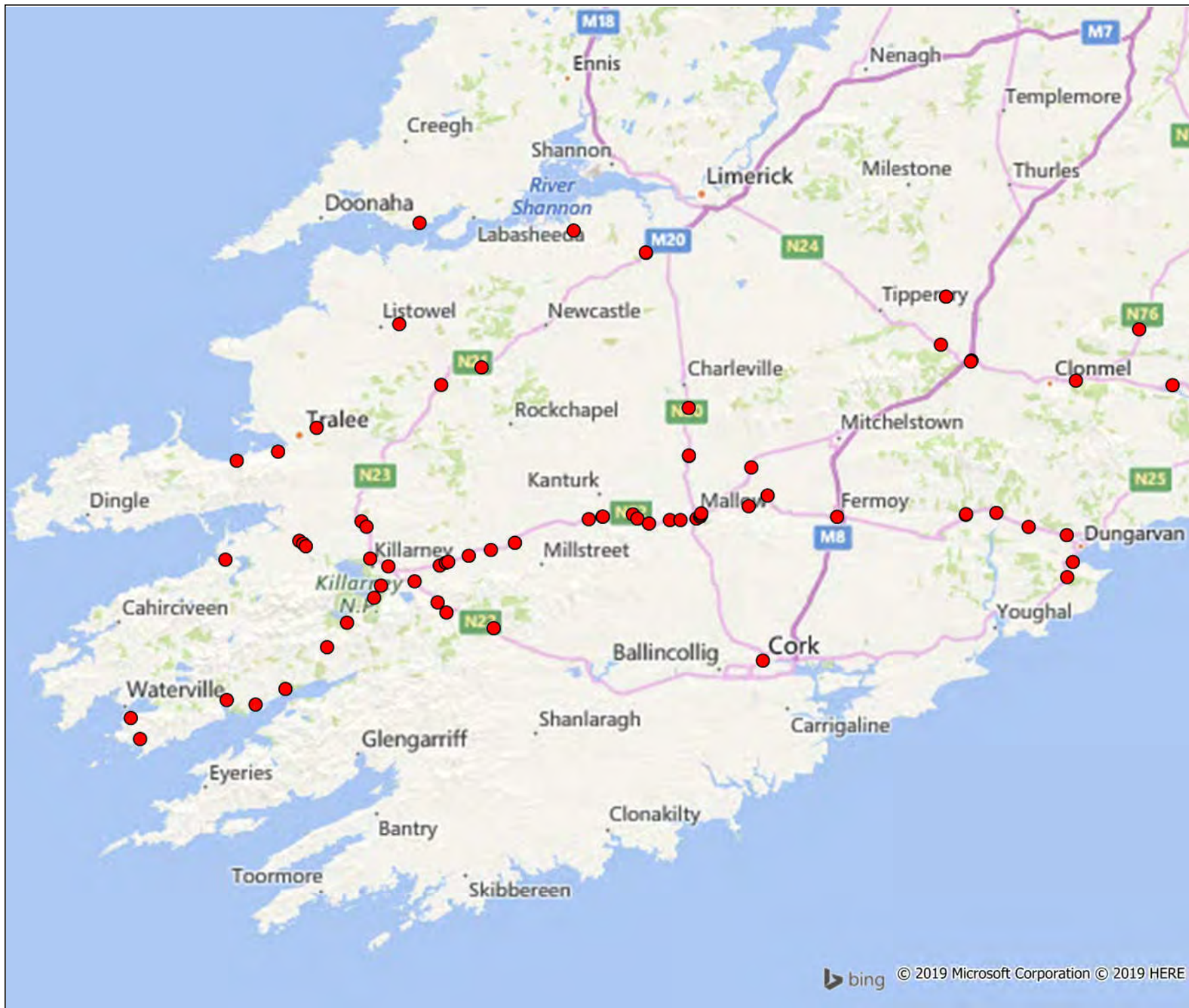
The works proposed at each bridge is contained in Section 5.8. The Work Orders detail the bridge identification number and name, the component of the bridge to which a work item is proposed, the work item and the quantity (m<sup>2</sup>) expected to be carried out. A summary of the work categories proposed at each bridge is detailed in Table 2-2.

**Table 2-1 Summary details of bridges requiring Appropriate Assessment.**

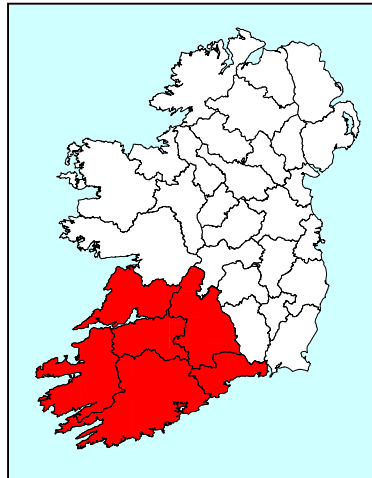
County	Structure ID	Structure Name	Watercourse Name (EPA)	Water framework Directive SubCatchment	GPS Coordinates (ITM)	
					X	Y
Cork City	CB-N20-002.00	Carroll's Quay Bridge	Kiln	Kiln_SC_010	567457	572408
Cork County	CC-N20-029.00	Awbeg River South	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020	554257	609802
Cork County	CC-N20-030.00	Rathelare Bridge	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020	554264	609854
Cork County	CC-N20-033.00	Farran Bridge	Awbeg [Buttevant] [East]	Awbeg[Buttevant]_SC_010	554294	618522
Cork County	CC-N72-001.00	Duncannon Bridge	Blackwater [Munster]	Blackwater[Munster]_SC_010	517998	593189
Cork County	CC-N72-004.00	Ahane Bridge	Owentaraglin 18	Blackwater[Munster]_SC_020	522375	594400
Cork County	CC-N72-008.00	Dysert Bridge	Knockanerroe 18	Blackwater[Munster]_SC_030	535934	598514
Cork County	CC-N72-010.00	Leaders Bridge	Allow	Dalua_SC_020	538438	598925
Cork County	CC-N72-013.00	Ketragh Bridge	Awbeg [Kanturk]	Blackwater[Munster]_SC_060	543932	599282
Cork County	CC-N72-014.00	Boland's Bridge	Non-listed	Blackwater[Munster]_SC_090	544745	598519
Cork County	CC-N72-015.00	Lombardstown Bridge	Woodpark Lombardstown	Blackwater[Munster]_SC_090	546873	597573
Cork County	CC-N72-018.00	Ballynafeaha Culvert	Ballyclogh (Stream)	Blackwater[Munster]_SC_090	550691	598185
Cork County	CC-N72-019.00	Firville Culvert	Scarteen 18	Blackwater[Munster]_SC_090	552606	598170
Cork County	CC-N72-021.00	Park Road River Bridge, Mallow	East Baltydaniel	Blackwater[Munster]_SC_090	555552	598404
Cork County	CC-N72-024.00	Spa Walk South, Mallow	South Caherduggan	Blackwater[Munster]_SC_090	556236	598764
Cork County	CC-N72-025.00	Spa Walk Central, Mallow	South Caherduggan	Blackwater[Munster]_SC_090	556363	599042
Cork County	CC-N72-026.00	Spa Walk North, Mallow	South Caherduggan	Blackwater[Munster]_SC_090	556421	599332
Cork County	CC-N72-029.00	Monanimy Cross Roads	Monanimy_Lower	Blackwater[Munster]_SC_090	565058	600563
Cork County	CC-N72-030.00	Castletownroche Bridge	Awbeg [Buttevant]	Blackwater[Munster]_SC_100	568513	602478
Cork County	CC-N72-030.90	Fermoy Bridge	Blackwater [Munster]	Blackwater[Munster]_SC_110	581152	598563
Cork County	CC-N73-005.00	Ballynamona Bridge	Awbeg [Buttevant]	Blackwater[Munster]_SC_100	565614	607606
Clare	CL-N67-001.00	Burrane Bridge	Tonavoher	Cloon[Clare]_SC_010	506097	652585
Kerry	KY-N21-018.80	River Feale Bridge	Feale	Feale_SC_030	509495	623298
Kerry	KY-N22-013.00	Kilkneedan Bridge	Leamnaguila 22	Laune_SC_020	494481	598841

County	Structure ID	Structure Name	Watercourse Name (EPA)	Water framework Directive SubCatchment	GPS Coordinates (ITM)	
					X	Y
Kerry	KY-N22-014.00	Ballydeenlea Bridge	Gweestin	Laune_SC_020	495377	597809
Kerry	KY-N22-017.00	Deenagh Bridge	Deenagh	Deenagh_SC_010	495941	592017
Kerry	KY-N22-019.00	Woodford Bridge	Woodford 22	Flesk[Kerry]_SC_020	499209	590510
Kerry	KY-N22-022.00	Brewsterfield Culvert	Knochanarrppr	Flesk[Kerry]_SC_020	503964	587687
Kerry	KY-N22-026.00	Garries Bridge	Flesk [Kerry]	Flesk[Kerry]_SC_010	508067	583814
Kerry	KY-N22-027.00	Poulgorm Bridge	Flesk [Kerry]	Flesk[Kerry]_SC_010	509682	581910
Kerry	KY-N69-001.50	Ballybeggan River Bridge	Ballynabrennagh	Lee[Tralee]_SC_010	486716	615984
Kerry	KY-N69-018.00	Skehanierin Culvert	Skehanierin	Feale_SC_040	502063	634438
Kerry	KY-N70-015.00	Caragh Bridge	Caragh	Caragh_SC_010	469509	592429
Kerry	KY-N70-040.00	Baslickane Bridge	Finglas river (Waterville)	Finglasriver[Waterville]_SC_01	451392	564012
Kerry	KY-N70-041.00	Darrynane Beg Bridge	Darrynane_More	Behaghane_SC_010	452987	560125
Kerry	KY-N70-051.00	Sneem River Bridge	Sneem	Sneem_SC_010	469099	566823
Kerry	KY-N70-052.00	Tahilla River Bridge	Tahilla 21	Sneem_SC_010	474364	565842
Kerry	KY-N70-054.00	Blackwater Bridge	Blackwater [Kerry]	Kealduff_SC_010	479908	568572
Kerry	KY-N71-002.00	Muckcross Friary Bridge	Cloghereen	Laune_SC_010	497795	587046
Kerry	KY-N71-003.00	Torc New Bridge	Owengarriff (Kerry)	Laune_SC_010	496505	584832
Kerry	KY-N71-006.00	Incheens Bridge	Galway's	Crinnagh_SC_010	491435	580406
Kerry	KY-N71-010.00	Carrig East Bridge	undefined	Finnihy_SC_010	487700	576022
Kerry	KY-N72-001.00	Coolroe South Bridge	Kealbrogeen Stream (Laune)	Laune_SC_020	483059	595522
Kerry	KY-N72-002.00	River Gweestin Bridge	Gweestin	Laune_SC_020	483791	595012
Kerry	KY-N72-003.00	Ballymalis Bridge	Gortnaskarry	Laune_SC_020	484221	594498
Kerry	KY-N72-008.00	Six Mile Bridge	Owneykeagh	Quagmire_SC_010	508587	590513
Kerry	KY-N72-009.00	Beheenagh Bridge	Beheenagh 22	Quagmire_SC_010	509724	590972
Kerry	KY-N72-010.00	Gortanahaneboy West Bridge	Beheenagh 22	Quagmire_SC_010	510134	591143
Kerry	KY-N72-012.00	Cullavaw Bridge	Cullavaw (Stream)	Blackwater[Munster]_SC_010	513943	592188
Kerry	KY-N86-007.00	Annagh East Bridge	Annagh 23	Lee[Tralee]_SC_010	479585	611849

County	Structure ID	Structure Name	Watercourse Name (EPA)	Water framework Directive SubCatchment	GPS Coordinates (ITM)	
					X	Y
Kerry	KY-N86-019.00	Killelton Bridge	Killelton	Owencashla_SC_010	472035	610380
Limerick	LC-N21-002.00	Goulburn Bridge	Allaghaun	Feale_SC_020	516827	626335
Limerick	LC-N21-018.00	Adare Church Bridge	Maigue	Maigue_SC_040	546862	646609
Limerick	LC-N21-019.00	Adare Bridge	Maigue	Maigue_SC_040	546845	646658
Limerick	LC-N69-009.00	Askeaton Friary River Bridge	Deel [Newcastlewest]	Deel[Newcastlewest]_SC_040	533840	650774
Tipperary South	TS-N24-001.00	The Three Bridges	Killonerry	Lingaun_SC_010	642186	622547
Tipperary South	TS-N24-006.00	Canal Bridge	Flows to Suir	Suir_SC_150	624661	623256
Tipperary South	TS-N24-015.00	Cahirabbey Lower Bridge 2	Outeragh (Stream)	Suir_SC_080	605724	626839
Tipperary South	TS-N24-016.00	Cahirabbey Lower Bridge 1	Suir	Suir_SC_090	605612	626641
Tipperary South	TS-N24-021.00	Cappa New Bridge	Aherlow	Suir_SC_090	600210	629700
Tipperary South	TS-N74-002.00	Castles Bridge 1	Springmount 16	Suir_SC_070	601109	638379
Tipperary South	TS-N74-003.00	Castles Bridge 2	Springmount 16	Suir_SC_070	601128	638383
Tipperary South	TS-N76-004.00	Mullennaglogh Bridge	Lingaun	Lingaun_SC_010	636085	632612
Waterford	WC-N25-019.00	Killongford Bridge	Brickey	Colligan_SC_010	624288	590315
Waterford	WC-N25-022.00	Gorteen Bridge	Licky	Goish_SC_010	623281	587534
Waterford	WC-N72-001.00	Lismore Bridge 1	Blackwater [Munster]	Blackwater[Munster]_SC_130	604758	598858
Waterford	WC-N72-002.00	Lismore Bridge 2	Owennashad	Blackwater[Munster]_SC_140	604782	598973
Waterford	WC-N72-003.00	Little Bridge	Glennafallia 18	Blackwater[Munster]_SC_140	610295	599222
Waterford	WC-N72-006.00	Finisk Bridge	Finisk	Finisk_SC_010	616179	596671
Waterford	WC-N72-007.00	Kildangan Bridge	Colligan	Colligan_SC_010	623170	595184



● Year 1 NIS Structures



Client: Transport Infrastructure Ireland		
Project: Term Maintenance Contract No.3		
Title: Location of Year 1 NIS Structures		
Drawn: NS	Checked: POD	Authorised: POD
Date: 19/06/2019	Date: 19/06/2019	Date: 19/06/2019
Drawing No: Figure 1-1		Rev: 0

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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.

### 2.1.2. 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 (air-line) 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-SD-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.

#### 2.1.2.1. 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.

#### 2.1.2.2. High pressure power hosing of surfaces

Any growth (fungal, algae, etc.) on bridge components shall be removed by high pressure hosing or by using a stiff brush or hand-scraper (note that power hosing of masonry structures is not permitted). The water shall be clean, fresh and potable and obtained from a public utility watermains. Pumping of water directly from a watercourse for use is not permitted. Due to the nature of masonry structures, sand/ grit hosing will not be carried out on masonry bridges.

It may be necessary to pre-treat staining with a suitable herbicide / fungicide prior to hosing. It is critical in such circumstances that the user knows where, when and under what circumstances such products can be used and follows instructions for use as set out on the product label, with particular attention given to safe use near water.

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)*.

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.*

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.

### 2.1.2.3. 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.

### 2.1.2.4. 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.

### 2.1.2.5. Vegetation Removal

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.

Note: please also refer to the text relating to the use of herbicides detailed in Section 2.1.1.4 above.

### 2.1.2.6. 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 Callitriche-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 or removed.

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.



#### 2.1.2.7. 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.

#### 2.1.2.8. Patch-painting of steel

Steelwork with damaged, missing, flaking or otherwise poor condition paintwork shall be touch repainted over the defective areas. The surface will be exposed to bare steel using a wire brush. The steel will then be painted using a similar colour and thickness in accordance with the manufacturer's guidelines. No discharge of waste will be permitted on site. All waste arising must be removed from site.

#### 2.1.2.9. Cleaning of graffiti

Graffiti 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.

During project progress meetings it was decided by TII that cleaning of graffiti would only be undertaken in areas that are visible to the public. Any graffiti removal from bridge archways spanning waterbodies and other sensitive environmental areas will not be undertaken.

#### 2.1.2.10. 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.

#### 2.1.2.11. 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.

**Table 2-2 Summary Table of Work Categories for each bridge.**

Structure ID	Structure Name	01 Clearance of watercourse	03 Removal of vegetation	04 Scour repairs	50 Concrete repairs	52 High-pressure hosing of surface	55 Repair of parapet	56 Establish base protection	57 Maintenance of base protection	59 Removal of graffiti	60 Masonry repointing	61 Masonry repairs
CB-N20-002.00	Carroll's Quay Bridge	Y	N	N	N	N	N	N	N	N	N	N
CC-N20-029.00	Awbeg River South	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N20-030.00	Rathelare Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N20-033.00	Farran Bridge	Y	Y	N	Y	N	N	N	N	N	N	N
CC-N72-001.00	Duncannon Bridge	Y	Y	N	N	N	N	N	N	N	Y	Y
CC-N72-004.00	Ahane Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-008.00	Dysert Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-010.00	Leaders Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-013.00	Ketragh Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-014.00	Boland's Bridge	Y	Y	N	Y	N	N	N	N	N	Y	N
CC-N72-015.00	Lombardstown Bridge	Y	Y	N	N	N	N	N	N	N	N	N
CC-N72-018.00	Ballynafeaha Culvert	Y	Y	N	N	N	N	N	N	N	N	N
CC-N72-019.00	Firville Culvert	Y	Y	N	N	N	N	N	N	N	Y	Y
CC-N72-021.00	Park Road River Bridge, Mallow	Y	Y	N	Y	N	N	N	N	N	Y	Y
CC-N72-024.00	Spa Walk South, Mallow	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-025.00	Spa Walk Central, Mallow	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-026.00	Spa Walk North, Mallow	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N72-029.00	Monanimy Cross Roads	Y	Y	N	N	N	N	N	N	N	N	N
CC-N72-030.00	Castletownroche Bridge	Y	Y	N	N	N	N	N	N	N	Y	Y
CC-N72-030.90	Fermoy Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CC-N73-005.00	Ballynamona Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
CL-N67-001.00	Burrane Bridge	Y	Y	N	N	Y	N	N	Y	N	Y	N
KY-N21-018.80	River Feale Bridge	N	Y	N	N	Y	N	N	N	N	N	N

Structure ID	Structure Name	01 Clearance of watercourse	03 Removal of vegetation	04 Scour repairs	50 Concrete repairs	52 High-pressure hosing of surface	55 Repair of parapet	56 Establish base protection	57 Maintenance of base protection	59 Removal of graffiti	60 Masonry repointing	61 Masonry repairs
KY-N22-013.00	Kilkneedan Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
KY-N22-014.00	Ballydeenlea Bridge	N	Y	N	Y	N	N	N	N	N	Y	N
KY-N22-017.00	Deenagh Bridge	Y	Y	N	N	N	N	N	N	Y	Y	Y
KY-N22-019.00	Woodford Bridge	Y	Y	N	Y	N	N	N	Y	N	Y	Y
KY-N22-022.00	Brewsterfield Culvert	Y	Y	N	N	N	N	N	N	N	N	N
KY-N22-026.00	Garries Bridge	N	Y	N	N	Y	N	N	N	N	N	N
KY-N22-027.00	Pouलगorm Bridge	N	Y	N	Y	Y	N	N	N	N	Y	Y
KY-N69-001.50	Ballybeggan River Bridge	Y	Y	N	N	N	N	N	N	Y	N	N
KY-N69-018.00	Skehanierin Culvert	Y	Y	Y	N	N	N	N	N	N	Y	N
KY-N70-015.00	Caragh Bridge	N	Y	N	N	N	N	N	N	N	Y	Y
KY-N70-040.00	Baslickane Bridge	N	Y	N	N	N	N	N	N	N	Y	Y
KY-N70-041.00	Darrynane Beg Bridge	N	Y	Y	N	N	N	N	N	N	Y	N
KY-N70-051.00	Sneem River Bridge	Y	Y	N	Y	N	N	N	N	N	Y	Y
KY-N70-052.00	Tahilla River Bridge	N	Y	N	N	N	N	N	N	N	Y	N
KY-N70-054.00	Blackwater Bridge	N	Y	N	N	N	N	N	N	N	Y	Y
KY-N71-002.00	Muckross Friary Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
KY-N71-003.00	Torc New Bridge	N	Y	N	N	N	N	N	N	N	Y	Y
KY-N71-006.00	Incheens Bridge	N	Y	N	N	N	N	N	Y	N	Y	N
KY-N71-010.00	Carrig East Bridge	N	Y	N	N	N	N	N	N	N	Y	N
KY-N72-001.00	Coolroe South Bridge	N	Y	Y	N	N	Y	N	N	N	Y	N
KY-N72-002.00	River Gweestin Bridge	Y	Y	N	N	N	N	N	N	N	Y	Y
KY-N72-003.00	Ballymalis Bridge	N	Y	Y	N	N	N	N	N	N	Y	Y
KY-N72-008.00	Six Mile Bridge	Y	Y	Y	N	N	N	N	N	N	Y	Y
KY-N72-009.00	Beheenagh Bridge	N	Y	N	N	N	N	N	N	N	N	N
KY-N72-010.00	Gortanahaneboy West Bridge	Y	Y	N	N	N	N	N	Y	N	Y	N
KY-N72-012.00	Cullavaw Bridge	Y	Y	N	N	N	N	N	N	Y	Y	Y

Structure ID	Structure Name	01 Clearance of watercourse	03 Removal of vegetation	04 Scour repairs	50 Concrete repairs	52 High-pressure hosing of surface	55 Repair of parapet	56 Establish base protection	57 Maintenance of base protection	59 Removal of graffiti	60 Masonry repointing	61 Masonry repairs
KY-N86-007.00	Annagh East Bridge	Y	Y	N	N	N	N	N	N	N	Y	Y
KY-N86-019.00	Killelton Bridge	Y	Y	N	N	N	N	N	N	N	N	N
LC-N21-002.00	Goulburn Bridge	Y	Y	N	Y	Y	N	N	Y	N	N	N
LC-N21-018.00	Adare Church Bridge	Y	Y	N	N	N	N	N	N	N	Y	Y
LC-N21-019.00	Adare Bridge	Y	Y	N	N	N	N	N	N	N	Y	Y
LC-N69-009.00	Askeaton Friary River Bridge	N	Y	N	Y	Y	N	N	N	N	N	N
TS-N24-001.00	The Three Bridges	Y	Y	Y	Y	N	N	N	N	N	Y	Y
TS-N24-006.00	Canal Bridge	N	Y	N	Y	N	N	N	N	N	N	N
TS-N24-015.00	Cahirabbey Lower Bridge 2	Y	Y	N	N	N	N	N	N	N	Y	N
TS-N24-016.00	Cahirabbey Lower Bridge 1	N	Y	N	N	Y	N	N	N	N	N	N
TS-N24-021.00	Cappa New Bridge	Y	Y	N	Y	N	N	N	N	Y	Y	N
TS-N74-002.00	Castles Bridge 1	N	Y	N	N	N	N	N	N	N	Y	Y
TS-N74-003.00	Castles Bridge 2	N	Y	N	N	N	N	N	N	N	N	Y
TS-N76-004.00	Mullennaglogh Bridge	N	Y	Y	Y	N	N	N	N	N	Y	Y
WC-N25-019.00	Killongford Bridge	N	Y	N	Y	Y	N	N	N	N	Y	Y
WC-N25-022.00	Gorteen Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
WC-N72-001.00	Lismore Bridge 1	N	Y	N	N	N	N	N	N	N	Y	Y
WC-N72-002.00	Lismore Bridge 2	Y	Y	Y	N	N	N	N	N	N	Y	Y
WC-N72-003.00	Little Bridge	Y	Y	Y	N	N	N	N	N	Y	Y	N
WC-N72-006.00	Finisk Bridge	Y	Y	N	N	N	N	N	N	N	Y	N
WC-N72-007.00	Kildangan Bridge	Y	Y	N	N	Y	N	N	N	N	N	N

## 2.2. Bridge Descriptions

### 2.2.1. Cork City

#### 2.2.1.1. Carroll's Quay Bridge [CB-N20-002.00]

The Carroll's Quay Bridge is a concrete beam bridge carrying N20 over the River Kiln. The maximum span is 11.5m and the minimum span is 4.62m. Structure comprises precast concrete beams on in-situ reinforced concrete abutments, reinforced concrete walls and reinforced concrete capping beams. All piles are steel-cased reinforced concrete piles. Bearing are PSC rubber strips. The bridge is located 5.2km upstream of the Cork Harbour SPA and 11.1km upstream of the Great Island Channel SAC. Plate 2-1 shows the north side of the bridge with parapets and piles.



**Plate 2-1** Carroll's Quay Bridge.

## 2.2.2. Cork County

### 2.2.2.1. Awbeg River South [CC-N20-029.00]

The structure is a single span in-situ reinforced concrete bridge with masonry parapets. The bridge carries N20 over the River Awbeg with span length of 7.12m. The bridge is within the Blackwater River SAC and is located 43.5km upstream of the Blackwater (Cork/Waterford) Callows SPA. Plate 2-2 shows the west elevation.



**Plate 2-2** Awbeg River South.

### 2.2.2.2. Rathelare Bridge [CC-N20-030.00]

The Rathelare Bridge is a 6.1m diameter single span masonry arch bridge with masonry parapets which carries N20 over the River Awbeg. The bridge is within the Blackwater River (Cork/Waterford) SAC and is located 43.5km upstream of the Blackwater Callows SPA. Plate 2-3 shows the east elevation.



**Plate 2-3** Rathelare Bridge.

2.2.2.3. [Farran Bridge \[CC-N20-033.00\]](#)

The Farran Bridge is a 4.77m single span in-situ reinforced concrete bridge with masonry parapets which carries N20 over the River Awbeg. There is 1 no. pipe strapped to the east face of the bridge and 2 no. pipes strapped to the west face of the structure. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 2-4 shows the west elevation.



**Plate 2-4** Farran Bridge.

2.2.2.4. [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 2-5 shows the north elevation.



**Plate 2-5** Duncannon Bridge.



### 2.2.2.5. Ahane Bridge [CC-N72-004.00]

The Ahane Bridge is a 2-span masonry arch bridge with in-situ reinforced concrete extension. Each span is 9.12m and rise of arch barrel at crown is 1.78m. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 2-6a shows the concrete extension at south side and Plate 2-6b shows the arch section at north side.



**Plate 2-6a Ahane Bridge.**



**Plate 2-6b Ahane Bridge.**

### 2.2.2.6. Dysert Bridge [CC-N72-008.00]

The Ahane Bridge is a single span masonry arch with concrete slab extension. The masonry span is 4.91m wide and the rise of arch barrel at crown is 0.86m. There is masonry parapet and steel barrier on steel posts. The structure has been extended by a 400mm beams and 2 no. 1.85m precast box culverts with a 5m span. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 2-7 shows the arch section at north side.



**Plate 2-7**      **Dysert Bridge.**

**2.2.2.7.**      **Leaders Bridge [CC-N72-010.00]**

The Leaders Bridge is a 3-span masonry arch bridge with masonry parapets. The mid-span is 9.85m and two side spans are 9.1m each. The structure carries N72 over the River Allow. The bridge is within the Blackwater River (Cork/Waterford) SAC. There is vegetation growth in the riverbed. Plate 2-8 shows the north elevation.



**Plate 2-8**      **Leaders Bridge.**

**2.2.2.8.**      **Ketragh Bridge [CC-N72-013.00]**

The Ketragh Bridge is a 3-span masonry arch bridge with concrete extension which carries N72 over the River Awbeg. Each span is 2.4m. There is masonry parapets and steel safety barrier on concrete posts. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 2-9a shows the arch section at north side and Plate 2-9b shows the concrete slab section at south side.



**Plate 2-9a** Ketragh Bridge.



**Plate 2-9b** Ketragh Bridge.

#### 2.2.2.9. [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 2-10 shows the concrete section at north side.



**Plate 2-10 Boland's Bridge.**

**2.2.2.10. Lombardstown Bridge [CC-N72-015.00]**

The Lombardstown Bridge is a single span masonry arch bridge with precast concrete box extension. The span is 1.81m and rise of arch barrel at crown is 0.63m. There is a pipe running under the arch riverbed leading to a step down in the level to about 0.51m. The structure carries the N72 over Woodpark Lombardstown stream and is located within 50m of the boundary of the Blackwater River (Cork/Waterford) SAC. Plate 2-11 shows the south elevation.



**Plate 2-11 Lombardstown Bridge.**

**2.2.2.11. Ballynafeaha Culvert [CC-N72-018.00]**

The Ballynafeaha Culvert carries the Ballyclogh Stream under the N80. The culvert consists of 4 no. concrete pipes. The maximum span is 1.49m and the minimum span is 1.17m. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 2-12 shows the north elevation.



**Plate 2-12 Ballynafeaha Bridge.**

**2.2.2.12. 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. Plate 2-13 shows the north side.



**Plate 2-13 Firville Culvert.**

**2.2.2.13. Park Road River Bridge, Mallow [CC-N72-021.00]**

The Park Road River Bridge is a 5.04m single span in-situ concrete bridge with masonry parapets which carries N72 over East Baltydaniel. The passage is a tributary of the River Blackwater. The structure is located 200m upstream of the Blackwater River (Cork/Waterford) SAC. Plate 2-14 shows the north side.



**Plate 2-14 Park Road River Bridge, Mallow.**

[2.2.2.14. Spa Walk South, Mallow \[CC-N72-024.00\]](#)

The structure is a 2-span masonry arch bridge with masonry parapets which carries N72 over the South Caherduggan. The maximum span is 2.55m and the minimum span is 2.45m. The rise of arch barrel at crown is 0.84m. The structure is located 1km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 2-15 shows the east elevation.



**Plate 2-15 Spa Walk South, Mallow.**

[2.2.2.15. Spa Walk Central, Mallow \[CC-N72-025.00\]](#)

The structure is a 3.26m single span masonry arch bridge carrying N72 over the South Caherduggan. The passage is a tributary of the River Blackwater. There is steel safety barrier on steel posts and masonry parapets. There are 2 no. manholes to the south and 3 no. manholes to the north. The structure is located 1.3km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 2-16 shows the east elevation.



**Plate 2-16 Spa Walk Central, Mallow.**

[2.2.2.16. Spa Walk North, Mallow \[CC-N72-026.00\]](#)

The structure is a 3.31m single span masonry arch bridge with masonry parapets carrying N72 over the South Caherduggan which is a tributary of the River Blackwater. The rise of the arch barrel at crown is 0.33m. The structure is located 1.7km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 2-17 shows the east elevation.



**Plate 2-17 Spa Walk North, Mallow.**

[2.2.2.17. Monanimy Cross Roads \[CC-N72-029.00\]](#)

The structure is a single span precast beam bridge with steel parapets which carries N72 over the Monanimy Lower. The structure was rebuilt in 2013. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 2-18 shows the south elevation.



**Plate 2-18 Monanimy Cross Roads.**

**2.2.2.18. 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 2-19 shows the south elevation.



**Plate 2-19 Castletownroche Bridge.**

**2.2.2.19. 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 2-20 shows the west elevation.





**Plate 2-20 Fermoy Bridge.**

**2.2.2.20. Ballynamona Bridge [CC-N73-005.00]**

The Ballynamona Bridge is a 3-span masonry arch bridge with masonry parapets which carries N73 over the River Awbeg. The maximum span is 5.62m and the minimum span is 4.04m. There is a pumphouse for main water supply built on southeast corner of the bridge. The structure is within Blackwater River (Cork/Waterford) SAC. Plate 2-21 shows the east elevation.



**Plate 2-21 Ballynamona Bridge.**

## 2.2.3. Clare

### 2.2.3.1. 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 within the Lower River Shannon SAC and River Shannon and is located 80m upstream of the River Fergus Estuaries SPA. Plate 2-22 shows the north elevation.



Plate 2-22 Burrane Bridge.

## 2.2.4. Kerry

### 2.2.4.1. River Feale Bridge [KY-N21-018.80]

The River Feale Bridge is a 3-span concrete beam bridge carrying N21 over the River Feale. The bridge parapets are aluminium railing. The mid-span is 38m and two side spans are 24.2m each. The structure is within the Lower River Shannon SAC. Plate 2-23 shows the east elevation.



**Plate 2-23 River Feale Bridge.**

### 2.2.4.2. 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 2-24a shows the masonry arch at east side and Plate 2-24b shows the concrete slab at west side.



**Plate 2-24a Kilkneedan Bridge.**



Plate 2-24b Kilneedan Bridge.

2.2.4.3. [Ballydeenlea Bridge \[KY-N22-014.00\]](#)

The Ballydeenlea Bridge is a 5.20m single span masonry arch bridge with in-situ reinforced concrete extension. The structure carries N22 over the River Gweestin. The bridge is within the Castlemaine Harbour SAC. Plate 2-25a shows the masonry arch at west side and Plate 2-25b shows the concrete slab at east side.



**Plate 2-25a** Ballydeenlea Bridge.



**Plate 2-25b** Ballydeenlea Bridge.

2.2.4.4. [Deenagh Bridge \[KY-N22-017.00\]](#)

The Deenagh Bridge is a 4-span masonry arch bridge with concrete slab extension. The maximum span is 5.16m and the minimum span is 3.05m. There is a water main strapped to the east face of the structure. The bridge is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC and is located 500m upstream of the Killarney National Park SPA. Plate 2-26 shows the west elevation.



**Plate 2-26 Deenagh Bridge.**

**2.2.4.5. 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 11.8km upstream of the Killarney National Park SPA. Plate 2-27 shows the underside of east span.



**Plate 2-27 Woodford Bridge.**

**2.2.4.6. Brewsterfield Culvert [KY-N22-022.00]**

The structure is a 5m span corrugated steel pipe under the N22. There is steel safety barrier on steel post. The culvert is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC. Plate 2-28 shows the north elevation.



**Plate 2-28 Brewsterfield Culvert.**

**2.2.4.7. Garries Bridge [KY-N22-026.00]**

The Garries Bridge is a 23.57m single span reinforced concrete structure which carries the N22 over the River Flesk in Co. Kerry. The parapets are aluminium railing. The bridge is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River catchment SAC. Plate 2-29 shows the east elevation.



**Plate 2-29 Garries Bridge.**

**2.2.4.8. 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. Plate 2-30 shows the south elevation.



**Plate 2-30 Poulgorm Bridge.**

**2.2.4.9. Ballybeggan River Bridge [KY-N69-001.50]**

The Ballybeggan River Bridge is a 8.51m single span precast reinforced concrete bridge which carries N69 over the Ballynabrennagh. There are post and rail fencing at both sides of the carriageway. The structure is located 7.4km upstream of the Tralee Bay And Magharees Peninsula, West To Cloghane SAC and 7.3km upstream of the Tralee Bay Complex SPA. Plate 2-31 shows the west elevation.



**Plate 2-31 Ballybeggan River Bridge.**

**2.2.4.10. Skehanierin Culvert [KY-N69-018.00]**

The structure is a 2-span masonry culvert with concrete pipe extension. The maximum span is 1.2m and the minimum span is 1.17m. There are masonry parapets on both sides of the carriageway. The structure is located 1km upstream of the Lower River Shannon SAC. Plate 2-32 shows the west elevation.





**Plate 2-32 Skehanierin Culvert.**

**2.2.4.11. Caragh Bridge [KY-N70-015.00]**

The Caragh Bridge is a 7-span masonry arch bridge which carries N70 over the River Caragh. There are masonry parapets on both sides of the carriageway. The maximum span is 5.63m and the minimum span is 1.05m. The structure is within Castlemaine Harbour SAC and the Castlemaine Harbour SPA. Plate 2-33 shows the north elevation.



**Plate 2-33 Caragh Bridge.**

**2.2.4.12. Baslickane Bridge [KY-N70-040.00]**

The Baslickane Bridge is a 9.2m single span masonry arch bridge which carries N70 over the Finglas river. The rise of arch barrel at crown is 2m. There are masonry parapets on both sides of the carriageway. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Plate 2-34 shows the east elevation.



**Plate 2-34 Baslickane Bridge.**

#### 2.2.4.13. Darrynane Beg Bridge [KY-N70-041.00]

The Darrynane Beg Bridge is a 3.7m single span arch bridge with precast reinforced concrete extension to the north end. There are masonry parapets on both sides of the carriageway. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. The bridge is located 0.5km upstream of the Kenmare River SAC and 1.9km upstream of the Iveragh Peninsula SPA. Plate 2-35 shows the north elevation.



**Plate 2-35 Darrynane Bridge.**

#### 2.2.4.14. Sneem River Bridge [KY-N70-051.00]

The Sneem River Bridge is a 6-span masonry arch with reinforced concrete extension which carries N70 over the Sneem river. The maximum span is 6.75m and the minimum span is 2.20m. The structure is within the Kenmare River SAC. Plate 2-36a shows the east elevation and Plate 2-36b shows the west elevation.



Plate 2-36a Sneem River Bridge.



Plate 2-36b Sneem River Bridge.

#### 2.2.4.15. Tahilla River Bridge [KY-N70-052.00]

The Tahilla River Bridge is a 2-span masonry arch bridge with precast concrete slab extension. The maximum span is 6.45m and the minimum span is 2.06m. There are masonry parapets on both sides of the carriageway. The structure is within the Kenmare River SAC. Plate 2-37 shows the south elevation.



**Plate 2-37 Tahilla River Bridge.**

#### 2.2.4.16. Blackwater Bridge [KY-N70-054.00]

The Blackwater Bridge is a 2-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 6.10m and the minimum span is 4.40m. The structure is within the Kenmare River SAC. Plate 2-38 shows the north elevation.



**Plate 2-38 Blackwater Bridge.**

#### 2.2.4.17. Muckross Friary Bridge [KY-N71-002.00]

The Muckross Friary Bridge is a 3.6m single span in-situ reinforced concrete bridge with masonry parapets on both sides of the carriageway. The structure is within Killarney National Park,

Macgillycuddy's Reeks And Caragh River Catchment SAC and Killarney National Park SPA. Plate 2-39 shows the west elevation.



**Plate 2-39 Muckcross Friary Bridge.**

**2.2.4.18. [Torc New Bridge \[KY-N71-003.00\]](#)**

The Torc New Bridge is a 2-span masonry arch bridge with masonry parapets on both sides of the carriageway. The main span is 7.87m and the side span is 2m. The riverbed is uneven but good flow is being maintained. The structure is within Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC and Killarney National Park SPA. Plate 2-40 shows the east elevation.



**Plate 2-40 Torc New Bridge.**

**2.2.4.19. [Incheens Bridge \[KY-N71-006.00\]](#)**

The Incheens Bridge is a 3.2m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 1.11m. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC and the Killarney National Park SPA. Plate 2-41 shows the east elevation.



**Plate 2-41 Incheens Bridge.**

**2.2.4.20. Carrig East Bridge [KY-N71-010.00]**

The Carrig East Bridge is a 3.2m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 1.15m. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Plate 2-42 shows the east elevation.



**Plate 2-42 Carrig East Bridge.**

**2.2.4.21. Coolroe South Bridge [KY-N72-001.00]**

The Coolroe South Bridge is a 4.65m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The structure carries N72 over the Kealbrogeen Stream which is a tributary of River Laune. The bridge is located 300m upstream of the Castlemaine Harbour SAC and 9.1km upstream of the Castlemaine Harbour SPA. Plate 2-43 shows the north elevation.



**Plate 2-43 Coolroe South Bridge.**

**2.2.4.22. River Gweestin Bridge [KY-N72-002.00]**

The River Gweestin Bridge is a 3-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 3.8m and the minimum span is 3.5m. The riverbed is uneven, and the river is fast flowing. The structure is within the Castlemaine Harbour SAC. Plate 2-44 shows the north elevation.



**Plate 2-44 River Gweestin Bridge.**

**2.2.4.23. Ballymalis Bridge [KY-N72-003.00]**

The Ballymalis Bridge is a 5.20m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 0.85m. The structure carries N72 over the stream at Gortnaskarry, a tributary of the River Laune is. The structure is within the Castlemaine Harbour SAC. Plate 2-45 shows the north elevation.



**Plate 2-45 Ballymalis Bridge.**

**2.2.4.24. Six Mile Bridge [KY-N72-008.00]**

The Six Mile Bridge is a 4-span masonry arch bridge with precast reinforced concrete arch extension to the south end. The maximum span is 6.25m and the minimum span is 3.63m. The first span on the west side is a dry span. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Plate 2-46 shows the south elevation.

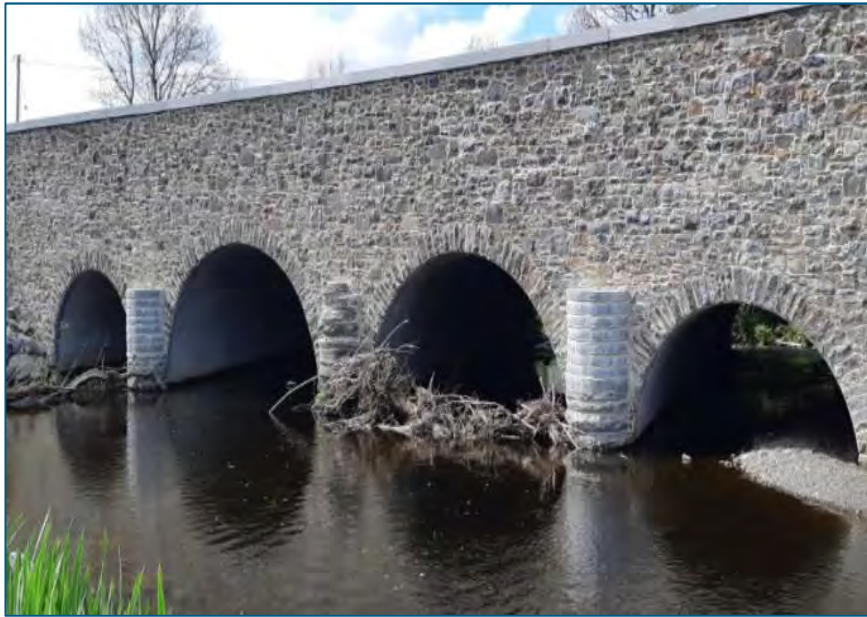


**Plate 2-46 Six Mile Bridge.**

**2.2.4.25. Beheenagh Bridge [KY-N72-009.00]**

The Beheenagh Bridge is a 4-span masonry arch bridge with in-situ reinforced concrete arch extension to the south end. The maximum span is 5.35m and the minimum span is 3.60m. The structure is within the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC. Plate 2-47 shows the south elevation.





**Plate 2-47 Beheenagh Bridge.**

**2.2.4.26. 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. Plate 2-48 shows the deck, abutments and riverbed of the bridge.



**Plate 2-48 Gortanahaneboy Bridge.**

**2.2.4.27. 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 2-49 shows the north elevation.



**Plate 2-49 Cullavaw Bridge.**

**2.2.4.28. Annagh East Bridge [KY-N86-007.00]**

The Annagh East Bridge is a 4.4m single span masonry arch bridge with reinforced concrete arch extension to the south end. The structure carries N86 over the Stream Annagh 23 which is a tributary of the River Lee. There is a metal gate attached to the downstream of the bridge. The structure is within the Tralee Bay And Magharees Peninsula, West To Cloghane SAC and the Tralee Bay Complex SPA. Plate 2-50 shows the north elevation.



**Plate 2-50 Annagh East Bridge.**

**2.2.4.29. Killelton Bridge [KY-N86-019.00]**

The Killelton Bridge is a 3.65m single span masonry arch bridge with masonry parapets on both sides of the carriageway. Structure has been widened to the north by a reinforced, in-situ concrete arch. Structure is very close to a dangerous bend on the main road. The structure is located 530m upstream of the Tralee Bay And Magharees Peninsula, West To Cloghane SAC. Plate 2-51 shows the north elevation.



Plate 2-51 Killelton Bridge.

## 2.2.5. Limerick

### 2.2.5.1. Goulburn Bridge [LC-N21-002.00]

The Goulburn Bridge is a 15.75m single span reinforced concrete bridge with aluminium railing parapets. The riverbed is very shallow. The structure is within the Lower River Shannon SAC. Plate 2-52 shows the south elevation.



**Plate 2-52 Goulburn Bridge.**

### 2.2.5.2. Adare Church Bridge [LC-N21-018.00]

The Adare Church Bridge is a 3-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 2.63m and the minimum span is 2.43m. The structure is within the Lower River Shannon SAC and located 9.5km upstream of the River Shannon and River Fergus Estuaries SPA. Plate 2-53 shows the east elevation.



**Plate 2-53 Adare Church Bridge.**

### 2.2.5.3. Adare Bridge [LC-N21-019.00]

The Adare Bridge is a 10-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 4.56m and the minimum span is 2.17m. The arch soffit has been stabilised with formed concrete. The structure is within the Lower River Shannon SAC and located 9.5km upstream of the River Shannon and River Fergus Estuaries SPA. Plate 2-54 shows the west elevation.



**Plate 2-54 Adare Bridge.**

### 2.2.5.4. Askeaton Friary River Bridge [LC-N69-009.00]

The Askeaton Friary River Bridge is a 26.60m single span reinforced concrete arch bridge with aluminium railing parapets. Arch ring was pinned with steel tooth bearings. The structure is within the River Shannon and River Fergus Estuaries SPA and located 1.9km upstream of the Lower River Shannon SAC. Plate 2-55 shows the south elevation.



**Plate 2-55 Askeaton Friary River Bridge.**

## 2.2.6. Tipperary South

### 2.2.6.1. The Three Bridges [TS-N24-001.00]

The Three Bridges is a 14.24m single span concrete slab bridge with masonry parapets on both sides of the carriageway. Waders are required for access. The median is a steel tension guardrail. The structure is within the Lower River Suir SAC. Plate 2-56 shows the south elevation.



**Plate 2-56 The Three Bridges.**

### 2.2.6.2. 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 2-57 shows the south elevation.



**Plate 2-57 Canal Bridge.**

### 2.2.6.3. Cahirabbey Lower Bridge 2 [TS-N24-015.00]

The Cahirabbey Lower Bridge 2 is a 3-span precast concrete pipe bridge with 1.2m diameter each. There is steel safety barrier on timber post. The structure is within the Lower River Suir SAC. Plate 2-58 shows the west elevation.



**Plate 2-58 Cahirabbey Lower Bridge 2.**

### 2.2.6.4. Cahirabbey Lower Bridge 1 [TS-N24-016.00]

The Cahirabbey Lower Bridge 1 is a 44.10m single span reinforced concrete beam bridge carrying the N24 over the River Suir. The parapets are heavy steel railing. The structure is within the Lower River Suir SAC. Plate 2-59 shows the south elevation.



**Plate 2-59 Cahirabbey Lower Bridge 2.**

### 2.2.6.5. Cappa New Bridge [TS-N24-021.00]

The Cappa New Bridge is a 2-span reinforced concrete bridge carrying the N24 over the River Aherlow which is a tributary of the River Suir. The maximum span is 11.94m and the minimum span

is 11.91m. The parapets are ornate concrete structure. The structure is within the Lower River Suir SAC. Plate 2-60 shows the south elevation.



**Plate 2-60 Cappa New Bridge.**

**2.2.6.6. Castles Bridge 1 [TS-N74-002.00]**

The Castles Bridge 1 is a 4.60m single span masonry arch bridge with masonry parapets on both sides of the carriageway. Masonry arch is gunited. The building to the south west has a cantilevered frontage over the river and west abutment. The structure is within the Lower River Suir SAC. Plate 2-61 shows the east elevation.



**Plate 2-61 Castles Bridge 1.**

**2.2.6.7. Castles Bridge 2 [TS-N74-003.00]**

The Castles Bridge 2 is a 4-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 3.60m and the minimum span is 2.75m. The structure is within the Lower River Suir SAC. Plate 2-62 shows the north elevation.





**Plate 2-62 Castles Bridge 2.**

**2.2.6.8. Mullennaglogh Bridge [TS-N76-004.00]**

The Mullennaglogh Bridge is a 2-span masonry arch bridge with reinforced concrete extension to the east side. The maximum span is 3.66m and the minimum span is 2.42m. The structure carries N76 over the River Lingaun. The structure is within the Lower River Suir SAC. Plate 2-63 shows the west elevation.



**Plate 2-63 Mullennaglogh Bridge.**

## 2.2.7. Waterford

### 2.2.7.1. Killongford Bridge [WC-N25-019.00]

The Killongford Bridge is a 3-span masonry arch bridge with reinforced concrete extension to the west side. The maximum span is 6.50m and the minimum span is 5.80m. The structure carries N25 over the River Brickey. The structure is within the Dungarvan Harbour SPA. Plate 2-64 shows the west elevation.



**Plate 2-64 Killongford Bridge.**

### 2.2.7.2. Gorteen Bridge [WC-N25-022.00]

The Gorteen Bridge is a 5.72m single span masonry arch bridge with reinforced concrete extension to the west side. There is a concrete parapet on the east side and an aluminium parapet on the west side. A guardrail has been installed in front of both parapets. Thickness of gunite to arch barrel is 170mm. The structure is within the Blackwater River (Cork/Waterford) SAC and located 18km upstream of the Blackwater Estuary SPA. Plate 2-65 shows the east elevation.



**Plate 2-65 Gorteen Bridge.**

### 2.2.7.3. Lismore Bridge 1 [WC-N72-001.00]

The Lismore Bridge 1 is a 7-span masonry arch bridge with masonry parapets which carries N72 over the River Blackwater. The maximum span is 30.50m and the minimum span is 12.50m. The river appears to flow through Span 1 only. All other spans are dry. The structure is within the Blackwater River (Cork/Waterford) SAC and is located 530m upstream of the Blackwater Callows SPA. Plate 2-66 shows the east elevation.



Plate 2-66 Lismore Bridge 1.

### 2.2.7.4. Lismore Bridge 2 [WC-N72-002.00]

The Lismore Bridge 2 is a 3-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 9.30m and the minimum span is 9.10m. 100mm gunite sprayed to all arch barrels and abutments. The structure is within the Blackwater River (Cork/Waterford) SAC and is located 1km upstream of the Blackwater Callows SPA. Plate 2-67 shows the west elevation.



Plate 2-67 Lismore Bridge 2.

2.2.7.5. [Little Bridge \[WC-N72-003.00\]](#)

The Little Bridge is a 5-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 5.35m and the minimum span is 3.90m. The structure is within the Blackwater River (Cork/Waterford) SAC. All arch barrels have been gunited with 120mm thick sprayed concrete. Plate 2-68 shows the east elevation.



**Plate 2-68 Little Bridge.**

2.2.7.6. [Finisk Bridge \[WC-N72-006.00\]](#)

The Finisk Bridge is a 4-span masonry arch bridge with reinforced concrete arch extension to the north side. The maximum span is 5.44m and the minimum span is 4.05m. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 2-69 shows the south elevation.



**Plate 2-69 Finisk Bridge.**

2.2.7.7. Kildangan Bridge [WC-N72-007.00]

The Kildangan Bridge is a 3-span reinforced concrete bridge with aluminium railing parapets. The maximum span is 14.85m and the minimum span is 14.10m. The structure is located 1.7km upstream of the Dungarvan Harbour SPA. Plate 2-70 shows the north elevation.



Plate 2-70 Kildangan Bridge.

## 3. Scope of Study

The purpose of this Natura Impact Statement (NIS) is to assess the potential for adverse effects, as a result of the proposed bridge maintenance works, on the integrity of Special Conservation Areas and Special Protection Areas that were 'Screened-In' by the competent authority, i.e. TII.

### 3.1. Aims of the Report

The aim of this report is to provide supporting information to assist the competent authority, in this case TII, to carry out an Appropriate Assessment with respect to the proposed project.

### 3.2. Legislative Context

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, known as the 'Habitats Directive' provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 – 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservations of an EU-wide network of sites known as Natura 2000 sites. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects that could potentially affect Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment: -

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

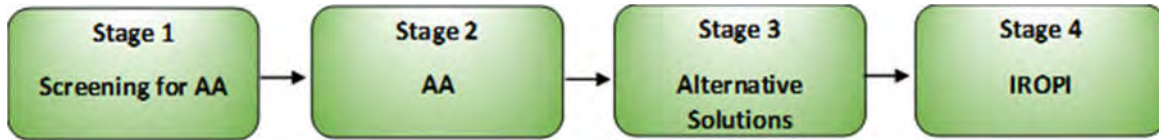
Article 6 (4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan or project will adversely affect a European site. Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures need to be addressed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

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

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

### 3.3. Appropriate Assessment Process

Guidance on the AA process was produced by the European Commission (EC, 2018), which was subsequently used to develop guidance for Ireland by the Department of Environment, Heritage and Local Government in 2009 (DEHLG, 2009). These guidance documents set out a four-staged approach to complete the AA process and outlines the issues and tests at each stage.



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

The stages outlined below are taken from the guidance document Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities (DEHLG, 2009).

#### 3.3.1. Screening for Appropriate Assessment

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

- i. Whether a plan or project is directly connected to or necessary for the management of the site, and
- ii. Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

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

#### 3.3.2. Appropriate Assessment

Appropriate Assessment considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects.

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

#### 3.3.3. Alternative Solutions

This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a Natura 2000 site. The process must return to Appropriate Assessment as alternatives will require assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, is necessary to examine whether there are imperative reasons of overriding interest.

#### 3.3.4. IROPI

This stage examines whether there are imperative reasons of overriding public interest for allowing a plan or project that will have adverse effects on the integrity of a Natura 2000 site to proceed in cases where it has been established that no less damaging alternative solution exists. Compensatory measures must be proposed and assessed, of which the Commission must be informed.

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

This report is a NIS that provides supporting information to the competent authority in their AA decision.



## 4. Methods

### 4.1. Guidance documents

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

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna (Habitats Directive);
- Statutory Instrument No. 477/2011 — European Communities (Birds and Natural Habitats) Regulations 2011;
- European Commission (2018). Managing Natura 2000 sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC;
- European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC;
- European Commission (2007). Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative reasons of overriding public interest, Compensatory Measures, Overall Coherence, Opinion of the Commission;
- Department of the Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities; and,
- Case C-323/17 People over Wind & Anor. v. Coillte.

### 4.2. 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 Natura 2000 sites, hydrological connectivity and ecological data (either 3<sup>rd</sup> 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 Natura 2000 sites in the vicinity of bridge sites. These areas were viewed using Google Earth, Google maps<sup>1</sup> and Bing maps<sup>2</sup> 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.

<sup>1</sup> <https://www.google.ie/maps>

<sup>2</sup> <http://www.bing.com/maps/>

- 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 Natura 2000 sites connected via watercourses to proposed works were identified to establish surface water connectivity between work areas and Natura 2000 sites. The Environmental Protection Agency (EPA) Envision mapping<sup>3</sup> system and datasets were used to identify any hydrological connection between the proposed project and Natura 2000 sites.

Desktop information on relevant Natura 2000 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 Natura 2000 sites.

Planning information from the surrounding area, dated within the last 5 years, was reviewed using the planning enquiry system 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.

#### 4.2.1. Consultation

At the outset of the Munster Term Maintenance Contract No. 3 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. Statement of Authority

The NIS was prepared by Niamh Sweeney and Conor Ruane under the direction of Paul O'Donoghue.

Niamh Sweeney (BSc, MSc (Res)) is a freshwater ecologist with 8 years' experience in ecological consultancy, with specialisms in macroinvertebrate and diatom taxonomy. Niamh has worked on numerous Screenings for Appropriate Assessment, Natura Impact Statements and Ecological Impact Assessments for private architect firms, waste companies, numerous County Councils, the OPW and Inland Fisheries Ireland. Niamh carried out the preparation of this report. Conor Ruane has a BSc (Hons) in Environmental Science. Conor has worked in ecological and environmental consultancy since 2014, working on a wide range of projects including bridge works, road construction, and road maintenance works. A focus of Conor's work to date has been on conducting Appropriate Assessment screenings, ecological appraisals and supporting the preparation of Natura Impact Statements and Ecological Impact Statements. Conor carried out the preparation of this report. Paul O'Donoghue has a BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics. His is a chartered member of the Society for the Environment (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Paul has over 18 years' experience in ecology; including extensive experience in the preparation of Habitat Directive Assessments / Natura Impact Statements (i.e. Appropriate Assessment under Article 6(3) of the EU Habitats Directive). Paul carried out the technical review of this report.

<sup>3</sup> <http://gis.epa.ie/Envision>

## 5. Appropriate Assessment

### 5.1. Connectivity of the Works Area to Natura 2000 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 is currently 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). 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 70 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 Natura 2000 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 Natura 2000 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 Natura 2000 sites and surface water connectivity to a Natura 2000 site.

**Table 5-1 Bridge location relative to Natura 2000 Sites and Surface Water connectivity.**

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
CB-N20-002.00	Carroll's Quay Bridge	Kiln	Kiln_SC_010	No	N/A	No	N/A	Great Island Channel SAC ca. 11.1km d/s of bridge	Cork Harbour SPA ca. 5.2km d/s of bridge
CC-N20-029.00	Awbeg River South	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	Blackwater Callows SPA ca. 43.5km d/s of bridge
CC-N20-030.00	Rathelare Bridge	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	Blackwater Callows SPA ca. 43.5km d/s of bridge
CC-N20-033.00	Farran Bridge	Awbeg [Buttevant] [East]	Awbeg[Buttevant]_SC_010	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
CC-N72-001.00	Duncannon Bridge	Blackwater [Munster]	Blackwater[Munster]_SC_010	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within SAC	No
CC-N72-004.00	Ahane Bridge	Owentaraglin 18	Blackwater[Munster]_SC_020	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
CC-N72-008.00	Dysert Bridge	Knockaneroe 18	Blackwater[Munster]_SC_030	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 1.4km d/s of bridge	No
CC-N72-010.00	Leaders Bridge	Allow	Dalua_SC_020	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within SAC	No
CC-N72-013.00	Ketragh Bridge	Awbeg [Kanturk]	Blackwater[Munster]_SC_060	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
CC-N72-014.00	Boland's Bridge	Non-listed	Blackwater[Munster]_SC_090	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
CC-N72-015.00	Lombardstown Bridge	Woodpark Lombardstown	Blackwater[Munster]_SC_090	Within 50m	Blackwater River (Cork/Waterford) SAC	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 35m d/s of bridge	No
CC-N72-018.00	Ballynafeaha Culvert	Ballyclogh (Stream)	Blackwater[Munster]_SC_090	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	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-N72-021.00	Park Road River Bridge, Mallow	East Baltydaniel	Blackwater[Munster]_SC_090	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 200m d/s of bridge	No
CC-N72-024.00	Spa Walk South, Mallow	South Caherduggan	Blackwater[Munster]_SC_090	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 1km d/s of bridge	No
CC-N72-025.00	Spa Walk Central, Mallow	South Caherduggan	Blackwater[Munster]_SC_090	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 1.3km d/s of bridge	No
CC-N72-026.00	Spa Walk North, Mallow	South Caherduggan	Blackwater[Munster]_SC_090	No	N/A	No	N/A	Blackwater River (Cork/Waterford) SAC ca. 1.7km d/s of bridge	No
CC-N72-029.00	Monanimy Cross Roads	MONANIMY_LO WER	Blackwater[Munster]_SC_090	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
CC-N72-030.00	Castletownroche Bridge	Awbeg [Buttevant]	Blackwater[Munster]_SC_100	Yes	Blackwater River	No	N/A	Within	No

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
					(Cork/Waterford) SAC				
CC-N72-030.90	Fermoy Bridge	Blackwater [Munster]	Blackwater[Munster]_SC_110	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	Blackwater Callows SPA ca. 1.6km d/s of bridge
CC-N73-005.00	Ballynamona Bridge	Awbeg [Buttevant]	Blackwater[Munster]_SC_100	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
CL-N67-001.00	Burrane Bridge	TONAVOHER	Cloon[Clare]_SC_010	Yes	Lower River Shannon SAC	Yes	River Shannon and River Fergus Estuaries SPA	Within	River Shannon and River Fergus Estuaries SPA ca. 0.08km d/s of bridge
KY-N21-018.80	River Feale Bridge	Feale	Feale_SC_030	yes	Lower River Shannon SAC	No	N/A	N/A	No
KY-N22-013.00	Kilkneedan Bridge	LEAMNAGUILA 22	Laune_SC_020	Yes	Castlemaine Harbour SAC	No	N/A	Within	No
KY-N22-014.00	Ballydeenlea Bridge	Gweestin	Laune_SC_020	Yes	Castlemaine Harbour SAC	No	N/A	Within	No
KY-N22-017.00	Deenagh Bridge	Deenagh	Deenagh_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	Killarney National Park SPA ca. 0.5km 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 SPA ca. 5.2km d/s of bridge
KY-N22-022.00	Brewsterfield Culvert	KNOCKANARR OOR	Flesk[Kerry]_SC_020	Yes	Killarney National Park, Macgillicuddy's Reeks And	No	N/A	Within	No

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
					Caragh River Catchment SAC				
KY-N22-026.00	Garries Bridge	Flesk [Kerry]	Flesk[Kerry]_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	No
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	No
KY-N69-001.50	Ballybeggan River Bridge	BALLYNABREN NAGH	Lee[Tralee]_SC_010	No	N/A	No	N/A	Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 7.4km d/s of bridge	Tralee Bay Complex SPA ca. 7.3km d/s of bridge
KY-N69-018.00	Skehanierin Culvert	SKEHANIERIN	Feale_SC_040	No	N/A	No	N/A	Lower River Shannon SAC ca. 1km d/s of bridge	No
KY-N70-015.00	Caragh Bridge	Caragh	Caragh_SC_010	Yes	Castlemaine Harbour SAC	Yes	Castlemaine Harbour SPA	Within	Within
KY-N70-040.00	Baslickane Bridge	Finglas river (Waterville)	Finglasriver[Waterville]_SC_01	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	No
KY-N70-041.00	Darrynane Beg Bridge	DARRYNANE_M ORE	BEHAGHANE_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within. Kenmare River SAC ca. 0.5km d/s of bridge.	Iveragh Peninsula SPA ca. 1.9km d/s of bridge

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
KY-N70-051.00	Sneem River Bridge	Sneem	Sneem_SC_010	Yes	Kenmare River SAC	No	N/A	Within	No
KY-N70-052.00	Tahilla River Bridge	Tahilla 21	Sneem_SC_010	Yes	Kenmare River SAC	No	N/A	Within	No
KY-N70-054.00	Blackwater Bridge	Blackwater [Kerry]	Kealduff_SC_010	Yes	Kenmare River SAC	No	N/A	Within	No
KY-N71-002.00	Muckross Friary Bridge	Cloghereen	Laune_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	Yes	Killarney National Park SPA	Within	Killarney National Park SPA ca. 0.003km d/s of bridge
KY-N71-003.00	Torc New Bridge	Owengarriff (Kerry)	Laune_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	Yes	Killarney National Park SPA	Within	Within
KY-N71-006.00	Incheens Bridge	Galway's	Crinnagh_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	Yes	Killarney National Park SPA	Within	Within
KY-N71-010.00	Carrig East Bridge	undefined	Finnihy_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	No
KY-N72-001.00	Coolroe South Bridge	KEALBROGEEEN STREAM (LAUNE)	Laune_SC_020	No	N/A	No	N/A	Castlemaine Harbour SAC ca. 300m d/s of bridge	Castlemaine Harbour SPA ca. 9.1km d/s of bridge
KY-N72-002.00	River Gweestin Bridge	Gweestin	Laune_SC_020	Yes	Castlemaine Harbour SAC	No	N/A	Within	No



Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
KY-N72-003.00	Ballymalis Bridge	GORTNASKAR RY	Laune_SC_020	Yes	Castlemaine Harbour SAC	No	N/A	Within	No
KY-N72-008.00	Six Mile Bridge	Owneykeagh	Quagmire_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	No
KY-N72-009.00	Beheenagh Bridge	Beheenagh 22	Quagmire_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	No
KY-N72-010.00	Gortanahaney West Bridge	BEHEENAGH 22	Quagmire_SC_010	Yes	Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC	No	N/A	Within	No
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-N86-007.00	Annagh East Bridge	ANNAGH 23	Lee[Tralee]_SC_010	Yes	Tralee Bay And Magharees Peninsula, West To Cloghane SAC	Yes	Tralee Bay Complex SPA	Within	Within
KY-N86-019.00	Killelton Bridge	Killelton	Owencashla_SC_010	No	N/A	No	N/A	Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 530m d/s of bridge	No
LC-N21-002.00	Goulburn Bridge	Allaghaun	Feale_SC_020	Yes	Lower River Shannon SAC	No	N/A	Within SAC	u/s

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
LC-N21-018.00	Adare Church Bridge	Maigue	Maigue_SC_040	Yes	Lower River Shannon SAC	No	N/A	Within SAC	River Shannon and River Fergus Estuaries SPA ca. 9.5km d/s of bridge
LC-N21-019.00	Adare Bridge	Maigue	Maigue_SC_040	Yes	Lower River Shannon SAC	No	N/A	Within SAC	River Shannon and River Fergus Estuaries SPA ca. 9.5km d/s of bridge
LC-N69-009.00	Askeaton Friary River Bridge	Deel [Newcastlewest]	Deel[Newcastlewest]_SC_040	No	N/A	Yes	River Shannon and River Fergus Estuaries SPA	Lower River Shannon SAC ca. 1.9km d/s of bridge	Within
TS-N24-001.00	The Three Bridges	KILLONERRY	Lingaun_SC_010	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N24-006.00	Canal Bridge	Flows to Suir	Suir_SC_150	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N24-015.00	Cahirabbey Lower Bridge 2	Outeragh (Stream)	Suir_SC_080	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N24-016.00	Cahirabbey Lower Bridge 1	Suir	Suir_SC_090	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N24-021.00	Cappa New Bridge	Aherlow	Suir_SC_090	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N74-002.00	Castles Bridge 1	Springmount 16	Suir_SC_070	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N74-003.00	Castles Bridge 2	Springmount 16	Suir_SC_070	Yes	Lower River Suir SAC	No	N/A	Within	No
TS-N76-004.00	Mullennaglogh Bridge	Lingaun	Lingaun_SC_010	Yes	Lower River Suir SAC	No	N/A	Within	No
WC-N25-019.00	Killongford Bridge	Brickey	Colligan_SC_010	No	N/A	Yes	Dungarvan Harbour SPA	N/A	Within

Structure ID	Structure Name	Watercourse Name (EPA)	WFD Sub-Catchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological Link to SAC	Hydrological Link to SPA
WC-N25-022.00	Gorteen Bridge	Licky	Goish_SC_010	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	Blackwater Estuary SPA ca. 18km d/s of bridge
WC-N72-001.00	Lismore Bridge 1	Blackwater [Munster]	Blackwater[Munster]_SC_130	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	Blackwater Callows SPA ca. 530m d/s of bridge
WC-N72-002.00	Lismore Bridge 2	Owennashad	Blackwater[Munster]_SC_140	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	Blackwater Callows SPA ca. 1km d/s of bridge
WC-N72-003.00	Little Bridge	GLENNAFALLIA 18	Blackwater[Munster]_SC_140	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
WC-N72-006.00	Finisk Bridge	Finisk	Finisk_SC_010	Yes	Blackwater River (Cork/Waterford) SAC	No	N/A	Within	No
WC-N72-007.00	Kildangan Bridge	Colligan	Colligan_SC_010	No	N/A	No	N/A	N/A	Dungarvan Harbour SPA ca. 1.7km d/s of bridge

## 5.2. Description of the Special Areas of Conservation

### 5.2.1. Blackwater River (Cork/Waterford) SAC (002170)

#### 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 margaritifera* occur, while *Austropotamobius pallipes* is found in the Awbeg River. *Lutra 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 *Callitricho-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]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaite Shad) [1103]
- *Salmo salar* (Salmon) [1106]

- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]

## 5.2.2. Lower River Shannon SAC (002165)

### 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. Poulnasherry 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]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [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]

### 5.2.3. Castlemaine Harbour SAC (000343)

#### 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. Landuses 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 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]

#### 5.2.4. Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC (000365)

##### 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 Callitricho-Batrachion vegetation [3260]
- 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 (*Molinion caeruleae*) [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]

### 5.2.5. Kenmare River SAC (002158)

#### 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. Dursley 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 maritimae*) [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]
- 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]

## 5.2.6. Tralee Bay And Magharees Peninsula, West To Cloghane (002070)

### 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. 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]

## 5.2.7. Lower River Suir SAC (002137)

### Site Overview

"The Suir River system flows through the counties of Tipperary, Kilkenny and Waterford. The site consists of all of the freshwater stretches of the Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many of the tributaries including the Clodiagh, the Lingaun, Anner,

Nier, Tar, Aherlow and Multeen. Much of the system flows through Carboniferous limestone, though towards Waterford the geology changes to Old Red Sandstone and Ordovician bedrocks. The site supports a diverse range of habitats, including marsh, reedbeds, wet and dry grasslands, broad-leaved semi-natural woodlands, salt marshes, tidal rivers and estuarine channels. Substantial areas of improved grassland and arable lands are included for water quality reasons.

This site contains a range of Annex I habitats, including floating river vegetation, eutrophic tall herbs, alluvial forest, old oak woods, yew woods and salt meadows. The site is very important for the presence of a number of scarce and specialised Annex II animal species with particularly important populations of the fish species *Salmo salar* and *Alosa fallax fallax*. *Lutra lutra* is widespread on the system, as is *Austropotamobius pallipes*. The site supports two Annex I priority and five non-priority Annex I habitats. There are four Annex I species of birds present within the site. The rare lichen *Lobaria pulmonaria*, an ancient woodland indicator, occurs at Portlaw Oak Woods, within the site.”

### Qualifying Interests

- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- 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]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twait Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

### 5.2.8. Great Island Channel SAC (001058)

#### Site Overview

“This site comprises the north-eastern part of Cork Harbour. It includes all of the Great Island Channel, the intertidal areas between Fota Island and Little Island, and also the estuary of the Dungourney and Owennacurra Rivers as far as Midleton. The North Channel is on average 1 km wide but extends for about 9 km from east to west. The area is well sheltered and the intertidal sediments are predominantly fine muds. In addition to the estuarine habitats, the site includes some wet grassland areas which are used by roosting birds, as well as some broad-leaved woodland at Fota Island. Compared to the rest of Cork Harbour, the Great Island Channel is relatively undisturbed, with aquaculture the main activity.

The site is of ecological importance for its examples of intertidal mud and sand flats and Atlantic salt meadows of the estuarine type. Both habitats are fairly extensive in area and of moderate to good quality. Site has high ornithological importance, supporting regularly c. 50% of the wintering waterfowl of Cork Harbour. Significant proportions of the internationally

*important populations of Limosa limosa and Tringa totanus which winter in Cork Harbour utilise the site and it supports nationally important populations of a further 12 species, including Pluvialis apricaria and Limosa lapponica, both listed on Annex I of the EU Birds Directive.”*

#### Qualifying Interests

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

### 5.2.9. St. Gobnet's Wood SAC (000106)

#### Site Overview

*“A relatively large complex of oakwood developed on brown earth, brown podzolic & gleyed soils, situated on rocky slopes on either side of the River Sullane. Seepage zones, small watercourses, a narrow, rocky defile and areas of rock outcrop occur within the woodlands.*

*Although partially degraded through the presence of exotic trees and an area of dense Rhododendron ponticum and Prunus laurocerasus, this wood is of value as a good example of old oak woodland. Notable for its particularly rich ground flora, including Saxifraga spathularis, Euphorbia hyberna and a range of bryophytes. It is also habitat for Geomalacus maculosus and foraging area for seven species of bat.”*

#### Qualifying Interest

- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]

## 5.3. Description of the Special Protection Areas

### 5.3.1. Cork Harbour SPA (004030)

#### Site Overview

“Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owenacurra. The site comprises the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy Estuary, Whitegate Bay and the Rostellan inlet. Owing to the sheltered conditions, the intertidal flats are often muddy in character. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Otherwise, birds roost on stony shorelines and in some areas fields adjacent to the shore. Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. It supports an internationally important population of *Tringa totanus*. A further 15 species have populations of national importance, with particularly notable numbers of *Tadorna tadorna* (9.6% of national total), *Anas clypeata* (4.5% of total), *Anas acuta* (4.2% of total) and *Phalacrocorax carbo* (4.1% of total) occurring. It has regionally important populations of *Pluvialis apricaria* and *Limosa lapponica*. Passage waders are regular, including *Philomachus pugnax* and *Tringa erythropus*. It is an important site for gulls in winter and autumn, especially *Larus canus* and *Larus fuscus*. The site provides both feeding and roosting areas for the waterfowl species. The quality of most of the estuarine habitats is good. The wintering birds have been well-monitored since the 1970s. The site has a breeding colony of *Sterna hirundo* which is of national importance. The colony is monitored annually and the chicks ringed.”

#### Qualifying Interests

- Little Grebe (*Tachybaptus ruficollis*) [A004]
- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Pintail (*Anas acuta*) [A054]
- Shoveler (*Anas clypeata*) [A056]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]

- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Lesser Black-backed Gull (*Larus fuscus*) [A183]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

### 5.3.2. Blackwater Callows SPA (004094)

#### Site Overview

*“The site comprises a 23 km stretch of the River Blackwater, running in a west to east direction between Fermoy and Lismore. It includes the river channel and strips of seasonally flooded grassland within the flood plain. Sandstone ridges parallel to the river confine the area of flooding to a relatively narrow corridor. The lower stretch, from Ballyduff to Lismore, is more subject to flooding than the upper part. The river channel has a well-developed aquatic community, along with emergent swamp vegetation in places. Most of the land above the banks is improved for agriculture, with only occasional areas of fringing marshland, wet grassland and wet woodland (mostly *Salix* spp.) still present. Some arable areas occur.*

*The site is of high importance for wintering waterfowl. It supports an internationally important population of *Cygnus cygnus* and nationally important populations of *Anas penelope*, *Anas crecca* and *Limosa limosa*. The population of *Limosa limosa* has exceeded the threshold for international importance at times. Formerly it had a regular population of *Cygnus columbarius bewickii* but this no longer occurs, reflecting a contraction of range at a national level. *Egretta garzetta* breeds locally and this species is now a regular visitor to the site. The Blackwater system is an important salmonid fishery and is of high conservation value for *Salmo salar*. It also supports important populations of *Lampetra planeri*, *L. fluviatilis*, *Petromyzon marinus* and *Alosa fallax fallax*. *Lutra lutra* is widespread throughout the site.”*

#### 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]

### 5.3.3. River Shannon and River Fergus Estuaries SPA (004077)

#### 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 Poulmasherry 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. 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 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]

#### 5.3.4. Killarney National Park SPA (004038)

##### 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 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]

### 5.3.5. Tralee Bay Complex SPA (004188)

#### 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]
- 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]

### 5.3.6. Iveragh Peninsula SPA (004154)

#### Site Overview

*“The Iveragh Peninsula SPA is a large site situated on the west coast of Co. Kerry. The site encompasses the high coast and sea cliff sections of the peninsula from just west of Rossbehy in the north, around to the end of the peninsula at Valencia Island and Bolus Head, and as far east as Lamb's Head in the south. The site includes the sea cliffs, the land adjacent to the cliff edge and also areas of sand dunes at Derrynane and Beginish. The high water mark forms the seaward boundary except at Doulus Head/Killelan Mountain where the adjacent sea area to a distance of 500 m from the cliff base is included. The site is underlain by Devonian sandstones, siltstones and mudstones. A small area of igneous rocks (dolerite and gabbro) occurs at Beginish and on the adjacent shore.*

*The site supports a nationally important population of breeding Chough, a Red Data Book species that is listed on Annex I of the E.U. Birds Directive; 106 breeding pairs were recorded from the site in the 1992 survey and 86 in the 2002/03 survey. Flocks of up to 42 birds were recorded in the 2002 to 2004 period. The site also supports a Peregrine population (5 pairs in 2002); this species is listed on Annex I of the E.U. Birds Directive. The site also holds nationally important populations of Guillemot (2,860 pairs in 1999-2000), Fulmar (766 pairs in 1999-2000), Kittiwake (1,150 pairs in 2000), Great Black-backed Gull (63 pairs in 1999-2000) and Black Guillemot (118 individuals in 1999), as well as smaller populations of other breeding seabirds: Razorbill (90 pairs in 1999-2000), Herring Gull (30 pairs in 1999-2000), Cormorant (33 pairs in 1999-2000) and Shag (11 pairs in 1999-2000).”*

#### Qualifying Interests

- Fulmar (*Fulmarus glacialis*) [A009]
- Peregrine (*Falco peregrinus*) [A103]
- Kittiwake (*Rissa tridactyla*) [A188]
- Guillemot (*Uria aalge*) [A199]
- Chough (*Pyrrhocorax pyrrhocorax*) [A346]

### 5.3.7. Castlemaine Harbour SPA (004029)

#### 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*.”

### 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]

### 5.3.8. Blackwater Estuary SPA (004028)

#### 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]
- 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]

### 5.3.9. Dungarvan Harbour SPA (004032)

#### Site Overview

*“The site is a large east-facing bay, sheltered on the south by Helvick Head and Ballynacourty Point to the north. A narrow north-south shingle spit, which almost divides the bay in two, provides very sheltered conditions for the inner part of the site. The bay is essentially the estuaries of three main rivers, the Brickey, the Colligan and the Glendine. At low tide, very extensive intertidal sand and mud flats are exposed. These have a diverse macro-invertebrate fauna, and *Zostera* is present. Salt marshes often fringe the intertidal flats, especially in the more sheltered areas. The site includes a substantial area of shallow marine water in outer Dungarvan Harbour.*

*This site qualifies for international importance as waterfowl numbers regularly exceed 20,000. It also qualifies as it supports internationally important populations of *Branta bernicla hrota*, *Limosa limosa* and *Limosa lapponica*. The *Limosa lapponica* population is one of the largest in the country comprising 6.0% of the national total. A further eleven species have populations of national importance, notably *Pluvialis squatarola* (5.9% of total), *Pluvialis apricaria* (3.3% of total), *Calidris alpina* (3.6% of total), *Calidris canutus* (2.8% of total) and *Tadorna tadorna* (3.6% of total). The site provides high quality feeding areas and good roost sites. At high tides, however, roosts outside of the site area are also used. Overall, this is the most important site for waterfowl in County Waterford and is one of the most important in the region.”*

#### Qualifying Interests

- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Oystercatcher (*Haematopus ostralegus*) [A130]

- 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]
- Turnstone (*Arenaria interpres*) [A169]
- Wetland and Waterbirds [A999]

## 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 Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

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.

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.

The conservation objectives for SACs and SPAs were considered during the preparation of this report.

## 5.5. Qualifying Interests

Table 5-2 summarises the SAC qualifying interests and Table 5-3 the SPA qualifying interests within the potential zone of influence of the proposed project.

Appendix A lists the bridges that fall within the potential zone of influence of each SAC and SPA and lists the qualifying interests of each Natura 2000 site.

**Table 5-2 SAC Qualifying Interests.**

<b>SAC Qualifying Interests</b>
<b>Species</b>
1014 March snail ( <i>Vertigo angustior</i> )
1029 Freshwater pearl mussel ( <i>Margaritifera margaritifera</i> )
1092 White-clawed Crayfish ( <i>Austropotamobius pallipes</i> )
1095 Sea Lamprey ( <i>Petromyzon marinus</i> )
1096 Brook lamprey ( <i>Lampetra planeri</i> )
1099 River lamprey ( <i>Lampetra fluviatilis</i> )
1103 Twaite Shad ( <i>Alosa fallax</i> )
1106 Salmon ( <i>Salmo salar</i> )
1303 Lesser horseshoe bat ( <i>Rhinolophus hipposideros</i> )
1349 Bottlenose Dolphin ( <i>Tursiops truncates</i> )
1355 Otter ( <i>Lutra lutra</i> )
1365 Harbour seal ( <i>Phoca vitulina</i> )
1395 Petalwort ( <i>Petalophyllum ralfsii</i> )
1421 Killarney fern ( <i>Trichomanes speciosum</i> )
1833 Slender naiad ( <i>Najas flexilis</i> )
5046 Killarney shad ( <i>Alosa killarnensis</i> )
<b>Habitats</b>
1110 Sandbanks which are slightly covered by sea water all the time
1130 Estuaries
1140 Mudflats and sandflats not covered by seawater at low tide

SAC Qualifying Interests
1150 Coastal lagoons*
1160 Large shallow inlets and bays
1170 Reefs
1210 Annual vegetation of drift lines
1220 Perennial vegetation of stony banks
1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts
1310 Salicornia and other annuals colonizing mud and sand
1330 Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> )
1410 Mediterranean salt meadows ( <i>Juncetalia maritimi</i> )
2110 Embryonic shifting dunes
2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)
2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*
2170 Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> )
2190 Humid dune slacks
3110 Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )
3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoeto</i> Nanojuncetea
3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation
4010 Northern Atlantic wet heaths with <i>Erica tetralix</i>
4030 European dry heaths
4060 Alpine and Boreal heaths
5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands
6130 <i>Calaminarian</i> grasslands of the <i>Violetalia calaminariae</i>
6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )
6430 <i>Hydrophilous</i> tall herb fringe communities of plains and of the montane to alpine levels
7130 Blanket bogs (* if active bog)
7150 Depressions on peat substrates of the <i>Rhynchosporion</i>
8330 Submerged or partially submerged sea caves
91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles
91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )*
91J0 <i>Taxus baccata</i> woods of the British Isles*

Note: - \* denotes priority annex habitats.

**Table 5-3 SPA Qualifying Interests.**

<b>SPA Qualifying Interests</b>
<b>Species</b>
A001 Red-throated Diver ( <i>Gavia stellata</i> )
A004 Little Grebe ( <i>Tachybaptus ruficollis</i> )
A005 Great Crested Grebe ( <i>Podiceps cristatus</i> )
A009 Fulmar ( <i>Fulmarus glacialis</i> )
A017 Cormorant ( <i>Phalacrocorax carbo</i> )
A028 Grey Heron ( <i>Ardea cinerea</i> )
A038 Whooper Swan ( <i>Cygnus Cygnus</i> )
A046 Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> )
A048 Shelduck ( <i>Tadorna tadorna</i> )
A050 Wigeon ( <i>Anas penelope</i> )
A052 Teal ( <i>Anas crecca</i> )
A053 Mallard ( <i>Anas platyrhynchos</i> )
A054 Pintail ( <i>Anas acuta</i> )
A056 Shoveler ( <i>Anas clypeata</i> )
A062 Scaup ( <i>Aythya marila</i> )
A065 Common Scoter ( <i>Melanitta nigra</i> )
A069 Red-breasted Merganser ( <i>Mergus serrator</i> )
A098 Merlin ( <i>Falco columbarius</i> )
A103 Peregrine ( <i>Falco peregrinus</i> )
A130 Oystercatcher ( <i>Haematopus ostralegus</i> )
A137 Ringed Plover ( <i>Charadrius hiaticula</i> )
A140 Golden Plover ( <i>Pluvialis apricaria</i> )
A142 Lapwing ( <i>Vanellus vanellus</i> )
A143 Knot ( <i>Calidris canutus</i> )
A144 Sanderling ( <i>Calidris alba</i> )
A149 Dunlin ( <i>Calidris alpina</i> )
A156 Black-tailed Godwit ( <i>Limosa limosa</i> )
A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> )
A160 Curlew ( <i>Numenius arquata</i> )
A162 Redshank ( <i>Tringa totanus</i> )
A164 Greenshank ( <i>Tringa nebularia</i> )
A169 Turnstone ( <i>Arenaria interpres</i> )
A179 Black-headed Gull ( <i>Chroicocephalus ridibundus</i> )
A182 Common Gull ( <i>Larus canus</i> )
A183 Lesser Black-backed Gull ( <i>Larus fuscus</i> )
A188 Kittiwake ( <i>Rissa tridactyla</i> )
A193 Common Tern ( <i>Sterna hirundo</i> )

<b>SPA Qualifying Interests</b>
A199 Guillemot ( <i>Uria aalge</i> )
A346 Chough ( <i>Pyrrhocorax pyrrhocorax</i> )
A395 Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> )
<b>Habitats</b>
A999 Wetland and Waterbirds



## 5.6. Identification of Potential Impacts on Natura 2000 sites

The available information on Natura 2000 sites was reviewed to establish whether or not the proposed works have the potential to have an adverse effect on the integrity of the designated sites. The likelihood of impacts on the qualifying interests of the Natura 2000 sites identified in this report is based on information collated from the desk study, GIS database, bridge photos, work orders 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 Natura 2000 sites and the features of interest and conservation objectives of the Natura 2000 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 July to September inclusive, unless otherwise agreed with and permitted by Inland Fisheries Ireland.

### 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 road, 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.

Where a bridge is a single span structure, there is potential for the temporary obstruction of species movement. The bridges that are single span at which scour repairs and base protection works are called up are:-

- KY-N70-041.00
- KY-N71-006.00
- KY-N72-001.00
- KY-N72-003.00
- KY-N72-010.00
- LC-N21-002.00

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 5-2 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 5-4) 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 5-4 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	

Three work items listed in Table 5-4 above, which has been identified as having a potential to impact, are not part of the work order list being considered in this NIS. These are; 44 Maintenance of gabion, 45 Maintenance of slope protection and 47 Reshaping (imported materials). Of the works listed above ten were found to have a potential impact to negative impacts to a SAC and/or SPA and are listed in Table 5-5.

**Table 5-5 Work items identified 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
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	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
59 Removal of graffiti	Reduction in species diversity 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 5-6 below details the pathway, receptor and impact for each of the EIRSPAN work types called up in the Work Orders for the 70 bridges.

Table 5-7 details the potential impacts posed at a bridge and the qualifying interests potentially affected. The geographic location of the bridge, proposed works, nature of connectivity to a Natura 2000 site, and the sites' structure, function and conservation objectives were taken into account when determining the potential impacts and qualifying interests within the zone of influence (Zol).

### 5.6.5. Freshwater pearl mussel considerations

The NPWS freshwater pearl mussel dataset and 2018 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.

[Redacted]

Specialist FWPM surveys were commissioned at bridges where either where no present day data was available for the bridge, or where the nature and extent of the works had the potential to impact on pearl mussel.

Where freshwater pearl mussel is located in the immediate vicinity of a bridge, there is a potential impact for direct physical disturbance to the species and indirect impacts through changes to surface water quality. Where freshwater pearl mussel is located at a remove from and downstream of a bridge, there is potential for indirect impacts through changes to surface water quality. Water quality best practice measures detailed in the mitigation measures in Section 5.8 will mitigate potential indirect impacts to freshwater pearl located downstream of bridges.

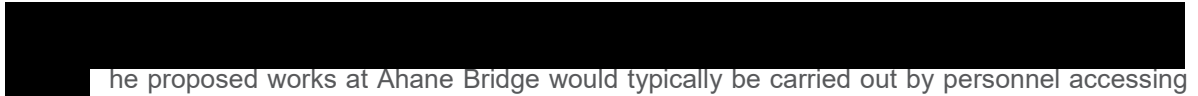
As can be seen from Table 5-8, Ballynafeaha Culvert (CC-N72-018.00) was surveyed in 2018 (Aquatic Services Unit, 2018) and no freshwater pearl mussel were recorded in the vicinity of this structure. The substrate of the channel was marl with calcareous deposits and thus, unsuitable for freshwater pearl mussel. Therefore, there is no potential for direct impacts to freshwater pearl mussel at this bridge. Best practice surface water quality mitigation measures (Section 5.8) will mitigate any potential indirect impacts to freshwater pearl mussel located downstream in the main channel of the River Blackwater.

[Redacted]

Duncannon Bridge was surveyed in 2018 and no freshwater pearl mussel were recorded in the vicinity of the bridge. The channel contained patches of suitable habitat but was largely unsuitable (Aquatic Services Unit, 2018).

[Redacted] The proposed works would usually be conducted by personnel accessing the river

channel on foot and thus, a second pearl mussel survey was commissioned at Duncannon Bridge (summer 2019) to provide updated survey data to the Contractor and their appointed contractor prior to the works commencing. The 2019 pearl mussel survey also found no freshwater pearl mussel in the vicinity of Duncannon Bridge (Sweeney Consultancy, 2019).

 he proposed works at Ahane Bridge would typically be carried out by personnel accessing the channel on foot and thus, Section 5.8 details mitigation measures regarding access at Ahane Bridge.

#### 5.6.6. 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 5-6 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)	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
50 Concrete 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
52 High-pressure hosing of surface	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
55 Repair of parapet	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)	Surface water dependent Annex II species and Annex I habitats



Work Item	Pathway	Potential Impacts	Receptor
		<ul style="list-style-type: none"> <li>- Indirect reductions in species density</li> <li>- Indirect impacts to surface water quality</li> </ul>	
59 Removal of graffiti	Surface water	<ul style="list-style-type: none"> <li>- Indirect impacts to surface water quality</li> </ul>	Surface water dependent Annex II species and Annex I habitats
56 Establish base protection	Land & Air	<ul style="list-style-type: none"> <li>- Direct physical disturbance of aquatic species (Disturbance to key species)</li> </ul>	Annex II species
	Surface water	<ul style="list-style-type: none"> <li>- Indirect modification of instream substrate quality (Loss or modification of habitat)</li> <li>- Indirect reductions in species density</li> <li>- Indirect impacts to surface water quality</li> </ul>	Surface water dependent Annex II species and Annex I habitats
57 Maintenance of base protection	Land & Air	<ul style="list-style-type: none"> <li>- Direct physical disturbance of aquatic species (Disturbance to key species)</li> </ul>	Annex II species
	Surface water	<ul style="list-style-type: none"> <li>- Indirect modification of instream substrate quality (Loss or modification of habitat)</li> <li>- Indirect reductions in species density</li> <li>- Indirect impacts to surface water quality</li> </ul>	Surface water dependent Annex II species and Annex I habitats
60 Masonry repointing	Land & Air	<ul style="list-style-type: none"> <li>- Direct physical disturbance of aquatic species (Disturbance to key species)</li> </ul>	Annex II species
	Surface water	<ul style="list-style-type: none"> <li>- Indirect impacts to surface water quality</li> </ul>	Surface water dependent Annex II species and Annex I habitats
61 Masonry repairs	Land & Air	<ul style="list-style-type: none"> <li>- Direct physical disturbance of aquatic species (Disturbance to key species)</li> </ul>	Annex II species
	Surface water	<ul style="list-style-type: none"> <li>- Indirect impacts to surface water quality</li> </ul>	Surface water dependent Annex II species and Annex I habitats

**Table 5-7 Potential Impacts to Natura 2000 sites at each bridge.**

Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
CB-N20-002.00	Carroll's Quay Bridge	*	*	✓	✓	Wintering and water birds of Cork Harbour SPA.
CC-N20-029.00	Awbeg River South	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N20-030.00	Rathelare Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N20-033.00	Farran Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-001.00	Duncannon Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-004.00	Ahane Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-008.00	Dysert Bridge	✓	*	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-010.00	Leaders Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-013.00	Ketragh Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-014.00	Boland's Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.

Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
CC-N72-015.00	Lombardstown Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-018.00	Ballynafeaha Culvert	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-019.00	Firville Culvert	✓	✗	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-021.00	Park Road River Bridge, Mallow	✓	✗	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-024.00	Spa Walk South, Mallow	✓	✗	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-025.00	Spa Walk Central, Mallow	✓	✗	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-026.00	Spa Walk North, Mallow	✓		✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-029.00	Monanimy Cross Roads	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-030.00	Castletownroche Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N72-030.90	Fermoy Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
CC-N73-005.00	Ballynamona Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.

Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
CL-N67-001.00	Burrane Bridge	x	x	x	✓	Lamprey species, salmon, otter, estuaries, mudflats and sandflats, and large shallow inlets and bays.
KY-N21-018.80	River Feale Bridge	x	x	✓	✓	FWPM, lamprey species, salmon, otter, floating river vegetation.
KY-N22-013.00	Kilkneedan Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter.
KY N22- 014.00	Ballydeenlea Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter.
KY-N22-017.00	Deenagh Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mestrophic waters, floating river vegetation, Killarney shad.
KY-N22-019.00	Woodford Bridge	✓	✓	✓	✓	FWPM, lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mestrophic waters, floating river vegetation, Killarney shad.
KY-N22-022.00	Brewsterfield Culvert	✓	✓	✓	✓	FWPM, lamprey species, salmon, otter, floating river vegetation.
KY-N22-026.00	Garries Bridge	✓	x	✓	✓	FWPM, lamprey species, salmon, otter, floating river vegetation.
KY-N22-027.00	Poulgorm Bridge	✓	✓	✓	✓	FWPM, lamprey species, salmon, otter, floating river vegetation.

Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
KY-N69-001.50	Ballybeggan River Bridge	x	x	✓	✓	Estuaries, mudflats and sandflats, large shallow inlets and bays, and otter.
KY-N69-018.00	Skehanierin Culvert	✓	x	✓	✓	FWPM, lamprey species, salmon, otter, floating river vegetation.
KY-N70-015.00	Caragh Bridge	✓	✓	✓	✓	SPA SCIs using the intertidal and supratidal zones of Caragh estuary; Lamprey species, salmon, estuaries, mudflats and sandflats, otter.
KY-N70-040.00	Baslickane Bridge	✓	✓	✓	✓	Lamprey species, Salmon otter.
KY-N70-041.00	Darrynane Beg Bridge	✓	✓	✓	✓	Lamprey species, Salmon otter.
KY-N70-051.00	Sneem River Bridge	✓	x	✓	✓	Large shallow inlets and bays, reefs, otter.
KY-N70-052.00	Tahilla River Bridge	✓	x	✓	✓	Large shallow inlets and bays, reefs, otter.
KY-N70-054.00	Blackwater Bridge	✓	x	✓	✓	Large shallow inlets and bays, reefs, otter.
KY-N71-002.00	Muckross Friary Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mestrophic waters, floating river vegetation, Killarney shad.
KY-N71-003.00	Torc New Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mestrophic waters, floating river vegetation.

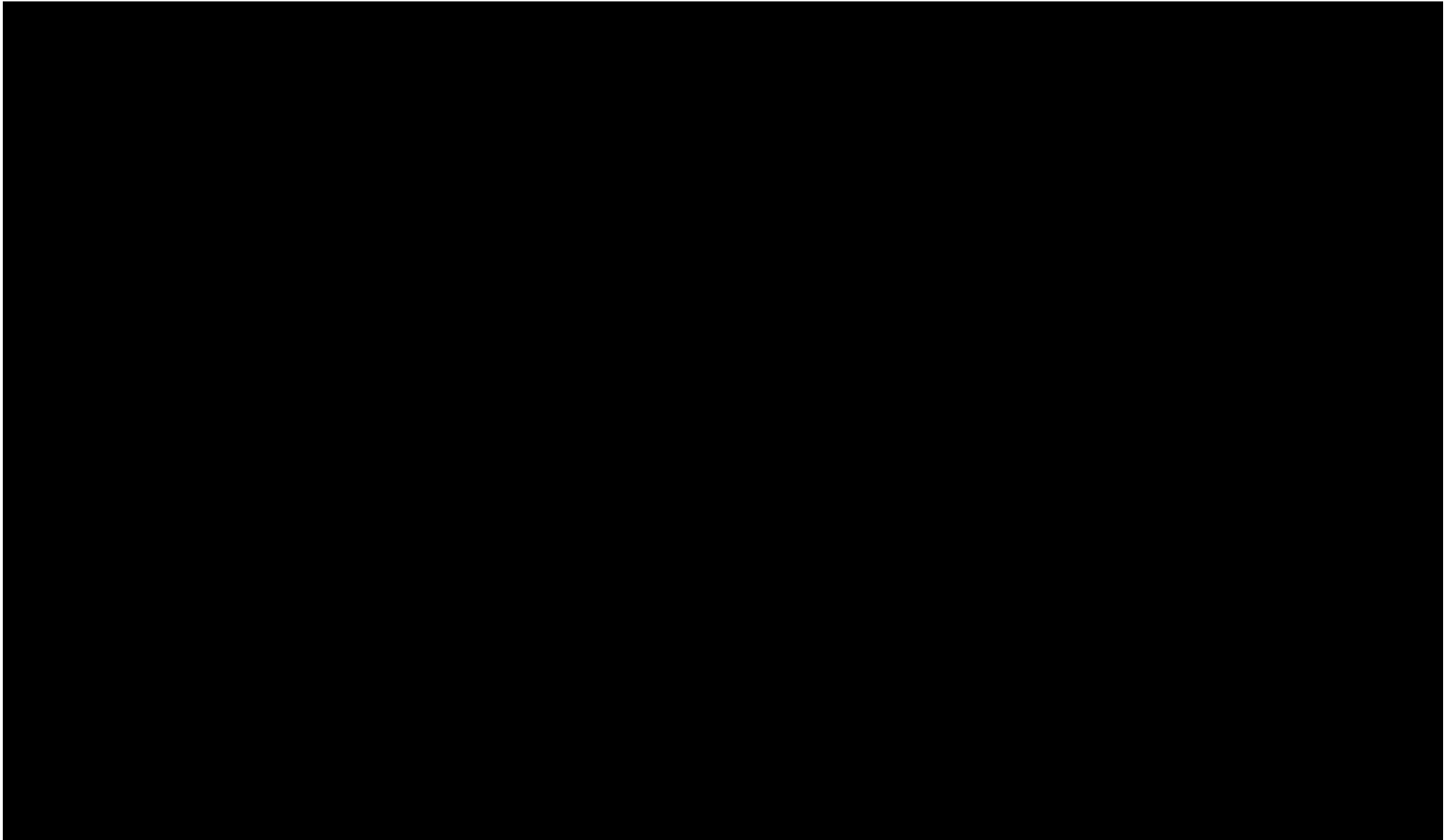
Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
KY-N71-006.00	Incheens Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mestrophic waters, floating river vegetation.
KY-N71-010.00	Carrig East Bridge	✓	✓	✓	✓	FWMP, lamprey species, salmon, otter, floating river vegetation.
KY-N72-001.00	Coolroe South Bridge	✓	✓	✓	✓	Lamprey species, salmon, estuaries, otter.
KY-N72-002.00	River Gweestin Bridge	✓	✓	✓	✓	Lamprey species, salmon, estuaries, otter.
KY-N72-003.00	Ballymalis Bridge	✓	✓	✓	✓	Lamprey species, salmon, estuaries, otter.
KY-N72-008.00	Six Mile Bridge	✓	✓	✓	✓	FWMP, lamprey species, salmon, otter, floating river vegetation.
KY-N72-009.00	Beheenagh Bridge	✓	✓	✓	✓	FWMP, lamprey species, salmon, otter, floating river vegetation.
KY-N72-010.00	Gortanahaneboy West Bridge	✓	✓	✓	✓	FWMP, lamprey species, salmon, otter, floating river vegetation.
KY-N72-012.00	Cullavaw Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
KY-N86-007.00	Annagh East Bridge	✓	✗	✓	✓	Estuaries, mudflats and sandflats, reefs, otter; SPA SCIs using the intertidal area of Annagh estuary.
KY-N86-019.00	Killelton Bridge	✓	✗	✓	✓	Mudflats and sandflats, Large shallow inlets and bays, otter

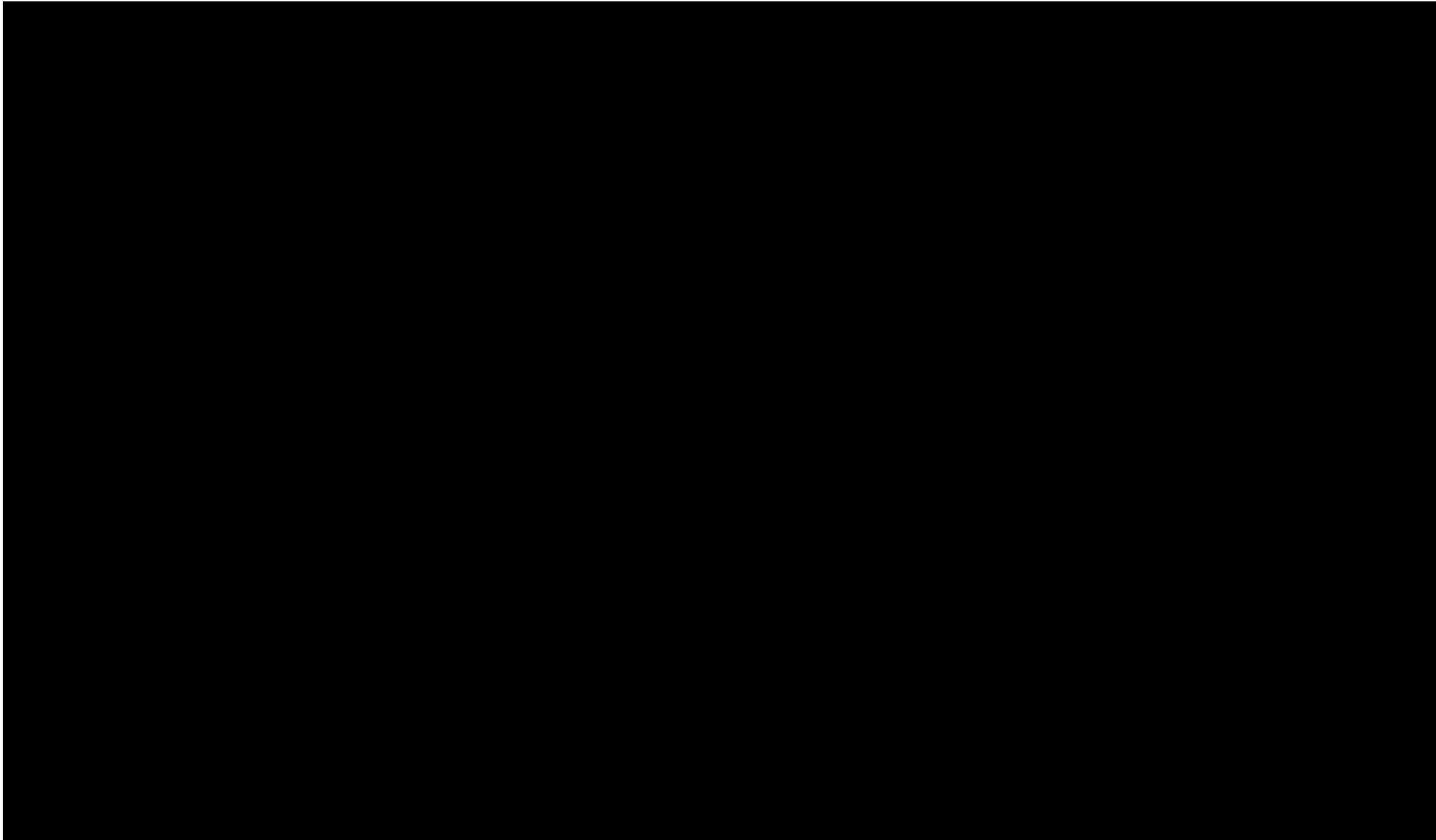
Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
LC-N21-002.00	Goulburn Bridge	✓	✓	✓	✓	FWPM, lamprey species, salmon, otter, floating river vegetation.
LC-N21-018.00	Adare Church Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter, floating river vegetation habitat ( <i>S. triqueter</i> ).
LC-N21-019.00	Adare Bridge	✓	✓	✓	✓	Lamprey species, salmon, otter, floating river vegetation habitat ( <i>S. triqueter</i> ).
LC-N69-009.00	Askeaton Friary River Bridge	✓	✗	✓	✓	SPA SCIs using the River Deel estuary; estuaries, mudflats and sandflats.
TS-N24-001.00	The Three Bridges	✓	✓	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N24-006.00	Canal Bridge	✓	✓	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N24-015.00	Cahirabbey Lower Bridge 2	✓	✓	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N24-016.00	Cahirabbey Lower Bridge 1	✓	✗	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N24-021.00	Cappa New Bridge	✓	✓	✓	✓	FWPM, floating river vegetation, hydrophilous tall

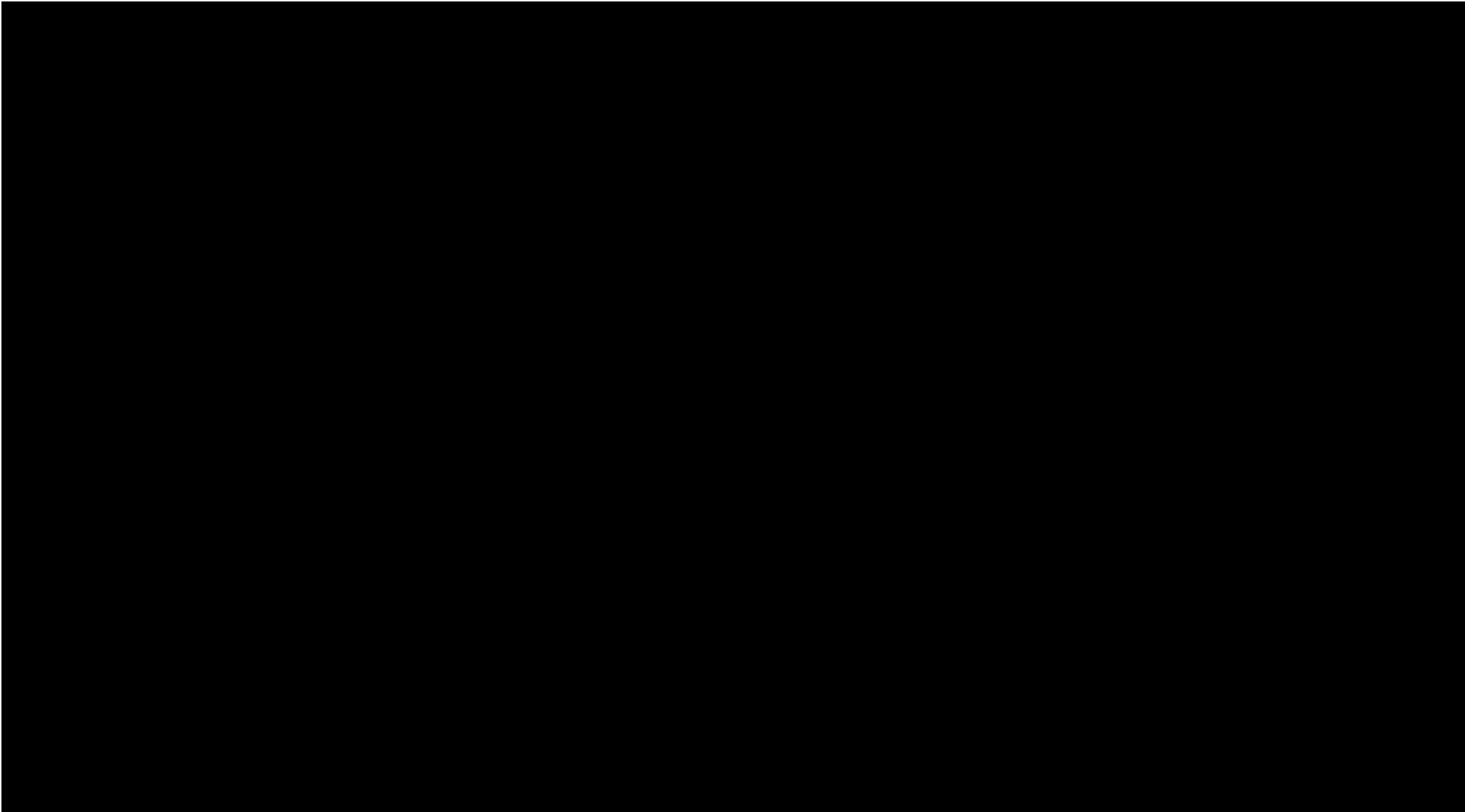
Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
						herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N74-002.00	Castles Bridge 1	✓	✓	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N74-003.00	Castles Bridge 2	✓	✓	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
TS-N76-004.00	Mullennaglogh Bridge	✓	✓	✓	✓	Floating river vegetation, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon, otter.
WC-N25-019.00	Killongford Bridge	✓	✗	✓	✓	SPA SCIs of the Brickey Estuary
WC-N25-022.00	Gorteen Bridge	✓	✓	✓	✓	FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation.
WC-N72-001.00	Lismore Bridge 1	✓	✓	✓	✓	Crayfish, lamprey species, salmon, otter, floating river vegetation, twaite shad.
WC-N72-002.00	Lismore Bridge 2	✓	✓	✓	✓	Crayfish, lamprey species, salmon, otter, floating river vegetation, twaite shad.
WC-N72-003.00	Little Bridge	✓	✓	✓	✓	Crayfish, lamprey species, salmon, otter, floating river vegetation., twaite shad.

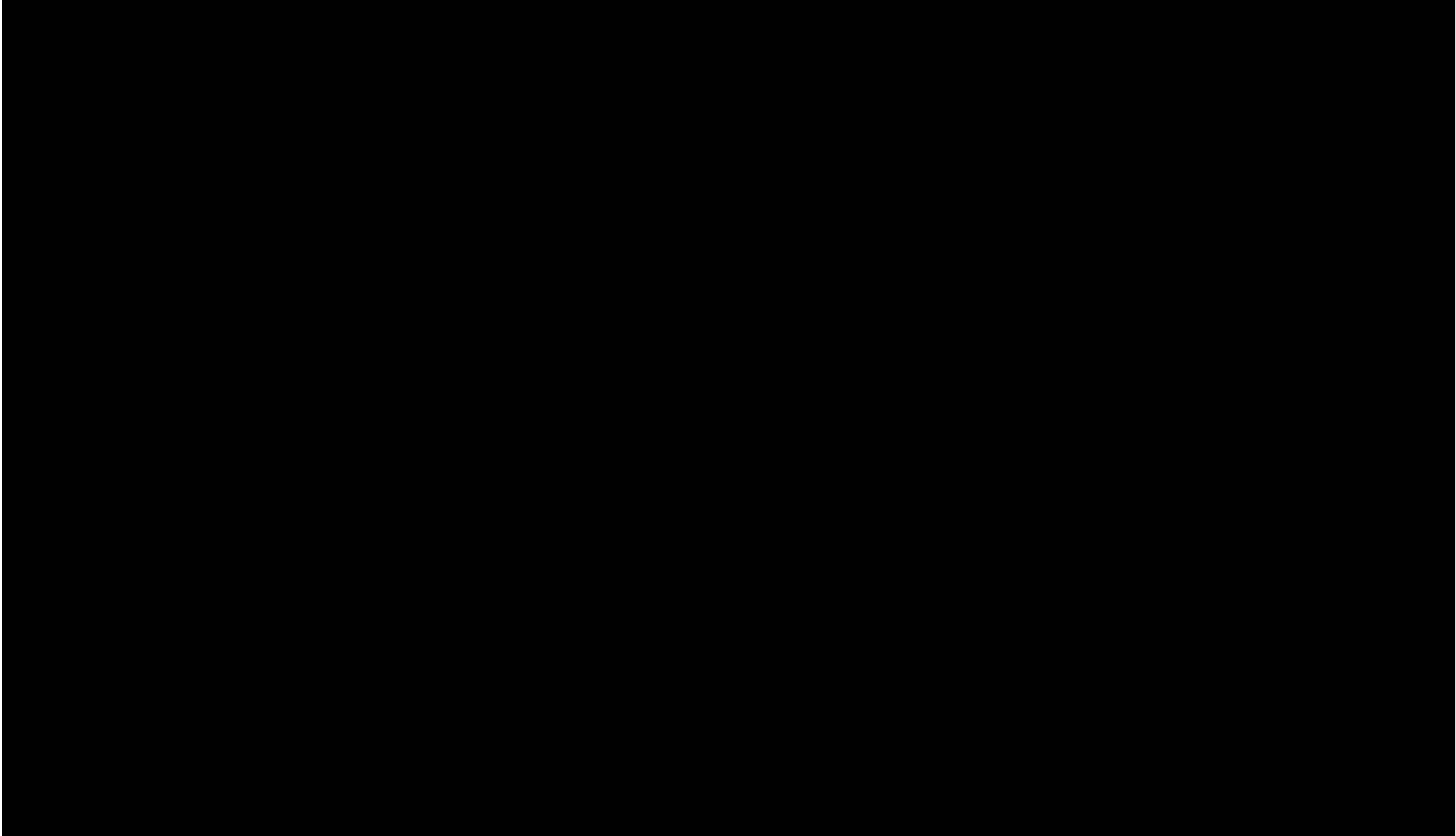


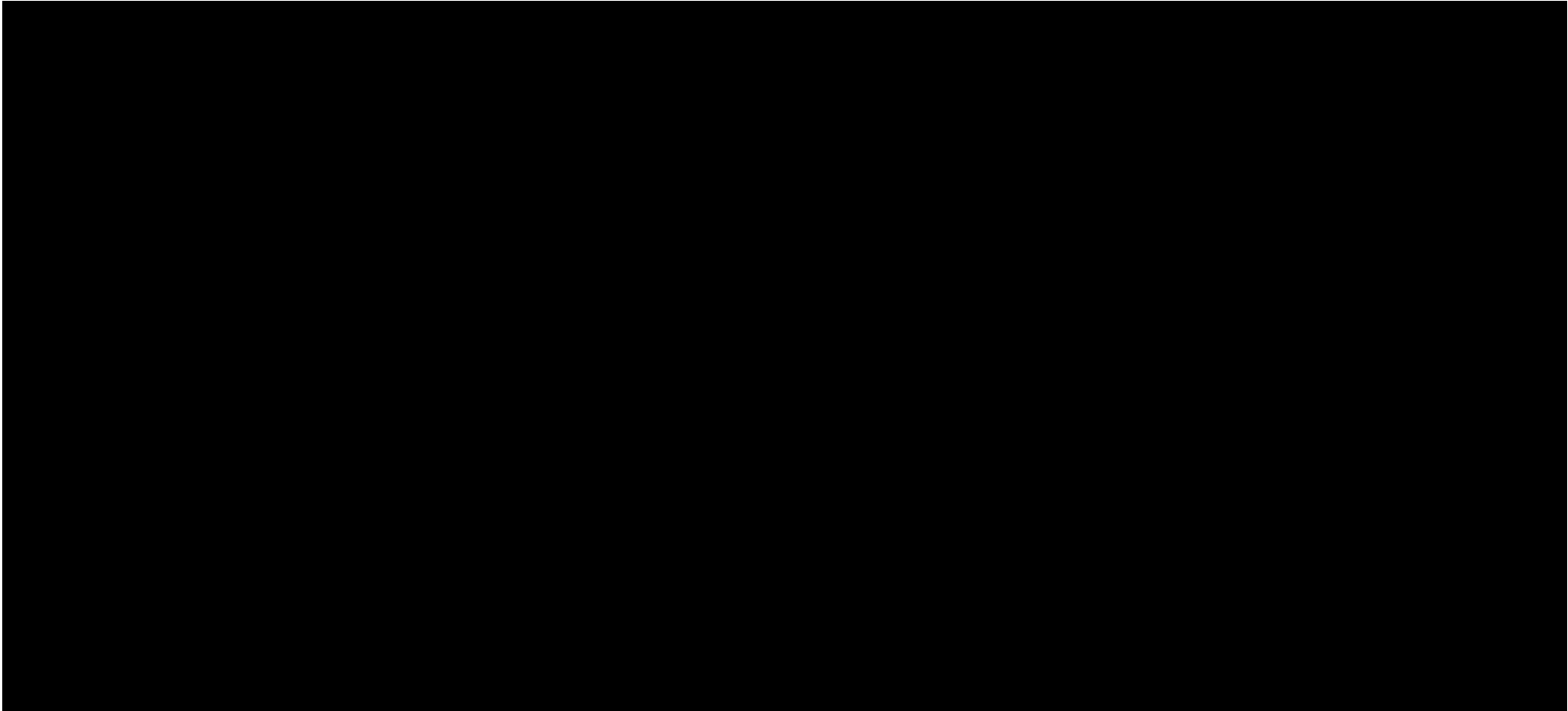
Structure ID	Structure Name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZoI (via direct and/or indirect impacts)
<b>WC-N72-006.00</b>	Finisk Bridge	✓	✓	✓	✓	Crayfish, lamprey species, salmon, otter, floating river vegetation.
<b>WC-N72-007.00</b>	Kildangan Bridge	✗	✗	✓	✓	SPA SCIs of the Brickey Estuary.











## 5.7. Cumulative 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 under go 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 Natura 2000 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 schemes. Four bridges fall either within or are located upstream of a scheme; WC-N25-019.00, KY-N69-018.00, LC-N69-009.00 and LC-N21-019.00. The OPW has carried out a Strategic Environmental Assessment and NIS of the drainage maintenance activities for 2016-2021. Maintenance activities will have to under-go the AA process to ensure no adverse impacts to Natura 2000 sites and their designated habitats and species. Mitigation measures are set out in the SEA and NIS5, which require further project-specific assessments to be carried out. Thus, given the nature and scale of the proposed routine maintenance bridge works, cumulative impacts with the OPW drainage programme are not anticipated.

**Table 5-9 Bridges within / upstream of an OPW works scheme.**

Bridge Code	Location relative to OPW scheme	OPW scheme (County)
<b>WC-N25-019.00</b>	Within	Brickey (Co. Waterford)
<b>KY-N69-009.00</b>	Ca. 3.5km upstream of scheme extent	Feale (Co. Kerry)
<b>LC-N69-009.00</b>	Within	Deel (Co. Limerick)
<b>LC-N21-019.00</b>	Within	Maigne (Co. Limerick)

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 willow<sup>6</sup>. 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,

<sup>5</sup> <https://www.opw.ie/en/flood-risk-management/operations/environmentalactivities/arterial-drainage-maintenance-sea-2018-20121/>

<sup>6</sup> Notifiable Actions <https://www.npws.ie/farmers-and-landowners/notifiable-actions>

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

A number of road schemes are proposed in the Munster Region<sup>7</sup>. Examples of such infrastructure projects include 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 2019, and due to their scale and temporary nature, cumulative impacts are not anticipated.

Road Scheme	Comment
<b>M8/N40 Dunkettle Interchange</b>	Retendered in 2019 and expected to commence construction in the latter part 2020. Currently advance works for the scheme are under construction and expected to be complete by summer 2020.
<b>N19 Shannon Airport Access</b>	Technical Advisors appointed and starting at Phase 1 of the TII's Project Management Guidelines (PMG).
<b>M20 Cork to Limerick</b>	This application was previously before ABP, however withdrawn on the request of the Minister in 2011. In 2019 the scheme recommenced the planning & design with the intention of submitting a new application to ABP in 2022.
<b>N21 Abbeyfeale and Newcastle West Bypasses</b>	The scheme has appointed technical advisers and commenced the planning, design and early appraisal assessments and will bypass both heavily congested Towns on the N21 between Limerick and Kerry.
<b>N21/N69 Foynes to Limerick</b>	The statutory application/orders were submitted by Limerick C&CC, to ABP in December 2019. Subject to planning approval, it is envisaged that the Adare bypass section of the scheme will be built and open before the Ryder Cup event in 2026.
<b>N22 Ballyvourney Macroom</b>	A main contractor has been appointed by Cork county Council, works commenced on site on the 6 <sup>th</sup> December 2019 and the scheme will be completed in 2023.
<b>N22 Farranfore to Killarney</b>	The scheme has appointed technical advisers and commenced the planning, design and early appraisal assessments and will involve an outer bypass of Killarney Town and a bypass of Farranfore village. It will also appraise the viability of a link from the N22 to the N71 west of Killarney itself.
<b>N24 Cahir to Limerick Junction</b>	The scheme has appointed technical advisers and commenced the planning, design and early appraisal assessments. This project will include a bypass of Tipperary Town which currently suffers from daily traffic congestion.
<b>N24 Cahir to Limerick Junction</b>	Technical Advisors appointed and starting at Phase 1 of the TII's Project Management Guidelines (PMG).
<b>N25 Carrigtwohill to Middleton</b>	The scheme has appointed technical advisers and commenced the planning, design and early appraisal assessments and will involve the upgrade of the existing 4 lane road to dual carriageway or motorway standard.
<b>M28 Ringaskiddy to Cork</b>	Application approved by ABP on 4 <sup>th</sup> July 2018, but subject to judicial review by third party. High Court dismissed same on the 23 <sup>rd</sup> January 2020. Scheme will proceed with approximately three years of advance work contracts before the main works can proceed.
<b>N40 TEN-T</b>	Following on from the NRA/TII demand management study, this project assesses the issues on the N40 in terms of safety, congestion and capacity.
<b>N40 Cork NRR</b>	In line the the NTA's CMATS, early appraisal and confirmation of the route is to be advanced in the coming years. Unlikely to be constructed until the latter part of the CMATS timeline, unless it can be justified as being needed earlier
<b>N69 Listowel Bypass</b>	This scheme will go to tender in 2020 and is likely to commence construction in the latter part of the same year, subject to approvals by various departments.
<b>N72/73 Mallow Relief Road</b>	The scheme has appointed technical advisers and commenced the planning, design and early appraisal assessments. This scheme is closely linked to the M20 Cork to Limerick Scheme as it was part on it in the previous M20 application.
<b>Motorway Service Area (Tranche 4)</b>	Review was being undertaken in 2019.

<sup>7</sup> TII Road Scheme Activity MapViewer <https://www.tii.ie/projects/road-schemes/#> (last access 14/11/2019).



## 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 Natura 2000 site.

### 5.8.1. Cork City Structures

#### 5.8.1.1. Carroll's Quay Bridge [CB-N20-002.00]

The Carroll's Quay Bridge is a concrete beam bridge carrying N20 over the River Kiln. The maximum span is 11.5m and the minimum span is 4.62m. Structure comprises precast concrete beams on in-situ reinforced concrete abutments, reinforced concrete walls and reinforced concrete capping beams. All piles are steel-cased reinforced concrete piles. Bearing are PSC rubber strips. The bridge is located 5.2km upstream of the Cork Harbour SPA and 11.1km upstream of the Great Island Channel SAC. Plate 5-1 shows the north side of the bridge with parapets and piles.



**Plate 5-1** Carroll's Quay Bridge.

The qualifying interests of the Cork Harbour SPA and Great Island Channel SAC are listed in Section 5.2. The qualifying interests that could be impacted are the wintering and water birds of Cork Harbour SPA. The potential impacts to the SPA are the deterioration of surface water quality and reduction in species density.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-10 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-10 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Damaged kerbs to be replaced (2m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Loss of surfacing/ rutting should be repaired particularly near joints (15m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping and cleaning to road surface (230m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Cleaning of drain gullies (16 no.).	Screened out – gullies will be suctioned or rodded and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Footways/ median	Sweeping and cleaning to footpaths (1150m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Riverbed	Clearing of riverbed. Removal of waste (704m <sup>2</sup> ).	Screened in - although this bridge is outside a Natura 2000 site, this work element is screened in due to risk of silt release and the presence of a surface water pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### *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. 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. 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 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.

#### 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 Cork Harbour SPA or any other European site.

## 5.8.2. Cork County

### 5.8.2.1. Awbeg River South [CC-N20-029.00]

The structure is a single span in-situ reinforced concrete bridge with masonry parapets. The bridge carries the N20 over the River Awbeg with span length of 7.12m. The bridge is within the Blackwater River SAC and is located 43.5km upstream of the Blackwater (Cork/Waterford) Callows SPA. Plate 5-2 shows the west elevation.



**Plate 5-2 Awbeg River South.**

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

There are no freshwater pearl mussel records at the Awbeg River South bridge. [REDACTED]

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-11 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-11 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (24m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning (60m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ safety barrier	Vegetation removal from the parapets (5m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ safety barrier	Masonry repointing (3m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Vegetation removal from embankments to maintain 1m clearance around structure (8m <sup>2</sup> )	Screened out – habitat type present on embankments is not a habitat for which the SAC is designated, nor is it heavy

Bridge Component	Work Element	Screening Recommendation
		scrub. Therefore, no risk of silt release. No LSE anticipated.
Wing/ Spandrel/ Retaining Walls	Vegetation clearance from the wing walls and spandrel walls (8m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following clearance of vegetation (2m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Minor vegetation clearance from watercourse both upstream and downstream of structure (10m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 SAC or any other European site.

#### 5.8.2.2. Rathelare Bridge [CC-N20-030.00]

The Rathelare Bridge is a 6.1m diameter single span masonry arch bridge with masonry parapets which carries N20 over the River Awbeg. The bridge is within the Blackwater River (Cork/Waterford) SAC and is located 43.5km upstream of the Blackwater Callows SPA. Plate 5-3 shows the east elevation.



**Plate 5-3 Rathelare Bridge.**

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

There are no freshwater pearl mussel records at the Awbeg River South bridge. [REDACTED]

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-12 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-12 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (30m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning along footways (45m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ safety barrier	Vegetation removal from the parapets (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ safety barrier	Repointing works following vegetation removal from parapets (5m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Vegetation removal from embankments to maintain 1m clearance around structure (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Vegetation clearance from the wing walls and spandrel walls (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint area of minor mortar loss at base of NW wing wall. Repoint open joints following clearance of vegetation. (2m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Vegetation clearance from watercourse at west elevation of structure (20m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 SAC or any other European site.

### 5.8.2.3. Farran Bridge [CC-N20-033.00]

The Farran Bridge is a 4.77m single span in-situ reinforced concrete bridge with masonry parapets which carries N20 over the River Awbeg. There is 1 no. pipe strapped to the east face of the bridge and 2 no. pipes strapped to the west face of the structure. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5-4 shows the west elevation.



**Plate 5-4 Farran Bridge.**

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

There are no freshwater pearl mussel records at Farran Bridge. [REDACTED]

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway, including vegetation removal along edges of rubbing strips (25m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of rubbing strips (11m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ safety barrier	Vegetation removal from the parapets (8m <sup>2</sup> )	Screened in - removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ safety barrier	Cracking and concrete break up in NE and SE corners to be repaired (6m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.



Bridge Component	Work Element	Screening Recommendation
Embankments/ Revetments	Vegetation removal from embankments to maintain 1m clearance around structure (15m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Vegetation clearance from wing walls (20m <sup>2</sup> )	Screened in - removal of vegetation may require instream access or the erection of scaffolding.
Riverbed	Minor vegetation growth to be removed from both riverbanks (30m <sup>2</sup> )	Screened in.

## Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 SAC or any other European site.

#### 5.8.2.4. 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 5-5 shows the north elevation.



**Plate 5-5 Duncannon Bridge.**

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

A survey for freshwater pearl mussel was conducted at this bridge in 2018 and 2019 for the current project. The

survey did not record freshwater pearl mussel within 50m upstream and downstream of the bridge. The substrate in the vicinity of the bridge was largely unsuitable with small patches of suitable habitat.

#### 5.8.2.5. 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning of road surface over the bridge (57m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning to concrete rubbing strips at both sides of the bridge (58m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ safety barrier	Removal of vegetation to inside and outside faces of parapet walls (50m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ safety barrier	Masonry repointing to mortar loss to vertical faces of parapet walls, to open joints to parapet cappings and to subsequent mortar loss after vegetation removal to parapet walls (57m <sup>2</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Parapets/ safety barrier	Masonry repair to missing and damaged stones to parapet walls where required (0.1m <sup>3</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Embankments/ Revetments	Vegetation removal from embankments. 1m wide strip NE and to southern embankments(30m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from wing walls and spandrel walls (20m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to mortar loss and to subsequent mortar loss after vegetation removal to wing walls and spandrel walls (30m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Piers	Cleaning of drainage pipe, 5No per each pier (5m <sup>2</sup> )	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Piers	Sections of open joints on south side of Pier 1 require repointing (1m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Masonry repointing to mortar loss to arch barrels (41m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

#### 5.8.2.6. Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

## Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

## Masonry repointing and masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

## 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 SAC or any other European site.

5.8.2.7. Ahane Bridge [CC-N72-004.00]

The Ahane Bridge is a 2-span masonry arch bridge with in-situ reinforced concrete extension. Each span is 9.12m and rise of arch barrel at crown is 1.78m. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5-6a shows the concrete extension at south side and Plate 5-6b shows the arch section at north side.



**Plate 5-6a Ahane Bridge.**



**Plate 5-6b Ahane Bridge.**

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

In 2018 a freshwater pearl mussel survey was carried out for the current project at this bridge.

## 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to both sides of the structure (60m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of concrete rubbing strip (137m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ safety barrier	Removal of vegetation, ivy growing at both sides of each parapet wall (25m <sup>2</sup> )	Screened in - removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ safety barrier	Masonry repointing to mortar loss to outside face of parapet walls (4m <sup>2</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Clearance of 1m strip of vegetation away from structure on all embankments. Masonry debris to be cleared (28m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from wing walls and spandrel walls (15m <sup>2</sup> )	Screened in - removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint following vegetation clearance where necessary (3m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Piers	Masonry repointing to mortar loss to masonry section of pier (2m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Repoint open joints in arch barrels. Mortar loss behind keystones in arch barrel of span 2 should be repointed (5m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Removal of vegetation to downstream watercourse at pier location (2m <sup>2</sup> )	Screened in.
Other elements	Removal of vegetation to south face of deck (2m <sup>2</sup> )	Screened in - removal of vegetation may require instream access or the erection of scaffolding.

## Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

### Access Restrictions

No access to the river channel is permitted. Works shall be carried out from a mobile elevated work platform (MEWP) or safety basket.

### Clearance of watercourse (Debris Removal)

[REDACTED], no access into the river channel is permitted. Thus, if the required vegetation cannot be removed from a MEWP or safety basket, then it should be left in-situ.

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. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

The Contractor shall liaise with the Resident Engineer (RE) regarding the scope of the work element to ensure that it has not changed significantly in nature or extent (2m<sup>2</sup>). If the work element has changed significantly in nature, the RE shall consult with TII's Environment Section. The Contractor may only progress with the work element upon receiving approval from the RE for that work element.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge, as outlined above. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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. In the case of Ahane bridge, a MEWP or safety basket will be used.

The MEWP or safety basket must 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 SAC or any other European site.

### 5.8.2.8. Dysert Bridge [CC-N72-008.00]

The Dysert Bridge is a single span masonry arch with concrete slab extension. The masonry span is 4.91m wide and the rise of arch barrel at crown is 0.86m. There is masonry parapet and steel barrier on steel posts. The structure has been extended by a 400mm beams and 2 no. 1.85m precast box culverts with a 5m span. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5-7 shows the arch section at north side.



**Plate 5-7 Dysert Bridge.**

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

There are no freshwater pearl mussel records at the Dysert Bridge. [REDACTED]

[REDACTED] A freshwater pearl mussel survey was carried out in 2018 under the current project. No freshwater pearl mussel was recorded within 50m upstream or downstream of the bridge.

## 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (15m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning to southern rubbing strip (53m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ safety barrier	Removal of vegetation to southern parapet wall (2m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.



Bridge Component	Work Element	Screening Recommendation
Parapets/ safety barrier	Masonry repointing to mortar loss to northern parapet wall and to subsequent mortar loss after vegetation removal to southern parapet wall (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Removal of vegetation, 1m wide strip to embankments to each side of the bridge (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Minor vegetation growth on spandrel walls to be cleared (2m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following vegetation clearance (1m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Repoint sections of open joints on both abutments (3m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Masonry repair to moved stones to north base of eastern abutment (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Removal of vegetation and fallen trees from watercourse upstream the bridge (20m <sup>2</sup> )	Screened in.

## 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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 SAC or any other European site.

### 5.8.2.9. Leaders Bridge [CC-N72-010.00]

The Leaders Bridge is a 3-span masonry arch bridge with masonry parapets. The mid-span is 9.85m and two side spans are 9.1m each. The structure carries N72 over the River Allow. The bridge is within the Blackwater River (Cork/Waterford) SAC. There is vegetation growth in the riverbed. Plate 5-8 shows the north elevation.



**Plate 5-8 Leaders Bridge.**

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

There are no freshwater pearl mussel records at the Leaders Bridge. [REDACTED] A freshwater pearl mussel survey was carried out in 2018 for the current project.

#### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (53m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning to existing rubbing strips (106m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to parapet walls (24m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Masonry repointing mortar loss and to subsequent mortar loss after vegetation removal to parapet walls (130m <sup>2</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Masonry repair to copping stone to NW side of northern parapet wall, to missing stone to SE pier to southern parapet wall and to damaged stones to south face of southern parapet wall (0.3m <sup>3</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Removal of vegetation to embankments, 1m wide strip to southern embankments and NW embankment to provide access (45m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Removal of vegetation to spandrel walls (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to mortar loss and to subsequent mortar loss after vegetation removal to spandrel walls (10m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/ Spandrel/ Retaining Walls	Masonry repair to missing stone to southern spandrel wall (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Masonry repointing to mortar loss to base of abutments (6m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Piers	Removal of vegetation to top of cutwaters (4m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Masonry repointing to mortar loss to base of piers on top of cutwaters. Masonry repointing to subsequent mortar loss after vegetation removal to top of cutwaters. Stone packers required (16m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Removal of fallen trees, logs, debris from upstream riverbed (north side of structure)(1m <sup>2</sup> )	Screened in.
Structure in general	Cleaning of structure ID plate (1 it)	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 SAC or any other European site.

5.8.2.10. Ketragh Bridge [CC-N72-013.00]

The Ketragh Bridge is a 3-span masonry arch bridge with concrete extension which carries N72 over the River Awbeg. Each span is 2.4m. There are masonry parapets and a steel safety barrier on concrete posts. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5-9a shows the arch section at north side and Plate 5-9b shows the concrete slab section at south side.



**Plate 5-9a** Ketragh Bridge.



**Plate 5-9b** Ketragh Bridge.

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

There are no freshwater pearl mussel records at Ketragh Bridge. [REDACTED]

## 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (9m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of both rubbing strips (38m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Removal of vegetation to embankments. 1m wide strip at each side of the bridge (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Removal of moss and vegetation growth from north headwall overbuild (25m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to SW wingwall (10m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Piers	Removal of areas of vegetation growth to piers (30m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Deck/slab/arch barrel	Repointing to localised open joints (2m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Removal of vegetation and fallen trees from upstream riverbed (20m <sup>2</sup> )	Screened in.

## Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 SAC or any other European site.

#### 5.8.2.11. 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 1.25m and measures 2.25m to the barrel of the slab. The bridge is within the Blackwater River (Cork/Waterford) SAC. Plate 5-10 shows the concrete section at north side.



**Plate 5-10 Boland's Bridge.**



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

There are no freshwater pearl mussel records at the Boland's Bridge. [REDACTED]

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (9m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of both rubbing strips (33m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to parapet walls (34m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Masonry repointing to mortar loss after vegetation removal to parapet walls. Parapet cracking to be repointed (5m <sup>2</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Removal of vegetation to embankments. 1m wide strip at each side of the bridge (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Removal of vegetation to southern spandrel wall (32m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to subsequent mortar loss after vegetation removal to southern spandrel wall (3m <sup>2</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Concrete repair to spalled concrete to north face of deck slab (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Riverbed	Removal of vegetation and fallen trees to riverbed (15m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### *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. 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. 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 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.

### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *Masonry repointing and concrete repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

### *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 SAC or any other European site.

### 5.8.2.12. Lombardstown Bridge [CC-N72-015.00]

The Lombardstown Bridge is a single span masonry arch bridge with precast concrete box extension. The span is 1.81m and rise of arch barrel at crown is 0.63m. There is a pipe running under the arch riverbed leading to a step down in the level to about 0.51m. The structure carries the N72 over Woodpark Lombardstown stream and is located within 50m of the boundary of the Blackwater River (Cork/Waterford) SAC. Plate 5-11 shows the south elevation.



**Plate 5-11 Lombardstown Bridge.**

The qualifying interests of the Blackwater River SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, crayfish, lamprey species, salmon, otter and floating river vegetation. The potential 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 5-20 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-20 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning of 0.5m strip on both edges of the carriageway (8m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of both rubbing strips (30m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Removal of vegetation, 1m wide strip to embankments at each side of the bridge (80m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Removal of moss and vegetation from upstream headwall overbuild (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Riverbed	Clearance of watercourse upstream of the bridge (5m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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 SAC or any other European site.

#### 5.8.2.13. Ballynafeaha Culvert [CC-N72-018.00]

The Ballynafeaha Culvert carries the Ballyclogh Stream under the N80. The culvert consists of 4 no. concrete pipes. The maximum span is 1.49m and the minimum span is 1.17m. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 5-12 shows the north elevation.



**Plate 5-12 Ballynafeaha Bridge.**

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

There are historic records of freshwater pearl mussel at Ballynafeaha Culvert. [REDACTED] The culvert was surveyed for freshwater pearl mussel in 2018 under the current project and no freshwater pearl mussel were recorded within 50m upstream or downstream of the bridge.

### 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 - Work elements and potential for likely significant effects**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sealing of longitudinal pavement crack to north edge of carriageway using hot poured bitumen (15m).	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Patching of potholes to road surface over the structure using macadam or similar approved (3m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping and cleaning to road surface over the structure (15m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Rubbing strips required to replace existing soft verges over the structure (59m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to northern parapet wall (1mx2m). Vegetation clearance in front of parapet walls (60m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Embankments/ Revetments	Removal of vegetation from all the corners of the structure (80m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Cleaning of drainage pipes to spandrel 1No and retaining wall 1No (1m <sup>2</sup> )	Screened out – drainage pipes will be suctioned or rodded and therefore no pathway.
Riverbed	Clearance of vegetation from upstream riverbed. Removal of fallen trees from upstream riverbed (20m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating*

*the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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 SAC or any other European site.

#### 5.8.2.14. 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. Plate 5-13 shows the north side.



**Plate 5-13** Firville Culvert.

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

There are no freshwater pearl mussel records at the Firville Bridge. [REDACTED]

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning of road surface over the structure (4m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of both rubbing strips (23m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to northern parapet wall (5m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from parapet walls.
Parapets/Safety barrier	Masonry repointing to mortar loss to south face of northern parapet wall and to subsequent mortar loss after vegetation removal to northern face and southern face of north parapet wall (6m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	Masonry repair to base of northern parapet wall (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/ Revetments	Removal of vegetation to embankments, 10m <sup>2</sup> to northern embankment and 30m <sup>2</sup> of vegetation clearance to south side of the structure (total 40 m <sup>2</sup> ). Debris should be cleared from embankments.	Screened out - bridge located outside & upstream of SAC. Vegetation to be removed is grass, a few single sapling trees, winter heliotrope and bramble, i.e. not SAC habitats or dense scrub/ deep rooted veg. LSE not anticipated.
Wing/ Spandrel/ Retaining Walls	Removal of vegetation to northern spandrel wall and to base of NE retaining wall (6m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from spandrel and retaining walls.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to subsequent mortar loss after vegetation removal to northern spandrel wall (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of vegetation and fallen trees to upstream riverbed (5m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### *Masonry repointing and masonry repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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 SAC or any other European site.

#### *5.8.2.15. Park Road River Bridge [CC-N72-021.00]*

The Park Road River Bridge is a 5.04m single span in-situ concrete bridge with masonry parapets which carries N72 over East Baltydaniel stream. The stream is a tributary of the River Blackwater. The structure is located 200m upstream of the Blackwater River (Cork/Waterford) SAC. Plate 5-14 shows the north side.



**Plate 5-14 Park Road River Bridge.**

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

There are no freshwater pearl mussel records at the Park Road River Bridge. [REDACTED]

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edge of parapets (14m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Clear partial blockage from drain gully along north footpath (1 it).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning along footways (14m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Repoint open joints following clearance of vegetation (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/ Revetments	Cut back trees from the north parapet to maintain 1m clearance, remove fallen trees from SW riverbank (100m <sup>2</sup> ).	Screened out – bridge located outside and upstream of SAC. Trees are predominantly fir trees. No LSE anticipated.
Embankments/ Revetments	Concrete repairs to undermined section of NW corner required (6m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Wing/ Spandrel/ Retaining Walls	Section of missing stone on north spandrel wall to be repaired (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Abutments	Clearance of minor vegetation from interfaces between abutment walls and deck (5m <sup>2</sup> )	Screened out –bridge located outside and upstream of SAC. No LSE anticipated from access to remove vegetation from abutment walls.
Abutments	Minor concrete repairs following clearance of vegetation (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Riverbed	Removal of vegetation and fallen trees to upstream riverbed (5m <sup>2</sup> )	Screened in - although this bridge is outside the SAC, this work element is screened in due to risk of silt release and surface water connectivity to the SAC.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### *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. 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. 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 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.

#### *Masonry repointing, masonry repairs and concrete repairs*

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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

#### 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 SAC or any other European site.

### 5.8.2.16. Spa Walk South [CC-N72-024.00]

The structure is a 2-span masonry arch bridge with masonry parapets which carries the N72 over the South Caherduggan stream. The maximum span is 2.55m and the minimum span is 2.45m. The rise of the arch barrel at the crown is 0.84m. The structure is located 1km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 5-15 shows the east elevation.



**Plate 5-15 Spa Walk South.**

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

There are no freshwater pearl mussel records at the Spa Walk South Bridge. [REDACTED]

#### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of carriageway (20m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning along footway and rubbing strip (20m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Cut back vegetation to maintain 1m clearance around structure, remove trees from SE embankment (30m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. Predominantly light bramble and ivy on embankments to be removed, i.e. not SAC habitats or dense scrub/ deep rooted veg. No LSE anticipated.
Wing/ Spandrel/ Retaining Walls	Clearance of minor vegetation from spandrel walls (3m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. LSE not anticipated

Bridge Component	Work Element	Screening Recommendation
		from access for removal of vegetation from spandrel walls.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following vegetation clearance (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Clear debris, vegetation and silt from watercourse upstream, downstream and underneath structure (80m <sup>2</sup> )	Screened in - although this bridge is outside the SAC, this work element is screened in due to risk of silt release and surface water connectivity to the SAC.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### 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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 SAC or any other European site.

5.8.2.17. Spa Walk Central [CC-N72-025.00]

The structure is a 3.26m single span masonry arch bridge carrying the N72 over the South Caherduggan stream. The stream is a tributary of the River Blackwater. The bridge has steel safety barriers on steel posts and masonry parapets. There are 2 no. manholes to the south and 3 no. manholes to the north. The structure is located 1.3km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 5-16 shows the east elevation.



**Plate 5-16 Spa Walk Central.**

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

There are no freshwater pearl mussel records at the Spa Walk Central Bridge. [REDACTED]

**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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (14m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Clear drainage channels at ends of east parapet, clear drainage units along west footway (3 it).	Screened out - works within the bridge deck and therefore no pathway. Drainage systems will be suctioned or rodded under the Contract.
Footways/ median	Minor cracking of footing to be repaired (1m).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of the west footway and east rubbing strip (14m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.



Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation from parapets (5m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from parapet walls.
Embankments/ Revetments	Vegetation removal from embankments to maintain 1m clearance around structure (10m <sup>2</sup> ).	Screened out – bridge located outside & upstream of SAC. Vegetation to be removed is not a component of a SAC habitat or dense scrub/deep rooted vegetation. No LSE anticipated.
Wing/ Spandrel/ Retaining Walls	Vegetation to be cleared from west spandrel wall (3m <sup>2</sup> ).	Screened out – bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from spandrel wall.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following clearance of vegetation (1m <sup>2</sup> ).	Screened in - use of wet mortar over water and a surface water pathway is present.
Riverbed	Clear vegetation and debris from watercourse (50m <sup>2</sup> ).	Screened in - although this bridge is outside the SAC, this work element is screened in due to risk of silt release and surface water connectivity to the SAC.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### 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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 SAC or any other European site.

5.8.2.18. Spa Walk North [CC-N72-026.00]

The structure is a 3.31m single span masonry arch bridge with masonry parapets carrying the N72 over the South Caherduggan stream, which is a tributary of the River Blackwater. The rise of the arch barrel at the crown is 0.33m. The structure is located 1.7km upstream of the Blackwater River (Cork/Waterford) SAC. Plate 5-17 shows the east elevation.



**Plate 5-17 Spa Walk North.**

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

There are no freshwater pearl mussel records at the Spa Walk North Bridge. [REDACTED]

**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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Repair works to section of worn surfacing on westbound carriageway (1m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping and cleaning along edges of carriageway (14m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning of rubbing strip and footway (15m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Clearance of moss growth from approach rails (5m <sup>2</sup> ).	Screened out – bridge is located outside & upstream of the SAC. The approach rails are over land.
Parapets/Safety barrier	Repair of approach rails to the structure (10m).	Screened out – bridge is located outside & upstream of the SAC. The approach rails are over land.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Repointing works to the parapets (5m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/ Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (10m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. Vegetation to be removed is not a component of a SAC habitat or dense scrub/deep rooted vegetation. No LSE anticipated.
Embankments/ Revetments	Repair works needed to embankments at each side of east parapet to prevent undermining (10m <sup>2</sup> ).	Screened in - although this bridge is outside the SAC, this work element is screened in due to risk of silt release and surface water connectivity to the SAC.
Riverbed	Clear vegetation and debris from watercourse downstream of structure. Large fallen tree to be removed from riverbed (30m <sup>2</sup> ).	Screened in - although this bridge is outside the SAC, this work element is screened in due to risk of silt release and surface water connectivity to the SAC.
Structure in general	Add structure ID to the structure (1 it).	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### 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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *Maintenance of slope protection*

Maintenance of slope protection will be carried out in the dry by repairing/replacing existing slope protection with similar material used in the slope protection onsite including; paving slabs, masonry and concrete. Where concrete slope protect requires repair compacted mass concrete will be place in scour voids and immediately in front of the affected areas over a length and width specified in the Work Order for that bridge.

No concrete, cementitious or fine particular material will be permitted to enter the watercourse. This 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. A second pump should be available on site in case of failure of the primary pump.

One span/culvert structures, such as Spa Walk North bridge, may not have sufficient capacity accommodate the required working area for a localised diversion. In this instance fluming of the entire waterbody will be carried out in line with Inland Fisheries Ireland, 2016 Guidelines on protection of fisheries during construction works in and adjacent to water. The waterbody will be diverted from upstream to downstream of the works area by means of a secure open flume arrangement, or through piping, or in limited circumstances, by means of over pumping.

The Contractor's ecologist will specify the required area to be diverted and if the stream is diverted using sand bags or flumed entirely, the ecologist will oversee fluming of the waterbody.

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 mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *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 pans 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 SAC or any other European site.

### 5.8.2.19. Monanimy Cross Roads Bridge [CC-N72-029.00]

The structure is a single span precast beam bridge with steel parapets which carries N72 over the Monanimy Lower stream. The structure was rebuilt in 2013. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 5-18 shows the south elevation.



**Plate 5-18 Monanimy Bridge.**

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

There are no freshwater pearl mussel records at the Monanimy Cross Roads Bridge. [REDACTED]

## 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (60m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Clear 3no. drain gullies along edges of the carriageway (3 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/ median	Sweeping and cleaning of rubbing strips (330m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Power hosing of parapet to remove light vegetation from railings (20m <sup>2</sup> ).	Screened in.

Bridge Component	Work Element	Screening Recommendation
Embankments/ Revetments	Vegetation removal from embankments to maintain 1m clearance around structure (60m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Beams/girders/transverse beams	Replace faulty polysulphide joint on deck edge beam (1 it).	Screened out - works within the bridge deck and therefore no pathway.
Riverbed	Clear watercourse both upstream and downstream of the structure (80m <sup>2</sup> )	Screened in.
Structure in general	2no. contractor advertising signs to be removed from parapets (2 it)	Screened out - works within the bridge deck and therefore no pathway.
Structure in general	Add structure ID to the structure (1 it)	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### *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. 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. 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 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.

#### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### *High-pressure hosing of surface*

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface entering water courses or affecting the surrounding flora and fauna. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are

present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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 SAC or any other European site.

#### 5.8.2.20. 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 the arch barrel for the maximum span at the crown is 1.56m. There is a water pipe strapped to the south of the bridge. The structure is within the Blackwater River (Cork/Waterford) SAC. Plate 5-19 shows the south elevation.



**Plate 5-19 Castletownroche Bridge.**

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

There are no freshwater pearl mussel records at the Castletownroche Bridge. [REDACTED]

### 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 5-28 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (60m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning along footways (30m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Vegetation removal from areas of the north parapet (10m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repoint open joints following clearance of vegetation (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/ Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (20m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Clearance of minor vegetation growth from south spandrel wall (10m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repoint open joints following clearance of vegetation. Cracking on south spandrel wall to be repointed (4m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Masonry repair to area above arch in southeast corner of the structure (1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Moss build up on west abutment wall to be cleared (7m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Open joints on west abutment wall to be repointed (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Vegetation removal from the pier cutwaters upstream of the structure (30m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Repoint open joints on pier 1 following clearance of vegetation and on piers 2 and 3 (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Loose and missing stone on pier 4 to be repaired (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Open joints in span 5 require repointing (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Broken and missing stones on span 5 should be repaired (0.2m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of trapped debris on cutwaters and under the structure (40m <sup>2</sup> )	Screened in.

## Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### Masonry repointing and masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### Assessment of In-combination effects

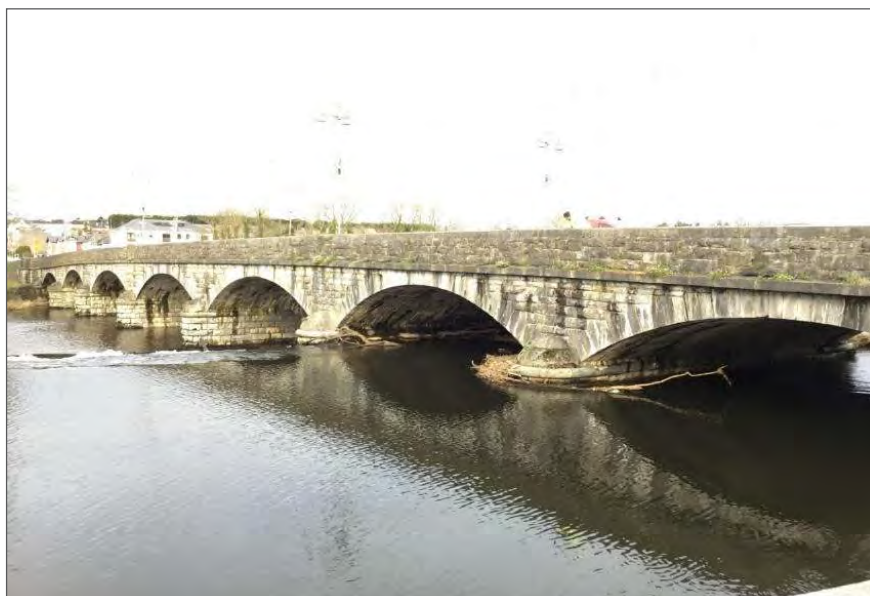
Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale and temporary nature of the proposed works, there is no potential for in-combination effects with the other work elements or with 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 SAC or any other European site.

#### 5.8.2.21. Fermoy Bridge [CC-N72-030.90]

The Fermoy Bridge is a 7-span masonry arch bridge with masonry parapets which carries the N72 over the River Blackwater. The maximum span is 14.6m and the minimum span is 11.52m. The structure is within Blackwater River (Cork/Waterford) SAC and located 1.6km upstream of the Blackwater Callows SPA. Plate 5-20 shows the west elevation.



**Plate 5-20 Fermoy Bridge.**

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

There are no freshwater pearl mussel records at the Fermoy Bridge.

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (230m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Cracked pavement slabs to be replaced (20m).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning along footways (400m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (30m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Clearance of vegetation from stringing course (2m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repoint open joints following clearance of vegetation from stringing course (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of minor moss growth from cutwaters (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Riverbed	Clear watercourse at 2no. south spans (150m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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. Strict adherence to biosecurity procedures and protocols is also a requirement.

Given the nature of the river at Fermoy bridge, the majority of the river channel would be not accessible on foot but would be suitable for a bridge inspection unit. Therefore, the removal of debris by hand from an inspection unit should be assessed by the Contractor from a health and safety perspective. If this is not feasible, then debris should be removed using mechanical methods, as outlined above, or using a hoist or similar system.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### **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. As stated above, given the nature of the river at Fermoy bridge, a bridge inspection unit would likely be most suitable.

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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### **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 SAC, Blackwater Callows SPA or any other European site.

5.8.2.22. Ballynamona Bridge [CC-N73-005.00]

Ballynamona Bridge is a 3-span masonry arch bridge with masonry parapets which carries the N73 over the River Awbeg. The maximum span is 5.62m and the minimum span is 4.04m. There is pumphouse for a mains water supply built on the southeast corner of the bridge. The structure is within Blackwater River (Cork/Waterford) SAC. Plate 5-21 shows the east elevation.



**Plate 5-21 Ballynamona Bridge.**

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

There are no freshwater pearl mussel records at the Ballynamona Bridge. [REDACTED]

**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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (50m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/ median	Sweeping and cleaning along footways (25m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Vegetation removal from parapets (20m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Masonry repointing to parapets following vegetation removal (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Masonry repair to areas of missing stones on both parapets (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Remove vegetation from spandrel walls (40m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing works to spandrel walls following vegetation removal (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Localised areas of mortar loss on abutments to be repointed (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Mortar loss on faces of piers 1 and 2 to be repointed (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Vegetation removal from watercourse on both sides of structure (20m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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 SAC or any other European site.



### 5.8.3. Clare

#### 5.8.3.1. Burrane Bridge [CL-N67-001.00]

Burrane Bridge is a 2-span bridge comprised of a corrugated steel arch on the south side and masonry arch on the north side. The span of each arch is 3.1m and maximum arch barrel rise is 1.34m at the crown. There is a steel safety barrier on the south side and steel parapet on the north side. The structure lies on the boundary of the Lower River Shannon SAC and is located 80m upstream of the River Fergus Estuaries SPA. Plate 5-22 shows the north elevation.



**Plate 5-22**

The qualifying interests of the Lower River Shannon SAC and River Fergus Estuaries SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter, estuaries, mudflats and sandflats, and large shallow inlets and bays. The potential impact to European designated sites is the 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (50m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Cleaning of blocked NW drainage gully (1 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Repair of crack across footway at NW corner of bridge (2m).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning of both rubbing strips (100m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Vegetation clearance from the outside face of the north parapet (5m <sup>2</sup> ).	Screened in - removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Paint repairs to minor areas of galvanised coating loss from north parapet railings. Abrasion and re-paint over isolated patches of rust (2m).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Power hosing of the north parapet railings to remove algae staining (30 m <sup>2</sup> ) (1 it).	Screened in.
Parapets/Safety barrier	Replacement of 30no. corroded fixings along north parapet railings, paint repairs to corroded anchor fixings also. (1 it)	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Vegetation clearance from south embankment to expose south elevation, vegetation clearance from north embankments to cut back trees overhanging the watercourse and also to maintain 1m clearance around (100m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Vegetation clearance from the wing walls and spandrel walls on both elevations (20m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repoint open joints following removal of vegetation (20m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Sections of spalled concrete on west abutment to be repaired (2m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Abutments	Areas of undermining to NW and NE corners of abutments to be repaired. Depth up to 200mm (3m).	Screened in.
Piers	Repair section of missing stone on north face (0.2m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of fly tipped material under dry span (20m <sup>2</sup> )	Screened out – removal of material is from a dry span and therefore will not impact on the SAC or SPA.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *Maintenance of base protection*

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. A second pump shall be available on site in case of failure 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.

For bridges with more than 1 span, the base protection will be constructed 1 span at a time where feasible, leaving the other span(s) open for watercourse flow thus avoiding any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *High pressure hosing of surface*

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

#### 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 Lower River Shannon SAC and River Fergus Estuaries SPA or any other European site.

## 5.8.4. Kerry

### 5.8.4.1. River Feale Bridge [KY-N21-018.80]

The River Feale Bridge is a 3-span concrete beam bridge carrying the N21 over the River Feale. The bridge parapets are aluminium railing. The mid-span is 38m and two side spans are 24.2m each. The structure is within the Lower River Shannon SAC. Plate 5-23 shows the east elevation.



**Plate 5-23 River Feale Bridge.**

The qualifying interests of the Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter, floating river vegetation. The potential impacts to the SAC are the reduction in species density and the deterioration of surface water quality.

There are no freshwater pearl mussel records at the River Feale Bridge. [REDACTED]

#### 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.

**Table 5-32 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (210m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Clear drainage gullies across structure (12 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Expansion joints	Clear debris from seal across both expansion joints (34m).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning along rubbing strips (200m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Power hosing of parapets to remove algae staining (250 m <sup>2</sup> ) (1 it).	Screened in.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure (200m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Bearings	Abrading and repainting of areas of surface corrosion on and around bearing bolts in north and south galleries. Total quantities 20no. bearings (1m).	Screened out - works within the bridge deck and therefore no pathway.
Other elements	Fencing underneath structure is damaged and should be replaced. Total quantities 3m of fencing replacement (1 it).	Screened out – fencing set back from river bank. Replacement will be like for like. No LSE anticipated.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### High pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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 Lower River Shannon SAC or any other European site.

5.8.4.2. **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 the N22 over the Leamnaguila 22 stream which is a tributary of the Gweestin River. The bridge lies on the boundary of the Castlemaine Harbour SAC. Plate 5-24a shows the masonry arch at east side and Plate 5-24b shows the concrete slab at west side.



**Plate 5-24a Kilkneedan Bridge.**



**Plate 5-24b Kilkneedan Bridge.**

The qualifying interests of the Castlemaine Harbour SAC are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon and 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.

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation to road surface over the bridge, 0.5m strip at each edge of carriageway (6m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Cleaning of drainage gully (1 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Sweeping, cleaning and removal of vegetation to concrete rubbing strips (10m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip to NW and southern embankments (15m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Abutments	Clearance of vegetation from abutment walls (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Repoint open joints from abutment walls throughout and following vegetation clearance (4m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Clearance of waste and fallen tree from upstream riverbed (2m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 Castlemaine Harbour SAC or any other European site.

5.8.4.3. Ballydeenlea Bridge [KY-N22-014.00]

The Ballydeenlea Bridge is a 5.20m single span masonry arch bridge with in-situ reinforced concrete extension. The structure carries the N22 over the River Gweestin. The bridge is within the Castlemaine Harbour SAC. Plate 5-25a shows the masonry arch at west side and Plate 5-25b shows the concrete slab at east side.



**Plate 5-25a** Ballydeenlea Bridge.



**Plate 5-25b** Ballydeenlea Bridge.

The qualifying interests of the Castlemaine Harbour SAC are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon and 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.

### 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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (18m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning to clean concrete footpaths at both sides of the bridge (36m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip to provide access at each side of the bridge (40m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Vegetation growth to be removed from both elevations (8m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repoint localised open joints on NW corner and following removal of vegetation. Extensive wing wall and spandrel wall cracks should be injected (8m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Cleaning of 18No drainage tubes to base of abutments (18m).	Screened out – drainage system will be suctioned or rodded and therefore no pathway.
Abutments	Concrete repair to spalled concrete on top of western abutment to the north side and to eastern abutment at the arch section (1m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Deck/Slab/Arch barrel	Spalled areas of concrete on arch barrel to be repaired (3m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *Masonry repointing and concrete repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

### *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 Castlemaine Harbour SAC or any other European site.

5.8.4.4. Deenagh Bridge [KY-N22-017.00]

The Deenagh Bridge is a 4-span masonry arch bridge with concrete slab extension. The maximum span is 5.16m and the minimum span is 3.05m. There is a water main strapped to the east face of the structure. The bridge is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC and is located 500m upstream of the Killarney National Park SPA. Plate 2-26 shows the west elevation.



**Plate 2-26 Deenagh Bridge.**

The qualifying interests of the Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mesotrophic waters, floating river vegetation and Killarney shad. The potential impacts 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 5-35 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-35 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (28m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Cleaning of drain gullies (3 it).	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Sweeping and cleaning to road concrete footways at both sides of the bridge (115m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to masonry parapet walls (13m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Masonry repointing to mortar loss and to subsequent mortar loss after vegetation removal to masonry parapet walls (16m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Masonry repair to missing stones to northern parapet wall. 1,3mx0,2mx0,1m (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip at each side of the bridge to provide access (40m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Isolated sections of vegetation growth to be cleared from wingwalls and spandrel walls (10m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Isolated sections of open joints and loose stones on wing walls and spandrel walls to be repointed. Repoint also following clearance of vegetation (5m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Removal of graffiti from concrete abutments and deck (5m <sup>2</sup> ).	Screened in – works have the potential to impact on surface water quality.
Abutments	Minor sections of open joints on masonry abutment to be repointed (4m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Removal of vegetation to cutwaters (8m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Masonry repointing to subsequent mortar loss after vegetation removal to cutwaters. Open joints/loose stones to be repointed (10m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/Slab/Arch barrel	Open joints on masonry arch barrels to be repointed (5m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Clearance of tree from watercourse at east side of pier 3 (1m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### Masonry repointing and masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to ensure that no lime mortar or debris enters the watercourse or causes 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.

### Graffiti removal

Graffiti removal shall be avoided and shall not be carried out by the Contractor at this structure.

### 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 Caragh River catchment SAC and Killarney National Park SPA or any other European site.

5.8.4.5. 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 railings. The bridge is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC and is located 11.8km upstream of the Killarney National Park SPA. Plate 5-27 shows the underside of east span.



**Plate 5-27 Woodford Bridge.**

The qualifying interests of the Caragh River catchment SAC and Killarney National Park SPA are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mesotrophic waters, floating river vegetation and Killarney shad. The potential 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 freshwater pearl mussel records at the Woodford Bridge. [REDACTED]

**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 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (18m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning to existing footways at both sides of the bridge and all rubbing strips (79m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to outside faces of parapet walls (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repoint open joints on south parapet following clearance of vegetation (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.



Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip to provide access (20m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Clearance of minor vegetation growth from NE wingwall (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Scour undermining of SW wing wall along a length of 10m, repairs necessary (10m).	Screened in.
Wing/Spandrel/Retaining Walls	Repoint open joints on NE wing wall following clearance of vegetation. 40mm wide vertical crack on SE wing wall to be repointed (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Removal of vegetation to concrete apron at base of western abutment (1m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Clearance of moss growth from top of cutwater (3m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Concrete repair to spalled concrete to base of east face of pier (1m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Deck/Slab/Arch barrel	Concrete repair to spalled concrete to north face of deck (1m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Deck/Slab/Arch barrel	Masonry repointing to mortar loss to arch barrels (5m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/Slab/Arch barrel	Masonry repair to dropped stones to masonry arch barrels using pinning stones and NHL mortar (1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of two fallen trees to upstream and downstream riverbed (2m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *Maintenance of base protection*

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. 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.

For bridges with more than 1 span, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus minimising any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *Masonry repointing, masonry repairs and concrete repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

#### 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 Caragh River catchment SAC and Killarney National Park SPA or any other European site.

5.8.4.6. Brewsterfield Culvert [KY-N22-022.00]

The structure is a 5m span corrugated steel pipe which carries the N22. There is steel safety barrier on steel posts. The culvert is on the Knockanaroor stream, which is a tributary of the River Flesk. The culvert is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC. Plate 5-28 shows the north elevation.



**Plate 5-28 Brewsterfield Culvert.**

The qualifying interests of the Caragh River catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter and floating river vegetation. 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.

There are no freshwater pearl mussel records at the Brewsterfield Culvert. [REDACTED]

**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
Bridge surface	Sealing of 2No longitudinal cracks to north and south edges of carriageway using hot poured bitumen (18m).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Patching of potholes to road surface over the culvert using macadam or similar approved (2m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping and cleaning to road surface over the culvert (9m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Soft verges to be replaced on both sides of the carriageway. 2.5m x 9m on both sides (45m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of trees behind safety barriers prior to the construction of concrete rubbing strip (18m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip at each side of the culvert (60m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Riverbed	Removal of fallen tree from upstream riverbed (20m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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 Caragh River catchment SAC or any other European site.

5.8.4.7. Garries Bridge [KY-N22-026.00]

The Garries Bridge is a 23.57m single span reinforced concrete structure which carries the N22 over the River Flesk in Co. Kerry. The parapets are aluminium railing. The bridge is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC. Plate 5-29 shows the east elevation.



**Plate 5-29 Garries Bridge.**

The qualifying interests of the Caragh River catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are FWPM, lamprey species, salmon, otter and floating river vegetation. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Garries Bridge. [REDACTED]

**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
Bridge surface	Sweeping and cleaning to road surface over the bridge (24m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Drainage gully should be installed at SE corner (1 it).	Screened out - works within the bridge deck and therefore no pathway.
Expansion joints	Cleaning of 2No expansion joints to road surface over the bridge (41m).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	High-pressure hosing to parapets (60m <sup>2</sup> ) (1 it).	Screened in.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip to each side of the bridge (40m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

## Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### High pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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 Caragh River catchment SAC or any other European site.

5.8.4.8. 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 the top of the wing walls. The bridge is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment SAC. Plate 5-30 shows the south elevation.



**Plate 5-30 Poulgorm Bridge.**

The qualifying interests of the Caragh River catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter and floating river vegetation. 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.

There are no freshwater pearl mussel records at the Poulgorm Bridge. [REDACTED]

**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
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (60m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping, cleaning and removal of vegetation to concrete raised verges to primary passage and to concrete footpath adjacent to NE wing wall to access the abutments (138m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to masonry parapet walls (15m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.



Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Masonry repointing to subsequent mortar loss after vegetation removal to masonry parapet walls (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	Masonry repair to missing stones at NW side of the bridge. 0,9mx0,9mx0.5m area. Stone to match existing (0.5m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	High-pressure hosing to steel parapets. 30m long, 1,1m high each. 66m <sup>2</sup> (1 it).	Screened in.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments. Debris should be removed (40m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Abutments	Concrete repair to areas of spalled concrete to eastern abutment (1m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### High pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach the watercourse.

#### Masonry repointing, masonry repairs and concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

#### 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 Caragh River catchment SAC or any other European site.

#### 5.8.4.9. Ballybeggan River Bridge [KY-N69-001.50]

The Ballybeggan River Bridge is a 8.51m single span precast reinforced concrete bridge which carries the N69 over the Ballynabrennagh stream. There are post and rail fencing at both sides of the carriageway. The structure is located 7.4km upstream of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and 7.3km upstream of the Tralee Bay Complex SPA. Plate 5-30 shows the west elevation.



**Plate 5-30 Ballybeggan River Bridge.**

The qualifying interests of the Cloghane SAC and Tralee Bay Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, large shallow inlets and bays, and otter. The potential 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 5-39 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-39 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to edge of carriageway and median (120m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Removal of vegetation and silt deposits required from 4 no. drainage gullies (2no. SE and 2 no. SW) (4 it)	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Removal of vegetation and silt deposits required from footways (36m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Removal of vegetation required from all embankments within 1m of bridge structure including along edges of the bridge deck (28m <sup>2</sup> ).	Screened out – bridge located outside & upstream of SAC. Vegetation to be removed is not a component of a SAC

Bridge Component	Work Element	Screening Recommendation
		habitat or dense scrub/deep rooted vegetation. No LSE anticipated.
Abutments	Removal of markings on north end abutment (1m <sup>2</sup> ).	Screened in.
Deck/slab/arch barrel	Joint material between units 9 and 10 should be repaired (1 it)	Screened out - works within the bridge deck and therefore no pathway.
Riverbed	Removal of vegetation, stones and heavy silt build-up from riverbed beneath bridge deck on south side of structure. (Dims of riverbed clearance required L-30m, W-5m) (150m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### *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. 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. 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 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.

#### *Graffiti removal*

Graffiti removal shall be avoided and shall not be carried out by the Contractor at this structure.

#### *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 Cloghane SAC and Tralee Bay Complex SPA or any other European site.

5.8.4.10. Skehanierin Culvert [KY-N69-018.00]

The structure is a 2-span masonry culvert with concrete pipe extensions. The maximum span is 1.2m and the minimum span is 1.17m. There are masonry parapets on both sides of the carriageway. The structure is located 1km upstream of the Lower River Shannon SAC on a tributary of the River Feale. Plate 5-31 shows the west elevation.



**Plate 5-31 Skehanierin Bridge.**

The qualifying interests of the Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter and floating river vegetation. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Skehanierin Culvert. [REDACTED]

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-40 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-40 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (10m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Install drain at west side of carriageway (1 it)	Screened in.
Footways/median	Sweeping and cleaning along rubbing strips (24m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (20m <sup>2</sup> ).	Screened out – bridge located outside & upstream of SAC. Light vegetation to be removed that is not a component of a SAC habitat or dense scrub/deep rooted vegetation. No LSE anticipated.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Clearance of vegetation from wing walls and spandrel walls (3m <sup>2</sup> ).	Screened out - bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from wing and spandrel walls.
Wing/Spandrel/Retaining Walls	Repoint open joints following removal of vegetation (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Vegetation and debris removal from watercourse at upstream elevation of the structure (10m <sup>2</sup> ).	Screened in.
Riverbed	Undermining at east end pipe in span no.1 to be repaired, 2m of scour protection required (2m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### 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. 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.

For bridges with more than 1 span, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus minimising any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and

downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *Installation of drainage outfall*

The establishment of a drainage outfall shall be conducted with a catch net system in place to collect any fallen concrete or mortar. If a working platform is required to carry out this work element, it shall be installed and used as outlined above under 'Masonry repointing'.

### *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 Lower River Shannon SAC or any other European site.

#### 5.8.4.11. Caragh Bridge [KY-N70-015.00]

The Caragh Bridge is a 7-span masonry arch bridge which carries the N70 over the River Caragh. There are masonry parapets on both sides of the carriageway. The maximum span is 5.63m and the minimum span is 1.05m. The structure is within Castlemaine Harbour SAC and the Castlemaine Harbour SPA. Plate 5-32 shows the north elevation.



**Plate 5-32 Caragh Bridge.**

The qualifying interests of the Castlemaine Harbour SAC and the Castlemaine Harbour SPA are listed in Section 5.2. The qualifying interests that could be impacted are SPA SCIs using the intertidal and supratidal zones of Caragh estuary; lamprey species, salmon, estuaries, mudflats and sandflats and otter. The potential 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.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-41 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-41 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Removal of vegetation and silt from bridge surface edges (150m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Removal of debris and silt from drainage gullies (4 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Removal of vegetation, debris and silt from footways (40m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation required from both sides of bridge parapets (30m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing of masonry post vegetation removal. 2no. cracks in parapets require repointing (6m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.



Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Laterally displaced section in NE corner to be taken down and rebuilt to match existing, 1.5m long (0.4m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Removal of vegetation required on all embankments within 1m of bridge structure (32m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation required from both wing walls and spandrel walls (25m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing of masonry required post vegetation removal (4m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

## Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### Masonry repointing and masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

## 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 Castlemaine Harbour SAC, the Castlemaine Harbour SPA or any other European site.

### 5.8.4.12. Baslickane Bridge [KY-N70-040.00]

The Baslickane Bridge is a 9.2m single span masonry arch bridge which carries the N70 over the Finglas river. The rise of arch barrel at its crown is 2m. There are masonry parapets on both sides of the carriageway. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Plate 5-33 shows the east elevation.



**Plate 5-33 Baslickane Bridge.**

The qualifying interests of the Caragh River Catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, and 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.

## Proposed Works

The proposed works at this bridge are detailed in Table 5-42 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-42 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (70m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (2 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of minor vegetation required on both sides of parapet barrier (16m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing required post vegetation removal (16m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	Missing stonework due to impact damage in NE corner requires repair (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	All trees, bushes and deep rooted vegetation within 1m of the structure to be removed. Japanese knotweed to be carefully treated/removed (30m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river. Note presence of Japanese knotweed at the bridge.
Wing/Spandrel/Retaining Walls	Removal of minor vegetation required on both wingwalls (8m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing required post vegetation removal (8m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Repair missing sections of stones on east and west spandrel walls (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	NW corner of abutment require vegetation removal (3m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Repointing required post vegetation removal (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Isolated sections of open joints require localised repointing (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

As detailed in the Works Order for Baslickane bridge, Japanese knotweed is present at the bridge. Therefore, the area of knotweed shall be cordoned off and no vegetation clearance shall be carried out within the cordoned off area.

### *Masonry repointing and masonry repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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 Caragh River Catchment SAC or any other European site.

### 5.8.4.13. Darrynane Beg Bridge [KY-N70-041.00]

The Darrynane Beg Bridge is a 3.7m single span arch bridge with precast reinforced concrete extension to the north end. There are masonry parapets on both sides of the carriageway. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. The bridge is located 0.5km upstream of the Kenmare River SAC and 1.9km upstream of the Iveragh Peninsula SPA. Plate 5-33 shows the north elevation.



**Plate 5-33 Darrynane Bridge.**

The qualifying interests of the Caragh River Catchment SAC, Kenmare River SAC and Iveragh Peninsula SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, and otter. The potential 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.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-42 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-42 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (50m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (2 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	All debris, silt and vegetation to be removed from medians/footways (15m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Western river side parapet requires vegetation clearance (7.5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing required post vegetation removal (7.5m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Clearance of vegetation from all embankments (10m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Clearance of vegetation from spandrel walls (4m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repoint open joints following clearance of vegetation (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Scour hole to the middle of the north section, 300mm deep requires repair (1m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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. 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 mitigation measures outlined above must be implemented. The Contractor’s ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 Caragh River Catchment SAC, Kenmare River SAC, Iveragh Peninsula SPA or any other European site.

#### 5.8.4.14. Sneem River Bridge [KY-N70-051.00]

The Sneem River Bridge is a 6-span masonry arch with reinforced concrete extension which carries the N70 over the Sneem river. The maximum span is 6.75m and the minimum span is 2.20m. The structure is within the Kenmare River SAC. Plate 5-34a shows the east elevation and Plate 5-34b shows the west elevation.



**Plate 5-34a Sneem River Bridge.**



**Plate 5-34b Sneem River Bridge.**

The qualifying interests of the Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, reefs and otter. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-43 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.



**Table 5-43 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (60m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (3 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	All debris, silt and vegetation to be removed from medians/footways (50m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	15m <sup>2</sup> on northern parapet and 16m <sup>2</sup> on central parapet require vegetation clearance (31m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing post vegetation removal (30m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	NW embankment requires vegetation clearance (15m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	NW and SW spot locations of vegetation growth require clearance (15m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing post vegetation removal (15m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Clearance of vegetation from south abutment (5m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Repoint open joints on south abutment (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Missing stone at base of south abutment wall to be repaired (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of vegetation from piers 2 and 4 (5m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Repoint open joints following vegetation clearance from piers 2 and 4. 7mm wide vertical crack on pier 2 to be repointed (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Repair sections of missing stone on piers 2 and 4 (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	5mm circumferential crack on underside of deck and open joints in span 2 to be repointed (5m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Clearance of vegetation (tree build up) from watercourse at east side of structure (5m <sup>2</sup> )	Screened in.

Bridge Component	Work Element	Screening Recommendation
Other elements	Sections of spalled concrete on footsteps leading to underside of structure to be repaired (2m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Other elements	Clearance of vegetation growth from footsteps leading to underside of structure (1 it)	Screened out – works over land and therefore no pathway present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry repointing, masonry repairs and concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

#### 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 Kenmare River SAC or any other European site.

5.8.4.15. Tahilla River Bridge [KY-N70-052.00]

The Tahilla River Bridge is a 2-span masonry arch bridge with precast concrete slab extension. The maximum span is 6.45m and the minimum span is 2.06m. There are masonry parapets on both sides of the carriageway. The structure is within the Kenmare River SAC. Plate 5-35 shows the south elevation.



**Plate 5-35 Tahilla Bridge.**

The qualifying interests of the Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, reefs and otter. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-44 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-44 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (35m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (3 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Eastern footway requires sealant in various locations (14m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	All debris, silt and vegetation to be removed from medians/footways (5m).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation required on both sides of parapet barrier (2m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Repointing post vegetation removal (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	All trees, bushes and deep rooted vegetation within 1m of structure to be removed. Tyre on embankment to be removed (35m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Western wingwall requires minor vegetation removal (10m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing post vegetation removal (8m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 Kenmare River SAC or any other European site.

#### 5.8.4.16. Blackwater Bridge [KY-N70-054.00]

The Blackwater Bridge is a 2-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 6.10m and the minimum span is 4.40m. The structure is within the Kenmare River SAC. Plate 5-36 shows the north elevation.



**Plate 5-36 Blackwater Bridge.**

The qualifying interests of the Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, reefs and otter. The potential impacts to the SAC are the loss or modification of habitat, reduction in species density and deterioration of surface water quality.

### Proposed Works

The proposed works at this bridge are detailed in Table 5-45 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-45 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (50m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (4 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation required on both sides of parapet barrier (125m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing post vegetation removal (30m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	Missing stone in SE coping requires repair (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	All trees, bushes and deep-rooted vegetation within 1m of structure to be removed. (200m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation required on both wingwalls and spandrel walls (200m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing required post vegetation removal (100m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Western abutments require vegetation clearance (ivy growth) (60m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Repoint open joints following vegetation clearance(10m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Section of missing stone in eastern abutment to be repaired (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of moss growth and removal of small tree from top of cutwater (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Section of missing stone on east side of pier requires repair. Repair top of cutwater where small tree is removed (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Masonry repointing (20m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### **Masonry repointing and masonry repairs**

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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### **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 Kenmare River SAC or any other European site.



### 5.8.4.17. Muckross Friary Bridge [KY-N71-002.00]

The Muckross Friary Bridge is a 3.6m single span in-situ reinforced concrete bridge with masonry parapets on both sides of the carriageway. The structure is within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA. Plate 5-37 shows the west elevation.



**Plate 5-37 Muckross Friary Bridge.**

The qualifying interests of the Caragh River Catchment SAC and Killarney National Park SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mesotrophic waters, floating river vegetation and Killarney shad. The potential 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.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-46 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-46 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (60m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (2 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Sweeping and cleaning of rubbing strip (6m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation required on both sides of parapet barrier (25m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing required post vegetation removal (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	All trees, bushes and deep-rooted vegetation within 1m of structure to be removed (10m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Clearance of minor vegetation growth from NW and SE walls (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing post vegetation removal (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Tree limbs and other debris deposited in north side bridge requires clearance (5m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 Caragh River Catchment SAC, Killarney National Park SPA or any other European site.

#### 5.8.4.18. Torc New Bridge [KY-N71-003.00]

The Torc New Bridge is a 2-span masonry arch bridge with masonry parapets on both sides of the carriageway. The main span is 7.87m and the side span is 2m. The riverbed is uneven but good flow is being maintained. The structure is within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA. Plate 5-38 shows the east elevation.



**Plate 5-38 Torc New Bridge.**

The qualifying interests of the Caragh River Catchment SAC and Killarney National Park SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mestrophic waters and floating river vegetation. The potential 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.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-47 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-47 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (100m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (2 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Parapets/Safety barrier	Saplings sprouting from joints with root embedment require removal on outer parapet walls (22m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing post vegetation removal (22m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	Hole in east parapet to be repaired (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	All trees, bushes and deep-rooted vegetation within 1m of structure to be removed (15m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of minor vegetation required on both wing walls and west spandrel wall (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Masonry repointing (5m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Section of missing stone on east spandrel wall to be repaired (0.1m <sup>3</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Isolated areas of open joints on abutments to be repointed (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry repointing and masonry 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 Caragh River Catchment SAC, Killarney National Park SPA or any other European site.

#### 5.8.4.19. Incheens Bridge [KY-N71-006.00]

The Incheens Bridge is a 3.2m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 1.11m. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and the Killarney National Park SPA. Plate 5-39 shows the east elevation.



**Plate 5-39 Incheens Bridge.**

The qualifying interests of the Caragh River Catchment SAC and Killarney National Park SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter, slender naiad, oligotrophic waters and oligotrophic to mesotrophic waters and floating river vegetation. The potential 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.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-48 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-48 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (25m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping, cleaning and removal of vegetation and debris from rubbing strips (3m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of minor vegetation growth required on both sides of parapet barrier (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing post vegetation removal (5m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	All trees, bushes and deep-rooted vegetation within 1m of structure to be removed (24m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation required on both wing walls (10m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing required post vegetation removal (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Repair undermining of south abutment at midspan, 1.1m long x 0.5m high x 0.3m deep (1.1m).	Screened in – instream works.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Maintenance of base protection

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. 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 mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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 Caragh River Catchment SAC, Killarney National Park SPA or any other European site.



5.8.4.20. Carrig East Bridge [KY-N71-010.00]

The Carrig East Bridge is a 3.2m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of the arch barrel at the crown is 1.15m. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. The bridge spans an un-named tributary of the River Finnihy. Plate 5-40 shows the east elevation.



**Plate 5-40 Carrig East Bridge.**

The qualifying interests of the Caragh River Catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter, floating river vegetation. 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.

Freshwater pearl mussel are not present at the Carrig East Bridge. [REDACTED]

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-49 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-49 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	All debris, silt and vegetation to be removed from bridge surface edges (35m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	All debris, silt and vegetation to be removed from bridge drainage gullies (3 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Eastern footway requires sealant in various locations (5m)	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	All debris, silt and vegetation to be removed from medians/footways (14m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation required on both sides of parapet barrier (2m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Repointing post vegetation removal (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	All trees, bushes and deep-rooted vegetation within 1m of structure to be removed. Tyre on embankment to be removed (35m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Western wingwall requires minor vegetation removal (10m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Repointing post vegetation removal (8m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 Caragh River Catchment SAC or any other European site.

#### 5.8.4.21. Coolroe South Bridge [KY-N72-001.00]

The Coolroe South Bridge is a 4.65m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The structure carries N72 over the Kealbrogeen Stream which is a tributary of River Laune. The bridge is located 300m upstream of the Castlemaine Harbour SAC and 9.1km upstream of the Castlemaine Harbour SPA. Plate 5-41 shows the north elevation.



**Plate 5-41 Coolroe South Bridge.**

The qualifying interests of the Castlemaine Harbour SAC and Castlemaine Harbour SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, estuaries and 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.

### Proposed Works

The proposed works at this bridge are detailed in Table 5-50 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-50 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (10m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	2no. gullies to be cleared (2 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Sweeping and cleaning to concrete rubbing strips to both sides of the bridge (13m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments including removal of waste from the SE embankment (15m <sup>2</sup> ).	Screened out – bridge located outside & upstream of SAC. Vegetation to be removed is not a component of a SAC habitat or dense scrub/deep rooted vegetation. No LSE anticipated.
Wing/Spandrel/Retaining Walls	Masonry repointing to mortar loss to the joint between spandrel wall and arch barrel keystone to the NE side of the structure (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Cleaning of 1No drainage tube from eastern abutment (1m).	Screened out – drainage systems will be suctioned or rodded and therefore no pathway.
Deck/slab/arch barrel	Cleaning of drip tube required (1 it)	Screened out – drainage systems will be suctioned or rodded and therefore no pathway.
Deck/slab/arch barrel	Concrete repair to areas of spalled/honeycombed concrete to deck (6m <sup>2</sup> ).	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Riverbed	Scour protection in the form of rip rap to be provided at base of abutments. 9m long, 0,5m wide each (9m <sup>2</sup> ).	Screened in.
Structure in general	Bridge ID plate to be provided (1 it)	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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. 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.

For bridges with more than 1 span, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus minimising any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### Masonry repointing, repair of parapet, concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

### 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 Castlemaine Harbour SAC and Castlemaine Harbour SPA or any other European site.

#### 5.8.4.22. River Gweestin Bridge [KY-N72-002.00]

The River Gweestin Bridge is a 3-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 3.8m and the minimum span is 3.5m. The riverbed is uneven, and the river is fast flowing. The structure is within the Castlemaine Harbour SAC. Plate 5-42 shows the north elevation.



**Plate 5-42 River Gweestin Bridge.**

The qualifying interests of the Castlemaine Harbour SAC are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, estuaries and 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.

### Proposed Works

The proposed works at this bridge are detailed in Table 5-51 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-51 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation to road surface over the bridge (22m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning to concrete rubbing strips to west side of the bridge (14m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation to masonry parapet walls (39m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Concrete repair to eastern coping to masonry parapet wall (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Parapets/Safety barrier	Masonry repointing to subsequent mortar loss after vegetation removal to masonry parapet walls (30m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/Safety barrier	Masonry repair to western parapet wall. 60cmx30cmx30cm. Stone to match existing. Copping to be reinstated to match existing (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Removal of vegetation, including trees, to embankments. 1m wide strip at each side of the bridge (20m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation to spandrel walls (110m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Masonry repointing to mortar loss after vegetation removal to spandrel walls (10m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Minor loss of stone to be repaired on spandrel walls. Repair damage caused by tree removal if necessary (0.2m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of fallen trees from upstream riverbed (10m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### Masonry repointing, masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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 Castlemaine Harbour SAC or any other European site.



#### 5.8.4.23. Ballymalis Bridge [KY-N72-003.00]

The Ballymalis Bridge is a 5.20m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The rise of the arch barrel at its crown is 0.85m. The structure carries the N72 over the stream at Gortnaskarry, a tributary of the River Laune is. The structure is within the Castlemaine Harbour SAC. Plate 5-43 shows the north elevation.



**Plate 5-43 Ballymalis Bridge.**

The qualifying interests of the Castlemaine Harbour SAC are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, estuaries and 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.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-52 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-52 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface (15m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning to concrete rubbing strips at both sides of the bridge (15m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of vegetation to masonry walls (6m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/Safety barrier	Masonry repair to damaged section of southern parapet to the west. 50cmx25cmx30cm. Stone to match existing (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Removal of vegetation to SW and NE embankments. 1m wide strip to provide access (10m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Bridge Component	Work Element	Screening Recommendation
Deck/slab/arch barrel	Masonry repointing to mortar loss to arch barrel (10m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Masonry repair to missing and dropped stones to arch barrel (0.3m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Concrete repair to concrete scour protection aprons to abutments (5m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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. A secondary pump should be available on site in case of failure 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 mitigation measures outlined above must be implemented. The Contractor’s ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

#### Masonry repointing, masonry repairs, concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water.*

#### 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 Castlemaine Harbour SAC or any other European site.

5.8.4.24. Six Mile Bridge [KY-N72-008.00]

The Six Mile Bridge is a 4-span masonry arch bridge with precast reinforced concrete arch extension to the south end. The maximum span is 6.25m and the minimum span is 3.63m. The first span on the west side is a dry span. The bridge spans the Owneykeagh river, which is a tributary of the River Flesk. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Plate 5-44 shows the south elevation.



**Plate 5-44** Six Mile Bridge.

The qualifying interests of the Caragh River Catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter and floating river vegetation. 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.

There are no freshwater pearl mussel records at Six Mile Bridge. This bridge was surveyed for freshwater pearl mussel in 2018 under the current project. No freshwater pearl mussel were present. The habitat was recorded as largely unsuitable for pearl mussel with small patches of suitable habitat.

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-53 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-53 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (47m <sup>2</sup> ).	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping, cleaning and removal of vegetation to concrete footways at both sides of the bridge (105m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/Safety barrier	Removal of ivy growth to north face or northern parapet wall. Removal of vegetation from top of parapet wall (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Repoint following removal of vegetation (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Removal of vegetation to embankments. 1m wide strip to northern embankments and to SW embankment (30m <sup>2</sup> ).	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation to northern spandrel wall (4m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Masonry repointing to subsequent mortar loss after vegetation removal to northern spandrel wall (2m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Removal of vegetation from top of northern cutwaters. Trapped debris to pier 3 cutwater to be removed (5m <sup>2</sup> ).	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Mortar loss to pier 2 cutwater (1m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Masonry repair to missing stones to northern cutwater at eastern pier (pier 3). Stone to match existing (1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Localised areas of mortar loss to arch barrels on north side to be repointed (3m <sup>2</sup> ).	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Repair areas of minor masonry loss on north arch barrels (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of vegetation, fallen trees from downstream riverbed (2m <sup>2</sup> ).	Screened in.
Riverbed	1 x no. 100mm scour hole to pier 3 north cutwater to be repaired (1m <sup>2</sup> ).	Screened in.

## Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

### 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. 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. 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 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.

### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *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. A secondary pump should be available on site in case of failure 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.

For bridges with more than 1 span, as in the case at Six Mile Bridge, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus avoiding any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *Masonry repointing, masonry repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 Caragh River Catchment SAC or any other European site.

#### 5.8.4.25. Beheenagh Bridge [KY-N72-009.00]

The Beheenagh Bridge is a 4-span masonry arch bridge with in-situ reinforced concrete arch extension to the south end. The maximum span is 5.35m and the minimum span is 3.60m. The bridge spans the Beheenagh stream, which is a tributary of the Owneykeagh that flows to the River Flesk. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Plate 5-45 shows the south elevation.



**Plate 5-45 Beheenagh Bridge.**

The qualifying interests of the Caragh River Catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter and floating river vegetation. The potential impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Beheenagh Bridge. This bridge was surveyed for freshwater pearl mussel in 2018 under the current project. No freshwater pearl mussel were present and the habitat was

recorded as largely unsuitable for pearl mussel with small patches of suitable habitat. [REDACTED]

### Proposed Works

The proposed works at this bridge are detailed in Table 5-54 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-54 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (33m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Removal of vegetation to embankments. 1m wide strip at each side to provide access (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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.

### 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 Caragh River Catchment SAC or any other European site.



5.8.4.26. 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 the arch barrel at the crown is 1.40m. This bridge spans the Beheenagh stream, which is a tributary of the Owneykeagh that flows to the River Flesk. The structure is within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Plate 5-46 shows the deck, abutments and riverbed of the bridge.



**Plate 5-46 Gortanahaneboy West Bridge.**

The qualifying interests of the Caragh River Catchment SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, lamprey species, salmon, otter and floating river vegetation. The potential impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Gortanahaneboy West Bridge. [REDACTED]

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-55 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-55 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning to road surface over the bridge (13m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping, cleaning and removal of vegetation and debris from western concrete raised verge and east pavement (6m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Removal of vegetation to parapet walls (8m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Masonry repointing to subsequent mortar loss after vegetation removal to masonry parapet walls. Parapet cracks to be repointed (4m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Embankments/ Revetments	Removal of vegetation to embankments. 1m wide strip to provide access (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Removal of vegetation to wingwalls and spandrel walls (15m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to subsequent mortar loss after vegetation removal to spandrel walls (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Localised undermining and mortar washout below water line to be repaired	Screened in.
Riverbed	Removal of fallen tree to upstream riverbed (1m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Maintenance of base protection

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. A secondary pump should be available on site in case of failure 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 mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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 pans and projects.

### *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 Catchment SAC or any other European site.

5.8.4.27. 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 the 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 5-47 shows the north elevation.



**Plate 5-47 Cullavaw Bridge.**

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

There are no freshwater pearl mussel records at the Cullavaw Bridge. [REDACTED]

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-56 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-56 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation and debris to edges of carriageway (33m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping, cleaning and removal of vegetation and debris to concrete footpaths over the bridge (131m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Break-up of concrete to be repaired. Specified repair is 15m <sup>2</sup> of concrete repairs	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Removal of vegetation to masonry parapet walls (6m <sup>2</sup> )	Screened out - bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from parapet walls.

Bridge Component	Work Element	Screening Recommendation
Parapets/ Safety barrier	Masonry repointing to subsequent mortar loss after vegetation removal to masonry parapet walls. Joint in corner of parapet to be repointing (5m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/ Revetments	Removal of vegetation to embankments. 1m wide strip to provide access (30m <sup>2</sup> )	Screened out – bridge located outside & upstream of SAC. Vegetation to be removed is not a component of a SAC habitat or dense scrub/deep rooted vegetation. No LSE anticipated.
Wing/ Spandrel/ Retaining Walls	Removal of vegetation to south spandrel wall and SE wingwall and northern walls (30m <sup>2</sup> )	Screened out - bridge located outside & upstream of SAC. LSE not anticipated from access for removal of vegetation from spandrel and wingwalls.
Wing/ Spandrel/ Retaining Walls	Removal of graffiti to north spandrel wall (5m <sup>2</sup> )	Screened in.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to subsequent mortar loss after vegetation removal to south spandrel wall and SE wingwall (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Repoint loose stone / open joints on both masonry abutments (5m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Repoint loose stone / open joints in masonry section of pier (4m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/ Slab/ Arch barrel	Masonry repointing to areas of mortar loss to masonry arch barrels. 70mm circumferential cracks in both spans of masonry arch barrels to be repointed (10m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/ Slab/ Arch barrel	Masonry repair to areas of dropped stones to masonry arch barrels using pinning stones to match existing (0.2m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Removal of vegetation and silt build-up to downstream riverbed and waste to riverbed at eastern span (30m <sup>2</sup> ).	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### *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. 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. 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 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.

### *Masonry repointing / Masonry repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *Graffiti removal*

Graffiti removal shall be avoided and shall not be carried out by the Contractor at this structure.

### *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.

### *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 SAC or any other European site.

#### 5.8.4.28. Annagh East Bridge [KY-N86-007.00]

The Annagh East Bridge is a 4.4m single span masonry arch bridge with reinforced concrete arch extension to the south end. The structure carries the N86 over the Annagh Stream which flows into Tralee Bay. There is a metal gate attached to the downstream side of the bridge. The structure is within the Tralee Bay And Magharees Peninsula, West To Cloghane SAC and the Tralee Bay Complex SPA. Plate 5-48 shows the north elevation.



**Plate 5-48 Annagh East Bridge.**

The qualifying interests of the West to Cloghane SAC and the Tralee Bay Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, reefs, otter; SPA SCIs using the intertidal area of Annagh estuary. The potential impacts to the European sites are loss or modification of habitat, reduction in species density and deterioration of surface water quality.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-57 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-57 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Removal of silt deposits from bridge surface edges (40m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Removal of silt and vegetation required from footways (10m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Removal of vegetation required from both parapets. (3m <sup>2</sup> on river side of southern parapet and 0.5m <sup>2</sup> required on river side of northern parapet)	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Repointing of masonry required post vegetation removal (4m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/ Revetments	Removal of vegetation required on all embankments within 1m of bridge structure (24m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Bridge Component	Work Element	Screening Recommendation
Wing/ Spandrel/ Retaining Walls	5m <sup>2</sup> of vegetation removal required from southern wingwall and spandrel extrados	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Minor repointing work to be carried out on east abutment (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Minor masonry repairs to be carried out on east abutment (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Stone build up adjacent to west abutment should be cleared (15m <sup>2</sup> )	Screened in.
Structure in general	2 No. corroded fixings on structure ID should be replaced	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

Where feasible, the stone build-up adjacent to the structure should not be removed from the river channel and instead should be re-distributed within the channel.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry repointing / Masonry repairs

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.



Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 West to Cloghane SAC and the Tralee Bay Complex SPA or any other European site.

#### 5.8.4.29. Killelton Bridge [KY-N86-019.00]

The Killelton Bridge is a 3.65m single span masonry arch bridge with masonry parapets on both sides of the carriageway. The structure has been widened to the north by a reinforced, in-situ concrete arch. The structure is located outside and 530m upstream of the Tralee Bay And Magharees Peninsula, West To Cloghane SAC. Plate 5-49 shows the north elevation.



**Plate 5-49 Killelton Bridge.**

The qualifying interests of the West to Cloghane SAC are listed in Section 5.2. The qualifying interests that could be impacted are mudflats and sandflats, large shallow inlets and bays and otter. The potential impacts to the SAC are loss or modification of habitat, reduction in species density and deterioration of surface water quality.

## Proposed Works

The proposed works at this bridge are detailed in Table 5-58 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-58 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Removal of vegetation and silt deposits from bridge surface edges (40m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Removal of silt deposits required from footways (2m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Removal of vegetation required within 1m of bridge structure from all embankments (24m <sup>2</sup> )	Screened out - Screened out – bridge located outside & upstream of SAC. Vegetation to be removed is not a component of a SAC habitat or dense scrub/deep rooted vegetation. No LSE anticipated.
Riverbed	10m <sup>2</sup> of Debris, vegetation and accumulating silt deposits are to be removed from northern side of bridge riverbed to prevent further build-up of debris (20m <sup>2</sup> )	Screened in.

## Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

### *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. 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. 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 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.

### 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.

### 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 Tralee Bay And Magharees Peninsula, West To Cloghane SAC or any other European site.

## 5.8.5. Limerick

### 5.8.5.1. Goulburn Bridge [LC-N21-002.00]

The Goulburn Bridge is a 15.75m single span reinforced concrete bridge with aluminium railing parapets. The riverbed is very shallow. It spans the Allaghaun stream, which is a tributary of the River Feale. The structure is within the Lower River Shannon SAC. Plate 5-50 shows the south elevation.



**Plate 5-50 Goulburn Bridge.**

The qualifying interests of the Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, crayfish, lamprey species, salmon, otter and floating river vegetation. The potential impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no records for freshwater pearl mussel at the bridge.

### Proposed Works

The proposed works at this bridge are detailed in Table 5-59 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-59 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (60m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	2no. drains to be cleared	Screened out – gullies/drains will be suctioned or rodded and therefore no pathway.
Footways/ Median	Sweeping and cleaning along rubbing strips (56m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Footways/ Median	Concrete rutting on south raised verge to be repaired (1m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Missing safety barrier post at SW departure adjacent to parapet to be replaced.	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Power hosing of parapets to remove algae staining, measuring 56m <sup>2</sup>	Screened in.
Embankments/ Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure. Debris to be cleared (50m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	200mm undermining over 1m length on NE wingwall to be repaired with fill or concrete	Screened in – instream works within a SAC.
Abutments	Localised exposed reinforcement / poorly compacted concrete to be repaired (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Structure in general	Clean structure ID.	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry & concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### *High-pressure hosing of surface*

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach the watercourse.

#### *Maintenance of base protection*

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. A secondary pump should be available on site in case of failure 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 mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

#### *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 pans and projects.

#### *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 or any other European site.

5.8.5.2. Adare Church Bridge [LC-N21-018.00]

The Adare Church Bridge is a 3-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 2.63m and the minimum span is 2.43m. The structure is within the Lower River Shannon SAC and located 9.5km upstream of the River Shannon and River Fergus Estuaries SPA. Plate 5-51 shows the east elevation.



**Plate 5-51 Adare Church Bridge.**

The qualifying interests of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter and floating river vegetation habitat (Triangular Club-rush *Schoenoplectus triqueter*). The potential impacts to the SAC and SPA 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 5-60 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-60 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (40m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Establish drainage facility along west parapet, ponding water present	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Vegetation removal from the parapets (15m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Repointing works to parapets following vegetation removal (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Embankments/ Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Vegetation removal from the wing walls (20m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following clearance of vegetation (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/ Spandrel/ Retaining Walls	Missing sections of stone in spandrel walls to be repaired (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Vegetation removal from the piers (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Repoint open joints on piers following clearance of vegetation (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Clearance of vegetation growth and excess debris from watercourse on both sides of structure (60m <sup>2</sup> )	Screened in.
Structure in general	Clean structure ID on west parapet	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

It is not permitted to remove any reed or rush-like plant material from the riverbanks.

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### **Masonry repointing / Masonry repairs**

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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### **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.

### **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 River Shannon and River Fergus Estuaries SPA or any other European site.



### 5.8.5.3. Adare Bridge [LC-N21-019.00]

The Adare Bridge is a 10-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 4.56m and the minimum span is 2.17m. The arch soffit has been stabilised with formed concrete. The structure spans the River Maigue and is within the Lower River Shannon SAC and located 9.5km upstream of the River Shannon and River Fergus Estuaries SPA. Plate 5-52 shows the west elevation.



**Plate 5-52 Adare Bridge.**

The qualifying interests of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey species, salmon, otter and floating river vegetation habitat (Triangular Club-rush *Schoenoplectus triquetra*). The potential impacts to the SAC and SPA 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 5-61 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-61 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway and bases of parapets (130m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	2no. cats eyes missing at south end of structure to be replaced	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Vegetation removal from outside faces of both parapets (40m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Repointing works along both parapets following vegetation removal (20m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/ Revetments	Vegetation removal from embankments to maintain 1m clearance around structure (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Bridge Component	Work Element	Screening Recommendation
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from wing walls and spandrel walls. Saplings to be removed from spandrel at NE side of structure (60m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repointing should be carried out after removal of vegetation (20m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/ Spandrel/ Retaining Walls	Masonry repairs where saplings are removed	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Vegetation and moss removal from pier 2. Debris at inlets of spans 6-10 to be removed.	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Riverbed	Vegetation clearance from upstream elevation of the structure. Fallen tree across span to be cleared.	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

It is not permitted to remove any reed or rush-like plant material from the riverbanks.

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *Masonry repointing / Masonry repairs*

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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### *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.

### *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 River Shannon and River Fergus Estuaries SPA or any other European site.

#### 5.8.5.4. Askeaton Friary River Bridge [LC-N69-009.00]

The Askeaton Friary River Bridge is a 26.60m single span reinforced concrete arch bridge with aluminium railing parapets. The arch ring is pinned with steel tooth bearings. The structure is within the River Shannon and River Fergus Estuaries SPA and located 1.9km upstream of the Lower River Shannon SAC. Plate 5-53 shows the south elevation.



**Plate 5-53 Askeaton Friary River Bridge.**

The qualifying interests of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are listed in Section 5.2. The qualifying interests that could be impacted are SPA SCIs using the River Deel estuary; estuaries, mudflats and sandflats. The potential impacts to the SAC and SPA are loss or modification of habitat, reduction in species density and deterioration of surface water quality.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-62 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-62 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (70m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Clean drain gullies at each corner of the structure (4 no.)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/ Median	Sweeping and cleaning along south footway and north rubbing strip, including vegetation clearance (70m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Power hosing of parapet railings along length of structure, 120m <sup>2</sup> in area	Screened in.
Embankments/ Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure	Screened out – Vegetation removal 1m around the structure will not affect the QIs of the SPA. Estuarine habitats of SAC located ca. 1.9km downstream of the bridge. LSE not anticipated.

Bridge Component	Work Element	Screening Recommendation
Abutments	Clearance of moss growth from abutment walls (20m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Deck/ Slab/ Arch barrel	Transverse crack extending full width of the deck mid-span to be repaired. Spalled concrete / exposed rebar in north sloped edge face and SW vertical pillar to be repaired (10m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.

### Mitigation Measures

The following mitigation measures apply to be works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### High-pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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.

## 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 River Shannon and River Fergus Estuaries SPA or any other European site.

### 5.8.6. Tipperary South

#### 5.8.6.1. The Three Bridges [TS-N24-001.00]

The Three Bridges is a 14.24m single span concrete slab bridge with masonry parapets on both sides of the carriageway. The median is a steel tension guardrail. The structure spans the Killonerry river and is within the Lower River Suir SAC. Plate 5-54 shows the south elevation.



**Plate 5-54 The Three Bridges.**

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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential 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 5-63 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-63 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Pavement remedial works to areas of worn surfacing on centre of eastbound carriageway (10m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning for 1m strip along parapets and central reserve (35m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping, cleaning and clearance of vegetation from central median and rubbing strips (80m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Minor vegetation removal to outside faces of both parapets (2m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Masonry repointing following removal of minor vegetation from parapet, 2m <sup>2</sup> overall	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/ Safety barrier	Repair required to bent support posts to 3m length of tension wire central safety barrier - 4no. posts in total.	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure (50m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Repair to 3m crack in northwest masonry wing wall (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/ Slab/ Arch barrel	11m long crack along length of south face of deck slab, surface should be cleaned, and resin injected into crack (6m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Riverbed	Minor vegetation and debris to be removed from watercourse (3m <sup>2</sup> )	Screened in.
Riverbed	Repair scour damaged area of riverbed at SW corner by installing scour protection (5m <sup>2</sup> )	Screened in.
Structure in general	Add structure ID to the parapet	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *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. 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.

For bridges with more than 1 span, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus minimising any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *Concrete repairs / Masonry repointing / Masonry repairs*

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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 Suir SAC or any other European site.

#### 5.8.6.2. 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 5-55 shows the south elevation.



**Plate 5-55 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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential 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 5-64 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-64 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Longitudinal and transverse cracks in the pavement should be sealed with hot poured bitumen	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Vegetation clearance and sweeping along edge of carriageway and rubbing strips (15m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from all wingwalls	Screened out – this activity will be over land.
Wing/ Spandrel/ Retaining Walls	Repair of 2 no. vertical cracks on SW wingwall (3m <sup>2</sup> )	Screened out – this activity will be over land.
Abutments	Crack repair required to southeast corner of abutment on south elevation (2m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Other elements	Manhole cover on rubbing strip should be replaced	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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 from the structure. 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 Suir SAC or any other European site.

#### 5.8.6.3. Cahirabbey Lower Bridge 2 [TS-N24-015.00]

The Cahirabbey Lower Bridge 2 is a 3-span precast concrete pipe bridge with 1.2m diameter each. There is steel safety barrier on timber post. The structure is within the Lower River Suir SAC. Plate 5-56 shows the west elevation.



**Plate 5-56 Cahirabbey Lower Bridge 2.**

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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential 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 5-65 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-65 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning of 0.5m strip on both sides of carriageway (10m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Embankments/ Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following vegetation clearance (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	40m <sup>2</sup> of vegetation clearance required both upstream of structure and downstream of structure	Screened in.
Other elements	Clear partial blockages in pipe 2 (5m in from east end) and at inlet of pipe 1.	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 Suir SAC or any other European site.

5.8.6.4. Cahirabbey Lower Bridge 1 [TS-N24-016.00]

The Cahirabbey Lower Bridge 1 is a 44.10m single span reinforced concrete beam bridge carrying the N24 over the River Suir. The parapets are heavy steel railings. The structure is within the Lower River Suir SAC. Plate 5-57 shows the south elevation.



**Plate 5-57 Cahirabbey Lower Bridge 1.**

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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential impacts to the SAC are loss or modification of habitat, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at Cahirabbey Lower Bridge 1. A survey for freshwater pearl mussel was conducted in 2018 as part of the current project and no pearl mussel were recorded within 50m upstream or downstream of the bridge. [REDACTED]

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-66 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-66 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along parapets and edge of carriageway, including removal of all vegetation (250m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping and cleaning to remove debris and vegetation growth along full length of parapets (200m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Power hosing of the parapet railings to remove algae staining, measuring 110m <sup>2</sup>	Screened in.
Embankments/ Revetments	Removal of dense vegetation from all embankments including light trees and	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Bridge Component	Work Element	Screening Recommendation
	branches within 2m of the structure (100m <sup>2</sup> )	

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### High-pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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.

#### 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 Suir SAC or any other European site.

5.8.6.5. Cappa New Bridge [TS-N24-021.00]

The Cappa New Bridge is a 2-span reinforced concrete bridge carrying the N24 over the River Aherlow which is a tributary of the River Suir. The maximum span is 11.94m and the minimum span is 11.91m. The parapets are ornate concrete structures. The structure is within the Lower River Suir SAC. Plate 5-58 shows the south elevation.



**Plate 5-58 Cappa New Bridge.**

The qualifying interests of the Lower River Suir SAC are listed in Section 5.2. The qualifying interests that could be impacted are freshwater pearl mussel, crayfish, lamprey species, salmon, otter, floating river vegetation, hydrophilous tall herb fringe communities. The potential impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

A freshwater pearl mussel survey was carried out in 2018 under the current project. [REDACTED]

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-67 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-67 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of carriageway, removal of light vegetation also (50m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping and cleaning along both rubbing strips (100m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Clearance of vegetation from both parapets, including around base of parapet pillars (15m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Parapets/ Safety barrier	Minor concrete repair to east end of north parapet, general minor crack repairs along rest of parapet top rails (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.



Bridge Component	Work Element	Screening Recommendation
Embankments/ Revetments	Remove vegetation from embankments and stairs from carriageway level to watercourse (150m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from wingwalls (25m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Crack (5mm) in section of spalled concrete in SE wingwall to be injected (2m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Wing/ Spandrel/ Retaining Walls	Repointing to the masonry walls along stairs (100m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Clearance of minor vegetation growth from abutments (1m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Clearance of minor vegetation growth from pier (2m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Deck/ Slab/ Arch barrel	Repair areas of spalled concrete and exposed rebar/steel beams (2m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Riverbed	Removal of trees from watercourse both upstream and downstream of structure (300m <sup>2</sup> )	Screened in.
Structure in general	Graffiti on top rail of south parapet to be removed (0.5m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Access restrictions

Therefore, personnel access to the bridge is only permitted in the immediate vicinity of the bridge. If work elements require access to the river stretches downstream of the bridge, these works shall not be carried out. The contractor must consult the Regional Engineer, who may in turn consult with the Employer’s Representative and TII’s Environment Section. The contractor may only progress with the works upon agreement from the Regional Engineer.

#### Clearance of watercourse (Debris Removal)

When conducting removal of tree debris from the river the contractor must take note of the works location with respect to freshwater pearl mussel downstream of the bridge.

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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### Concrete repairs / 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. Due to the scale of the River Suir at this location, and it's designation as an the SAC, with pearl mussel downstream of the bridge, in stream placement of scaffold is not permitted.

Should the Contractor use work platforms these must 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.

The main area to be repointed is a section of masonry wall along the stairs (see Plate 5-58); this is not over the river. Preparation for the repointing work will include vegetation removal from the bridge; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

Note: *The same principles apply to concrete works over water*

### 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 pans and projects.

## 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 Suir SAC or any other European site.

### 5.8.6.6. Castles Bridge 1 [TS-N74-002.00]

The Castles Bridge 1 is a 4.60m single span masonry arch bridge with masonry parapets on both sides of the carriageway. Masonry arch is gunited. The building to the south west has a cantilevered frontage over the river and west abutment. The structure is within the Lower River Suir SAC. Plate 5-59 shows the east elevation.



**Plate 5-59** Castles Bridge 1.

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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Castles Bridge 1. [REDACTED]

## Proposed Works

The proposed works at this bridge are detailed in Table 5-68 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-68 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of carriageway (10m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping and cleaning of east footway (20m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Vegetation clearance to outside face of south parapet, minor vegetation clearance elsewhere (5m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

Bridge Component	Work Element	Screening Recommendation
Parapets/ Safety barrier	Repointing following vegetation clearance (5m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/ Safety barrier	Masonry reconstruction of east parapet which is out of plumb over a length of 10m	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/ Spandrel/ Retaining Walls	Vegetation clearance to wingwalls of structure	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry repointing / Masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

## 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.

## 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 Suir SAC or any other European site.

### 5.8.6.7. Castles Bridge 2 [TS-N74-003.00]

The Castles Bridge 2 is a 4-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 3.60m and the minimum span is 2.75m. The structure is within the Lower River Suir SAC. Plate 5-60 shows the north elevation.



**Plate 5-60 Castles Bridge 2.**

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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential impacts to the SAC are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Castles Bridge 2. [REDACTED]

## Proposed Works

The proposed works at this bridge are detailed in Table 5-69 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-69 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of carriageway (50m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/ Median	Sweeping and cleaning of footway (30m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Parapets/ Safety barrier	Removal of vegetation from parapet walls (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Minor patch painting of steel on lighting post on SE parapet to be completed (0.5m)	Screened out - works within the bridge deck and therefore no pathway.
Embankments/Revetments	Clearance of vegetation and debris from all embankments (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from spandrel walls and NW wingwall (15m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repair local masonry loss on NW wingwall (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of vegetation from piers, particularly around base of one of the piers on the south elevation (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry repointing & repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 Suir SAC or any other European site.

#### 5.8.6.8. Mullennaglogh Bridge [TS-N76-004.00]

The Mullennaglogh Bridge is a 2-span masonry arch bridge with reinforced concrete extension to the east side. The maximum span is 3.66m and the minimum span is 2.42m. The structure carries N76 over the River Lingaun. The structure lies on the boundary of the upper extent of the Lower River Suir SAC. Plate 5-61 shows the west elevation.



**Plate 5-61 Mullennaglogh 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, hydrophilous tall herb fringe communities, crayfish, lamprey species, salmon and otter. The potential 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 5-70 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-70 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning of 0.5m strip at both edges of carriageway (10m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Clearing of drain gullies along edges of carriageway (2 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/ Median	Sweeping, cleaning and clearance of vegetation on footways (60m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Minor masonry repointing to be carried out on west parapet (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/ Safety barrier	Cracking and loose coping stone in west parapet to be repaired/replaced (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Vegetation clearance on the east embankments (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Removal of vegetation to the east wing walls and river walls. Removal of vegetation on west spandrel wall also (15m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to west masonry following removal of vegetation (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Repair NE edge of abutment where cores were taken (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Abutments	Missing stones on abutments walls to be replaced (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of vegetation from eastern pier (1m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Minor concrete patch repair to damaged section on east elevation of the masonry block pier (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Deck/slab/arch barrel	Repair spalled concrete and exposed, corroded reinforcement over a width of 600 mm from east face of RC deck in both spans (8m <sup>2</sup> ). Repair spalled concrete in both spans of RC deck throughout (12m <sup>2</sup> ). (20m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Deck/slab/arch barrel	Minor masonry repointing to both arch barrels (5m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Minor areas of stones missing from both arch barrels to be replaced (0.5m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.



Bridge Component	Work Element	Screening Recommendation
Riverbed	Regrading/concrete invert to riverbed required to repair localised scouring to riverbed under masonry section of bridge (20m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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. A second pump should be available on site in case of failure 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.

For Mullennaglogh bridge, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus avoiding any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

#### Masonry repointing, masonry repairs and concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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 pans and projects.

#### 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 Suir SAC or any other European site.

## 5.9. Waterford

### 5.9.1.1. Killongford Bridge [WC-N25-019.00]

The Killongford Bridge is a 3-span masonry arch bridge with reinforced concrete extension to the west side. The maximum span is 6.50m and the minimum span is 5.80m. The structure carries N25 over the River Brickey. The structure is within the Dungarvan Harbour SPA. Plate 5-62 shows the west elevation.



**Plate 5-62 Killongford Bridge.**

The qualifying interests of the Dungarvan Harbour SPA are listed in Section 5.2. The qualifying interests that could be impacted are the designated bird species of the SPA in the Brickey Estuary. The potential impacts to the SPA are loss or modification of habitat, reduction in species density and deterioration of surface water quality.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-71 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-71 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Seal open cracks around surfacing repair on east verge (20m)	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping, cleaning and removal of vegetation along edges of the carriageway (80m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Expansion joints	Renew hot poured bitumen in sawcut joints above west extension of the structure (80m)	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Power hosing of parapet railings along their length, 76m <sup>2</sup> (1 it)	Screened in.
Embankments/Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river/ estuary.
Wing/ Spandrel/ Retaining Walls	Vegetation removal from the wingwalls (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

Bridge Component	Work Element	Screening Recommendation
Wing/ Spandrel/ Retaining Walls	Repoint open joints on wingwalls following vegetation removal (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Abutments	Clearance of seaweed from abutments (4m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Abutments	Repair sections of missing stone in south abutment (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of seaweed from piers (6m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Piers	Concrete repairs to upper sections of the west piers, cracking and reinforcement corrosion evident (2m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.
Deck/slab/arch barrel	Hole in elevation of edge beam to be repaired (1m <sup>2</sup> )	Screened in – concrete repair works have the potential to impact on surface water quality through accidental spillage.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### High-pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach the watercourse.

#### Masonry repointing, masonry repairs and concrete repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 Dungarvan Harbour SPA or any other European site.

### 5.9.1.2. Gorteen Bridge [WC-N25-022.00]

The Gorteen Bridge is a 5.72m single span masonry arch bridge with reinforced concrete extension to the west side. There is a concrete parapet on the east side and an aluminium parapet on the west side. A guardrail has been installed in front of both parapets. Thickness of gunite to arch barrel is 170mm. The bridge spans the river Licky which is a tributary of the River Blackwater. The structure is within the Blackwater River (Cork/Waterford) SAC and located 18km upstream of the Blackwater Estuary SPA. Plate 5-63 shows the east elevation.



**Plate 5-63 Gorteen Bridge.**

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

There are no freshwater pearl mussel records at the Gorteen Bridge. [REDACTED]

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-72 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-72 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping, and cleaning along edges of carriageway (14m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning along rubbing strips (40m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Install bedding mortar around baseplates of west parapet (3 it)	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Patch painting to base of west parapet posts (1m)	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Replace 12no. corroded bolts on west parapet (1 it)	Screened out - works within the bridge deck and therefore no pathway.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation clearance from embankments to maintain 1m clearance around structure. Debris to be removed from embankments (20m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Vegetation removal from east spandrel wall (1m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Masonry repointing to east spandrel wall following vegetation removal (2m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Riverbed	Vegetation clearance from the watercourse upstream and downstream and cutback overgrowth from embankments (30m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 SAC or any other European site.



5.9.1.3. Lismore Bridge 1 [WC-N72-001.00]

The Lismore Bridge 1 is a 7-span masonry arch bridge with masonry parapets which carries the N72 over the River Blackwater. The maximum span is 30.50m and the minimum span is 12.50m. The river appears to flow through Span 1 only. All other spans are dry. The structure spans the River Blackwater, is within the Blackwater River (Cork/Waterford) SAC and is located 530m upstream of the Blackwater Callows SPA. Plate 5-64 shows the east elevation.



**Plate 5-64 Lismore Bridge 1.**

The qualifying interests of the Blackwater River SAC and Blackwater Callows SPA are listed in Section 5.2. The qualifying interests that could be impacted are crayfish, lamprey species, salmon, otter, floating river vegetation and twaite shad. The potential impacts to the SAC and SPA are loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no freshwater pearl mussel records at the Lismore Bridge 1. Records for freshwater pearl mussel downstream of the bridge are for dead shells only, presumably washed down from upstream populations. Thus, there are no live freshwater pearl mussels located downstream of the bridge.

**Proposed Works**

The proposed works at this bridge are detailed in Table 5-73 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-73 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (300m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning along footways (150m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Remove vegetation from the parapets (40m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.

Bridge Component	Work Element	Screening Recommendation
Parapets/ Safety barrier	Repointing along length of the parapets following vegetation removal (40m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Parapets/ Safety barrier	Section of missing stone on parapet edge to be repaired. Stone to match existing (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from spandrel wall (20m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint open joints on spandrel wall following removal of vegetation (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Clearance of vegetation from west side of pier 6 (2m <sup>2</sup> )	Screened out – removal of vegetation is over land and can be carried on foot.
Piers	Repoint open joints following removal of vegetation (1m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

#### Masonry repointing and masonry repairs

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

#### 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.

#### 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 SAC, Blackwater Callows SPA or any other European site.

#### 5.9.1.4. Lismore Bridge 2 [WC-N72-002.00]

The Lismore Bridge 2 is a 3-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 9.30m and the minimum span is 9.10m. 100mm gunite sprayed to all arch barrels and abutments. The structure is within the Blackwater River (Cork/Waterford) SAC and is located 1km upstream of the Blackwater Callows SPA. Plate 5-65 shows the west elevation.



**Plate 5-65 Lismore Bridge 2.**

The qualifying interests of the Blackwater River SAC and Blackwater Callows SPA are listed in Section 5.2. The qualifying interests that could be impacted are crayfish, lamprey species, salmon, otter, floating river vegetation and twaite shad. The potential impacts to the SAC and SPA 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 5-74 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-74 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Failed patch repair on west side to be repaired (3m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping and cleaning along edges of the carriageway (80m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning along footway (40m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Vegetation removal from the parapets (30m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Repointing works along the length of both parapets (80m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Damaged stone on SW approach to be repaired (0.1m <sup>3</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Remove fallen trees from SE river bank. Clear 1m strip of vegetation adjacent to structure all around (50m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Clearance of vegetation from wing walls (10m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following removal of vegetation (3m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Piers	Remove vegetation from pier cutwaters (8m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Riverbed	Clear loose vegetation from the watercourse around the structure including timber logs (20m <sup>2</sup> )	Screened in.
Riverbed	900mm deep scour hole in front of south pier in span no. 2 to be repaired by installing rock armour (1m <sup>2</sup> )	Screened in.
Other elements	Remove 3no. logs suspended from east elevation of the structure (1 it)	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that 'screened-in' in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *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. A second pump should be available on site in case of failure 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.

For bridges with more than 1 span, the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus minimising any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *Masonry repointing and masonry repairs*

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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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.

### 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 SAC, Blackwater Callows SPA or any other European site.

#### 5.9.1.5. Little Bridge [WC-N72-003.00]

The Little Bridge is a 5-span masonry arch bridge with masonry parapets on both sides of the carriageway. The maximum span is 5.35m and the minimum span is 3.90m. The structure is within the Blackwater River (Cork/Waterford) SAC. All arch barrels have been gunited with 120mm thick sprayed concrete. Plate 5-66 shows the east elevation.



**Plate 5-66 Little Bridge.**

The qualifying interests of the Blackwater River SAC are listed in Section 5.2. The qualifying interests that could be impacted are crayfish, lamprey species, salmon, otter, floating river vegetation and twaite shad. The potential

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 5-75 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-75 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (100m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Drain gullies at base of parapet to be cleared (7 it)	Screened out – gullies will be suctioned or rodded and therefore no pathway.
Footways/median	Sweeping and cleaning along footway (50m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Vegetation removal from the parapets (90m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Repointing of the parapets following vegetation removal (60m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (30m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/ Spandrel/ Retaining Walls	Remove vegetation from the spandrel walls, wing walls and staircase on NW corner of the structure (60m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Wing/ Spandrel/ Retaining Walls	Repoint open joints following removal of vegetation (20m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Deck/slab/arch barrel	Graffiti on gunited arch barrel to be removed (4m <sup>2</sup> )	Screened in.
Riverbed	Clear vegetation from both sides of south span and adjacent to structure (50m <sup>2</sup> )	Screened in.
Riverbed	Scour to span no.1 and span no.2, circa 680mm, to be repaired by installing rock armour (2m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### *Removal of vegetation*

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments or from the bridge where freshwater pearl mussel is situated within the immediate vicinity of the embankments and/ or bridge. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### *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. A secondary pump should be available on site in case of failure 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.

For Little Bridge the base protection will be constructed 1 span at a time, leaving the other span(s) open for watercourse flow thus avoiding any adverse effect to river/fish passage.

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated mitigation measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Where both translocation of crayfish and electrofishing are required, the translocation of crayfish shall be carried out prior to 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.

### *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.

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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### Graffiti removal

Graffiti removal shall not be carried out by the Contractor to the arch barrel of Little 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 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.

### 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 SAC or any other European site.

#### 5.9.1.6. Finisk Bridge [WC-N72-006.00]

The Finisk Bridge is a 4-span masonry arch bridge with reinforced concrete arch extension to the north side. The maximum span is 5.44m and the minimum span is 4.05m. The structure spans the River Finisk that is a tributary of the River Blackwater and is within the Blackwater River (Cork/Waterford) SAC. Plate 5-67 shows the south elevation.



**Plate 5-67 Finisk Bridge.**

The qualifying interests of the Blackwater River SAC are listed in Section 5.2. The qualifying interests that could be impacted are crayfish, lamprey species, salmon, otter and floating river vegetation. The potential 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 5-76 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-76 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Remedial works to area of poor surfacing on westbound carriageway (10m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Sweeping and cleaning along verges, including vegetation removal along base of parapet (210m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Vegetation removal from the parapets (20m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Parapets/ Safety barrier	Repointing works to south parapet following vegetation removal. Crack in centre of north parapet to be repaired (21m <sup>2</sup> )	Screened in – use of wet mortar over water and a surface water pathway is present.
Embankments/Revetments	Clearance of 1m strip of vegetation away from structure on all embankments (40m <sup>2</sup> )	Screened in - this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Piers	Removal of vegetation (including moss) from cutwaters (15m <sup>2</sup> )	Screened in – removal of vegetation may require instream access or the erection of scaffolding.
Riverbed	Clear vegetation trapped on upstream cutwater. Cut back vegetation overgrowth downstream of structure (90m <sup>2</sup> )	Screened in.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### 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. 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. 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 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.

### Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, *if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area.*

### 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.

Preparation for the repointing work will include vegetation removal from the structure; 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, and any waste material (including washings from the mixer) shall be stored in mortar bins and taken off-site. Great care is to be taken to 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.

### 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.

### 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 SAC or any other European site.

### 5.9.1.7. Kildangan Bridge [WC-N72-007.00]

The Kildangan Bridge is a 3-span reinforced concrete bridge with aluminium railing parapets. The maximum span is 14.85m and the minimum span is 14.10m. The structure is located 1.7km upstream of the Dungarvan Harbour SPA. Plate 5-68 shows the north elevation.



**Plate 5-68 Kildangan Bridge.**

The qualifying interests of the Dungarvan Harbour SPA are listed in Section 5.2. The qualifying interests that could be impacted are SPA SCIs of the Brickey estuary. The potential impacts to the SPA are reduction in species density and deterioration of surface water quality.

#### Proposed Works

The proposed works at this bridge are detailed in Table 5-77 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

**Table 5-77 - Work elements and potential for likely significant effects.**

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Sweeping and cleaning along edges of the carriageway (100m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Bridge surface	Hosing and clearing of drainage units along each footway (100m)	Screened out – gullies will be suctioned or rodded as per the Contract and therefore no pathway.
Expansion joints	Resealing of open areas of sawcut joint across surfacing with hot poured bitumen (20m)	Screened out - works within the bridge deck and therefore no pathway.
Footways/median	Sweeping and cleaning of footways (150m <sup>2</sup> )	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Repair cracked and spalled bedding mortar under the parapet post baseplates (38 no)	Screened out - works within the bridge deck and therefore no pathway.
Parapets/ Safety barrier	Power hosing of the parapets measuring 125m <sup>2</sup> (1 it)	Screened in.
Embankments/Revetments	Clear vegetation from embankments to maintain 1m clearance around structure (40m <sup>2</sup> )	Screened out – bridge is located outside and upstream of the SPA. Habitat type present on embankments is not a habitat a supporting habitat of

Bridge Component	Work Element	Screening Recommendation
		the SPA, nor is it heavy scrub. Therefore, no risk of silt release. No LSE anticipated.
Riverbed	Clear vegetation from span containing watercourse. Tree debris under spans to be cleared (10m <sup>2</sup> )	Screened out – tree debris is atop a gravel berm. The removal of vegetation may require instream access however this will not affect the qualifying interests of the SPA.
Structure in general	Add structure ID to the parapet (1 it)	Screened out - works within the bridge deck and therefore no pathway.

### Mitigation Measures

The following mitigation measures apply to the works elements that ‘screened-in’ in order to avoid adverse effects to a Natura 2000 site.

#### High-pressure hosing of surface

High pressure water hosing will be used to remove moss/algae/lichen from metal parapets. Water from any adjacent watercourse if present is not to be used for the works; potable freshwater from a public utility undertaking will be brought to site for use in the works. No chemicals are to be added to the water supply used in the hosing works. The use of hot water is prohibited.

Due consideration must be given to run-off and the risk of contaminants removed from the surface. The Contractor shall ensure any waste materials from the works are collected and disposed of correctly. In Natura 2000 sites or sites with freshwater pearl mussels are present, only soft washing (<500psi) of metal parapets is allowed. If the bridge drainage at these sites leads directly into the watercourse, the outfall of all gullies on the bridge must be blocked during works and the gullies must be sucked out following the power hosing to ensure the water and waste material does not reach 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.

### 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 Dungarvan Harbour SPA or any other European site.

## 6. Conclusions

This NIS provides the competent authority with supporting information to undertake Appropriate Assessment in relation to the proposed works at 70 bridges in the Munster region under the Munster Term Maintenance Contract No 3.

This NIS has examined the potential impacts of the proposed works on the integrity of Natura 2000 sites within the zone of influence of the 70 bridges, alone and in combination with other plans and projects, taking into account 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 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 70 bridges, will not have an adverse effect on the integrity of those SACs and SPAs.

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# Appendices



# Appendix A. Qualifying Interests of Natura 2000 sites

# Special Conservation Interests (SCIs) of Natura 2000 sites

## Special Areas of Conservation (SAC)

<b>Blackwater River (Cork/Waterford) SAC (002170)</b>			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
CC-N20-029.00	Yes	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020
CC-N20-030.00	Yes	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020
CC-N20-031.00	Yes	Awbeg (Buttevant)	Awbeg[Buttevant]_SC_020
CC-N20-033.00	Yes	Awbeg [Buttevant] [East]	Awbeg[Buttevant]_SC_010
CC-N72-001.00	Yes	Blackwater [Munster]	Blackwater[Munster]_SC_010
CC-N72-004.00	Yes	Owentaraglin 18	Blackwater[Munster]_SC_020
CC-N72-009.00	Within 50m	Allow	Dalua_SC_020
CC-N72-010.00	Yes	Allow	Dalua_SC_020
CC-N72-011.00	Within 50m	Allow	Dalua_SC_020
CC-N72-013.00	Yes	Awbeg [Kanturk]	Blackwater[Munster]_SC_060
CC-N72-014.00	Yes	Non-listed	Blackwater[Munster]_SC_090
CC-N72-015.00	Within 50m	Woodpark Lombardstown	Blackwater[Munster]_SC_090
CC-N72-018.00	Yes	Ballyclogh (Stream)	Blackwater[Munster]_SC_090
CC-N72-029.00	Yes	MONANIMY LOWER	Blackwater[Munster]_SC_090
CC-N72-030.00	Yes	Awbeg [Buttevant]	Blackwater[Munster]_SC_100
CC-N72-030.90	Yes	Blackwater [Munster]	Blackwater[Munster]_SC_110
CC-N73-005.00	Yes	Awbeg [Buttevant]	Blackwater[Munster]_SC_100
WC-N25-022.00	Yes	Licky	Goish_SC_010
WC-N72-001.00	Yes	Blackwater [Munster]	Blackwater[Munster]_SC_130
WC-N72-002.00	Yes	Owennashad	Blackwater[Munster]_SC_140
WC-N72-003.00	Yes	GLENNAFALLIA 18	Blackwater[Munster]_SC_140
WC-N72-006.00	Yes	Finisk	Finisk_SC_010
<b>SCI Description</b>			
<p>1029 Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)            1092 White-clawed crayfish (<i>Austropotamobius pallipes</i>)            1095 Sea lamprey (<i>Petromyzon marinus</i>)            1096 Brook lamprey (<i>Lametra planeri</i>)            1099 River lamprey (<i>Lampetra fluviatilis</i>)            1103 Twait shad (<i>Alosa fallax</i>)            1106 Salmon (<i>Salmo salar</i>)            1355 Otter (<i>Lutra lutra</i>)            1130 Estuaries            1140 Mudflats and sandflats not covered by seawater at low tide            1220 Perennial vegetation of stony banks            1310 Salicornia and other annuals colonizing mud and sand            1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)            1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)            3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation            91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles            91E0 *Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)            91J0 *Taxus baccata woods of the British Isles</p>			
*indicates a priority habitat under the Habitats Directive			
<b>Castlemaine Harbour SAC (000343)</b>			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N22-013.00	Yes	LEAMNAGUILA 22	Laune_SC_020
KY-N22-014.00	Yes	Gweestin	Laune_SC_020
KY-N70-015.00	Yes	Caragh	Caragh_SC_010
KY-N72-002.00	Yes	Gweestin	Laune_SC_020
KY-N72-003.00	Yes	GORTNASKARRY	Laune_SC_020
<b>SCI Description</b>			
<p>1095 Sea lamprey (<i>Petromyzon marinus</i>)            1099 River lamprey (<i>Lampetra fluviatilis</i>)            1106 Atlantic salmon Salmon (<i>Salmo salar</i>)            1355 Otter (<i>Lutra lutra</i>)            1395 Petalwort (<i>Petalophyllum ralfsii</i>)            1130 Estuaries            1140 Mudflats and sandflats not covered by seawater at low tide            1210 Annual vegetation of drift lines            1220 Perennial vegetation of stony banks            1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts            1310 Salicornia and other annuals colonizing mud and sand            1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)            1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)            2110 Embryonic shifting dunes            2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)            2130 *Fixed coastal dunes with herbaceous vegetation (grey dunes)            2170 Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</p>			
*indicates a priority habitat under the Habitats Directive			

<b>Kenmare River SAC (002158)</b>			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N70-051.00	Yes	Sneem	Sneem_SC_010
KY-N70-052.00	Yes	Tahilla 21	Sneem_SC_010
KY-N70-054.00	Yes	Blackwater [Kerry]	Kealduff_SC_010
<b>SCI Description</b>			
1014 March snail ( <i>Vertigo angustior</i> ) 1303 Lesser horseshoe bat ( <i>Rhinolophus hipposideros</i> ) 1355 Otter ( <i>Lutra lutra</i> ) 1365 Harbour seal ( <i>Phoca vitulina</i> ) 1160 Large shallow inlets and bays 1170 Reefs 1220 Perennial vegetation of stony banks 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts 1330 Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) 1410 Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 *Fixed coastal dunes with herbaceous vegetation (grey dunes) 4030 European dry heaths 5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands 6130 <i>Calaminarian grasslands</i> of the <i>Violetalia calaminariae</i> 8330 Submerged or partially submerged sea caves  *indicates a priority habitat under the Habitats Directive			

<b>Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC (000365)</b>			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N22-017.00	Yes	Deenagh	Deenagh_SC_010
KY-N22-019.00	Yes	Woodford 22	Flesk[Kerry]_SC_020
KY-N22-022.00	Yes	KNOCKANARROOR	Flesk[Kerry]_SC_020
KY-N22-026.00	Yes	Flesk [Kerry]	Flesk[Kerry]_SC_010
KY-N22-027.00	Yes	Flesk [Kerry]	Flesk[Kerry]_SC_010
KY-N70-040.00	Yes	Finglas river (Waterville)	Finglasriver[Waterville]_SC_01
KY-N70-041.00	Yes	DARRYNANE_MORE	BEHAGHANE_SC_010
KY-N71-002.00	Yes	Cloghereen	Laune_SC_010
KY-N71-003.00	Yes	Owengarriff (Kerry)	Laune_SC_010
KY-N71-006.00	Yes	Galway's	Crinnagh_SC_010
KY-N71-010.00	Yes	undefined	Finnihy_SC_010
KY-N72-008.00	Yes	Owneykeagh	Quagmire_SC_010
KY-N72-009.00	Yes	Beheenagh 22	Quagmire_SC_010
KY-N72-010.00	Yes	BEHEENAGH 22	Quagmire_SC_010
<b>SCI Description</b>			
1303 Lesser horseshoe bat ( <i>Rhinolophus hipposideros</i> ) 1355 Otter ( <i>Lutra lutra</i> ) 1421 Killarney fern ( <i>Trichomanes speciosum</i> ) 1833 Slender naiad ( <i>Najas flexilis</i> ) 5046 Killarney shad <i>Alosa killarneyensis</i> 91E0 *Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) 3110 Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) 3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletalia uniflorae</i> and/or of the <i>Isoetes Nanaojuncetalia</i> 3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 4060 Alpine and Boreal heaths 5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands 6130 <i>Calaminarian grasslands</i> of the <i>Violetalia calaminariae</i> 6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinia caerulea</i> ) 7130 Blanket bogs (* if active bog) 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles 91J0 * <i>Taxus baccata</i> woods of the British Isles  *indicates a priority habitat under the Habitats Directive			

<b>Lower River Shannon SAC (002165)</b>			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-
CL-N67-001.00	Within	TONAVOHER	Cloon[Clare]_SC_010
KY-N21-018.80	N/A	Feale	Feale_SC_030
LC-N21-002.00	Within SAC	Allaghaun	Feale_SC_020
LC-N21-018.00	Within SAC	Maique	Maique_SC_040
LC-N21-019.00	Within SAC	Maique	Maique_SC_040
<b>SCI Description</b>			
1029 Fresh water pearl mussel ( <i>Margaritifera margaritifera</i> ) 1095 Sea lamprey ( <i>Petromyzon marinus</i> ) 1096 Brook lamprey ( <i>Lampetra planeri</i> ) 1099 River lamprey ( <i>Lampetra fluviatilis</i> ) 1106 Salmon ( <i>Salmo salar</i> ) 1349 Bottlenose Dolphin ( <i>Tursiops truncatus</i> ) 1355 Otter ( <i>Lutra lutra</i> ) 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) 1110 Sandbanks which are slightly covered by sea water all the time			

1130 Estuaries  
 1140 Mudflats and sandflats not covered by seawater at low tide  
 1150 \*Coastal lagoons  
 1160 Large shallow inlets and bays  
 1170 Reefs  
 1220 Perennial vegetation of stony banks  
 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts  
 1310 Salicornia and other annuals colonizing mud and sand  
 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)  
 1410 Mediterranean salt meadows (*Juncetalia maritimi*)  
 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation  
 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

\*indicates a priority habitat under the Habitats Directive

### Lower River Suir SAC (002137)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
TS-N24-001.00	Within	KILLONERRY	Lingaun_SC_010
TS-N24-006.00	Within	Flows to Suir	Suir_SC_150
TS-N24-015.00	Within	Outeragh (Stream)	Suir_SC_080
TS-N24-016.00	Within	Suir	Suir_SC_090
TS-N24-021.00	Within	Aherlow	Suir_SC_090
TS-N74-002.00	Within	Springmount 16	Suir_SC_070
TS-N74-003.00	Within	Springmount 16	Suir_SC_070
TS-N76-004.00	Within	Lingaun	Lingaun_SC_010

### SCI Description

1029 Freshwater pearl mussel (*Margaritifera margaritifera*)  
 1092 White-clawed Crayfish (*Austropotamobius pallipes*)  
 1095 Sea Lamprey (*Petromyzon marinus*)  
 1096 Brook lamprey (*Lampetra planeri*)  
 1099 River lamprey (*Lampetra fluviatilis*)  
 1103 Twaite Shad (*Alosa fallax*)  
 1106 Salmon (*Salmo salar*)  
 1355 Otter (*Lutra lutra*)  
 91E0 \*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)  
 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)  
 1410 Mediterranean salt meadows (*Juncetalia maritimi*)  
 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation  
 6430 *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels  
 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles  
 91J0 \**Taxus baccata* woods of the British Isles

\*indicates a priority habitat under the Habitats Directive

### Tralee Bay And Magharees Peninsula, West To Cloghane SAC (002070)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N86-007.00	Yes	KY-N86-007.00	KY-N86-007.00

### SCI Description

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

\*indicates a priority habitat under the Habitats Directive

### Great Island Channel SAC (001058)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
CB-N20-002.00	ca. 11.1km d/s of bridge	Kiln	Kiln_SC_010

### SCI Description

1140 Mudflats and sandflats not covered by seawater at low tide  
 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)

### St. Gobnet's Wood SAC (000106)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
CC-N22-004.00	ca. 2.6km d/s of bridge	Owengarve (Cork)	Sullane_SC_010

### SCI Description

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]

## Special Protection Areas (SPAs)

<b>Castlemaine Harbour SPA (004029)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N70-015.00	Within	Caragh	Caragh_SC_010
<b>SCI Description</b>			
A001 Red-throated Diver ( <i>Gavia stellate</i> ) A017 Cormorant ( <i>Phalacrocorax carbo</i> ) A046 Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) A050 Wigeon ( <i>Anas Penelope</i> ) A053 Mallard ( <i>Anas platyrhynchos</i> ) A054 Pintail ( <i>Anas acuta</i> ) A062 Scaup ( <i>Aythya marila</i> ) A065 Common Scoter ( <i>Melanitta nigra</i> ) A130 Oystercatcher ( <i>Haematopus ostralegus</i> ) A137 Ringed Plover ( <i>Charadrius hiaticula</i> ) A144 Sanderling ( <i>Calidris alba</i> ) A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> ) A162 Redshank ( <i>Tringa tetanus</i> ) A164 Greenshank ( <i>Tringa nebularia</i> ) A169 Turnstone ( <i>Arenaria interpres</i> ) A346 Chough ( <i>Pyrrhocorax pyrrhocorax</i> )			

<b>Killarney National Park SPA (004038)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N71-002.00	Within	Muckross Friary Bridge	Cloghereen
KY-N71-003.00	Within	Torc New Bridge	Owengarriff (Kerry)
KY-N71-006.00	Within	Incheens Bridge	Galway's
<b>SCI Description</b>			
A098 Merlin ( <i>Falco columbarius</i> ) A395 Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> )			

<b>River Shannon and River Fergus Estuaries SPA (004077)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	Structure ID
CL-N67-001.0	Within	TONAVOHER	Cloon[Clare]_SC_010
<b>SCI Description</b>			
A017 Cormorant ( <i>Phalacrocorax carbo</i> ) A046 Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) A048 Shelduck ( <i>Tadorna tadorna</i> ) A050 Wigeon ( <i>Anas Penelope</i> ) A052 Teal ( <i>Anas crecca</i> ) A054 Pintail ( <i>Anas acuta</i> ) A056 Shoveler ( <i>Anas clypeata</i> ) A062 Scaup ( <i>Aythya marila</i> ) A137 Ringed Plover ( <i>Charadrius hiaticula</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A141 Grey Plover ( <i>Pluvialis squatarola</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A143 Knot ( <i>Calidris canutus</i> ) A149 Dunlin ( <i>Calidris alpina</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> ) A160 Curlew ( <i>Numenius arquata</i> ) A162 Redshank ( <i>Tringa tetanus</i> ) A164 Greenshank ( <i>Tringa nebularia</i> ) A179 Black-headed Gull ( <i>Chroicocephalus ridibundus</i> )			

<b>Tralee Bay Complex SPA (004188)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N86-007.00	Within	ANNAGH 23	Lee[Tralee]_SC_010
<b>SCI Description</b>			
A038 Whooper Swan ( <i>Cygnus Cygnus</i> ) A046 Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) A048 Shelduck ( <i>Tadorna tadorna</i> ) A050 Wigeon ( <i>Anas Penelope</i> ) A052 Teal ( <i>Anas crecca</i> ) A053 Mallard ( <i>Anas platyrhynchos</i> ) A054 Pintail ( <i>Anas acuta</i> ) A062 Scaup ( <i>Aythya marila</i> ) A130 Oystercatcher ( <i>Haematopus ostralegus</i> ) A137 Ringed Plover ( <i>Charadrius hiaticula</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A141 Grey Plover ( <i>Pluvialis squatarola</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A144 Sanderling ( <i>Calidris alba</i> ) A149 Dunlin ( <i>Calidris alpina</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> ) A160 Curlew ( <i>Numenius arquata</i> ) A162 Redshank ( <i>Tringa tetanus</i> ) A169 Turnstone ( <i>Arenaria interpres</i> ) A179 Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) A182 Common Gull ( <i>Larus canus</i> ) A999 Wetland and Waterbirds			

<b>Cork Harbour SPA (004030)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
CB-N20-002.00	ca. 5.2km d/s of bridge	Kiln	Kiln_SC_010
<b>SCI Description</b>			
A004 Little Grebe ( <i>Tachybaptus ruficollis</i> ) A005 Great Crested Grebe ( <i>Podiceps cristatus</i> ) A017 Cormorant ( <i>Phalacrocorax carbo</i> ) A028 Grey Heron ( <i>Ardea cinerea</i> ) A048 Shelduck ( <i>Tadorna tadorna</i> ) A048 Wigeon ( <i>Anas Penelope</i> ) A048 Teal ( <i>Anas crecca</i> ) A048 Pintail ( <i>Anas acuta</i> ) A056 Shoveler ( <i>Anas clypeata</i> ) A069 Red-breasted Merganser ( <i>Mergus serrator</i> ) A130 Oystercatcher ( <i>Haematopus ostralegus</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A141 Grey Plover ( <i>Pluvialis squatarola</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A149 Dunlin ( <i>Calidris alpina</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> ) A160 Curlew ( <i>Numenius arquata</i> ) A162 Redshank ( <i>Tringa tetanus</i> ) A179 Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) A182 Common Gull ( <i>Larus canus</i> ) A183 Lesser Black-backed Gull ( <i>Larus fuscus</i> ) A193 Common Tern ( <i>Sterna hirundo</i> ) A999 Wetlands			

<b>Blackwater Callows SPA (004094)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
CC-N20-029.00	ca. 43.5km d/s of bridge	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020
CC-N20-030.00	ca. 43.5km d/s of bridge	Awbeg [Buttevant]	Awbeg[Buttevant]_SC_020
CC-N20-031.00	ca. 43.5km d/s of bridge	Awbeg (Buttevant)	Awbeg[Buttevant]_SC_020
CC-N72-030.90	ca. 1.6km d/s of bridge	Blackwater [Munster]	Blackwater[Munster]_SC_110
WC-N72-001.00	A ca. 530m d/s of bridge	Blackwater [Munster]	Blackwater[Munster]_SC_130
WC-N72-002.00	ca. 1km d/s of bridge	Owennashad	Blackwater[Munster]_SC_140
<b>SCI Description</b>			
A038 Whooper Swan ( <i>Cygnus Cygnus</i> ) A050 Wigeon ( <i>Anas penelope</i> ) A052 Teal ( <i>Anas crecca</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> )			

<b>Blackwater Estuary SPA (004028)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
WC-N25-022.00	ca. 18km d/s of bridge	Licky	Goish_SC_010
<b>SCI Description</b>			
A050 Wigeon ( <i>Anas Penelope</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A149 Dunlin ( <i>Calidris alpine</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> ) A160 Curlew ( <i>Numenius arquata</i> ) A162 Redshank ( <i>Tringa tetanus</i> ) A999 Wetlands			

<b>Iveragh Peninsula SPA (004154)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
KY-N70-041.00	ca. 1.9km d/s of bridge	DARRYNANE_MORE	BEHAGHANE_SC_010
<b>SCI Description</b>			
A009 Fulmar ( <i>Fulmarus glacialis</i> ) A103 Peregrine ( <i>Falco peregrinus</i> ) A188 Kittiwake ( <i>Rissa tridactyla</i> ) A199 Guillemot ( <i>Uria aalge</i> ) A346 Chough ( <i>Pyrrhocorax pyrrhocorax</i> )			

<b>Dungarvan Harbour SPA (004032)</b>			
Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
WC-N72-007.00	ca. 1.7km d/s of bridge	Colligan	Colligan_SC_010
<b>SCI Description</b>			
A005 Great Crested Grebe ( <i>Podiceps cristatus</i> ) A046 Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) A048 Shelduck ( <i>Tadorna tadorna</i> ) A069 Red-breasted Merganser ( <i>Mergus serrator</i> ) A130 Oystercatcher ( <i>Haematopus ostralegus</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A141 Grey Plover ( <i>Pluvialis squatarola</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A142 Knot ( <i>Calidris canutus</i> ) A149 Dunlin ( <i>Calidris alpine</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A157 Bar-tailed Godwit ( <i>Limosa lapponica</i> ) A160 Curlew ( <i>Numenius arquata</i> ) A162 Redshank ( <i>Tringa tetanus</i> ) A162 Turnstone ( <i>Arenaria interpres</i> ) A999 Wetland			

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