

CLOSING DATE FOR PUBLIC CONSULTATION 19th MAY 2021

TO270 - Munster Term Maintenance Contract No 3

Munster Bridges Year 3 NIS

Transport Infrastructure Ireland

15/03/2021

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Contents

| Chapter | Page |
|--|------------|
| 1. Introduction | 1 |
| 1.1. Project Background and Context | 1 |
| 2. Project Description | 5 |
| 2.1. Proposed Works | 5 |
| 2.2. Bridge Descriptions | 17 |
| 3. Scope of Study | 32 |
| 3.1. Aims of the Report | 32 |
| 3.2. Legislative Context | 32 |
| 3.3. Appropriate Assessment Process | 32 |
| 4. Methods | 34 |
| 4.1. Legislation & Guidance Documents | 34 |
| 4.2. Data Collation | 34 |
| 4.3. Statement of Authority | 35 |
| 5. Appropriate Assessment | 37 |
| 5.1. Connectivity of the Works Area to European Sites | 37 |
| 5.2. Description of the Special Areas of Conservation | 37 |
| 5.3. Description of the Special Protection Areas | 49 |
| 5.4. Conservation Objectives | 55 |
| 5.5. Identification of Potential Impacts on European sites | 59 |
| 5.6. In-combination Impacts | 74 |
| 5.7. Mitigation Measures | 76 |
| 6. Conclusions | 135 |
| References | 136 |
| Appendices | 137 |
| Appendix A. Qualifying Interests of Natura 2000 sites | 138 |

Tables

| | |
|---------------------------|---|
| Table 1-1 | EIRSPAN bridge components and works. |
| Table 2-1 | Summary details of bridges requiring Appropriate Assessment. |
| Table 2-2 | Summary Table of Work Categories for each bridge. |
| Table 5-2 | Conservation Objectives documents reviewed for information regarding site-specific conservation objectives of SACs. |
| Table 5-3 | Conservation Objectives documents reviewed for information regarding site-specific conservation objectives of SPAs. |
| Table 5-4 | Potential negative impacts of work items. |
| Table 5-5 | Work items identified in Year 3 works orders as having negative impacts to be considered further. |
| Table 5-6 | Works categories, potential impacts and receptors. |
| Table 5-7 | Potential Impacts to European sites at each bridge. |
| Table 5-8 |  |
| Table 5-9 | Bridges within / upstream of an OPW works scheme. |
| Table 5-10 | TII Road Schemes in the Munster Region. |
| Tables 5-11 – 5-38 | Work elements and potential for likely significant effects. |

Figures

| | |
|-------------------|---|
| Figure 2-1 | Locations of Year 1 NIS structures. |
| Figure 3-1 | 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 28 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 28 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 each and 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 1st March and 30th 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
- Scour repairs.

Year 1 and Year 2 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 3 of the contract is currently being progressed.

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) |
| | 59 Removal of graffiti |

| Bridge Component | Works |
|-----------------------------------|------------------------------------|
| | 99 Miscellaneous works |
| 6.0 Wing/Spandrel/Retaining Walls | 03 Removal of vegetation |
| | 50 Concrete repairs |
| | 52 High-pressure hosing of surface |
| | 53 Maintenance of joints |
| | 56 Establish base protection |
| | 57 Maintenance of base protection |
| | 59 Removal of graffiti |
| | 60 Masonry repointing |
| | 61 Masonry repairs |
| 99 Miscellaneous | |
| 7.0 Abutments | 03 Removal of vegetation |
| | 35 Maintenance of drainage channel |
| | 50 Concrete repairs |
| | 52 High-pressure hosing of surface |
| | 53 Maintenance of soft joints |
| | 56 Establish base protection |
| | 57 Maintenance of base protection |
| | 59 Removal of graffiti |
| | 60 Masonry repointing |
| | 61 Masonry repairs |
| 99 Miscellaneous works | |
| 8.0 Piers | 03 Removal of vegetation |
| | 35 Maintenance of drainage channel |
| | 50 Concrete repairs |
| | 52 High-pressure hosing of surface |
| | 56 Establish base protection |
| | 57 Maintenance of base protection |
| | 59 Removal of graffiti |
| | 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, [REDACTED]. 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 a suitably qualified ecologist for the duration of the contract to carry out pre-construction surveys, such as invasive species and bats surveys along with check for any other protected species which may be present in the area, and oversee the ecological requirements of the project. All generated reports relating to AA, TII AA determinations and survey data are provided to the Contractor and their appointed ecologist.

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 3 Work Orders were screened for AA and TII issued determinations for each structure. This resulted in 28 bridges being '*Screened In*', i.e. where likely significant effects could not be ruled out, requiring those structures to undergo Appropriate Assessment.

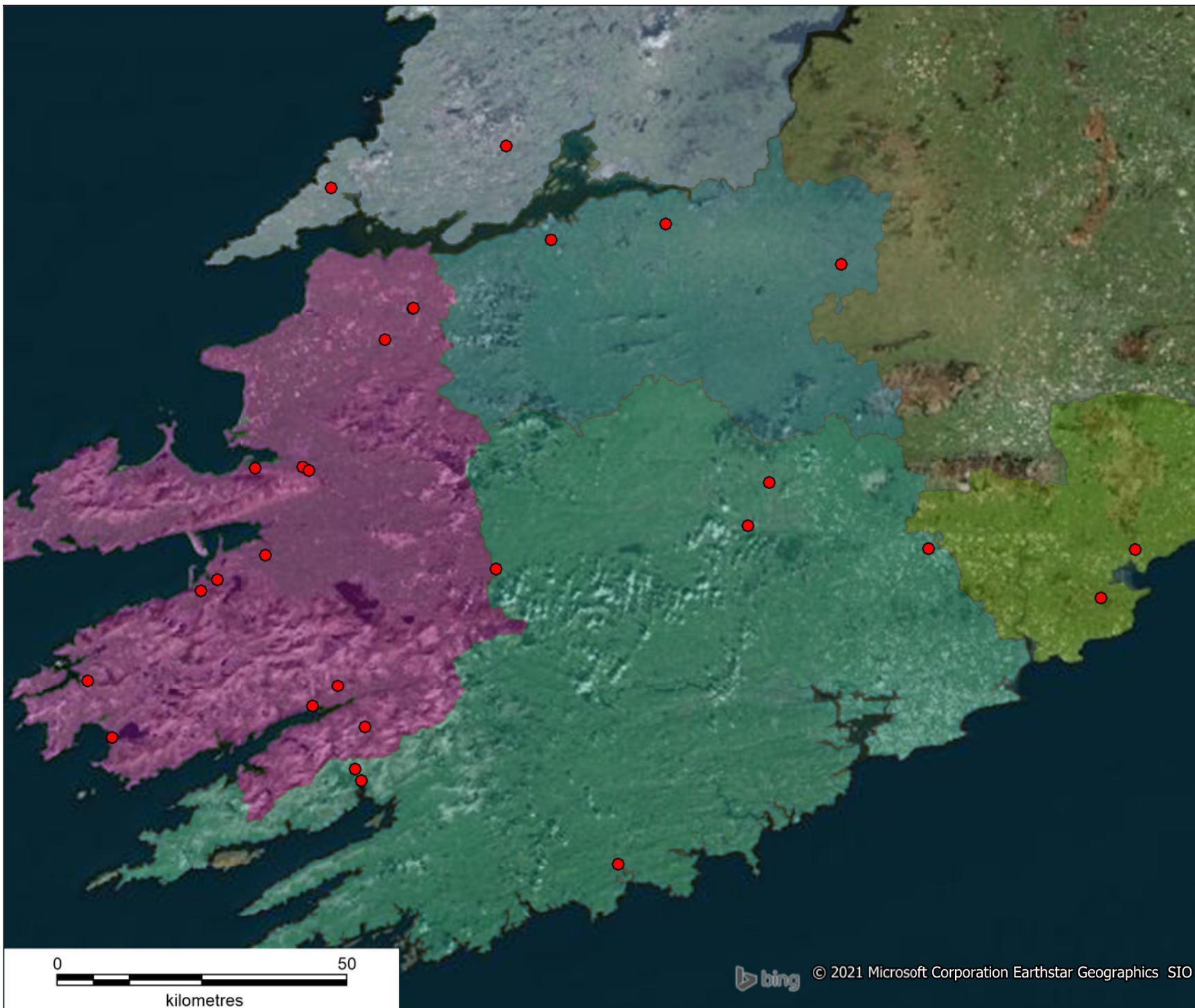
These 28 bridges are located in Counties Clare (no. 2), Cork (no. 7), Kerry (no. 14), Limerick (no. 3), and Waterford (no. 2). Table 2-1 summaries the main details pertaining to each of the 28 bridges; and which is illustrated in Figure 2-1.

The Work Orders detail the bridge identification number and name, the component of the bridge to which a work item is proposed, the work item and the quantity (m²) expected to be carried out. A summary of the work categorises proposed at each bridge is detailed in Table 2-2. A description of the works is given in Section 2.1.1.

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

| County | Structure ID | Structure Name | Road / River Bridge | Watercourse Name (EPA) | Water framework Directive Sub Catchment | GPS Co-ordinates (ITM) | |
|--------|---------------|-------------------------|---------------------|------------------------|---|------------------------|---------|
| | | | | | | x | y |
| Clare | CL-N67-007.00 | Lisdeen Bridge | River | Lisluinaghan | Wood_SC_010 | 490755 | 659476 |
| Clare | CL-N68-004.00 | Liscasey Bridge West | River | Liscasey | Owenslieve_SC_010 | 520929 | 666070 |
| Cork | CC-N71-002.00 | Crossterry Bridge | River | Drumaclarig | Glengarriff_SC_010 | 492698 | 558812 |
| Cork | CC-N71-003.00 | Reenmeen Bridge | River | Reenmeen West | Glengarriff_SC_010 | 493787 | 556725 |
| Cork | CC-N71-031.00 | Clarke Street Bridge | River | Clonakilty (Stream) | Clonakilty[Stream]_SC_010 | 538628 | 541412. |
| Cork | CC-N72-001.00 | Duncannon Bridge | River | Blackwater [Munster] | Blackwater[Munster]_SC_010 | 517998. | 593189 |
| Cork | CC-N72-027.00 | Carrig Bridge | River | North Caherduggan | Blackwater[Munster]_SC_090 | 561863 | 600188. |
| Cork | CC-N72-033.00 | Downey's Bridge | River | Kilcoran_North | Bride[Waterford]_SC_030 | 593324 | 596053 |
| Cork | CC-N73-005.00 | Ballynamona Bridge | River | Awbeg [Buttevant] | Blackwater[Munster]_SC_100 | 565614 | 607606 |
| Kerry | KY-N69-017.00 | Listowel Bridge | River | Feale | Feale_SC_040 | 499489 | 633227 |
| Kerry | KY-N70-003.00 | Kilfeighny North Bridge | River | Caherweesheen | Lee[Tralee]_SC_010 | 484793 | 611543 |
| Kerry | KY-N70-004.00 | Caherleen Bridge | River | Lissardboola | Lee[Tralee]_SC_010 | 485860 | 610855 |
| Kerry | KY-N70-012.00 | Laune Bridge | River | Laune | Laune_SC_030 | 477931 | 596463 |
| Kerry | KY-N70-019.00 | Kilnabrack Upper Bridge | River | Kilnabrack_Upper | Caragh_SC_010 | 466529 | 590555 |
| Kerry | KY-N70-034.00 | Oghermong Bridge | River | Boola 22 | Boola_SC_010 | 446372 | 575532 |
| Kerry | KY-N70-039.00 | Waterville Bridge | River | Waterville | Finglasriver[Waterville]_SC_01 | 450295 | 565360 |
| Kerry | KY-N70-056.00 | Assroe Bridge | River | Rosscoosane | Finnihy_SC_010 | 485482 | 569994 |

| County | Structure ID | Structure Name | Road / River Bridge | Watercourse Name (EPA) | Water framework Directive Sub Catchment | GPS Co-ordinates (ITM) | |
|-----------|---------------|-----------------------|---------------------|------------------------|---|------------------------|--------|
| | | | | | | x | y |
| Kerry | KY-N71-012.00 | Sahaleen Bridge | River | Finnihy | Finnihy_SC_010 | 490000 | 573444 |
| Kerry | KY-N69-020.00 | River Galey Bridge | River | Galey | Galey_SC_010 | 504368 | 638422 |
| Kerry | KY-N69-021.00 | Galey Bridge Culvert | Non-EPA | Flows to Galey | Galey_SC_010 | 504454 | 638536 |
| Kerry | KY-N70-015.00 | Caragh Bridge | River | Caragh | Caragh_SC_010 | 469509 | 592429 |
| Kerry | KY-N71-017.50 | Derrynacoulagh Bridge | River | Killabunane | Sheen_SC_010 | 494608 | 566095 |
| Kerry | KY-N86-014.00 | The Red Bridge | Non EPA | Non-EPA | Lee[Tralee]_SC_010 | 476490 | 611466 |
| Limerick | LC-N24-005.00 | Tullabeg Bridge | River | Tullabeg 25 | Mulkear_SC_010 | 578225 | 645123 |
| Limerick | LC-N69-005.00 | Rincullia Bridge | River | Ahacronane | Shanagolden[Stream]_SC_010 | 528368 | 649814 |
| Limerick | LC-N69-011.00 | Ferry Bridge | River | Maigue | Ballynaclogh_SC_010 | 548162 | 652332 |
| Waterford | WC-N25-016.00 | Knockahavaun Bridge | River | Knockahavaun | Colligan_SC_010 | 629179 | 595975 |
| Waterford | WC-N25-022.00 | Gorteen Bridge | River | Licky | Goish_SC_010 | 623281 | 587534 |

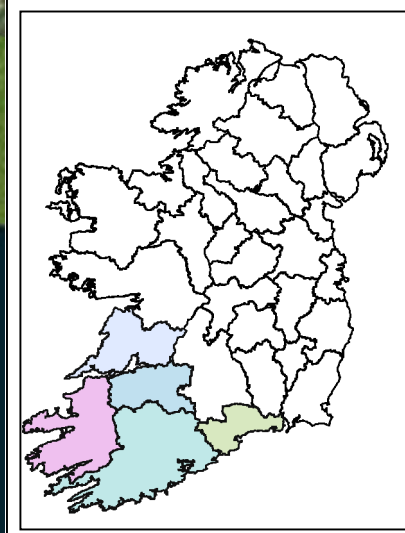


Legend

● Year 3 NIS Bridges

County

- Cork
- Kerry
- Waterford
- Limerick
- Clare



Client: Transport Infrastructure Ireland

Project: TO270 - Munster Term
Maintenance Contract No 3

Title: Location of Structures

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| Drawn: EN | Checked: NS | Authorised: POD |
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| Date: 28/01/2021 | Date: 28/01/2021 | Date: 28/01/2021 |
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| Drawing No: 2.1 | Rev: 1.0 |
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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.

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

All dirt, debris and vegetation shall first be removed from the bridge surface either by sweeping with a brush, using a power hose (airline) or manual raking out. No dirt, debris and / or vegetation will enter a watercourse. Cracks shall be sealed with hot poured bitumen or similar approved product. Potholes will be cleaned of loose debris, broken back and reinstated in accordance with CC-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.

2.1.1.3. Cleaning of Drains and Gullies

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

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

2.1.1.4. Cleaning and Maintenance of Expansion Joints

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

2.1.1.5. Installation of rubbing strips

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

2.1.1.6. Vegetation Removal

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

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

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

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

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

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

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

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

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

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.

2.1.1.7. Clearance of watercourse

Many watercourses support in-stream vegetation, including examples of the Annex I habitat watercourses of plain to montane levels with *Ranunculus 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.

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

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

2.1.1.8. Masonry repair and repointing

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

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

2.1.1.9. Cleaning of graffiti

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.

2.1.1.10. Maintenance of gabions

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

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

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

2.1.1.11. Reshaping (imported materials)

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

2.1.1.12. Maintenance of slope protection

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

2.1.1.13. Concrete Repairs

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

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

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

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

2.1.1.14. Establishing base protection

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

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

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

2.1.2. Biosecurity protocols

Biosecurity protocols shall be implemented during the construction phase of the proposed project to prevent the introduction of invasive species listed on the third schedule of the 2011 Regulations to site and the further spread of diseases.

1. All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.
2. If drying out of equipment is not feasible, equipment should be either: -
 - i. power steam washed at a suitably high temperature or at least 65 degrees, or
 - ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer's instructions are followed and if required, the correct contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant.
3. During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.
4. Appropriate facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.
5. Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

A pre-construction invasive species survey will be conducted prior to the commencement of works on site. If invasive species are encountered, they shall be fenced off using a 7m buffer from the outermost edges of invasive species.

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

| County | Structure ID | 01 Clearance of watercourse | 03 Removal of vegetation | 04 Scour repairs | 30 Clean drains & gullies | 45 Maintenance of slope protection | 47 Reshaping | 50 Concrete repairs | 55 Repair of parapet | 56 Establish base protection | 57 Maintenance of base protection | 60 Masonry repointing | 61 Masonry repairs |
|--------|---------------|--------------------------------------|-----------------------------------|------------------------|------------------------------------|---|-----------------|---------------------------|-------------------------------|---------------------------------------|--|-----------------------------|--------------------------|
| Clare | CL-N67-007.00 | | | Y | | | | | | | | Y | Y |
| Clare | CL-N68-004.00 | | Y | Y | | | | | | | | Y | Y |
| Cork | CC-N71-002.00 | | | Y | | | | | | | | Y | Y |
| Cork | CC-N71-003.00 | | | | | | | | | | | Y | |
| Cork | CC-N71-031.00 | | | | | | | | | | | Y | |
| Cork | CC-N72-001.00 | | | Y | | Y | | | | | | | Y |
| Cork | CC-N72-027.00 | | Y | | | | | | | | | Y | |
| Cork | CC-N72-033.00 | | | | | | | | | | | Y | |
| Cork | CC-N73-005.00 | | | | | | | | | | | Y | |
| Kerry | KY-N69-017.00 | | Y | | Y | | | | | | | Y | |
| Kerry | KY-N69-020.00 | | | | | | | | | | | Y | |
| Kerry | KY-N69-021.00 | | | | | | | | | | | Y | |
| Kerry | KY-N70-003.00 | Y | Y | Y | | | | | | | | | |
| Kerry | KY-N70-004.00 | | Y | | | | | | | | | Y | |
| Kerry | KY-N70-012.00 | | Y | | Y | | | | | | | Y | Y |
| Kerry | KY-N70-015.00 | | | | | | | Y | | | | | |
| Kerry | KY-N70-019.00 | | Y | Y | Y | | | | | | | | |

| County | Structure ID | 01 Clearance of watercourse | 03 Removal of vegetation | 04 Scour repairs | 30 Clean drains & gullies | 45 Maintenance of slope protection | 47 Reshaping | 50 Concrete repairs | 55 Repair of parapet | 56 Establish base protection | 57 Maintenance of base protection | 60 Masonry repointing | 61 Masonry repairs |
|-----------|---------------|--------------------------------------|-----------------------------------|------------------------|------------------------------------|---|-----------------|---------------------------|-------------------------------|---------------------------------------|--|-----------------------------|--------------------------|
| Kerry | KY-N70-034.00 | | Y | | Y | | | | | | | Y | Y |
| Kerry | KY-N70-039.00 | | Y | | Y | | | | | | | Y | |
| Kerry | KY-N70-056.00 | | Y | | Y | | | | Y | | | Y | |
| Kerry | KY-N71-012.00 | | Y | | | Y | Y | | | | | Y | |
| Kerry | KY-N71-017.50 | Y | | | | | | | | | | Y | Y |
| Kerry | KY-N86-014.00 | | Y | Y | Y | | | | | | | | |
| Limerick | LC-N24-005.00 | | | | | Y | | | | | | Y | Y |
| Limerick | LC-N69-005.00 | | | | | | | Y | | | | Y | |
| Limerick | LC-N69-011.00 | | | | | | | | | | | Y | |
| Waterford | WC-N25-016.00 | | Y | Y | | | | Y | | | | | |
| Waterford | WC-N25-022.00 | | Y | | | | | Y | | | | | |

2.2. Bridge Descriptions

2.2.1. Clare

2.2.1.1. Lisdeen Bridge [CL-N67-007.00]

The Lisdeen Bridge is a single span in-situ reinforced concrete slab bridge. The span is 2.65m. The substructure consists of 2 masonry and concrete abutments. There are masonry parapets on both sides of the carriageway. The structure is located 800m upstream of Lower River Shannon SAC and located 2.18km upstream of River Shannon and River Fergus Estuaries SPA. Plate 2-1 shows the north elevation.



Plate 2-1 Lisdeen Bridge.

2.2.1.2. Liscasey Bridge West [CL-N68-004.00]

The Liscasey Bridge is a 2-span stone masonry arch bridge. The span lengths are 1.34m and 1.62m. The substructure consists of 2 masonry abutments and a masonry pier. There are masonry parapets on both sides of the carriageway. The structure is located 10.8km upstream of Lower River Shannon SAC and located 10.8km upstream of River Shannon and Fergus Estuaries SPA. Plate 2-2 shows the south elevation.



Plate 2-2 Liscasey Bridge West.

2.2.2. Cork

2.2.2.1. Crossterry Bridge [CC-N71-002.00]

Crossterry Bridge is a single span masonry arch bridge with a span of 5.27m. There are masonry parapets along the carriageway. The bridge carries the N71 over the Drumaclarig River and is located within the Glengarriff Harbour And Woodland SAC. Plate 2-3 shows the masonry face of the bridge.



Plate 2-3 Crossterry Bridge.

2.2.2.2. Reenmeen Bridge [CC-N71-003.00]

Reenmeen Bridge is a double span masonry arch bridge with a concrete slab secondary structure. The span of the bridge is 18.4m in width. Masonry parapets border the carriageway. The bridge carries the N71 over the Reenmeen West River and is located within the Glengarriff Harbour And Woodland SAC. Plate 2.4 displays the bridge and concrete slab structure.



Plate 2-4 Reenmeen Bridge.

2.2.2.3. [Clarke Street Bridge \[CC-N71-031.00\]](#)

Clark Street Bridge is a triple span masonry arch and concrete slab structure. It has a span of 10.37m in width. Masonry parapets line the road. The bridge carries the N71 over the Clonakilty Stream. It is located within the Clonakilty Bay SAC and SPA. Plate 2.5 displays the masonry face of the bridge.



Plate 2-5 Clarke Street 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 2-6 shows the north elevation.



Plate 2-6 Duncannon Bridge.

2.2.2.5. Carrig Bridge [CC-N72-027.00]

Carrig bridge is a single span masonry arch bridge with concrete slab secondary structure with a span of 4.71m. Masonry parapets are present along the roadsides. The bridge carries the N72 across the North Caherduggan River, within the Blackwater River (Cork/Waterford) SAC. Plate 2-7 shows the masonry and concrete slab structure of the bridge.



Plate 2-7 Carrig Bridge.

2.2.2.6. Downey's Bridge [CC-N72-033.00]

Downey's Bridge is a single span masonry arch structure with a span of 7.3m in width. The structure has masonry parapets either side of the road. The bridge carries the N72 over the Kilcoran North River. Blackwater River (Cork/Waterford) SAC is located 1.8km downstream while the Blackwater Estuary SPA is 31km downstream of the bridge. Plate 2-8 shows the masonry face of the bridge.

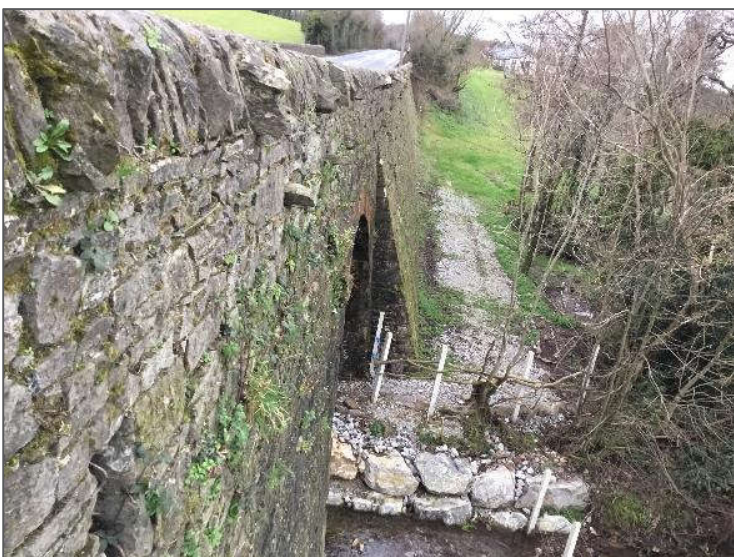


Plate 2-8 Downey's Bridge.

2.2.2.7. 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 pumphouse for main water

supply built on southeast corner of the bridge. The structure is within Blackwater River (Cork/Waterford) SAC. Plate 2-9 shows the east elevation.



Plate 2-9 **Ballynamona Bridge.**

2.2.3. Kerry

2.2.3.1. Listowel Bridge [KY-N69-017.00]

The Listowel Bridge is a 5-span stone masonry arch bridge. The span lengths are 15.2m each. The substructure consists of 2 masonry abutments and 4 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Lower River Shannon SAC. Plate 2-10 shows the west elevation.



Plate 2-10 Listowel Bridge.

2.2.3.2. River Galey Bridge [KY-N69-020.00]

The River Galey Bridge is a 3-span reinforced concrete slab bridge. The span lengths are 8.21m, 8.12m and 8.75m. The substructure consists of 2 masonry and concrete abutments and 2 masonry and concrete piers. There are masonry parapets on both sides of the carriageway. The structure is within the Lower River Shannon SAC. Plate 2-11 shows the east elevation.



Plate 2-11 River Galey Bridge.

2.2.3.3. Galey Bridge Culvert [KY-N69-021.00]

Galey Bridge Culvert is a single span masonry arch and concrete slab culvert with a total span of 2.46. The bridge carries the N69 over a non-EPA drain to the Galey River. The Lower River Shannon SAC is located 100m downstream of the bridge. Plate 2-12 shows the face of the bridge.



Plate 2-12 Galey Bridge Culvert.

2.2.3.4. Kilfeighny North Bridge [KY-N70-003.00]

The Kilfeighny North Bridge is a 2-span stone masonry arch bridge. The span lengths are 3.4m. The substructure consists of 2 buried abutments. There are masonry parapets on both sides of the carriageway. The structure is located 4.6km upstream of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and located 4.5km upstream of the Tralee Bay Complex SPA. Plate 2-13 shows the east elevation.



Plate 2-13 Kilfeighny North Bridge.

2.2.3.5. Caherleen Bridge [KY-N70-004.00]

The Caherleen Bridge is a single span bridge. It is a masonry arch in the west side, and it has been widened in the east side using a box culvert. The span is 3.59m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is within Slieve Mish Mountains SAC and located 6km upstream of the Tralee Bay Complex SPA. Plate 2-14 shows the west elevation.



Plate 2-14 Caherleen Bridge.

2.2.3.6. Laune Bridge [KY-N70-012.00]

The Laune Bridge is an 8-span stone masonry arch bridge. The span lengths vary between 10.2m and 10.55m. The substructure consists of 2 masonry abutments and 7 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within Castlemaine Harbour SAC and located 1.7km upstream of the Castlemaine Harbour SPA. Plate 2-15 shows the north elevation.

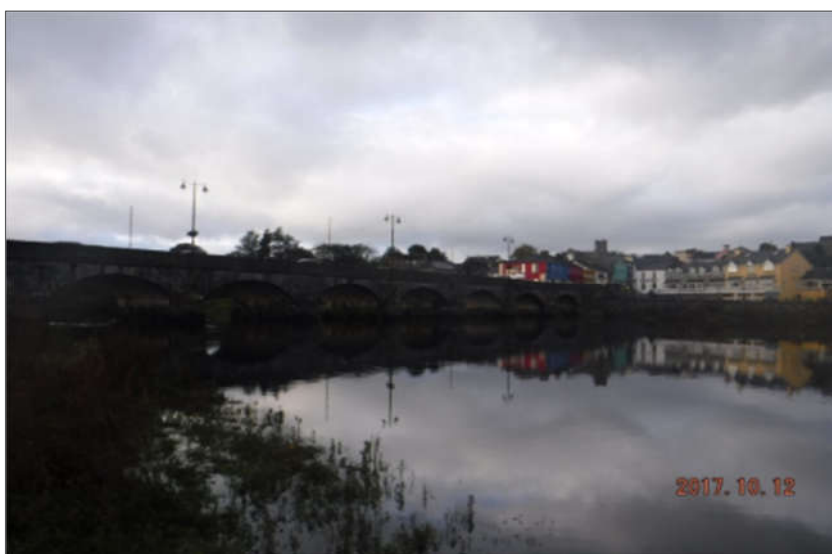


Plate 2-15 Laune Bridge.

2.2.3.7. Caragh Bridge [KY-N70-015.00]

Caragh Bridge is a seven-span masonry arch bridge with a length of 41.27m. Masonry walls line each side of the carriageway. The bridge carries the N70 over the Caragh River and is located within the Castlemaine Harbour SAC and SPA. Plate 2-16 shows the east elevation.



Plate 2-16 Caragh Bridge.

2.2.3.8. Kilnabrack Upper Bridge [KY-N70-019.00]

The Kilnabrack Upper Bridge is a single span bridge. It is a masonry arch in the east side, and it has been widened in the west side using a precast reinforced concrete piped culvert. The span is 2.15m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 1.9km upstream of the Castlemaine Harbour SAC and located 1.8km upstream of the Castlemaine Harbour SPA. Plate 2-17 shows the east elevation.



Plate 2-17 Kilnabrack Upper Bridge.

2.2.3.9. Oghermong Bridge [KY-N70-034.00]

The Oghermong Bridge is a single span stone masonry arch bridge. The span is 7.8m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 1.3km upstream of the Valencia Harbour/Portmagee Channel SAC. Plate 2-18 shows the east elevation.



Plate 2-18 Oghermong Bridge.

2.2.3.10. Waterville Bridge [KY-N70-039.00]

The Waterville Bridge is a 3-span stone masonry arch bridge. The spans are of similar around 7.13m. The substructure consists of 2 masonry abutments and 2 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Ballinskelligs Bay and Inny Estuary SAC. Plate 2-19 shows the east elevation.



Plate 2-19 Waterville Bridge.

2.2.3.11. Assroe Bridge [KY-N70-056.00]

The Assroe Bridge is a single span stone masonry arch bridge. The span is 7.07m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 200m upstream of the Kenmare River SAC. Plate 2-20 shows the south elevation.

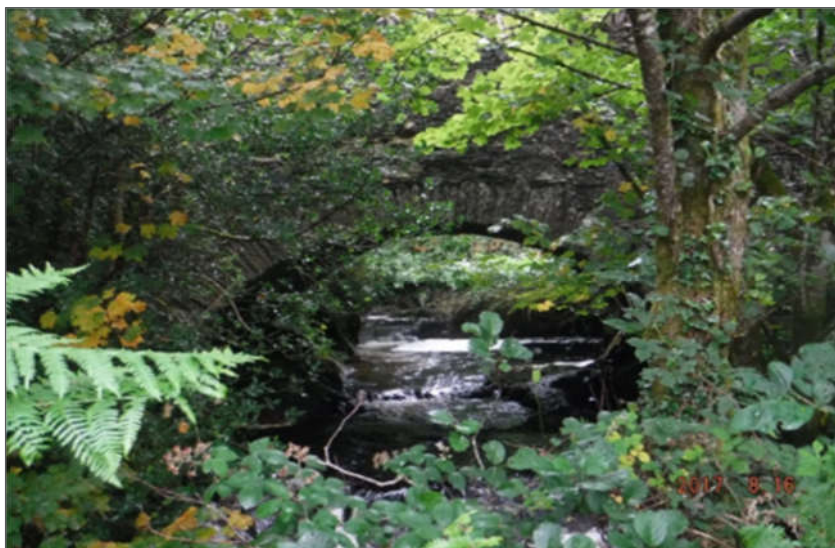


Plate 2-20 Assroe Bridge.

2.2.3.12. Sahaleen Bridge [KY-N71-012.00]

The Sahaleen Bridge is a single span bridge. It is a masonry arch in the west side, and it has been widened in the east side using a precast prestressed concrete slab. The span is 7.97m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 3.5km upstream of the Kenmare River SAC. Plate 2-21 shows the west elevation.

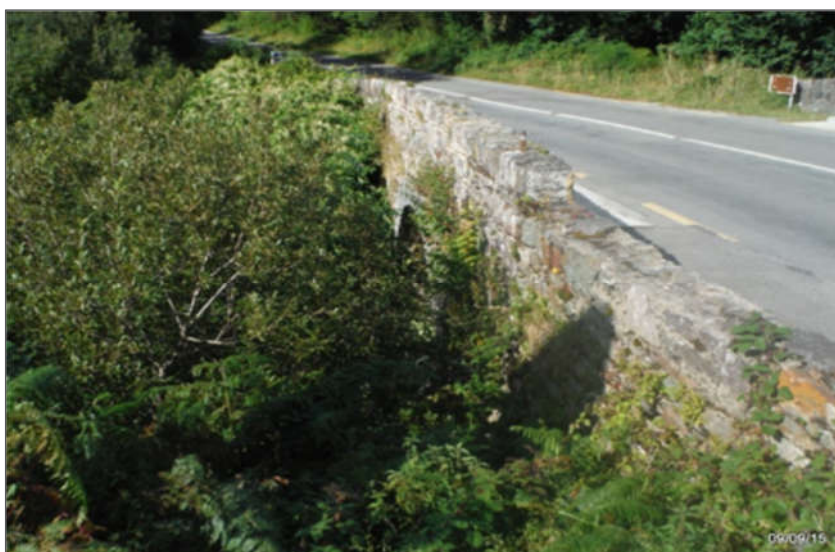


Plate 2-21 Sahaleen Bridge.

2.2.3.13. Derrynacoulagh Bridge [KY-N71-017.50]

Derrynacoulagh Bridge is a single arch masonry with a span length of 6m. Masonry walls line each side of the carriageway. The bridge carries the N71 over the Killabunane River approximately 9km upstream of the Kenmare River SAC. Plate 2-22 shows the face of the bridge.



Plate 2-22 Derrynacoulagh Bridge.

2.2.3.14. The Red Bridge [KY-N86-014.00]

The Red Bridge is a single span stone masonry arch bridge. The span is 2.91m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 250m upstream of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and located 200m upstream of the Tralee Bay Complex SPA. Plate 2-23 shows the south elevation.



Plate 2-23 The Red Bridge.

2.2.4. Limerick

2.2.4.1. Tullabeg Bridge [LC-N24-005.00]

Tullabeg Bridge is a single span concrete slab structure with 3.11m span width. Concrete parapet walls line the carriageway above the structure. The bridge carries the N24 across the Tullabeg River. The Lower River Shannon SAC is located 4.3km downstream of the bridge. Plate 2-24 shows the face of the bridge.



Plate 2-24 Tullabeg Bridge.

2.2.4.2. Rincullia Bridge [LC-N69-005.00]

Rincullia Bridge is a three-span masonry and concrete bridge with a span of 6.2m. Masonry parapets line the carriageway above the structure. The bridge carries the N69 over the Ahacronane River within the Lower River Shannon SAC and 300m upstream of the River Shannon and River Fergus Estuaries SPA. Plate 2-25 shows the face of the bridge.



Plate 2-25 Rincullia Bridge.

2.2.4.3. Ferry Bridge [LC-N69-011.00]

Ferry Bridge is a triple span masonry arch bridge with a span width of 44.49m. Masonry parapets walls line the carriageway. The bridge carries the N69 across the Mague River. It is located within both the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. Plate 2.26 displays the masonry face of the bridge.



Plate 2-26 Ferry Bridge.

2.2.5. Waterford

2.2.5.1. Knockahavaun Bridge [WC-N25-016.00]

The Knockahavaun Bridge is a single span reinforced concrete arch bridge. The span is 2.5m. The substructure consists of 2 reinforced concrete abutments. There are no parapets on the structure. The structure is located 1.1km upstream of Dungarvan Harbour SPA. Plate 2-27 shows the south elevation.



Plate 2-27 Knockahavaun Bridge.

2.2.5.2. Gorteen Bridge [WC-N25-022.00]

Gorteen Bridge is a single span masonry arch with concrete slab bridge. It has a span width of 5.72m. Steel safety barriers line the carriageway. The bridge carries the N25 over the River Licky within the Blackwater River (Cork/Waterford) SAC. Plate 2.28 displays the masonry face of the bridge.



Plate 2-28 Gorteen Bridge.

3. Scope of Study

The purpose of this Natura Impact Statement (NIS) is to assess the likelihood of adverse effects of the proposed bridge maintenance works on the integrity of Special Areas of Conservation and Special Protection Areas that were ‘Screened-In’ by the competent authority, 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 European sites. European 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 European 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, 2001; 2018), which was subsequently used to develop guidance for Ireland by the Department of Environment, Heritage and Local Government in 2009 (DEHLG, 2009) and also by the National Parks and Wildlife Service in 2018¹ (NPWS 2018). These guidance documents set out a staged approach to complete the AA process and outlines the issues and

¹ <https://www.npws.ie/development-consultations>

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

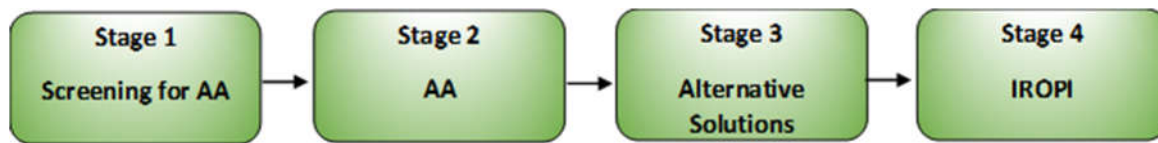


Figure 3.1 Appropriate Assessment Process (Source: DEHLG, 2009)

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 European 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 European site, and includes any necessary mitigation measures.

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 sufficient 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 examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a European site. The process must return to AA 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, it is necessary to examine whether there are imperative reasons of overriding interest (IROPI).

3.3.4. IROPI

This 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 European 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 European site and where no likely significant effects on a European site in view of its conservation objectives are identified, the process stops at Screening for AA. 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; 2018).

4. Methods

4.1. Legislation & 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;
- National Parks and Wildlife Service - Development Consultations² (NPWS 2018)
- 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 coordinates, work order data (i.e. proposed works), subcatchment, location with respect to European sites, hydrological connectivity and ecological data (either 3rd party data or data obtained from surveys conducted under the current contract). This GIS is regularly updated with data such as incoming survey data on bats, invasive species and freshwater pearl mussel, obtained as a result of site surveys conducted by the Contractor's appointed ecologist.

At the outset, a desk study was carried out to collate information available on European sites in the vicinity of bridge sites. These areas were viewed using Google Earth, Google maps³ and Bing maps⁴ 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.

² <https://www.npws.ie/development-consultations>

³ <https://www.google.ie/maps>

⁴ <http://www.bing.com/maps/>

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

Geospatial analysis of all data was carried out using MapInfo v.16. In line with established best practice, locations and boundaries of all European sites connected via watercourses to proposed works were identified to establish surface water connectivity between work areas and European sites. The Environmental Protection Agency (EPA) Envision mapping⁵ system and datasets were used to identify any hydrological connection between the proposed project and European sites.

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

Planning information from the surrounding area, dated within the last 5 years, was reviewed using the planning enquiry system MyPlan.ie. 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, Emma Nickelsen and Paul O'Donoghue.

Emma Nickelsen has a BSc (Hons) in Environmental Biology and an MSc in Marine Biology. Emma has worked in ecological and environmental consultancy since 2017, working on a wide range of projects including bridge works, road construction, local amenity development and renewable energy. A focus of Emma'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. Emma carried out the preparation of this report.

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.

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

⁵ <http://gis.epa.ie/Envision>

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.

5. Appropriate Assessment

5.1. Connectivity of the Works Area to European Sites

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

A distance of 15km 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 28 bridges being considered in this assessment, the maximum distance where works are likely from a bridge is 20m upstream or downstream of a bridge. Thus, direct impacts are anticipated to occur within the immediate vicinity of the bridge.

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

Thus, given the nature of the proposed project the potential zone of influence will be limited to European sites the encompass or are immediately adjacent to a bridge, or to those hydrologically connected to the proposed works at a bridge. Table 5-1 details the bridges, their location relative to European sites and surface water connectivity to a European site.

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 *Lam etra laneri*, *L. fluviatilis* *Petrom zon marinus* and *Alosa fallax fallax*. *Austroptomobius 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 maritima*) [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]

- *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]

Linkage to Bridges

Structures CC-N72-001.00 Duncannon Bridge, CC-N72-027.00 Carrig Bridge, CC-N73-005.00 Ballynamona Bridge and WC-N25-022.00 Gorteen Bridge are located within Blackwater River (Cork/Waterford) SAC (002170), while CC-N72-033.00 Downey’s Bridge is located 1.8km upstream.

5.2.2. Glengarriff Harbour & Woodland SAC (000090)

Site Overview

“Glengarriff woodland consists of a sizeable area of broadleaved semi-natural woodland comprised of oak (*Quercus* sp.) and Holly (*Ilex aquifolium*), with much Downy Birch (*Betula pubescens*) and Rowan (*Sorbus aucuparia*). A little Yew (*Taxus baccata*) occurs and Strawberry Tree (*Arbutus unedo*) is scattered through the woods. The most frequent ground plants are Heather (*Calluna vulgaris*), Great Wood-rush (*Luzula sylvatica*), Bilberry (*Vaccinium myrtillus*) and the ferns *Pteridium aquilinum*, *Blechnum spicant* and *Dryopteris aemula*.

Wet woodland occurs along parts of the Canrooska and Glengarriff rivers. This is dominated by willows (mainly *Salix cinerea* subsp. *oleifolia*) and Downy Birch, with Alder (*Alnus glutinosa*) also frequent. A rich herb layer is found, characterised by such species as Bugle (*Ajuga reptans*), False Brome (*Brachypodium sylvaticum*), Meadowsweet (*Filipendula ulmaria*) and Wood Sanicle (*Sanicula europaea*). The rivers flood regularly, depositing silt within the woodlands.

However, there is much small-scale variation in the habitat from heathy places with Heath Bedstraw (*Galium saxatile*), Star Sedge (*Carex echinata*) and Purple Moor-grass (*Molinia caerulea*), to rocks with Goldenrod (*Solidago virgaurea*), Navelwort (*Umbilicus rupestris*) or Filmy-fern (*Hymenophyllum* sp.). Common woodland herbs include Bugle, Enchanter's-nightshade (*Circaea lutetiana*), Irish Spurge (*Euphorbia hyberna*), Common Cow-wheat (*Melampyrum pratense*) and Foxglove (*Digitalis purpurea*).

Although this is the site of an ancient woodland, it was once part of an estate and much of the oak was planted around 1807-1810. Some exotic species were also introduced, such as Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and Rhododendron (*Rhododendron ponticum*). The latter has invaded parts of the woodland, posing a serious problem. However, it is being systematically removed. Other areas within the woodland have been planted with conifers including Sitka Spruce (*Picea sitchensis*), Scots Pine (*Pinus sylvestris*) and Western Hemlock (*Tsuga heterophylla*).

In addition to the woodlands, the harbour is of great interest. This sheltered inlet of Bantry Bay has a rocky shore vegetated with brown seaweeds (*Pelvetia caniculata*, *Fucus* spp. and *Ascophyllum nodosum*). The inlet also features rocky islets.

Adding to the diversity of the site is a wet meadow, adjacent to the woodlands, which supports species such as Ragged-Robin (*Lychnis flos-cuculi*). Smooth Brome (*Bromus racemosus*), an uncommon grass which is listed as 'Vulnerable' in the Red Data Book, occurs within this habitat.

The site is notable for the presence in the woodlands of several rare species of Myxomycete fungus, namely *Echinostelium colliculosum*, *Cribraria tenella*, *Arcyria affinis*, *Stemonitis nigrescens*, *Symphytocarpus impexus*, *Fuligo muscorum*, *Diderma deplanatum* and *D. lucidum*.

Invertebrates, too, are well represented. Species found include the Kerry Slug (*Geomalacus maculosus*) a legally protected species, listed on Annex II of the E.U. Habitats Directive; damselflies, such as the Beautiful Demoiselle (*Calypteryx virgo*, Order Zygoptera), and butterflies (Order Lepidoptera), such as Silver-washed Fritillary (*Argynnis paphia*), Green Hairstreak (*Callophrys rubi*), Purple Hairstreak (*Quercusia quercus*), Large Heath Coenon m ha tullia , Holl Blue Celastrina ar iolus and Wood White Le tidea sina is .

Other invertebrates reflect the ancient nature of the woodland. For example, Ireland's only arboreal ant (*Lasius fuliginosis*, Order Hymenoptera), a longhorn beetle (*Laptura aurilenta*, Order Coleoptera) and a hoverfly (*Microdon analis*, Order Diptera). Meanwhile, the association between woodland and bog provides the necessary requirements for species such as the Large Marsh Grasshopper (*Stethophyma grossum*, Order Orthoptera) and a horse-fly (*Hybonutra mohlfeldi*, Order Diptera)."

Qualifying Interests

- 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]
- *Geomalacus maculosus* (Kerry Slug) [1024]
- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

Structures CC-N71-002.00 Crossterry Bridge and CC-N71-003.00 Reenmeen Bridge are located within Glengarriff Harbour & Woodland SAC (000090).

5.2.3. Clonakilty Bay SAC (000091)

Site Overview

“Sand flats dominate the intertidal area, although mudflats occur at the sheltered upper end of the inlets. The vegetation consists of algal mats (*Enteromorpha spp.*), with brown seaweeds (*Fucus spp.*) occurring where the coast is rocky. The invasive Cord-grass (*Spartina sp.*) occurs in places. The intertidal flats have a typical diversity of macro-invertebrates, including *Arenicola marina*, *Scrobicularia plana*, *Hediste diversicolor*, *Nephtys hombergii*, *N. cirrosa*, *Hydrobia ulvae* and *Cerastoderma edule*.

Sand dunes grade from a strandline, colonised by *Frosted Orache* (*Atriplex laciniata*), *Sea Sandwort* (*Honkenya peploides*) and *Sea Rocket* (*Cakile maritima*), through to fixed dunes vegetated by grasses, small herbs and several species of orchid. They support an interesting array of plants, amongst which *Great Mullein* (*Verbascum thapsus*), *Viper's-bugloss* (*Echium vulgare*) and *Teasel* (*Dipsacus fullonum*) are some of the most noticeable. Embryonic shifting dunes and white *Marram* (*Ammophila arenaria*) dunes are also represented. Of particular interest is a small area of decalcified dune heath with some *Gorse* (*Ulex europaeus*).

Inland of the western estuary, an extensive area of wetland occurs, which in itself contains a fine range of habitats from saline lagoons, to brackish grasslands, open freshwater marsh and *Alder* (*Alnus glutinosa*) scrub. Species found here are characteristic of marshy areas and include *Creeping Bent* (*Agrostis stolonifera*), *Water Horsetail* (*Equisetum fluviatile*), *Marsh Cinquefoil* (*Potentilla palustris*) and *Marsh Willowherb* (*Epilobium palustre*). The saline influence is evident by the occurrence of species such as *Saltmarsh Rush* (*Juncus gerardi*) and *Sea Rush* (*J. maritimus*).

The site contains a good diversity and density of waterfowl. Otter spraints were found frequently during a recent survey of the marsh area. This species is listed on Annex II of the E.U. Habitats Directive.”

Qualifying Interests

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150]

Linkage to Bridges

Structure CC-N71-031.00 Clarke Street Bridge is located within Clonakilty Bay SAC (000091).

5.2.4. 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. Poulmasherry Bay; the freshwater lower reaches of the Shannon River, between Killaloe and Limerick, plus the freshwater stretches of much of the Feale and Mulkear catchments; a marine area at the mouth of the Shannon estuary with high rocky cliffs to the north and south; ericaceous heath on Kerry Head and Loop Head; and several lagoons. The underlying geology ranges from Carboniferous limestone (east of Foynes) to Namurian shales and flagstones (west of Foynes) to Old Red Sandstone (at Kerry

Head). The salinity of the system varies daily with the ebb and flood of the tide and with annual rainfall fluctuations seasonally.

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

Qualifying Interests

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculum 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]



- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structures KY-N69-017.00 Listowel Bridge, KY-N69-020.00 River Galey Bridge, LC-N69-005.00 Rincullia Bridge and LC-N69-011.00 Ferry Bridge are located within Lower River Shannon SAC (002165). CL-N67-007.00 Lisdeen Bridge is located 800m upstream of the SAC. CL-N68-004.00 Liscasey Bridge West is located 10.8km upstream of the SAC. KY-N69-021.00 Galey Bridge Culvert is located 100m upstream of the SAC. LC-N24-005.00 Tullabeg Bridge is located 4.3km upstream of the SAC.

5.2.5. 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. Land uses include fishery and aquaculture activities, grazing, and recreational activities.

Site is of major ecological importance for its diversity and range of coastal habitats and species. The Inch sand spit is the largest and arguably one of the best remaining intact dune systems in the country. The dune systems are highly dynamic and possess very fine examples of embryonic dunes, shifting marram dunes, fixed dunes and dune slacks. Salt marshes, both of the Atlantic and Mediterranean types, are also particularly well developed and extensive in area. The site has one of the largest expanses of intertidal sand and mud flats in the country. A fine stand of native alluvial forests occurs on the River Laune. The fixed dunes have *Petalophyllum ralfsii* and three Red Data Book vascular plant species are known from the site. Castlemaine Harbour supports important populations of wintering waterfowl, with internationally important numbers of *Branta bernicla hrota* and nationally important populations of a further 16 species. *Pluvialis apricaria* and *Limosa lapponica*, both listed on Annex I of the EU Birds Directive, occur regularly. The site provides habitat for *Bufo calamita*, a very localised species in Ireland and listed in the Red Data Book. The site is also utilized by *Lutra lutra* and supports important populations of *Salmo salar*, *Petromyzon marinus* and *Lampetra fluviatilis*.”

Qualifying Interests

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

- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Petalophyllum ralfsii* (Petalwort) [1395]

Linkage to Bridges

Structures KY-N70-012.00 Laune Bridge and KY-N70-015.00 Caragh Bridge are located within Castlemaine Harbour SAC (000343), while KY-N70-019.00 Kilnabrack Upper Bridge is located 1.9km upstream.

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 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]
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]
- Humid dune slacks [2190]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Lutra lutra* (Otter) [1355]
- *Petalophyllum ralfsii* (Petalwort) [1395]

Linkage to Bridges

KY-N70-003.00 Kilfeighny North Bridge is located 4.6km upstream of Tralee Bay And Magharees Peninsula, West To Cloghane SAC. KY-N70-004.00 Caherleen Bridge is located 6km upstream. KY-N86-014.00 The Red Bridge is located 250m upstream.

5.2.7. Slieve Mish Mountains SAC (002185)

Site Overview

“The Slieve Mish Mountains form the backbone of the eastern half of the Dingle Peninsula in Co. Kerry. The highest peak is Baurtregaum (851 m). The range is composed predominantly of Old Red Sandstone.

The dominant habitat within Slieve Mish Mountains SAC is heath. Wet heath, dry heath and acid grassland occur in mosaics on the lower slopes of the mountains, while dry heath tends to dominate the upper, steeper slopes.

The site is intersected, particularly on its northern flank, by several steep-sided glaciated river valleys or glens. The head of Derrymore Glen features a classic oligotrophic corrie lake which is surrounded by steep cliffs. Steep cliffs, scree and rocky ridges are features of the site above 650 m.

The site contains a good population of Killarney Fern (*Trichomanes speciosum*), a species that is listed on Annex II of the E.U. Habitats Directive. Two other plants that are also listed in the Irish Red Data Book occur, namely Betony (*Stachys officinalis*) and Cornish Moneywort (*Sibthorpia europaea*).

Peregrine Falcons breed on cliffs within the site, and Chough are known to feed in the area. Both of these species are listed on Annex I of the E.U. Birds Directive.

The site is of considerable conservation significance, particularly for the presence of several habitats and species that are listed on Annexes I and II of the E.U. Habitats Directive. The presence of two bird species that are listed on Annex I of the E.U. Birds Directive and the populations of several rare or scarce plant species adds to the importance of the site.”

Qualifying Interests

- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Alpine and Boreal heaths [4060]
- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110]
- Calcareous rocky slopes with *chasmophytic* vegetation [8210]
- Siliceous rocky slopes with *chasmophytic* vegetation [8220]
- *Trichomanes speciosum* (Killarney Fern) [1421]

Linkage to Bridges

KY-N70-004.00 Caherleen Bridge is located within Slieve Mish Mountains SAC (002185).

5.2.8. Valencia Harbour / Portmagee Channel SAC (002262)

Site Overview

“Valencia Harbour and Portmagee Channel, at the tip of the Iveragh peninsula in Co. Kerry, separate Valencia Island from the mainland. The channel, which is approximately 1 km wide, and Valencia Harbour and Doulus Bay to the east of the island, contain important examples of three habitats in particular reefs, large shallow inlets and tidal mudflats.

The reefs at this site range from high water to 34 m in depth. They support an excellent range of communities from those that are typical of areas very exposed to wave action to those typical of areas sheltered from wave action but with some tidal stream present. A number of uncommon shallow subtidal communities occur here. The area also has an excellent range of sediment communities present including beds of free living red calcareous algae, generally called maerl beds (also known as ‘coral’), with the uncommon anemone *Halcampa chrysanthellum*. Areas of soft mud or muddy sand are characterised by the sea pen *Virgularia mirabilis* and a range of burrowing anemones, including the very rare species *Edwardsia delapiae*, which has not been recorded since it was originally found and described from this area in 1928. Also present is *Scolanthus callimorphus*, only known from Kilkieran Bay, Co. Galway and one site in England. The phoronid *Phoronis psammophila* occurs in this community and has not been recorded elsewhere in Ireland or Britain.

The littoral reefs of Valencia Island are composed of areas that are exposed to, or very sheltered from, wave action. At exposed sites there is a typical zonation for this habitat: an

upper shore with a narrow band of the brown alga *Pelvetia canaliculata*; a mid-shore covered by barnacles, limpets and mussels, with rock pools containing the Purple Sea Urchin *Paracentrotus lividus* and coralline algal crusts; and a low shore dominated by mussels and barnacles with *Porphyra* sp., followed by mixed kelp species (*Laminaria digitata*, *Laminaria saccharina* and *Saccorhiza polyschides*). On mixed substrate in sheltered areas there is a typical zonation of bands of *Ascophyllum nodosum* and *Fucus vesiculosus* in the mid shore, with *Fucus serratus* in the low shore. The subtidal fringe has mixed kelp species with an understory of red algae. On the north-east shore of Portmagee Channel, the very low shore has Eelgrass (*Zostera marina*) beds and a variety of bivalve species. Burrowing anemones, in particular *Cereus pedunculatus*, occur in gravel and mud in very sheltered areas. Boulders in the sublittoral fringe have a kelp community on top, and on the undersides a community of bryozoans and sea squirts (*Polyclinum aurantium* and *Morchellium argus*).

The shallow water reefs in areas very exposed to wave action have kelp park communities of *Laminaria hyperborea*, with dense foliose algae, the jewel anemone *Corynactis viridis* and the sea squirt *Pycnoclavella aurilucens*. Reefs moderately exposed to wave action with moderate current display good examples of *L. hyperborea* forest with a cushion fauna of sponges and ascidians which is considered uncommon. Another unusual community characterised by the keel worm *Pomatoceros triqueter* and occasional kelp occurs on areas of scoured cobbles. Vertical rock supports a range of hydroids, red algae, the sea urchin *Echinus esculentus*, with only occasional kelp plants. In sheltered areas either a species rich community of mixed kelps with sand scour tolerant fauna may be present, or a forest of *L. hyperborea* and *L. saccharina* may occur. This latter community is considered uncommon. Isolated silty bedrock outcrops support sponges, hydroids, anemones and occasional red and brown algae.

In deeper water at the western entrance to Portmagee Channel the reefs are very exposed or moderately exposed to wave action. Very steep bedrock is characterised by sponges, the jewel anemone *Corynactis viridis* and the cup coral *Caryophyllia smithi*. More gently sloping and upward facing circalittoral bedrock is characterised by pink coralline crusts, encrusting bryozoans, *Caryophyllia smithi*, *Echinus esculentus* and the sponges *Haliclona viscosa* and *Mycale rotalis*. These communities are typical of these habitats.

The very sheltered beach on the shores of the Valencia River estuary has a gradually sloping shingle beach, with a narrow band of *Fucus vesiculosus*, *Ascophyllum nodosum* and *Enteromorpha* sp., amphipods (e.g. *Echinogammarus marina*) and winkles (e.g. *Littorina littorea*) are frequent under the algae. Seaward of the shingle in muddy sand the polychaete *Scoloplos armiger* and the lug-worm *Arenicola marina* are common. The tide-swept low shore is characterised by the polychaete *Lanice conchilega*. The bivalve *Scrobicularia plana* is common in the upper mid shore, while *Angulus tenuis* is more prevalent in the mid and low shore.

The site has a good range of sediment communities which vary from gravel and pebbles to maerl, sand and mud. The moderately exposed sediments consist of areas of medium sand with the burrowing sea urchin *Spatangus purpureus* and the bivalve *Dosinia exoleta*. Areas with mixed sediments with different combinations of pebbles, gravel and mud are generally characterised by a variety of hydroids, anemones, bivalves and red algae. Soft mud or muddy sand is characterised by burrowing anemones, in particular *Sagartiogeton undata* and *Edwardsia claparedii*, the sea pen *Virgularia mirabilis*, the molluscs *Philine aperta* and *Haminoe navicula*, and bivalves. *H. navicula* is common in these communities but rare elsewhere in Ireland. A number of other uncommon marine species are found within the site including the rare phoronid *Phoronis psammophila* which occurs at a number of locations within the site, and two rare burrowing anemones *Edwardsia delapiae* and *Scolothus callimorphus*.

This site is of particular interest and importance because it contains good examples of three habitats listed on Annex I of the E.U. Habitats Directive – tidal mudflats and sandflats, large shallow inlets and bays, and reefs.”

Qualifying Interests

- Mudflats and sandflats not covered by seawater at low tide [1140]

- Large shallow inlets and bays [1160]
- Reefs [1170]

[Linkage to Bridges](#)

KY-N70-034.00 Oghermong Bridge is located 1.3km upstream of Valencia Harbour / Portmagee Channel SAC (002262).

5.2.9. Ballinskelligs Bay & Inny Estuary SAC (000335)

[Site Overview](#)

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

*Two types of saltmarsh occur on the site. Mediterranean salt meadows are characterised by the presence of Sea Rush (*Juncus maritimus*), while species such as Thrift (*Armeria maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*) are typical of Atlantic salt meadows.*

*The site is of considerable conservation significance, particularly for the presence of two types of saltmarsh listed on Annex I of the E.U. Habitats Directive and of a population of *Petalophyllum ralfsii*, a species listed on Annex II of this Directive. Additionally, the site is of significance for the nationally important populations of Common Scoter and Ringed Plover that use it.”*

[Qualifying Interests](#)

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

[Linkage to Bridges](#)

KY-N70-039.00 Waterville Bridge within Ballinskelligs Bay & Inny Estuary SAC (000335).

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

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

Qualifying Interests

- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- European dry heaths [4030]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Calaminarian grasslands of the *Violetalia calaminariae* [6130]
- Submerged or partially submerged sea caves [8330]
- *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

KY-N70-056.00 Assroe Bridge is located 200m upstream of Kenmare River SAC (002158) while KY-N71-012.00 Sahaleen Bridge is located 3.5km upstream and KY-N71-017.50 Derrynacoulagh Bridge is located 9km upstream.

5.3. Description of the Special Protection Areas

5.3.1. Clonakilty Bay SPA

Site Overview

“Intertidal sand and mud flats occupy the majority of the site area and these provide the main food resource for the wintering waterfowl. Sand flats dominate the intertidal area, although mud flats occur at the sheltered upper end of the inlets. The vegetation consists of algal mats (Ulva spp.), with brown seaweeds (Fucus spp.) occurring where the shore is rocky. The invasive Common Cord-grass (Spartina anglica) occurs in places. The intertidal flats have a typical diversity of macroinvertebrates, including Lugworm (Arenicola marina), Peppery Furrow-shell (Scrobicularia plana), Ragworm (Hediste diversicolor), the marine bristle worms Nephtys hombergii and N. cirrosa, Laver Spire-shell (Hydrobia ulvae) and Common Cockle (Cerastoderma edule).

The Cloheen Strand Intake wetland contains a fine range of habitats from saline lagoons, to brackish grasslands, open freshwater marsh and wet grassland. This area provides the main roosting area for birds at high tide. Birds also roost elsewhere above the shoreline and on the sandy beach associated with the dune system at Inchydoney Island.

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

Qualifying Interests

- Shelduck (*Tadorna tadorna*) [A048]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Curlew (*Numenius arquata*) [A160]
- Wetland and Waterbirds [A999]

Linkage to Bridges

CC-N71-031.00 Clarke Street Bridge is located within Clonakilty Bay SPA.

5.3.2. 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 Poulnasherry Bay. The site has vast expanses of intertidal flats. The main macro-invertebrate community is a Macoma-Scrobicularia-Nereis community which provides a rich food resource for the wintering birds. Eelgrass (Zostera spp.) is present in places. The intertidal flats are often fringed with salt marsh vegetation, areas which provide important high tide roost sites for the birds. In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as Phragmites australis and Scirpus spp. Spartina anglica is frequent in parts.

This is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. It has internationally important populations of Calidris alpina,

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

Qualifying Interests

- Cormorant (*Phalacrocorax carbo*) [A017]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Pintail (*Anas acuta*) [A054]
- Shoveler (*Anas clypeata*) [A056]
- Scaup (*Aythya marila*) [A062]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Knot (*Calidris canutus*) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Wetland and Waterbirds [A999]

Linkage to Bridges

LC-N69-011.00 Ferry Bridge is located within River Shannon and River Fergus Estuaries SPA (004077). CL-N67-007.00 Lisdeen Bridge is located 2.18km upstream, CL-N68-004.00 Liscasey Bridge West is located 10.8km upstream, LC-N24-005.00 Tullabeg Bridge is located 40km upstream, and LC-N69-005.00 Rincullia Bridge is located 300m upstream.

5.3.3. 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]

Linkage to Bridges

KY-N70-003.00 Kilfeighny North Bridge is located 4.5km upstream of Tralee Bay Complex SPA (004188). KY-N70-004.00 Caherleen Bridge is located 6km upstream and KY-N86-014.00 The Red Bridge is located 200m upstream.

5.3.4. 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. *Pyrrhocorax pyrrhocorax* 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 (*Pyrrhocorax pyrrhocorax*) [A346]
- Wetland and Waterbirds [A999]

Linkage to Bridges

KY-N70-015.00 Caragh Bridge is located within Castlemaine Harbour SPA (004029). KY-N70-012.00 Laune Bridge is located 1.7km upstream and KY-N70-019.00 Kilnabrack Upper Bridge is located 1.8km upstream.

5.3.5. 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]

Linkage to Bridges

WC-N25-016.00 Knockahavaun Bridge is located 1.1km upstream of Dungarvan Harbour SPA (004032).

5.3.6. 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]

Linkage to Bridges

CC-N72-033.00 Downey’s Bridge is located 1.8km upstream of Blackwater Estuary SPA (004028).

5.4. Conservation Objectives

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

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

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

Favourable conservation status of a habitat is achieved when: -

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

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

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

Table 5.2 displays links and citations to Conservation Objectives documents for each SAC for which site-specific objectives have been assigned. These were considered in the preparation of this report and assessment of effects of proposed works on SACs.

Table 5-2 Conservation Objectives documents reviewed for information regarding site-specific conservation objectives of SACs.

| SAC | Link to report | Citation |
|---|---|--|
| Blackwater River (Cork/Waterford) SAC (002170) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002170.pdf | NPWS (2012). Conservation Objectives: Blackwater River (Cork/Waterford) SAC 002170. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Glengarriff Harbour & Woodland SAC (000090) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000090.pdf | NPWS (2015). Conservation Objectives: Glengarriff Harbour and Woodland SAC 000090. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Clonakilty Bay SAC (000091) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000091.pdf | NPWS (2014). Conservation Objectives: Clonakilty Bay SAC 000091. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Lower River Shannon SAC (002165) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf | NPWS (2012). Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Castlemaine Harbour SAC (000343) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000343.pdf | NPWS (2011). Conservation Objectives: Castlemaine Harbour SAC 000343. Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Tralee Bay and Magharees Peninsula, West to Cloghane (002070) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002070.pdf | NPWS (2014). Conservation Objectives: Tralee Bay and Magharees Peninsula, West to Cloghane SAC 002070. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Valencia Harbour / Portmagee Channel SAC (002262) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002262.pdf | NPWS (2012). Conservation Objectives: Valencia Harbour/Portmagee Channel SAC 002262. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Ballinskelligs Bay & Inny Estuary SAC (000335) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000335.pdf | NPWS (2014). Conservation Objectives: Ballinskelligs Bay and Inny Estuary SAC 000335. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Kenmare River SAC (002158) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf | NPWS (2013). Conservation Objectives: Kenmare River SAC 002158. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |

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

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

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

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

Table 5.3 displays links and citations to Conservation Objectives documents for each SPA for which site-specific objectives have been assigned. These were considered in the preparation of this report and assessment of effects of proposed works on SPAs.

Table 5-3 Conservation Objectives documents reviewed for information regarding site-specific conservation objectives of SPAs.

| SPA | Link to report | Citation |
|---|---|--|
| Clonakilty Bay SPA (004081) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004081.pdf | NPWS (2014). Conservation Objectives: Clonakilty Bay SPA 004081. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| River Shannon and River Fergus Estuaries SPA (004077) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf | NPWS (2012). Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Tralee Bay Complex SPA (004188) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004188.pdf | NPWS (2014). Conservation Objectives: Tralee Bay Complex SPA 004188. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Castlemaine Harbour SPA (004029) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004029.pdf | NPWS (2011). Conservation Objectives: Castlemaine Harbour SPA 004029. Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Dungarvan Harbour SPA (004032) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004032.pdf | NPWS (2012). Conservation Objectives: Dungarvan Harbour SPA 004032. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |
| Blackwater Estuary SPA (004028) | https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004028.pdf | NPWS (2012). Conservation Objectives: Blackwater Estuary SPA 004028. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. |

5.5. Identification of Potential Impacts on European sites

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

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

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

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

5.5.1. '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.

5.5.2. Identification of potential impacts

5.5.2.1. Potential Impacts of proposed works

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

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

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

Loss or modification of habitat

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

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

Disturbance to key species

Key species are defined as those listed on the Annexes of the EU Habitats Directive and Birds Directive for which sites are designated. Disturbance to a species can be direct through the physical disturbance of that species such as access to the watercourse and erecting scaffolding.

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

Habitat/ species fragmentation

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

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

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

- CL-N67-007.00
- CC-N71-002.00
- KY-N70-019.00
- KY-N86-014.00
- WC-N25-016.00

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.

5.5.3. 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 1-1 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 | |

Five work items listed in Table 5-4 above, which have been identified as having a potential to impact, are not part of the Year 3 work order list. These are; Maintenance of gabion; High-pressure hosing of surface; Establish base protection; Maintenance of base protection; Removal of graffiti. Of the remaining works listed above, nine were found to have potential to negatively impact a SAC and/or SPA and are listed in Table 5-5.

Table 5-5 Work items identified in Year 3 works orders as having negative impacts to be considered further.

| Work Item | Potential Impacts of proposed works |
|------------------------------------|---|
| 01 Clearance of watercourse | Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality |
| 03 Removal of vegetation | Loss or modification of habitat Disturbance to key species Reduction in species diversity |
| 04 Scour repairs | Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality |
| 45 Maintenance of slope protection | Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality |
| 47 Reshaping | Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality |
| 50 Concrete repairs | Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality |
| 55 Repair of parapet | Disturbance to key species 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 |

5.5.4. 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 28 bridges.

Table 5-7 details the potential impacts posed at a bridge and the QIs potentially affected. The geographic location of the bridge, proposed works, nature of connectivity to a European site, and the site's structure, function and conservation objectives were considered when determining the potential impacts and QIs within the zone of influence (Zoi).

5.5.5. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5.5.6. 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) - Loss or modification of habitat | Annex II species |
| | Surface water | - Indirect reductions in species density - Indirect impacts to surface water quality (Disturbance to key species) | Surface water dependent Annex II species and Annex I habitats |
| 04 Scour repairs | Land & Air | - Direct physical disturbance of aquatic species (Disturbance to key species) | Annex II species |
| | Surface water | - Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality | Surface water dependent Annex II species and Annex I habitats |
| 45 Maintenance of slope protection | Land & Air | - Direct physical disturbance of aquatic species (Disturbance to key species) | Annex II species |
| | Surface water | - Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality | Surface water dependent Annex II species and Annex I habitats |
| 47 Reshaping | 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 |

| Work Item | Pathway | Potential Impacts | Receptor |
|-----------------------|---------------|--|---|
| 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 |
| 55 Repair of parapet | 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 | Surface water dependent Annex II species and Annex I habitats |
| 60 Masonry repointing | Land & Air | - Direct physical disturbance of aquatic species (Disturbance to key species) | Annex II species |
| | Surface water | - Indirect impacts to surface water quality | Surface water dependent Annex II species and Annex I habitats |
| 61 Masonry repairs | Land & Air | - Direct physical disturbance of aquatic species (Disturbance to key species) | Annex II species |
| | Surface water | - Indirect impacts to surface water quality | Surface water dependent Annex II species and Annex I habitats |

Table 5-7 Potential Impacts to European sites at each bridge.

| County | Structure ID | Structure Name | Loss or modification of habitat | Physical disturbance of species | Reduction in species density | Deterioration in surface water quality | QIs within ZoI (via direct or indirect impacts) | Rationale |
|-------------|---------------|----------------------|---------------------------------|---------------------------------|------------------------------|--|---|---|
| Clare | CL-N67-007.00 | Lisdeen Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; large shallow inlets and bays; reefs; lamprey; salmon; common bottlenose dolphin; otter; wetland SCIs of the SPA | Potential indirect impacts. Lower River Shannon SAC ca. 800km d/s of bridge. River Shannon and River Fergus Estuaries SPA ca. 2.18km d/s of bridge. FWPM are not located at or d/s of the bridge. |
| Clare | CL-N68-004.00 | Liscasey Bridge West | N | Y | Y | Y | Lamprey; salmon; otter; wetland SCIs of the SPA | Potential indirect impacts. Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA ca. 10.8km d/s of bridge. FWPM are not located at or d/s of the bridge. |
| Cork County | CC-N71-002.00 | Crossterry Bridge | Y | Y | Y | Y | Otter | Potential indirect impacts. Within Glengarriff Harbour And Woodland SAC |
| Cork County | CC-N71-003.00 | Reenmeen Bridge | N | Y | N | Y | Otter | Potential indirect impacts. Within Glengarriff Harbour And Woodland SAC |
| Cork County | CC-N71-031.00 | Clarke Street Bridge | Y | N | N | Y | Mudflats and sandflats; wetland SCIs of the SPA | Potential indirect impacts. Within Clonakilty Bay SAC/SPA |
| Cork County | CC-N72-001.00 | Duncannon Bridge | Y | Y | Y | Y | FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation | Potential indirect impacts. Within Blackwater River SAC. FWPM located d/s on main channel of Blackwater river |
| Cork County | CC-N72-027.00 | Carrig Bridge | Y | Y | Y | Y | FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation | Potential indirect impacts. Within Blackwater River SAC. FWPM located d/s on main channel of Blackwater river |
| Cork County | CC-N72-033.00 | Downey's Bridge | N | Y | N | Y | Crayfish, lamprey species, salmon, otter, floating river vegetation. | Potential indirect impacts. Blackwater River SAC located 1.8km d/s. FWPM are not located at or d/s of the bridge. |

| County | Structure ID | Structure Name | Loss or modification of habitat | Physical disturbance of species | Reduction in species density | Deterioration in surface water quality | QIs within ZoI (via direct or indirect impacts) | Rationale |
|-------------|---------------|-------------------------|---------------------------------|---------------------------------|------------------------------|--|--|---|
| Cork County | CC-N73-005.00 | Ballynamona Bridge | Y | Y | Y | Y | FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation | Potential indirect impacts. Within Blackwater River SAC. FWPM located d/s on main channel of Blackwater river |
| Kerry | KY-N69-017.00 | Listowel Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; large shallow inlets and bays; reefs; FWPM; lamprey; salmon; common bottlenose dolphin; otter | Potential indirect impacts. Located within Lower River Shannon SAC. Some suitable FWPM habitat d/s of bridge. |
| Kerry | KY-N69-020.00 | River Galey Bridge | Y | Y | N | Y | Estuaries; mudflats and sandflats; lamprey; salmon; common bottlenose dolphin; otter | Potential indirect impacts. Located within Lower River Shannon SAC. FWPM are not located at or d/s of the bridge. |
| Kerry | KY-N69-021.00 | Galey Bridge Culvert | Y | Y | N | Y | Estuaries; mudflats and sandflats; lamprey; salmon; common bottlenose dolphin; otter | Potential indirect impacts. Lower River Shannon SAC located 100m d/s. FWPM are not located at or d/s of the bridge. |
| Kerry | KY-N70-003.00 | Kilfeighny North Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 4.6km d/s of bridge Tralee Bay Complex SPA ca. 4.5km d/s of bridge |
| Kerry | KY-N70-004.00 | Caherleen Bridge | Y | Y | N | Y | Estuaries; mudflats and sandflats; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Within Slieve Mish Mountains SAC but ultimate receiving waterbody is Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 6km d/s of bridge. Tralee Bay Complex SPA ca. 6km d/s of bridge |
| Kerry | KY-N70-012.00 | Laune Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; lamprey; salmon; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Located within Castlemaine Harbour SAC. Castlemaine Harbour SPA ca. 1.7km d/s of bridge |
| Kerry | KY-N70-015.00 | Caragh Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; lamprey; salmon; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Located within Castlemaine Harbour SAC/SPA. |

| County | Structure ID | Structure Name | Loss or modification of habitat | Physical disturbance of species | Reduction in species density | Deterioration in surface water quality | QIs within ZoI (via direct or indirect impacts) | Rationale |
|----------|---------------|-------------------------|---------------------------------|---------------------------------|------------------------------|--|--|---|
| Kerry | KY-N70-019.00 | Kilnabrack Upper Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; lamprey; salmon; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Located within Castlemaine Harbour SAC/SPA. |
| Kerry | KY-N70-034.00 | Oghermong Bridge | Y | Y | Y | Y | Large shallow inlets and bays; mudflats and sandflats; reefs | Potential indirect impacts. Valencia Harbour/Portmagee Channel SAC ca. 1.3km d/s of bridge. |
| Kerry | KY-N70-039.00 | Waterville Bridge | Y | N | N | Y | Salt meadows | Potential indirect impacts. Located within Ballinskelligs Bay And Inny Estuary SAC. |
| Kerry | KY-N70-056.00 | Assroe Bridge | Y | Y | Y | Y | Large shallow inlets and bays; reefs; otter; harbour seal | Potential indirect impacts. Kenmare River SAC ca. 200m d/s of bridge |
| Kerry | KY-N71-012.00 | Sahaleen Bridge | Y | Y | Y | Y | Large shallow inlets and bays; reefs; otter; harbour seal | Potential indirect impacts. Kenmare River SAC ca. 3.5km d/s of bridge. FWPM not QI of SAC |
| Kerry | KY-N71-017.50 | Derrynacoulagh Bridge | Y | Y | Y | Y | Estuaries; large shallow inlets and bays; mudflats and sandflats; reefs; otter | Potential indirect impacts. Kenmare River SAC ca. 3.5km d/s of bridge. FWPM not QI of SAC |
| Kerry | KY-N86-014.00 | The Red Bridge | Y | Y | Y | Y | Large shallow inlets and bays; reefs; otter; harbour seal; SCIs of SPA associated with wetlands | Potential indirect impacts. Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 250m d/s of bridge. Tralee Bay Complex SPA ca. 0.2km d/s of bridge |
| Limerick | LC-N24-005.00 | Tullabeg Bridge | N | Y | N | Y | Floating river vegetation; lamprey species; otter; salmon | Potential indirect impacts. Lower River Shannon SAC ca. 4.3km d/s of bridge. FWPM are not located at or d/s of the bridge. |
| Limerick | LC-N69-005.00 | Rincullia Bridge | Y | Y | Y | Y | Estuaries; mudflats and sandflats; large shallow inlets and bays; reefs; lamprey; salmon; common bottlenose dolphin; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Located within Lower River Shannon SAC. River Shannon and River Fergus Estuaries SPA ca. 300m d/s of bridge. |

| County | Structure ID | Structure Name | Loss or modification of habitat | Physical disturbance of species | Reduction in species density | Deterioration in surface water quality | QIs within ZoI (via direct or indirect impacts) | Rationale |
|-----------|---------------|---------------------|---------------------------------|---------------------------------|------------------------------|--|--|---|
| Limerick | LC-N69-011.00 | Ferry Bridge | N | Y | N | Y | Estuaries; mudflats and sandflats; large shallow inlets and bays; reefs; lamprey; salmon; common bottlenose dolphin; otter; SCIs of SPA associated with wetlands | Potential indirect impacts. Located within Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA |
| Waterford | WC-N25-016.00 | Knockahavaun Bridge | Y | Y | Y | Y | SCIs of SPA associated with wetlands | Potential indirect impacts. Dungarvan Harbour SPA ca. 1.1km d/s of bridge. |
| Waterford | WC-N25-022.00 | Gorteen Bridge | Y | Y | Y | Y | FWPM, crayfish, lamprey species, salmon, otter, floating river vegetation | Potential indirect impacts. Within Blackwater River SAC. FWPM located ca. 1.7km d/s of bridge. |

Table 5-8 [REDACTED]

| | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |

| | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| | | | | | | | | | | [REDACTED] |
| | | | | | | | | | | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |

5.6. In-combination Impacts

Local Authorities prepare County and Development Plans and Local Action Plans that set out policies and objectives for the development of the County during the period of the Plan. The Plans seek to secure the sustainable development and improvement of economic, environmental, cultural and social assets of the counties. These Plans 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 European sites due to the incorporation of mitigation measures built into the Plans as a result of the AA process.

The Office of Public Works (OPW) has 16 arterial drainage and embankment schemes in the Munster Region. A number of bridges are located within the same WFD catchment as the schemes but do not have hydrologically connectivity with the schemes. Seven bridges fall either within or are located upstream of a scheme. Four bridges are within a scheme. 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 European sites and their designated habitats and species. Mitigation measures are set out in the SEA and NIS⁶, which require further project-specific assessments to be carried out. Thus, given the nature and scale of the proposed routine maintenance bridge works, in-combination impacts with the OPW drainage programme are not anticipated.

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

| Bridge Code | Location relative to OPW scheme | OPW scheme (County) |
|---------------|---------------------------------|---------------------------|
| KY-N69-017.00 | Within | Feale |
| KY-N69-020.00 | Within | Feale |
| KY-N69-021.00 | Within | Feale |
| KY-N70-012.00 | Upstream | Maine |
| LC-N24-005.00 | Upstream | Mulkear Cappamore |
| LC-N69-005.00 | Upstream | Shannon Embankments South |
| LC-N69-011.00 | Within | Maigne Outfall |

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 willow⁷. 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

⁶ <https://www.opw.ie/en/flood-risk-management/operations/environmentalactivities/arterial-drainage-maintenance-sea-2018-20121/>

⁷ Notifiable Actions <https://www.npws.ie/farmers-and-landowners/notifiable-actions>

Development) Regulations 2011. Therefore, the in-combination effects of agricultural operations and the proposed culvert works are not likely to be significant.

Projects that have been granted planning permission in the vicinity of the structures in this assessment are located along the adjacent national and local roads. These generally include retention of existing developments, extensions to domestic dwellings, or the construction of new domestic dwellings or extensions to such dwellings. Regarding potential impacts to water quality, these projects will have to comply with the EPA’s Code of Practice 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 Region⁸. 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, in-combination impacts are not anticipated.

Table 5-10 TII Road Schemes in the Munster Region.

| Road Scheme | Region | Phase |
|-------------------------------------|------------|---|
| N11 Oilgate to Rosslare | South East | Phase 2 - Options Selection |
| N21 Abbeyfeale Relief Road | South West | Phase 2 - Options Selection |
| N21 Newcastlewest Relief Road | South West | Phase 2 - Options Selection |
| N22 Farranfore to Killarney | South West | Phase 2 - Options Selection |
| N24 Cahir to Limerick Junction | South West | Phase 2 - Options Selection |
| N24 Cahir to Waterford | South East | Phase 2 - Options Selection |
| N25 Carrigtwohill to Middleton | South West | Phase 2 - Options Selection |
| N20 Cork to Limerick | South West | Phase 2 - Options Selection |
| N21/N69 Limerick to Adare to Foynes | South West | Phase 4 - Statutory Processes |
| N72/N73 Mallow Relief Road | South West | Phase 2 - Options Selection |
| N28 Cork to Ringaskiddy | South West | Phase 4 - Statutory Process - Judicial Review |
| N69 Listowel Bypass | South West | Phase 5 - Enabling and Procurement |
| N8/N25 Dunkettle Interchange | South West | Phase 6 - Construction and Implementation |
| N22 Ballyvourney to Macroom | South West | Phase 6 - Construction and Implementation |
| N72 Stagmount | South West | Phase 6 - Construction and Implementation |

⁸ TII Road Scheme Activity MapViewer <https://www.tii.ie/projects/road-schemes/#>

5.7. Mitigation Measures

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

5.7.1. Clare

5.7.1.1. Lisdeen Bridge [CL-N67-007.00]

The Lisdeen Bridge is a single span in-situ reinforced concrete slab bridge. The span is 2.65m. The substructure consists of 2 masonry and concrete abutments. There are masonry parapets on both sides of the carriageway. The structure is located 800m upstream of Lower River Shannon SAC and located 2.18km upstream of River Shannon and River Fergus Estuaries SPA. Plate 5-1 shows the north elevation.



Plate 5-1 Lisdeen Bridge.

The qualifying interests of Lower River Shannon SAC and River Shannon and Fergus Estuaries SPA are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, large shallow inlets and bays, reefs, lamprey, salmon, common bottlenose dolphin, otter and wetland habitats and birds for which the SPA is designated. The potential impacts to the SAC/SPA are the loss or modification of habitat, physical disturbance of species, deterioration of surface water quality and reduction in species density.

There are no records for freshwater pearl mussel in the vicinity or downstream of the bridge. Freshwater pearl mussel are a qualifying interest of the SAC but are located on watercourses that are not hydrologically linked to the Lisluinaghan River.

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 |
|-----------------------|---|--|
| Riverbed | Scour repairs at outlet required. (3m ²). | Screened in – will require instream access. |
| Deck/slab/arch barrel | 3mm circumferential crack located 1.5m in from south end to be repointed. (1m ²). | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

Scour Repairs

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

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Lower River Shannon SAC or River Shannon and Fergus Estuaries SPA.

5.7.1.2. Liscasey Bridge West [CL-N68-004.00]

The Liscasey Bridge is a 2-span stone masonry arch bridge. The span lengths are 1.34m and 1.62m. The substructure consists of 2 masonry abutments and a masonry pier. There are masonry parapets on both sides of the carriageway. The structure is located 10.8km upstream of Lower River Shannon SAC and located 10.8km upstream of River Shannon and Fergus Estuaries SPA. Plate 5-2 shows the south elevation.



Plate 5-2 Liscasey Bridge West.

The qualifying interests of Lower River Shannon SAC and River Shannon and Fergus Estuaries SPA are listed in Section 5.2. The qualifying interests that could be impacted are lamprey, salmon, otter and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

There are no records for freshwater pearl mussel in the vicinity or downstream of the bridge. Freshwater pearl mussel are a qualifying interest of the SAC but are located on watercourses that are not hydrologically linked to the Liscasey River.

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 |
|------------------------|---|---|
| Riverbed | Scour repairs to riverbed at downstream end to prevent undermining. (10m ²) | Screened in – will require instream access. |
| Embankments/Revetments | Clearance of 1m strip of vegetation growth away from structure on all embankments. (15m ²)" | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Piers | Open joints and loose stones along pier to be repointed with pinning stones to piers. (4m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Deck/slab/arch barrel | Circumferential crack on north side of both spans roughly 50mm-100mm wide to be repointed. Loose stones at the crown to be repointed, 8m ² . Local areas of repointing required (8m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Piers | Masonry repairs to pier at downstream end at location of scour (1m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Deck/slab/arch barrel | Isolated sections of missing stones on both spans to be repaired, 0.4m ³ . (0.4m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

Scour Repairs

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

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

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

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

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. Biosecurity protocols are outlined in Section 2.1.

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 Lower River Shannon SAC or River Shannon and Fergus Estuaries SPA.

5.7.2. Cork

5.7.2.1. Crossterry Bridge [CC-N71-002.00]

Crossterry Bridge is a single span masonry arch bridge with a span of 5.27m. There are masonry parapets along the carriageway. The bridge carries the N71 over the Drumaclarig River and is located within the Glengarriff Harbour And Woodland SAC. Plate 5-3 shows the masonry face of the bridge.



Plate 5-3 Crossterry Bridge.

The qualifying interests of Glengarriff Harbour And Woodland SAC are listed in Section 5.2. Other are qualifying interests that could be impacted. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, deterioration of surface water quality and reduction in species density.

There are no records for freshwater pearl mussel in the vicinity of the 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 |
|------------------|---|--|
| Riverbed | Scour at SE corner to be repaired by reinstating missing masonry. (1m ²). | Screened in – will require instream access. |
| Abutments | Local repointing to open joints required along the base of the abutments. (3m ²). | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for

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

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

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

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

Scour Repairs

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

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

5.7.2.2. Reenmeen Bridge [CC-N71-003.00]

Reenmeen Bridge is a double span masonry arch bridge with a concrete slab secondary structure. The span of the bridge is 18.4m in width. Masonry parapets border the carriageway. The bridge carries the N71 over the Reenmeen West River and is located within the Glengarriff Harbour And Woodland SAC. Plate 5.4 displays the bridge and concrete slab structure.



Plate 5-4 Reenmeen Bridge.

The qualifying interests of Glengarriff Harbour And Woodland SAC are listed in Section 5.2. Otter are qualifying interests that could be impacted. The potential impacts to the SAC are the physical disturbance of species and deterioration of surface water quality.

There are no records for freshwater pearl mussel in the vicinity or downstream of the bridge.

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 |
|-----------------------|--|--|
| Deck/slab/arch barrel | Masonry repointing to areas of open joints particularly in span 4. (10m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for

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

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

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Glengarriff Harbour And Woodland SAC.

5.7.2.3. Clarke Street Bridge [CC-N71-031.00]

Clark Street Bridge is a triple span masonry arch and concrete slab structure. It has a span of 10.37m in width. Masonry parapets line the road. The bridge carries the N71 over the Clonakilty Stream. It is located within the Clonakilty Bay SAC and SPA. Plate 5.5 displays the masonry face of the bridge.



Plate 5-5 Clarke Street Bridge.

The qualifying interests of Clonakilty Bay SAC and SPA are listed in Section 5.2. The qualifying interests that could be impacted are mudflats and sandflats and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the loss or modification of habitat and deterioration of surface water quality.

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 |
|-----------------------|---|--|
| Abutments | Areas of repointing required to abutment throughout (20m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Deck/slab/arch barrel | Areas of repointing to open joints required. (1 m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

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 Clonakilty Bay SAC and SPA.

5.7.2.4. 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 5-6 shows the north elevation.



Plate 5-6 Duncannon Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are [redacted] crayfish, 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.

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 |
|------------------------|---|--|
| Riverbed | There is scour at the SE corner measuring 300mm long, where a foundation stone is missing (1m ²). | Screened in – will require instream access. |
| Embankments/Revetments | The loose stone should be reinstated. (1m ²). | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Scour Repairs

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

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

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

The Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether translocation of crayfish or electrofishing to remove fish from between the upstream and downstream sandbags is required. Translocation of crayfish will be conducted under licence from the NPWS. IFI issue licences for and liaises in carrying out electrofishing. 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 from the appropriate body as outlined above.

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

Masonry Repointing

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

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

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

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

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 Blackwater River (Cork/Waterford) SAC.

5.7.2.5. Carrig Bridge [CC-N72-027.00]

Carrig bridge is a single span masonry arch bridge with concrete slab secondary structure with a span of 4.71m. Masonry parapets are present along the roadsides. The bridge carries the N72 across the North Caherduggan River, within the Blackwater River (Cork/Waterford) SAC. Plate 5-7 shows the masonry and concrete slab structure of the bridge.



Plate 5-7 Carrig Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are [redacted] crayfish, 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.

[redacted]

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 |
|------------------------|--|---|
| Embankments/Revetments | Remove vegetation from embankments to maintain 1m clearance around structure. (200m ²) | 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 | Tree stump on wingwall to be cut back flush with masonry and cross cut and treated to prevent regrowth. (10m ²) | Screened in - removal of vegetation may require instream access and the erection of scaffolding. |
| Wing/Spandrel/Retaining Walls | Masonry repointing at the base of the wingwalls required. (4m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Abutments | Masonry repointing along base of both abutments. (10m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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.

[REDACTED] an additional barrier will be temporarily installed at the edge of the embankment to reduce potential movement of bankside soil into the water body.

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

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

5.7.2.6. Downey's Bridge [CC-N72-033.00]

Downey's Bridge is a single span masonry arch structure with a span of 7.3m in width. The structure has masonry parapets either side of the road. The bridge carries the N72 over the Kilcoran North River. Blackwater River (Cork/Waterford) SAC is located 1.8km downstream while the Blackwater Estuary SPA is 31km downstream of the bridge. Plate 5-8 shows the masonry face of the bridge.

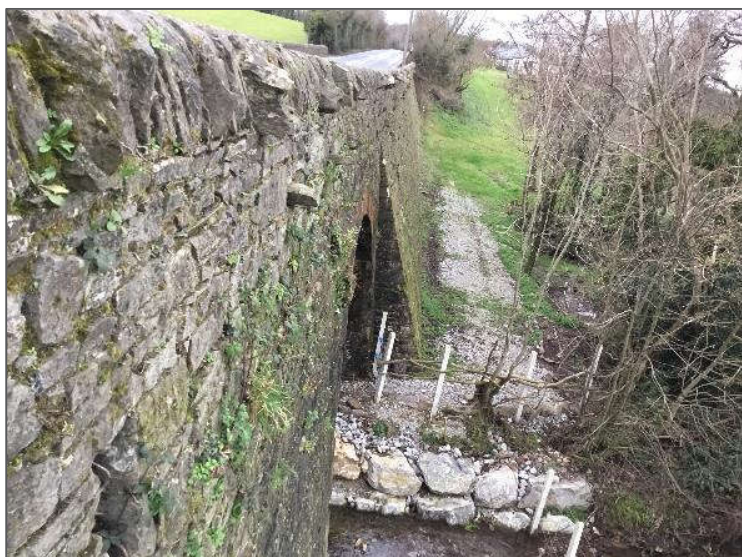


Plate 5-8 Downey's Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are crayfish, lamprey species, salmon, otter and floating river vegetation. The potential impacts to the SAC are the physical disturbance of species and deterioration of surface water quality.

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 |
|-------------------------------|---|--|
| Wing/Spandrel/Retaining Walls | Repointing to wingwalls following vegetation removal. (80m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

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

5.7.2.7. 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 pumphouse for main water supply built on southeast corner of the bridge. The structure is within Blackwater River (Cork/Waterford) SAC. Plate 5-9 shows the east elevation.



Plate 5-9 Ballynamona Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are [redacted] crayfish, 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 [redacted] records for freshwater pearl mussel in the vicinity of the 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 |
|-----------------------|---|--|
| Deck/slab/arch barrel | Repointing to local open joints. (5m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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

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

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Blackwater River (Cork/Waterford) SAC.

5.7.3. Kerry

5.7.3.1. Listowel Bridge [KY-N69-017.00]

The Listowel Bridge is a 5-span stone masonry arch bridge. The span lengths are 15.2m each. The substructure consists of 2 masonry abutments and 4 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Lower River Shannon SAC. Plate 5-10 shows the west elevation.



Plate 5-10 Listowel Bridge.

The qualifying interests of Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, large shallow inlets and bays, reefs, [REDACTED] lamprey, salmon, common bottlenose dolphin 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.

[REDACTED]

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 |
|-------------------------------|--|---|
| Embankments/Revetments | Vegetation should be cut back. (20m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Bridge surface | Clear drainage units along both edges of the carriageway (200m) | Screened out |
| Wing/Spandrel/Retaining Walls | Following extensive devegetation of the wingwalls located over the embankment, repointing will be required. Full extent to be determined following removal however 100m ² is allowed. Remeasure following (100m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

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 Lower River Shannon SAC.

5.7.3.2. River Galey Bridge [KY-N69-020.00]

The River Galey Bridge is a 3-span reinforced concrete slab bridge. The span lengths are 8.21m, 8.12m and 8.75m. The substructure consists of 2 masonry and concrete abutments and 2 masonry and concrete piers. There are masonry parapets on both sides of the carriageway. The structure is within the Lower River Shannon SAC. Plate 5-11 shows the east elevation.



Plate 5-11 River Galey Bridge.

The qualifying interests of Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, lamprey, salmon, common bottlenose dolphin and otter. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species and deterioration of surface water quality.

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 |
|-------------------------------|--|--|
| Wing/Spandrel/Retaining Walls | Repointing of wingwalls following removal of vegetation. (10m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

In some locations repointing over water will be possible on foot; where the mason cannot reach the area of repointing from the ground, work platforms (scaffolds, ladders and underbridge inspection units) will be used for access. All work platforms must also be covered by geotextile filter layers (or equivalent catch system) to prevent mortar or defective concrete falling through the works platform into the watercourse and to allow for any waste

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

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

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

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

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 Lower River Shannon SAC.

5.7.3.3. Galey Bridge Culvert [KY-N69-021.00]

Galey Bridge Culvert is a single span masonry arch and concrete slab culvert with a total span of 2.46. The bridge carries the N69 over a non-EPA drain to the Galey River. The Lower River Shannon SAC is located 100m downstream of the bridge. Plate 5-12 shows the face of the bridge.



Plate 5-12 Galey Bridge Culvert.

The qualifying interests of Lower River Shannon SAC are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, lamprey, salmon, common bottlenose dolphin and otter. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species and deterioration of surface water quality.

There are no records for freshwater pearl mussel in the vicinity, or downstream, of the bridge.

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 |
|------------------|---|--|
| Abutments | Repoint abutments following removal of vegetation. (3m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

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 Lower River Shannon SAC.

5.7.3.4. Kilfeighny North Bridge [KY-N70-003.00]

The Kilfeighny North Bridge is a 2-span stone masonry arch bridge. The span lengths are 3.4m. The substructure consists of 2 buried abutments. There are masonry parapets on both sides of the carriageway. The structure is located 4.6km upstream of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and located 4.5km upstream of the Tralee Bay Complex SPA. Plate 5-13 shows the east elevation.



Plate 5-13 Kilfeighny North Bridge.

The qualifying interests of Tralee Bay and Magharees Peninsula, West to 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, otter and wetland birds and habitats for which the SPA is designated. The potential impacts to the SAC/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 5-23 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 |
|------------------------|--|--|
| Riverbed | Debris and vegetation to be cleared from riverbed. (50m ²) | Screened in – will require instream access |
| Riverbed | There is scour to the bed material immediately in front of the pier at the east end (6m ²) | Screened in – will require instream access |
| Embankments/Revetments | Removal of vegetation required from all embankments within 1m of bridge structure (20m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Clearance of watercourse (Debris Removal)

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

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

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

Scour Repairs

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

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment

and allowed to filter through the vegetation. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

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

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. Biosecurity protocols are outlined in Section 2.1.

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 Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA.

5.7.3.5. Caherleen Bridge [KY-N70-004.00]

The Caherleen Bridge is a single span bridge. It is a masonry arch in the west side, and it has been widened in the east side using a box culvert. The span is 3.59m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is within Slieve Mish Mountains SAC, but ultimate receiving waterbody is Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 6km downstream of the bridge along with Tralee Bay Complex SPA. Plate 5-14 shows the west elevation.



Plate 5-14 Caherleen Bridge.

The qualifying interests of Slieve Mish Mountains SAC, Tralee Bay And Magharees Peninsula, West To 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, otter and wetland birds and habitats for which the SPA is designated. The potential impacts to the SAC/SPA are the loss or modification of habitat, physical disturbance of species, and deterioration of surface water quality.

There are no records for freshwater pearl mussel in the vicinity, or downstream, of the bridge.

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 |
|-------------------------------|--|---|
| Embankments/Revetments | Clearance of 1m strip of vegetation away from structure on all embankments. Japanese knotweed signs present. (32m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Wing/Spandrel/Retaining Walls | 9m ² removal of vegetation over embankments and 3m ² over water. (12m ²) | Screened in - removal of vegetation may require instream access and the erection of scaffolding. |
| Wing/Spandrel/Retaining | Walls 9m ² repointing over embankments (9m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Deck/slab/arch barrel | Open joints on arch to be repointed following vegetation removal (9m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

application of biosecurity measures must also be applied to any work platforms used instream. Biosecurity protocols are outlined in Section 2.1.

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Slieve Mish Mountains SAC, Tralee Bay And Magharees Peninsula, West To Cloghane SAC and Tralee Bay Complex SPA.

5.7.3.6. Laune Bridge [KY-N70-012.00]

The Laune Bridge is an 8-span stone masonry arch bridge. The span lengths vary between 10.2m and 10.55m. The substructure consists of 2 masonry abutments and 7 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within Castlemaine Harbour SAC and located 1.7km upstream of the Castlemaine Harbour SPA. Plate 5-15 shows the north elevation.

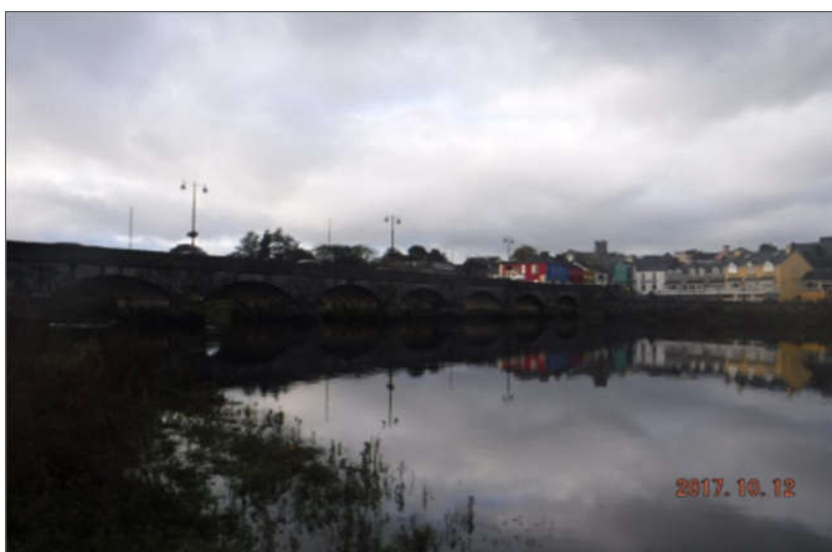


Plate 5-15 Laune Bridge.

The qualifying interests of Castlemaine Harbour SAC / SPA are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, lamprey species, otter and wetland birds and habitats for which the SPA is designated. The potential impacts to the SAC/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 5-25 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 |
|------------------------|---|---|
| Embankments/Revetments | All trees, bushes and deep rooted vegetation within 1m of structure to be removed (20m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Bridge surface | Cleaning of gullies over and on approach to structure required (10 no.) | Screened out |
| Abutments | Areas of mortar loss to square cut stones to be repointed (5m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Piers | Repoint open joints following clearance of vegetation. Cracked stone near pier 7 cutwater to be repointed. Upstream cutwaters to be repointed and local repointing to remainder of piers. (25m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Piers | Masonry repair to local loose masonry on upstream cutwaters near base and area of local undermining to pier 4 upstream cutwater (0.4m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

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

5.7.3.7. Caragh Bridge [KY-N70-015.00]

Caragh Bridge is a seven-span masonry arch bridge with a length of 41.27m. Masonry walls line each side of the carriageway. The bridge carries the N70 over the Caragh River and is located within the Castlemaine Harbour SAC and SPA. Plate 5-16 shows the east elevation.



Plate 5-16 Caragh Bridge.

The qualifying interests of Castlemaine Harbour SAC / SPA are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, lamprey species, otter and wetland birds and habitats for which the SPA is designated. The potential impacts to the SAC/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 records for freshwater pearl mussel in the vicinity, or downstream, of the bridge.

[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 |
|-----------------------|---|--|
| Deck/slab/arch barrel | Repairs to gunite layers required in spans 3, 4, 5 and 6. (40m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

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 Castlemaine Harbour SAC / SPA.

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

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

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. Biosecurity protocols are outlined in Section 2.1.

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 Castlemaine Harbour SAC / SPA.

5.7.3.9. Oghermong Bridge [KY-N70-034.00]

The Oghermong Bridge is a single span stone masonry arch bridge. The span is 7.8m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 1.3km upstream of the Valencia Harbour/Portmagee Channel SAC. Plate 5-18 shows the east elevation.



Plate 5-18 Oghermong Bridge.

The qualifying interests of Valencia Harbour/Portmagee Channel SAC are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, mudflats and sandflats, and reefs. 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 5-28 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

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

| Bridge Component | Work Element | Screening Recommendation |
|-------------------------------|---|---|
| Embankments/Revetments | All trees, bushes and deep rooted vegetation within 1m of structure to be removed (20m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Bridge surface | All debris, silt and vegetation to be removed from bridge surface edges (2 no.) | Screened out |
| Abutments | Repoint open joints following vegetation clearance (4m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Deck/slab/arch barrel | Repointing required throughout. Rake out loose joints and repoint (24m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Wing/Spandrel/Retaining Walls | Masonry repair to wing/retaining walls (12m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Deck/slab/arch barrel | Missing stone at crown to be replaced (0.3m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

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

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 Valencia Harbour/Portmagee Channel SAC.

5.7.3.10. Waterville Bridge [KY-N70-039.00]

The Waterville Bridge is a 3-span stone masonry arch bridge. The spans are of similar around 7.13m. The substructure consists of 2 masonry abutments and 2 masonry piers. There are masonry parapets on both sides of the carriageway. The structure is within the Ballinskelligs Bay and Inny Estuary SAC. Plate 2-19 shows the east elevation.



Plate 2-19 Waterville Bridge.

The qualifying interests of Ballinskelligs Bay and Inny Estuary SAC are listed in Section 5.2. The qualifying interests that could be impacted are salt marsh habitats. The potential impacts to the SAC are the loss or modification of habitat and deterioration of surface water quality.

There are no records for freshwater pearl mussel at or downstream of the 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 |
|-------------------------------|--|---|
| Embankments/Revetments | All trees, bushes and deep rooted vegetation within 1m of structure to be removed. (20m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Wing/Spandrel/Retaining Walls | Repointing to wingwalls. (60m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Bridge surface | All debris, silt and vegetation to be removed from bridge drainage gullies (4 no.) | Screened out |
| Wing/Spandrel/Retaining Walls | Repointing to wingwalls following removal of vegetation. (20m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

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

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 Ballinskelligs Bay and Inny Estuary SAC.

5.7.3.11. Assroe Bridge [KY-N70-056.00]

The Assroe Bridge is a single span stone masonry arch bridge. The span is 7.07m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 200m upstream of the Kenmare River SAC. Plate 5-20 shows the south elevation.

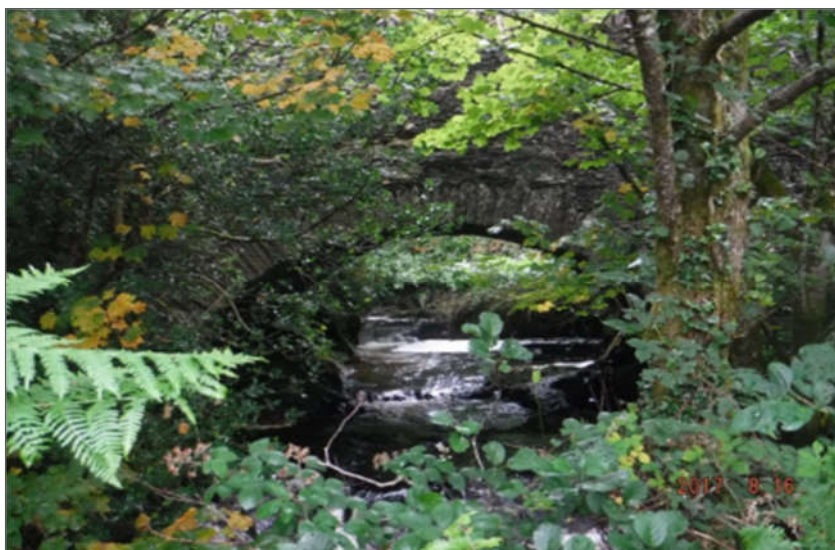


Plate 5-20 Assroe Bridge.

The qualifying interests of Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, reefs, otter and harbour seal. 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 5-30 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 |
|-------------------------|---|---|
| Parapets/Safety barrier | Removal of vegetation (30m ²) | Screened in - removal of vegetation may require instream access and the erection of scaffolding. |
| Embankments/Revetments | All trees, bushes and deep rooted vegetation within 1m of structure to be removed (60m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Piers | Removal of vegetation (10m ²) | Screened in - removal of vegetation may require instream access |
| Bridge surface | All debris, silt and vegetation to be removed from bridge drainage gullies (2 no.) | Screened out |
| Parapets/Safety barrier | Masonry repointing following removal of vegetation (30m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Abutments | Repoint open joints on both abutments at springing points (4m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

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

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 Kenmare River SAC.

5.7.3.12. Sahaleen Bridge [KY-N71-012.00]

The Sahaleen Bridge is a single span bridge. It is a masonry arch in the west side, and it has been widened in the east side using a precast prestressed concrete slab. The span is 7.97m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 3.5km upstream of the Kenmare River SAC. Plate 5-21 shows the west elevation.



Plate 5-21 Sahaleen Bridge.

The qualifying interests of Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, reefs, otter and harbour seal. 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 5-31 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 |
|-------------------------------|---|---|
| Embankments/Revetments | All trees, bushes and deep rooted vegetation within 1m of structure to be removed (60m ²) | 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 should be removed from all 4 wing walls (48m ²) | Screened in - removal of vegetation may require instream access and the erection of scaffolding. |
| Wing/Spandrel/Retaining Walls | Open joints on wingwalls to be repointed following removal of vegetation (20m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Abutments | There are open joints which should be repointed over 1.5m high x 3m long (4.5m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Embankments/Revetments | The NW embankment has collapsed which should be reinstated (4m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

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

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

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 partial 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. One span/culvert structures 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 waterbodies 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 discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. If over pumping is required, a second pump shall be available on site in case of failure of the primary pump.

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.

N.B. Dewatering of the entire channel will not be permitted 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 Kenmare River SAC.

5.7.3.13. Derrynacoulagh Bridge [KY-N71-017.50]

Derrynacoulagh Bridge is a single arch masonry with a span length of 6m. Masonry walls line each side of the carriageway. The bridge carries the N71 over the Killabunane River approximately 9km upstream of the Kenmare River SAC. Plate 5-22 shows the face of the bridge.



Plate 5-22 Derrynacoulagh Bridge.

The qualifying interests of Kenmare River SAC are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, large shallow inlets and bays, mudflats and sandflats, reefs 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 5-32 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 |
|-------------------------------|--|--|
| Riverbed | The south riverbed has been blocked by the tree debris which should be removed. (10m ²). | Screened in – will require instream access. |
| Wing/Spandrel/Retaining Walls | Repointing of southwest wingwall following removal of vegetation (5m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Abutments | There are open joints to both abutments which should be repointed. (5m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Abutments | There is one block of masonry missing at the south end of the west abutment measuring (0.1m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Clearance of watercourse (Debris Removal)

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

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

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

Masonry Repointing

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

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

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

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

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 Kenmare River SAC.

5.7.3.14. The Red Bridge [KY-N86-014.00]

The Red Bridge is a single span stone masonry arch bridge. The span is 2.91m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 250m upstream of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and located 200m upstream of the Tralee Bay Complex SPA. Plate 5-23 shows the south elevation.



Plate 5-23 The Red Bridge.

The qualifying interests of Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are large shallow inlets and bays, reefs, otter, harbour seal, and wetland habitats and birds for which the SPA is designated. The potential impacts to the SAC/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 records for freshwater pearl mussel in at or downstream of the bridge.

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 |
|------------------------|---|---|
| Riverbed | Scour repairs at SE corner of the structure. (5m ²) | Screened in – will require instream access. |
| Embankments/Revetments | Removal of vegetation required from all embankments within 1m of bridge structure (20m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Bridge surface | Removal of debris and silt deposits from drainage gullies (2 no.) | Screened out |

Mitigation Measures

Scour Repairs

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

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

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

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. Biosecurity protocols are outlined in Section 2.1.

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 Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA.

5.7.4. Limerick

5.7.4.1. Tullabeg Bridge [LC-N24-005.00]

Tullabeg Bridge is a single span concrete slab structure with 3.11m span width. Concrete parapet walls line the carriageway above the structure. The bridge carries the N24 across the Tullabeg River. The Lower River Shannon SAC is located 4.3km downstream of the bridge. Plate 5-24 shows the face of the bridge.



Plate 5-24 Tullabeg Bridge.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-34 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-34 - Work elements and potential for likely significant effects.

| Bridge Component | Work Element | Screening Recommendation |
|-------------------------------|---|---|
| Wing/Spandrel/Retaining Walls | South west wingwall in poor condition and has partially failed with cracking and undermining up to 350mm depth over full length of wall. Reconstruct masonry wingwall and slope stabilisation. (2m ³) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. This activity could also result in the exposure of loose soils, resulting in a sediment load to the river. |

Mitigation Measures

Masonry Repointing

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

cleaning of the geotextile from any platform shall be carried out in such a manner to prevent debris, grout etc. falling into the watercourse.

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

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

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

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

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 partial 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. One span/culvert structures 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 waterbodies 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 discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. If over pumping is required, a second pump shall be available on site in case of failure of the primary pump.

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. Any such fluming will be conducted in consultation with IFI.

Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

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

shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts or electrofishing. All surveying and electrofishing activities of lamprey and salmonids, shall be carried out under licence from IFI.

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Lower River Shannon SAC.

5.7.4.2. Rincullia Bridge [LC-N69-005.00]

Rincullia Bridge is a three-span masonry and concrete bridge with a span of 6.2m. Masonry parapets line the carriageway above the structure. The bridge carries the N69 over the Ahacronane River within the Lower River Shannon SAC and 300m upstream of the River Shannon and River Fergus Estuaries SPA. Plate 5-25 shows the face of the bridge.



Plate 5-25 Rincullia Bridge.

The qualifying interests of 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 estuaries, mudflats and sandflats, large shallow inlets and bays, reefs, lamprey species salmon, common bottlenose dolphin, otter and wetland habitats and birds for which the SPA is designated. The potential impacts to the SAC/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 records for freshwater pearl mussel in at or downstream of the bridge.

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 |
|------------------|---|---|
| Piers | Repointing to localised open joints (2m ²). | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |
| Piers | Concrete repair to undermined concrete scour protection to north pier face (3m ²) | Screened in – use of wet mortar/concrete over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

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

Concrete repairs

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

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

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

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

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 Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.

5.7.4.3. Ferry Bridge [LC-N69-011.00]

Ferry Bridge is a triple span masonry arch bridge with a span width of 44.49m. Masonry parapets walls line the carriageway. The bridge carries the N69 across the Mague River. It is located within both the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. Plate 5.26 displays the masonry face of the bridge.



Plate 5-26 Ferry Bridge.

The qualifying interests of 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 estuaries, mudflats and sandflats, large shallow inlets and bays, reefs, lamprey species salmon, common bottlenose dolphin, otter and wetland habitats and birds for which the SPA is designated. The potential impacts to the SAC/SPA are the physical disturbance of species and deterioration of surface water quality.



Proposed Works

The proposed works at this bridge are detailed in Table 5-36 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-36 - Work elements and potential for likely significant effects.

| Bridge Component | Work Element | Screening Recommendation |
|-------------------------------|--|--|
| Wing/Spandrel/Retaining Walls | Repointing of spandrels after vegetation has been removed. (20m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Masonry Repointing

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

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

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

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

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 Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.

5.7.5. Waterford

5.7.5.1. Knockahavaun Bridge [WC-N25-016.00]

The Knockahavaun Bridge is a single span reinforced concrete arch bridge. The span is 2.5m. The substructure consists of 2 reinforced concrete abutments. There are no parapets on the structure. The structure is located 1.1km upstream of Dungarvan Harbour SPA. Plate 5-27 shows the south elevation.



Plate 5-27 Knockahavaun Bridge.

The qualifying interests of Dungarvan Harbour SPA are listed in Section 5.2. The qualifying interests that could be impacted are the wetland habitats and birds for which the SPA is designated. The potential impacts to the 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 records for freshwater pearl mussel in at or downstream of the bridge.

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 |
|-------------------------------|---|---|
| Riverbed | Minor scour repairs to be done at downstream end. (1m ²) | Screened in – will require instream access |
| Embankments/Revetments | Clear vegetation around both portals of structure (40m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Wing/Spandrel/Retaining Walls | Vertical cracks on NW wingwall should be injected and repaired (0.5m ²) | Screened in – use of wet mortar over water and therefore a surface water pathway is present. |

Mitigation Measures

Scour Repairs

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

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

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

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. Biosecurity protocols are outlined in Section 2.1.

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. Biosecurity protocols are outlined in Section 2.1.

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

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

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 Dungarvan Harbour SPA.

5.7.5.2. Gorteen Bridge [WC-N25-022.00]

Gorteen Bridge is a single span masonry arch with concrete slab bridge. It has a span width of 5.72m. Steel safety barriers line the carriageway. The bridge carries the N25 over the River Licky within the Blackwater River (Cork/Waterford) SAC. Plate 5.28 displays the masonry face of the bridge.



Plate 5-28 Gorteen Bridge.

The qualifying interests of Blackwater River (Cork/Waterford) SAC are listed in Section 5.2. The qualifying interests that could be impacted are [redacted] crayfish, 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.

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 |
|------------------------|---|---|
| Embankments/Revetments | Vegetation clearance from embankments to maintain 1m clearance around structure. Debris to be removed from embankments. (20m ²) | Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river. |
| Abutments | Repair to crack between the arch and central slab abutment on the south side, crack injection required. (0.5m ²) | Screened in – use of wet concrete over water and therefore a surface water pathway is present. |

Mitigation Measures

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. Biosecurity protocols are outlined in Section 2.1.

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. Biosecurity protocols are outlined in Section 2.1.

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

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

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 Blackwater River (Cork/Waterford) SAC.

6. Conclusions

This NIS provides the competent authority with supporting information to undertake Appropriate Assessment in relation to the proposed works at 28 bridges in the Munster region under the Munster Term Maintenance Contract No 3 (Year 3).

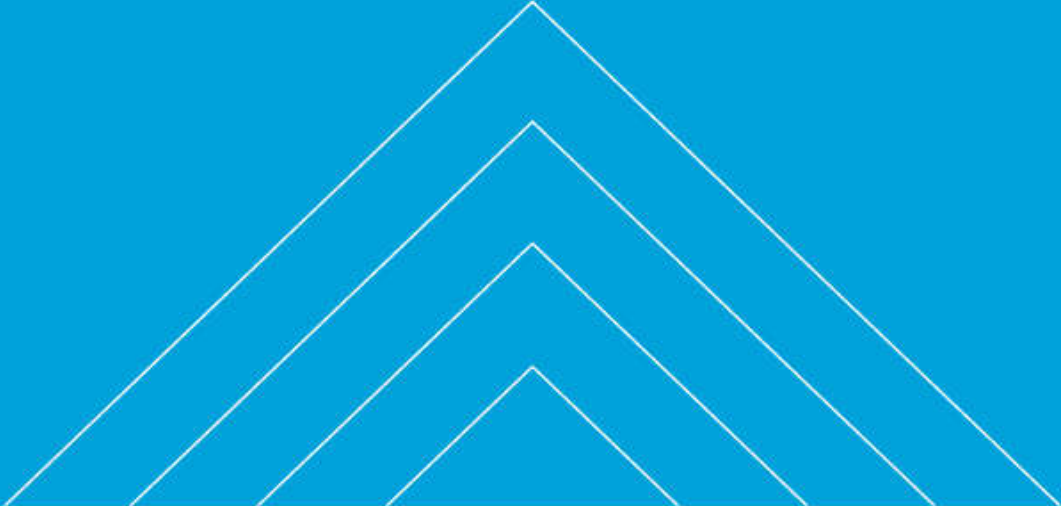
This NIS has examined the potential impacts of the proposed works on the integrity of European sites within the zone of influence of the 28 bridges, alone and in combination with other plans and projects, considering a sites' structure, function and conservation objectives. Where potential significant impacts were identified, mitigation measures have been recommended to preclude these impacts.

Thus, the potential direct, indirect and cumulative impacts on the qualifying interests, and their associated conservation objectives, for SACs and SPAs within the zone of influence of the proposed project, and the implementation of the proposed mitigation measures, it has been concluded by the authors of this report that the proposed project, i.e. maintenance works at 28 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

| Clonakilty Bay SAC (000090) | | | |
|--|-------------------|--------------------------------------|---------------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| CC-N71-031.00 | Yes | Clonakilty (Stream) | Clonakilty[Stream]_SC_010 |
| SCI Description | | | |
| Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150] | | | |

| Lower River Shannon SAC (002165) | | | |
|---|--|--------------------------------------|----------------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N69-017.00 | Yes | Feale | Feale_SC_040 |
| KY-N69-020.00 | Yes | Galey | Galey_SC_010 |
| LC-N69-005.00 | Yes | Ahacronane | Shanagolden[Stream]_SC_010 |
| LC-N69-011.00 | Yes | Maigue | Ballynaclogh_SC_010 |
| CL-N67-007.00 | Lower River Shannon SAC ca. 800m d/s of bridge | Lisluinaghan | Wood_SC_010 |
| CL-N68-004.00 | Lower River Shannon SAC ca. 10.8km d/s of bridge | Liscasey | Owenslieve_SC_010 |
| KY-N69-021.00 | Lower River Shannon SAC ca. 100m d/s of bridge | Flows to Galey | Galey_SC_010 |
| LC-N24-005.00 | Lower River Shannon SAC ca. 4.3km d/s of bridge | Tullabeg 25 | Mulkear_SC_010 |
| SCI Description | | | |
| 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] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0] [REDACTED] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Lutra lutra</i> (Otter) [1355] | | | |

| Castlemaine Harbour SAC (000343) | | | |
|---|---|--------------------------------------|--------------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-012.00 | Yes | Laune | Laune_SC_030 |
| KY-N70-015.00 | Yes | Caragh | Caragh_SC_010 |
| KY-N70-019.00 | Castlemaine Harbour SAC ca. 1.9km d/s of bridge | Kilnabrack_Upper | Caragh_SC_010 |
| SCI Description | | | |
| <p>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] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens ssp. argentea</i> (<i>Salicion arenariae</i>) [2170] Humid dune slacks [2190] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p> | | | |

| Tralee Bay and Magharees Peninsula, West to Cloghane (002070) | | | |
|--|---|----------------------------------|--------------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-003.00 | Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 4.6km d/s of bridge | Caherweesheen | Lee[Tralee]_SC_010 |
| KY-N70-004.00 | Within Slieve Mish Mountains SAC but ultimate receiving waterbody is Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 6km d/s of bridge | Lissardboola | Lee[Tralee]_SC_010 |
| KY-N86-014.00 | Tralee Bay And Magharees Peninsula, West To Cloghane SAC ca. 250m d/s of bridge | Non-EPA | Lee[Tralee]_SC_010 |
| SCI Description | | | |
| <p>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] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens ssp. argentea</i> (<i>Salicion arenariae</i>) [2170] Humid dune slacks [2190] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <i>Lutra lutra</i> (Otter) [1355] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p> | | | |

| Slieve Mish Mountains SAC (002185) | | | |
|--|-------------------|----------------------------------|--------------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-004.00 | Yes | Lissardboola | Lee[Tralee]_SC_010 |
| SCI Description | | | |
| <p>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p> | | | |

| Valencia Harbour / Portmagee Channel SAC (002262) | | | |
|---|--|---------------------------|-------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-034.00 | Valencia Harbour/Portmagee Channel SAC ca. 1.3km d/s of bridge | Boola 22 | Boola_SC_010 |
| SCI Description | | | |
| Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] | | | |

| Ballinskelligs Bay & Inny Estuary SAC (000335) | | | |
|---|------------|---------------------------|---------------------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-039.00 | Yes | Waterville | Finglas river[Waterville]_SC_01 |
| SCI Description | | | |
| Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] <i>Petalophyllum ralfsii</i> (Petalwort) [1395] | | | |

| Kenmare River SAC (002158) | | | |
|---|---|---------------------------|-------------------|
| Structure ID | Within SAC | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-056.00 | Kenmare River SAC ca. 200m d/s of bridge | Rossacoosane | Finnihy_SC_010 |
| KY-N71-012.00 | Kenmare River SAC ca. 3.5km d/s of bridge | Finnihy | Finnihy_SC_010 |
| KY-N71-017.50 | Kenmare River SAC ca. 9km d/s of bridge | Killabunane | Sheen_SC_010 |
| SCI Description | | | |
| 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 (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130] Submerged or partially submerged sea caves [8330] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365] | | | |

| Clonakilty Bay SPA | | | |
|---|-------------------|--------------------------------------|---------------------------|
| Structure ID | Within SPA | Watercourse (Source: EPA) | WFD Sub-Catchment |
| CC-N71-031.00 | Yes | Clonakilty (Stream) | Clonakilty[Stream]_SC_010 |
| SCI Description | | | |
| Shelduck (<i>Tadorna tadorna</i>) [A048] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Curlew (<i>Numenius arquata</i>) [A160] Wetland and Waterbirds [A999] | | | |

| River Shannon and River Fergus Estuaries SPA (004077) | | | |
|---|--|--------------------------------------|----------------------------|
| Structure ID | Within SPA | Watercourse (Source: EPA) | WFD Sub-Catchment |
| LC-N69-011.00 | Yes | Maigue | Ballynaclogh_SC_010 |
| CL-N67-007.00 | River Shannon and River Fergus Estuaries SPA ca. 2.18km d/s of bridge | Lisluinaghan | Wood_SC_010 |
| CL-N68-004.00 | River Shannon and Fergus Estuaries SPA ca. 10.8km d/s of bridge | Liscasey | Owenslieve_SC_010 |
| LC-N24-005.00 | River Shannon and River Fergus Estuaries SPA greater than 40km d/s of bridge | Tullabeg 25 | Mulkear_SC_010 |
| LC-N69-005.00 | River Shannon and River Fergus Estuaries SPA ca. 300m d/s of bridge | Ahacronane | Shanagolden[Stream]_SC_010 |
| SCI Description | | | |
| Cormorant (<i>Phalacrocorax carbo</i>) [A017] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Scaup (<i>Aythya marila</i>) [A062] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999] | | | |

| Tralee Bay Complex SPA (004188) | | | |
|--|--|---------------------------|--------------------|
| Structure ID | Within SPA | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-003.00 | Tralee Bay Complex SPA ca. 4.5km d/s of bridge | Caherweesheen | Lee[Tralee]_SC_010 |
| KY-N70-004.00 | Tralee Bay Complex SPA ca. 6km d/s of bridge | Lissardboola | Lee[Tralee]_SC_010 |
| KY-N86-014.00 | Tralee Bay Complex SPA ca. 0.2km d/s of bridge | Non-EPA | Lee[Tralee]_SC_010 |
| SCI Description | | | |
| Whooper Swan (<i>Cygnus cygnus</i>) [A038] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Pintail (<i>Anas acuta</i>) [A054] Scaup (<i>Aythya marila</i>) [A062] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Wetland and Waterbirds [A999] | | | |

| Castlemaine Harbour SPA (004029) | | | |
|---|---|----------------------------------|--------------------------|
| Structure ID | Within SPA | Watercourse (Source: EPA) | WFD Sub-Catchment |
| KY-N70-015.00 | Yes | Caragh | Caragh_SC_010 |
| KY-N70-012.00 | Castlemaine Harbour SPA ca. 1.7km d/s of bridge | Laune | Laune_SC_030 |
| KY-N70-019.00 | Castlemaine Harbour SPA ca. 1.8km d/s of bridge | Kilnabrack_Upper | Caragh_SC_010 |
| SCI Description | | | |
| Red-throated Diver (<i>Gavia stellata</i>) [A001] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Wigeon (<i>Anas penelope</i>) [A050] Mallard (<i>Anas platyrhynchos</i>) [A053] Pintail (<i>Anas acuta</i>) [A054] Scaup (<i>Aythya marila</i>) [A062] Common Scoter (<i>Melanitta nigra</i>) [A065] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Sanderling (<i>Calidris alba</i>) [A144] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Turnstone (<i>Arenaria interpres</i>) [A169] Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346] Wetland and Waterbirds [A999] | | | |

| Dungarvan Harbour SPA (004032) | | | |
|---|---|----------------------------------|--------------------------|
| Structure ID | Within SPA | Watercourse (Source: EPA) | WFD Sub-Catchment |
| WC-N25-016.00 | Dungarvan Harbour SPA ca. 1.1km d/s of bridge | Knockahavaun | Colligan_SC_010 |
| SCI Description | | | |
| Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Wetland and Waterbirds [A999] | | | |

| Blackwater Estuary SPA (004028) | | | |
|---|--|--------------------------------------|--------------------------|
| Structure ID | Within SPA | Watercourse (Source: EPA) | WFD Sub-Catchment |
| CC-N72-033.00 | Blackwater River (Cork/Waterford) SAC ca. 1.8km d/s of bridge | Kilcoran_North | Bride[Waterford]_SC_030 |
| WC-N25-022.00 | Bridge spans 1st order stream situated on upstream boundary of SAC | Licky | Goish_SC_010 |
| SCI Description | | | |
| <p>Wigeon (<i>Anas penelope</i>) [A050] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p> | | | |



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