

NW Term Maintenance Contract 3

Year 4 NIS Part 2

Transport Infrastructure Ireland

12/11/2021



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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 North West Region, the most recent contract concluded in December 2016. A Bridges Term Maintenance Contract for 714 bridges in the North West 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 the north west of Ireland (i.e. Task Order 289) under the North West 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 a total of 44 bridges in the North West Region and thus require Appropriate Assessment. A Natura Impact Statement providing supporting information to TII in making their Appropriate Assessment decision on 28 of these bridges have undergone Appropriate Assessment prepared previously. This report is a Natura Impact Statement which addressed the remaining 15 bridges; one bridge has been removed from project (MO-N59-003.00 Knockadangan Bridge). The bridges detailed in this report required specialist ecological surveys before a NIS could be conducted. These specialist surveys have now been conducted.

1.1. Project Background and Context

The Bridge Term Maintenance Contract for the North West region includes 714 No. bridges, which are located on the national road network across the north west of Ireland in counties Donegal, Mayo, Galway, Sligo, Roscommon, Cavan, Leitrim and Monaghan.

Each of these bridges have required four routine inspections throughout the term of the contract. Each and every structure has been inspected 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,
- Cleaning of graffiti.

Year 4 of the contract is underway, and Screening for AA has been conducted for each bridge to determine the likelihood of proposed works causing significant effects on a European site. Proposed 2021 works at bridges that did not 'Screen out' are the subject of this assessment.

Throughout the project, progress meetings are regularly held during the year between Atkins, TII and the Contractor. During these meetings all aspects of the project are discussed, including those relevant to ecological assessments. This is to ensure that all aspects of the project are being accounted for and consistency is being maintained throughout. The full list of EIRSPAN bridge components and works are listed in Table 1-1 below.

Table 1-1 EIRSPAN bridge components and works.

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

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

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

2. Project Description

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

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

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

2.1. Proposed Works

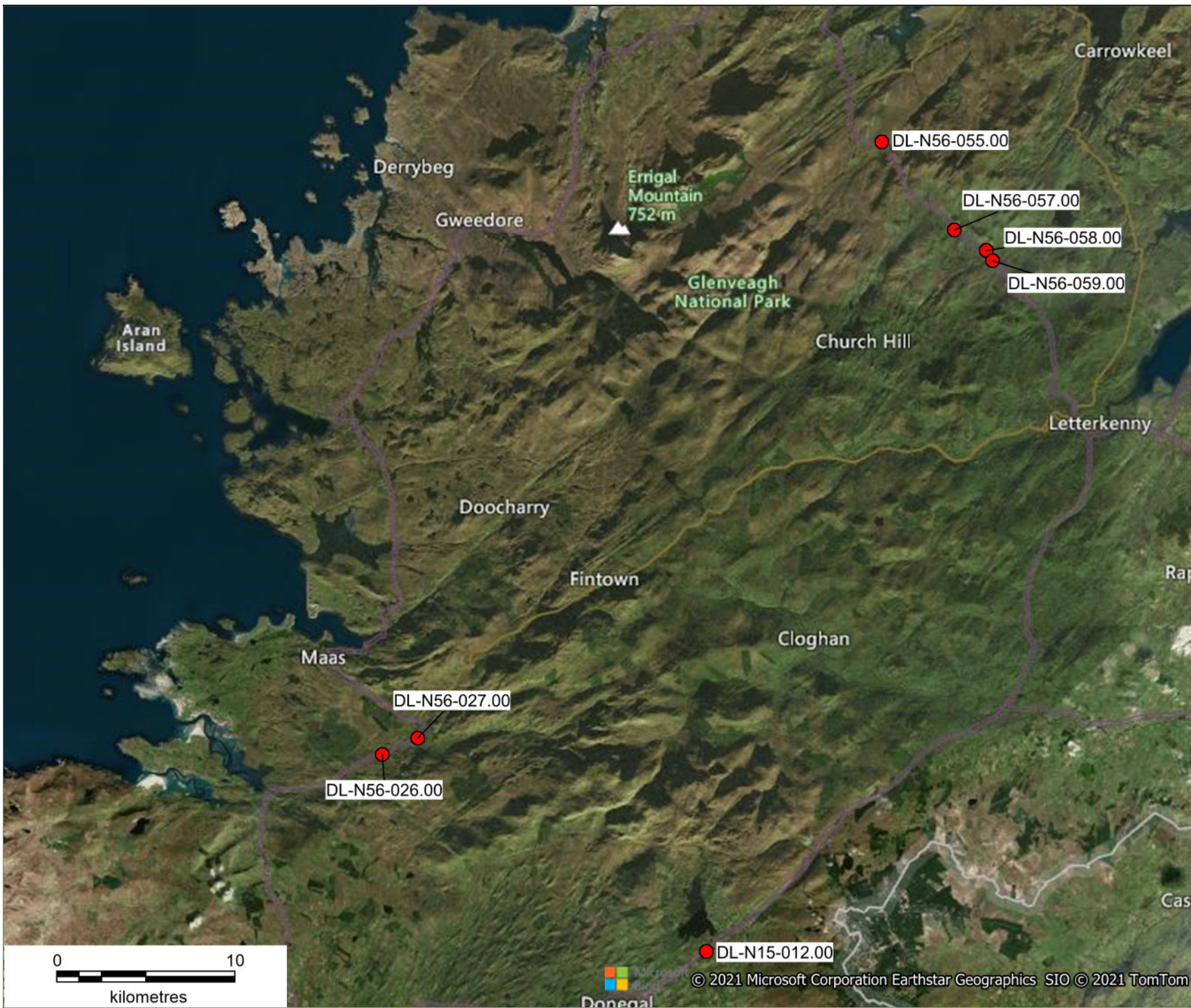
As detailed above, the Year 4 Work Orders were screened for AA and TII issued determinations for each structure. This resulted in 44 bridges being 'Screened In', i.e. where likely significant effects could not be ruled out, requiring those structures to undergo Appropriate Assessment. A Natura Impact Statement providing supporting information to TII in making their Appropriate Assessment decision on 28 of these bridges have undergone Appropriate Assessment prepared previously. This report is a Natura Impact Statement which addressed the remaining 15 bridges ; one bridge has been removed from project (MO-N59-003.00 Knockadangan Bridge). The bridges detailed in this report required specialist ecological surveys before a NIS could be conducted. These specialist surveys have now been conducted.

These 15 bridges are located in Donegal (no. 7), Galway (no. 6), and Mayo (no. 2) which is illustrated in Figure 1-1. Table 2-1 summaries the main details pertaining to each of the 15 bridges.

The works proposed at each bridge is contained in Section 5.8. The Work Orders detail the bridge identification number and name, the component of the bridge to which a work item is proposed, the work item and the quantity (m²) expected to be carried out. A summary of the work categories proposed at each bridge is detailed in Table 2-1.

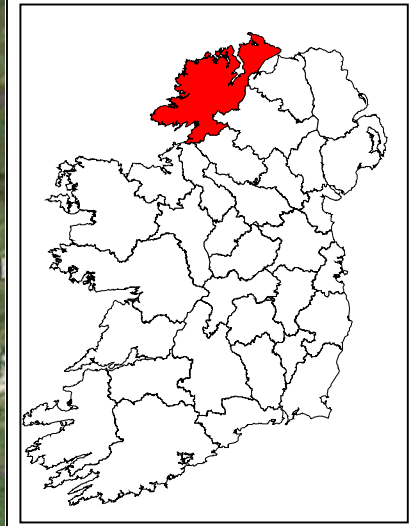
Table 2-1 Summary details of bridges requiring Appropriate Assessment.

County	Structure ID	Structure Name	Townland	Road/River Bridge	Watercourse Name (EPA)	Water Framework Directive Sub-catchment	GPS Coordinates (ITM)	
							X	Y
Donegal	DL-N15-012.00	Druminnin Bridge	Druminnin	River	Clogher [Donegal]	Eske_SC_010	597871.58	881459.79
Donegal	DL-N56-026.00	Kilraine Bridge	Kilrean	River	Kilrean Upper	Owenea_SC_010	579534.56	892631.16
Donegal	DL-N56-027.00	Mullanieran Bridge	Meenachallow	River	Owenea	Owenea_SC_010	581543.45	893544.16
Donegal	DL-N56-055.00	Owencarrow River Bridge	Stragradddy	River	Undefined	Lackagh_SC_010	607741.89	927066.53
Donegal	DL-N56-057.00	Termon Bridge	Termon	River	Drumluragh	Leannan_SC_020	611849.57	922140.55
Donegal	DL-N56-058.00	Procklis Bridge	Procklis	River	Lurgy 39	Leannan_SC_020	613650.02	920996.91
Donegal	DL-N56-059.00	Lurgy Bridge	Kilconnell	River	Lurgy 39	Leannan_SC_020	613987.97	920434.04
Galway County	GC-N59-010.00	Kylemore Abbey Bridge	Addergoole	River	Dawros 32	Dawros_SC_010	474296.84	758217.32
Galway County	GC-N59-023.00	Emlaghdauroe Bridge	Emlaghdauroe	River	Undefined	Recess_SC_020	475787.28	748609.64
Galway County	GC-N59-024.00	Lettery Bridge	Lettery	River	Undefined	Recess_SC_020	477784.92	748245.77
Galway County	GC-N59-029.00	Caher Bridge	Caher	River	Owentooey	Recess_SC_010	487205.38	747488.27
Galway County	GC-N59-035.00	Buskannive Bridge	Buskanniff	River	Recess	Recess_SC_010	493596.48	746396
Galway County	GC-N59-039.00	Glengowla Bridge	Glengowla	River	Bunowen [Oughterard]	BallycuirkeLoughStream_SC_010	508347.5	742388.83
Mayo	MO-N59-053.20	Bracklagh Bridge	Bracklagh	River	Rooghaun 32	Erriff_SC_010	497449	774652.8
Mayo	MO-N59-053.50	Carrowrevagh Bridge	Carrowrevagh	River	Rooghaun 32	Erriff_SC_010	497088.5	774527.8



Legend

● Bridges



Client: Transport Infrastructure Ireland

Project: NW Term Maintenance Contract No.3

Title: Location of Structures in Donegal

Drawn: EN	Checked: NS	Authorised: POD
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Date: 30/08/2021	Date: 30/08/2021	Date: 30/05/2020
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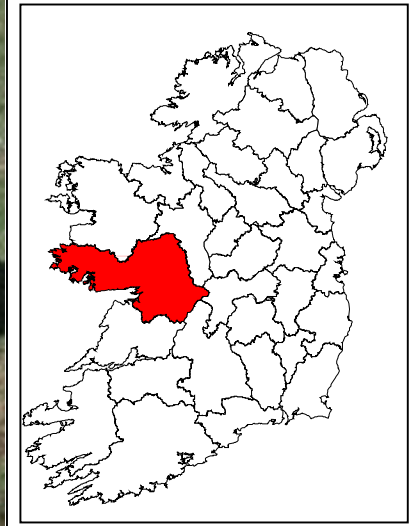


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Legend
 ● Bridges



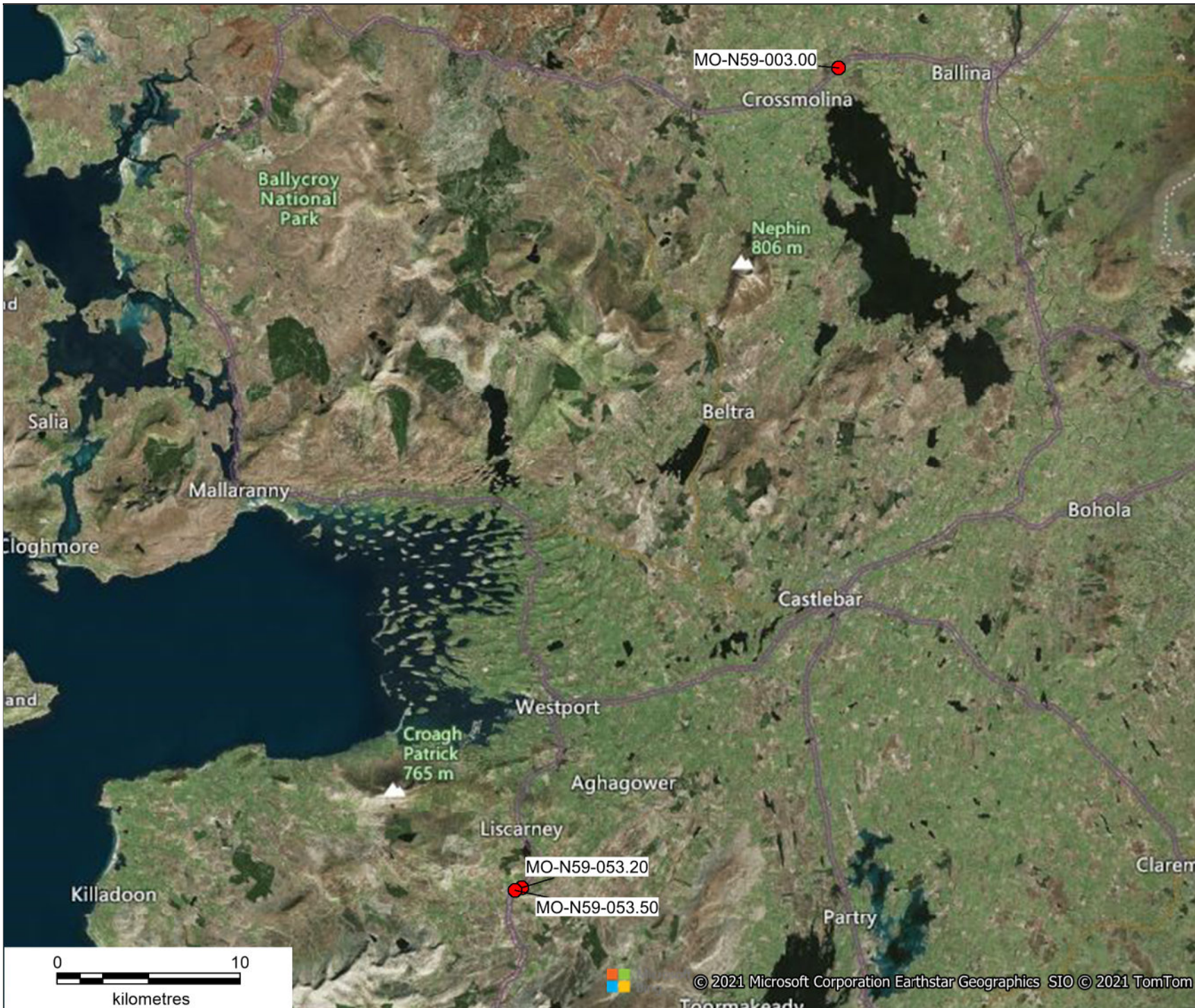
Client: Transport Infrastructure Ireland
 Project: NW Term Maintenance Contract No.3
 Title: Location of Structures in Galway

Drawn: EN	Checked: NS	Authorised: POD
Date: 30/08/2021	Date: 30/08/2021	Date: 30/05/2020
Drawing No: 1.2		Rev: 1.0



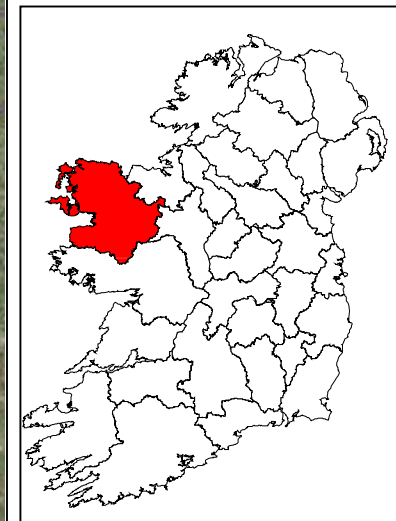
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Legend

● Bridges



Client: Transport Infrastructure Ireland

Project: NW Term Maintenance Contract No.3

Title: Location of Structures in Mayo

Drawn: EN	Checked: NS	Authorised: POD
Date: 30/08/2021	Date: 30/08/2021	Date: 30/05/2020
Drawing No: 1.3		Rev: 1.0

ATKINS



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2.1.1. Works Descriptions

The following presents a summary of the possible works that might occur at bridges.

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 & use of herbicides

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

The stumps of vegetation with a diameter greater than 100mm shall have horizontal saw cuts made into the stump to promote natural rotting. The removal of mould/fungus or algae will be achieved using

high pressure hosing, stiff brush or hand-scraper. Herbicide will not be used on vegetation which is not on the bridge structures.

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

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

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

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

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

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

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

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

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

In the wider environment, we would recommend that where possible the use of pesticides and plant protection products is avoided. Priority should be given to the use of non-chemical and natural alternatives. Where the use of pesticides and / or plant protection products cannot be avoided the

importance of ensuring that products are used in accordance with the product label cannot be over emphasised.

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

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

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

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

2.1.1.7. Clearance of watercourse

Many watercourses support in-stream vegetation, including examples of the Annex I habitat watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation (3260); also known as floating river vegetation. This is not to be removed.

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. 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 and the further spread of diseases. This should include species listed on the 3rd Schedule of the 2011 Regulations (S.I. 477 of 2011); as well as non-3rd Schedule invasive species that could have significant effects on European sites to site; and diseases such a crayfish plague.

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

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

The following biosecurity measures will be adopted: -

1. All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.
2. Prior to being brought on site, equipment should be: -
 - i. power steam washed at a suitably high temperature or at least 65 degrees, or
 - ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer's instructions are followed and if required, the correct

contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant

3. During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.
4. Appropriate facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.
5. Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

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

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

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

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

County	Structure ID	Townland	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
Donegal	DL-N15-012.00	Druminnin	No	Yes	No	No	Yes	No	Yes	No	No	No	No	No
Donegal	DL-N56-026.00	Kilrean	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes	Yes
Donegal	DL-N56-027.00	Meenachallow	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
Donegal	DL-N56-055.00	Stragradddy	No	Yes	No	No	No	No	No	Yes	No	No	Yes	Yes
Donegal	DL-N56-057.00	Termon	No	Yes	No	No	No	No	Yes	No	Yes	No	No	No
Donegal	DL-N56-058.00	Procklis	No	Yes	No	Yes	No	No	Yes	Yes	No	No	Yes	No
Donegal	DL-N56-059.00	Kilconnell	Yes	Yes	No	Yes	No	No	Yes	Yes	No	No	No	Yes
Galway	GC-N59-010.00	Addergoole	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	Yes
Galway	GC-N59-023.00	Emlaghdauroe	No	Yes	No	No	No	No	No	No	No	No	Yes	Yes
Galway	GC-N59-024.00	Lettery	No	Yes	No	No	No	No	Yes	No	No	No	No	No
Galway	GC-N59-029.00	Caher	No	Yes	No	No	No	No	No	No	No	No	Yes	No
Galway	GC-N59-035.00	Bunscaffiff	No	Yes	Yes	No	No	No	No	No	No	No	Yes	No
Galway	GC-N59-039.00	Glengowla	No	Yes	No	No	No	No	Yes	No	No	No	No	No
Mayo	MO-N59-053.20	Bracklagh	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes	No
Mayo	MO-N59-053.50	Carrowrevagh	Yes	Yes	Yes	No	No	No	Yes	Yes	No	No	Yes	Yes

2.2. Bridge Descriptions

2.2.1. Donegal

2.2.1.1. Druminnin Bridge [DL-N15-012.00]

The Druminnin Bridge is a single span concrete structure with an overall span width of 10.1m. Steel safety barriers line the carriageway. The bridge carries the N15 over the Clogher Stream and is located 35m upstream of Lough Eske and Ardnamona Wood SAC. Plate 2.1 displays the west elevation of the structure.



Plate 2-1 Druminnin Bridge.

2.2.1.2. Kilraine Bridge [DL-N56-026.00]

Kilraine Bridge is a double span masonry arch structure with pipe extensions with an overall span width of 7m. Masonry parapet walls line the road. The bridge carries the N56 over the Kilrean Upper Stream 300m upstream of West Of Ardara/Maas Road SAC. Plate 2.2 displays the structure.



Plate 2-2 Kilraine Bridge.

2.2.1.3. Mullanieran Bridge [DL-N56-027.00]

Mullaneiran Bridge is a triple span masonry arch and concrete slab structure with an overall span width of 14.3. Masonry parapet walls line the road. The bridge carries the N56 over the Owenea River within West Of Ardara/Maas Road SAC. Plate 2.3 displays the west elevation.



Plate 2-3 Mullanieran Bridge.

2.2.1.4. Owencarrow River Bridge [DL-N56-055.00]

The Owencarrow River Bridge is a 3-span masonry bridge which carries the N56 over the Owencarrow River. Masonry parapets line the road. The bridge is located within the Cloghernagore Bog and Glenveagh National Park SAC. Derryveagh and Glendowan Mountains SPA is located 3.7km downstream of the bridge. Plate 2.4 shows the bridge.

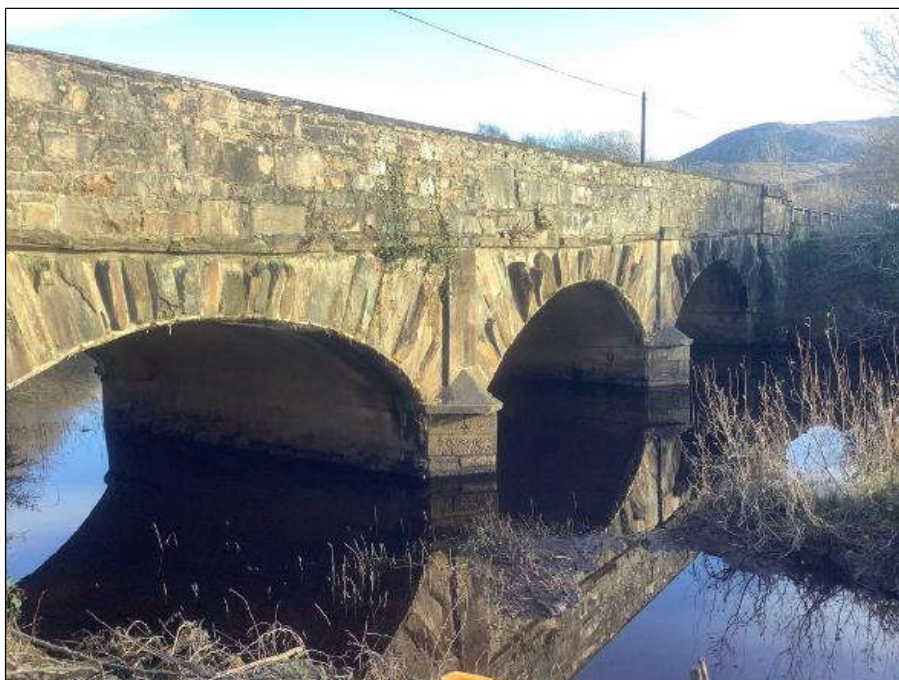


Plate 2-4 Owencarrow River Bridge.

2.2.1.5. Termon Bridge [DL-N56-057.00]

Termon Bridge is a double span masonry arch bridge with an overall span width of 7.2m. Masonry parapet walls line the roadway. The bridge crosses the Drumluragh River and is located within Leannan River SAC and 7.6km upstream of Lough Fern SPA. Plate 2.5 shows the face of Termon Bridge.



Plate 2-5 Termon Bridge.

2.2.1.6. [Procklis Bridge \[DL-N56-058.00\]](#)

Procklis Bridge is a single span masonry arch structure with concrete slab extension with an overall span width of 6.3m. The road is lined by steel safety barriers. The bridge crosses the Lurgy River within Leannan River SAC and 4.7km upstream of Lough Fern SPA. Plate 2.6 displays the western elevation of the structure.



Plate 2-6 Procklis Bridge.

2.2.1.7. [Lurgy Bridge \[DL-N56-059.00\]](#)

Lurgy Bridge is a single span concrete slab structure with an overall span width of 10.62m. Steel safety barriers line the road. The bridge crosses the Lurgy River within Leannan River SAC and 3.5km upstream of Lough Fern SPA. Plate 2.7 displays the face of the structure.



Plate 2-7 Lurgy Bridge.

2.2.2. Galway

2.2.2.1. Kylemore Abbey Bridge [GC-N59-010.00]

Kylemore Abbey Bridge is a single span masonry arch and concrete slab structure with an overall span width of 6.58m. Masonry walls and steel safety barriers line the road. The bridge crosses a tributary of the Dawros River 100m upstream of The Twelve Bens/Garraun Complex SAC. Plate 2.8 displays the north elevation of the structure. Rhododendron can be seen growing close to the bridge in Plate 2-8.



Plate 2-8 Kylemore Abbey Bridge.

2.2.2.2. Emlaghdauroe Bridge [GC-N59-023.00]

Emlaghdauroe Bridge is a single span masonry arch and concrete slab structure with an overall span width of 4.7m. Masonry walls and steel safety barriers line the road. The bridge spans an unnamed stream that flows into Ballynahinch Lake. It is located within The Twelve Bens/Garraun Complex SAC. Connemara Bog Complex SPA is located 3.2km downstream of the bridge. Plate 2.9 displays the south elevation.

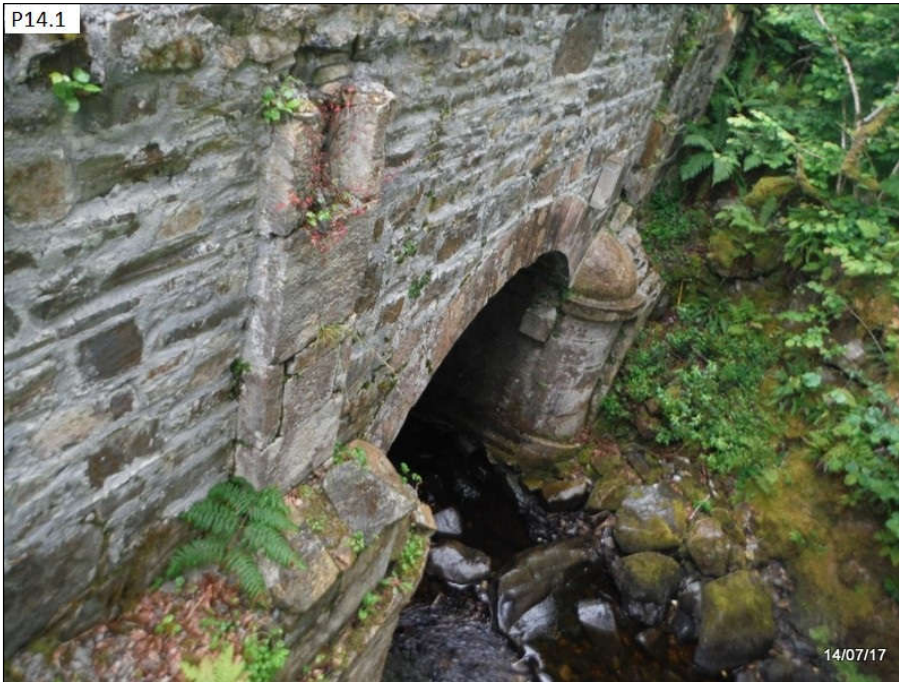


Plate 2-9 Emlaghdauroe Bridge.

2.2.2.3. Lettery Bridge [GC-N59-024.00]

Lettery Bridge is a single span concrete slab structure with an overall span width of 8.17m. Masonry parapet walls line the roadway. The bridge crosses an unnamed stream within 50m of The Twelve Bens/Garraun Complex SAC. Connemara Bog Complex SPA is located 4.6km downstream of the bridge. Plate 2.10 displays the south elevation.



Plate 2-10 Lettery Bridge.

2.2.2.4. Caher Bridge [GC-N59-029.00]

Caher Bridge is a single span masonry arch bridge with an overall span width of 6.12m. Steel safety barriers line the road. The bridge crosses the Owentooey River within Maumturk Mountains SAC and 15.2km upstream of Connemara Bog Complex SPA. Plate 2.11 displays the south elevation.



Plate 2-11 Caher Bridge.

2.2.2.5. Bunsconnive Bridge [GC-N59-035.00]

The Bunsconnive Bridge is a single span bridge. It is a masonry arch in the north side, and it has been widened using a reinforced concrete slab in the south side. The span is 3.17m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is within Connemara Bog Complex SAC and located 2.5km upstream of the of Connemara Bog Complex SPA. Plate 2.12 shows the south elevation.



Plate 2-12 Bunsconnive Bridge.

2.2.2.6. Glengowla Bridge [GC-N59-039.00]

Glengowla Bridge is a single span concrete slab structure with an overall span width of 3.67m. Concrete parapet walls line the road. The bridge crosses the Bunowen River within Lough Corrib SAC and 6.8km upstream of Lough Corrib SPA. Plate 2.13 displays the north elevation.



Plate 2-13 Glengowla Bridge.

2.2.3. Mayo

2.2.3.1. Bracklagh Bridge [MO-N59-053.20]

Bracklagh Bridge is a single span masonry box structure. There are no safety barriers or parapet walls along the road. The bridge carries the N59 over the Rooghaun Stream 750m upstream of Mweelrea/Sheeffry/Erriff Complex SAC. Plate 2.15 displays the bridge.

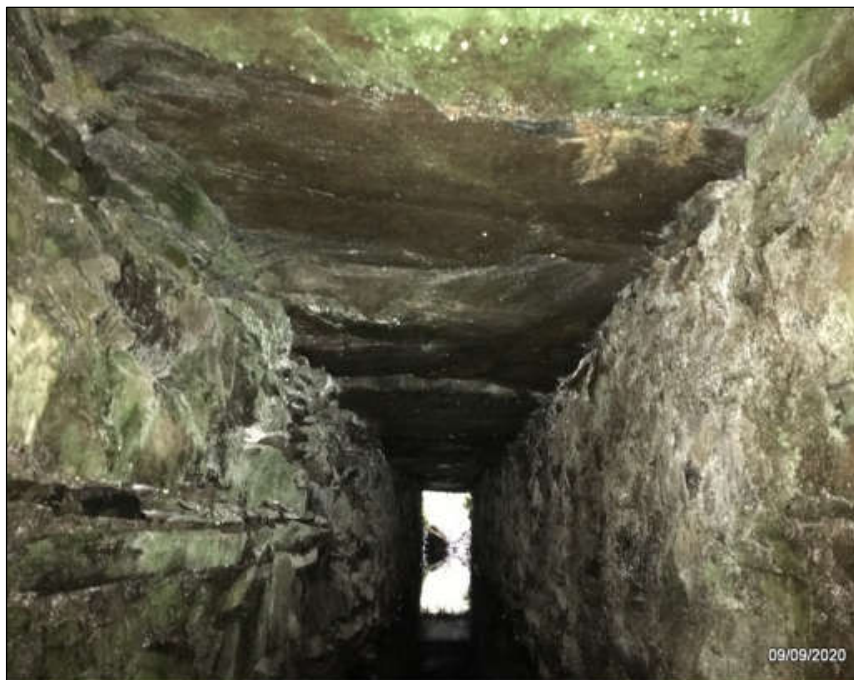


Plate 2-15 Bracklagh Bridge.

2.2.3.2. Carrowrevagh Bridge [MO-N59-053.50]

Carrowrevagh Bridge is a single span masonry arch and concrete slab structure. Masonry and concrete parapet walls line the road. The bridge carries the N59 over the Rooghaun Stream 250m upstream of Mweelrea/Sheeffry/Erriff Complex SAC. Plate 2.16 displays the bridge.



Plate 2-16 Carrowrevagh Bridge.

3. Scope of Study

The aim of this report is to provide supporting information to assist the competent authority to carry out an AA determination with respect to the proposed project.

3.1. 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.”

3.2. 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), National Parks and Wildlife Service in 2018¹ (NPWS 2018) and the Office of the Planning Regulator (2021). These guidance documents set out a staged approach to complete the AA process and outline the issues and 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).

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

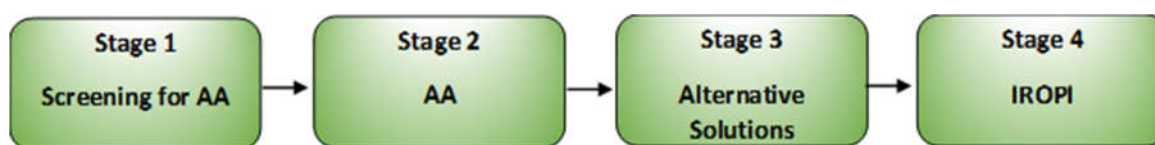


Figure 2.1 Appropriate Assessment Process (Source: DEHLG, 2009)

3.2.1. 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.

3.2.2. 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.

3.2.3. 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).

3.2.4. 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 due regard for relevant 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;
- Department of the Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities;
- Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01; and,
- Case C-323/17 People Over Wind & anor. V. Coillte.

4.2. Data Collation

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

The dataset contains information specific to each bridge, such as name, ID number, location co-ordinates, work order data (i.e. proposed works), subcatchment, location with respect to European sites, hydrological connectivity and ecological data (either 3rd party data or data obtained from surveys conducted under the current contract. This GIS is regularly updated with data such as incoming survey data on bats, invasive species [REDACTED] 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, [REDACTED]
- 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, [REDACTED]
- 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 North West 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 and have consulted on an ongoing basis.

TII recently consulted with the Department of Tourism, Culture, Art, Gaeltacht, Sports and Media (DTCAGSM⁶; dated 17th May 2021) pursuant to the requirements of Regulation 49(9)(c) of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). This consultation related to works on structures in Year 3 of the EIRSPAN Bridge repair project which required preparation of a Natura Impact Statement as well as a number of additional projects to repair damaged culverts. All comments received across these consultations have been considered in the current assessment.

4.2.2. Procurement of Specialist Surveys

Specialist surveys are procured for each year of the contract, in particular for bats [REDACTED]. 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 on an ongoing basis.

⁵ <http://gis.epa.ie/Envision>

⁶ This responsibility has recently transferred to the Department of Housing, Local Government and Heritage (DHLGH).

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 checks 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.

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



4.2.3. Protected Species

TII recently consulted with the Department of Tourism, Culture, Art, Gaeltacht, Sports and Media (DTCAGSM⁷; dated 17th May 2021) pursuant to the requirements of Regulation 49(9)(c) of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). This consultation related to works on structures in Year 3 of the EIRSPAN Bridge repair project which required preparation of a Natura Impact Statement as well as a number of additional projects to repair damaged culverts. All comments received across these consultations have been considered in the current assessment.

Regulation 51 of the 2011 Birds and Habitats Regulations prohibits the damaging or destruction of a breeding site or resting place referred to in Part 1 of the First Schedule, otherwise known as strictly protected species (species listed in Annex IV of the Habitats Directive). Of particular relevance to this project are strictly protected species such as otter and all bat species. These are discussed below.

4.2.3.1. Otter

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

Otter are protected by a number of legal instruments. Key amongst these is protection under Annex II & IV of the EU Habitats Directive (92/43/EEC), which was transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) and further amended in 2015. Otters, including their breeding and resting places, are also protected under national legislation such as the Birds and Natural Habitats Regulations and the Wildlife Acts 1976 to 2012.

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

The National Roads Authority, now Transport Infrastructure Ireland, has produced guidance documents regarding the crossing of watercourses and considerations for otter during the construction of road schemes; '*Guidelines for the crossing of watercourses during the construction of national road schemes*' and '*Guidelines for the treatment of otters prior to the construction of national road schemes*' (NRA, 2009a & 2009b). These guidelines detail procedures to be taken during

⁷ This responsibility has recently transferred to the Department of Housing, Local Government and Heritage (DHLGH).

construction in the vicinity of otter holts, the destruction of holts under licence, provision of a means of passage at crossing points (in particular at watercourses) and installation of mammal resistant fencing.

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

- West Of Ardara/Maas Road SAC (000197)
- Cloghernagore Bog and Glenveagh National Park SAC (002047)
- Leannan River SAC (002176)
- The Twelve Bens / Garraun Complex SAC (00201)
- Connemara Bog Complex SAC (002034)
- Lough Corrib SAC (000297)
- Mweelrea/Sheeffry/Erriff Complex SAC (001932)

As example of the relevant Attributes, in this case for Lough Corrib SAC, is presented in Table 4.1. This is extracted from the Conservation Objectives for Lough Corrib SAC 000297 as prepared by NPWS (2017).

Table 4.1 – Conservation Objectives for Otter in the Lough Corrib SAC (from NPWS, 2017).

Conservation Objectives for : Lough Corrib SAC [000297]			
1355 Otter <i>Lutra lutra</i>			
To maintain the favourable conservation condition of Otter in Lough Corrib SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 1,054ha along river banks/ lake shoreline/around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline and river banks identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 314.2km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 4,178ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase. For guidance, see map 12	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

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

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

4.2.3.3. Bats

In the case of bats, each year bridges to be repaired are assessed for the potential to negatively impact upon bats. In 2021 we have commenced the Year 4 assessments and therefore now have

access to targeted bat surveys at a range of bridges undertaken over a 4 year period, as well as any historic data. In particular, for example, all masonry bridges where masonry repair works are called up are assessed and where appropriate a bat specialist is procured to survey these structures to check whether they support roosting bats. This involves checking of the structure for potential bat roosts / roosting bats and where necessary a bat emergence survey is undertaken to determine if bats are roosting at a structure. Specialist bat surveyors are procured by Atkins on behalf of TII to undertake this work. Copies of bat survey reports can be provided to the Department if deemed appropriate.

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

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

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

4.2.3.4. Nesting Birds

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

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

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

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

It is a requirement of the Contractor that any nests identified are avoided by the erection of suitable buffer zones and communication of this constraint to staff during tool box talks.

4.2.3.5. Vegetation

In their submission on behalf of the Department (DTCAGSM; dated 17th May 2021), NPWS noted that “Masonry bridges are a valuable habitat for a myriad of saxicolous vascular, bryophyte and lichen species.” The Department’s comments that the “Removal of vegetation from the bridge surface, parapets and embankments”, should be carried out judiciously so as to avoid the wholesale removal of small vascular plants, bryophytes and lichens – their removal should be deemed necessary only for imperative reasons of engineering integrity.”

Section 5.2 presents a short summary of each bridge as well as a recent photograph of the structure. As can be seen from these the bridges subject to works proposals in this assessment support limited amounts of vegetation on the bridge proper. However, these concerns have been noted and communicated to TII with a view to exploring how the need to protect saxicolous vascular, bryophyte

and lichen species can be integrated into the need to protect a bridge from damage and structural deterioration.

Bridges located within SACs that are designated for species or habitats that may constitute *saxicolous vascular, bryophyte and lichen species*, where vegetation removal is proposed from the structure, are subject to further consideration in this assessment.

4.3. Statement of Authority

The NIS was prepared by Emma Nickelsen and Niamh Sweeney under the direction of 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 over 10 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 assisted in the preparation of this report.

Paul O'Donoghue has a BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics. He is a chartered member of the Society for the Environment (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Paul has over 18 years' experience in ecology; including extensive experience in the preparation of Habitat Directive Assessments / Natura Impact Statements (i.e. Appropriate Assessment under Article 6(3) of the EU Habitats Directive). Paul carried out the technical review of this report.

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

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

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

Table 5-1 Bridge location relative to European sites and surface water connectivity.

Structure ID	Structure Name	River	Wfd Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
DL-N15-012.00	Druminnin Bridge	Clogher [Donegal]	Eske_SC_010	Yes	Lough Eske and Ardnamona Wood SAC	No	N/A	Lough Eske And Ardnamona Wood SAC is located 35m ca. d/s from bridge	No
DL-N56-026.00	Kilraine Bridge	KILREAN_UPPER	Owenea_SC_010	No	N/A	No	N/A	West Of Ardara/Maas Road SAC ca. 0.3km d/s of bridge	No
DL-N56-027.00	Mullanieran Bridge	Owenea	Owenea_SC_010	Yes	West Of Ardara/Maas Road SAC	No	N/A	Within	No
DL-N56-055.00	Owencarrow River Bridge	Undefined	Lackagh_SC_010	Yes	Cloghernagore Bog And Glenveagh National Park SAC	No	N/A	Within	Derryveagh And Glendowan Mountains SPA ca. 3.7km d/s of bridge
DL-N56-057.00	Termon Bridge	Drumluragh	Leannan_SC_020	Yes	Leannan River SAC	No	N/A	Within	Lough Fern SPA ca. 7.6km d/s of bridge
DL-N56-058.00	Procklis Bridge	Lurgy 39	Leannan_SC_020	Yes	Leannan River SAC	No	N/A	Within	Lough Fern SPA ca. 4.7km d/s of bridge
DL-N56-059.00	Lurgy Bridge	Lurgy 39	Leannan_SC_020	Yes	Leannan River SAC	No	N/A	Within	Lough Fern SPA ca. 3.5km d/s of bridge
GC-N59-010.00	Kylemore Abbey Bridge	Dawros 32	Dawros_SC_010	No	N/A	No	N/A	Within	No
GC-N59-023.00	Emlaghdauroe Bridge	Undefined	Recess_SC_020	Yes	The Twelve Bens/Garraun Complex SAC	No	N/A	Within	Connemara Bog Complex SPA ca. 3.2km d/s of bridge
GC-N59-024.00	Lettery Bridge	Undefined	Recess_SC_020	No	N/A	No	N/A	Within 50m of The Twelve Bens/Garraun Complex SAC	Connemara Bog Complex SPA ca. 4.6km d/s of bridge
GC-N59-029.00	Caher Bridge	Owentooley	Recess_SC_010	Yes	Maumturk Mountains SAC	No	N/A	Within	Connemara Bog Complex SPA ca. 15.2km d/s of bridge

Structure ID	Structure Name	River	Wfd Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
GC-N59-035.00	Bunskannive Bridge	Recess	Recess_SC_010	Yes	Connemara Bog Complex SAC	No	N/A	Within	Connemara Bog Complex SPA ca. 2.5km d/s of bridge
GC-N59-039.00	Glengowla Bridge	Bunowen [Oughterard]	BallycuirkeLoughStream_SC_010	Yes	Lough Corrib SAC	No	N/A	Within	Lough Corrib SPA ca. 6.8km d/s of bridge
MO-N59-053.20	Bracklagh Bridge	Rooghaun 32	Erriff_SC_010	No	N/A	No	N/A	Bridge located 750m upstream of Mweelrea/Sheeffry/Erriff Complex SAC 001932	No
MO-N59-053.50	Carrowrevagh Bridge	Rooghaun 32	Erriff_SC_010	No	N/A	No	N/A	Bridge located 250m upstream of Mweelrea/Sheeffry/Erriff Complex SAC 001932	No

5.2. Description of the Special Areas of Conservation

5.2.1. Connemara Bog Complex SAC (002034)

Site Overview

“The Connemara Bog Complex is characterized by areas of deep peat surrounded by rocky granite outcrops covered by heath vegetation. However, the main habitat within this site is lowland Atlantic blanket bog, as most of the area is covered by blanket peat greater than 1 m in depth. A mosaic of different communities exists in association with the blanket bog, including hummock/hollow systems, interconnecting bog pools, flushes, transition and quaking mires, freshwater marshes, lakeshore, lake and river systems.

Both oligotrophic and dystrophic lakes are found within Connemara Bog Complex SAC, with the greatest concentration in the west of the site. The latter type are generally smaller, have a mainly peaty bottom and there is generally an abrupt transition from blanket bog to open water. Oligotrophic lakes in this site typically have shallow margins, with a mixed rocky/peaty bottom.

The main river systems within the site are the Owenmore (Ballynahinch) river, the Glashanasmearany and Derrygauna rivers (to the south of Lough Bofin), the Cashla river (which flows out of Glenicmurrin Lough), the Glengawbeg river (which connects Lough Agraffard and Lettercraffoe Lough) and the Owenboliska river and its tributaries (north of Spiddal).

Within this site, areas of transition mire occur mainly along the margins of lakes and bog streams. The surface of such areas is typically quaking and there is often evidence of base-enrichment.

*There are a number of areas of old oak woodland, but the woodland at Shannawoneen, north of Spiddal, is the best known. This woodland lies in the valley of the Owenboliska river. It provides a good example of a Sessile Oak (*Quercus petraea*) dominated canopy woodland, although there is also a lot of Downy Birch (*Betula pubescens*).*

Four main lagoons occur within this site: Lough Ahalia, Doire Bhanbh, Lough Aconeera and Salt Lake. All four are regarded as saline lake lagoons and they range in size from 1–90 ha.

*Nine species protected under the Flora (Protection) Order, 2015, occur within this site: Forked Spleenwort (*Asplenium septentrionale*), Parsley Fern (*Cryptogramma crispa*), Bog Hair-grass (*Deschampsia setacea*), Slender Cottongrass, Bog Orchid (*Hammarbya paludosa*), Slender Naiad, Heath Cudweed (*Omalotheca sylvatica*), Pillwort and Pale Dog-violet (*Viola lactea*).*

Atlantic Salmon, a species listed under Annex II of the E.U. Habitats Directive, occurs in many of the rivers within the site.

Otter have been recorded as occurring in the Connemara Bog Complex.”

Qualifying Interests

- Coastal lagoons [1150]
- Reefs [1170]
- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]
- Natural dystrophic lakes and ponds [3160]

- Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitriche-Batrachion* vegetation [3260]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) [6410]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Alkaline fens [7230]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- *Euphydryas aurinia* (Marsh Fritillary) [1065]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

GC-N59-035.00. Bunsannive Bridge. Within SAC.

5.2.2. Lough Corrib SAC (000297)

Site Overview

“The shallow, lime-rich waters of the southern basin of Lough Corrib support one of the most extensive beds of stoneworts (Charophytes) in Ireland. Alkaline fen vegetation is more widespread around the lake margins and includes, amongst the typically diverse range of plants, the Slender Cottongrass (Eriophorum gracile), a species protected under the Flora (Protection) Order, 2015.

This large site contains four discrete raised bog areas and is selected for active raised bog, degraded raised bog, Rhynchosporion and bog woodland. Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (Sphagnum spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, Sphagnum lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels.

At Addergoole, on the eastern shores of Lough Corrib, there is an important area of western raised bog. This bog area is one of the most westerly, relatively intact raised bogs in the country. There are also other substantial areas of raised bog along various tributaries of the Corrib in east Co. Galway, namely Slieve Bog, Lough Tee Bog and Killaclogher bog. The active parts of these bogs mostly correspond to the wettest areas, where there are well-developed surface features with hummocks, lawns and pools. It is in such areas that Rhynchosporion vegetation is best represented.

The largest part of the uncut high bog comprises degraded raised bog. Degraded bog is dominated by a raised bog flora which tends to be rather species-poor because of disturbance and/or drying-out.

Limestone pavement occurs along much of the shoreline in the lower Corrib basin, and supports a rich and diverse flora.

Open areas of orchid-rich calcareous grassland are also found in association with the limestone exposures.

A number of the rivers in the site support submerged and floating vegetation of the *Ranunculus fluitantis* and *Callitriche-Batrachion*, including mosses.

Lough Corrib is considered one of the best sites in the country for Otter, due to the sheer size of the lake and associated rivers and streams, and also the generally high quality of the habitats. Atlantic Salmon (*Salmo salar*) use the lake and rivers as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the E.U. Habitats Directive.

[REDACTED] White clawed Crayfish (*Austropotamobius pallipes*), also listed on Annex II, is well distributed throughout Lough Corrib and its in-flowing rivers over limestone. A summer roost of Lesser Horseshoe Bat, another Annex II species, occurs within the site - approximately 100 animals were recorded here in 1999."

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140]
- Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Active raised bogs [7110]
- Degraded raised bogs still capable of natural regeneration [7120]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- Alkaline fens [7230]
- Limestone pavements [8240]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Bog woodland [91D0]
- [REDACTED]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Salmo salar* (Salmon) [1106]
- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]
- *Lutra lutra* (Otter) [1355]
- *Najas flexilis* (Slender Naiad) [1833]

- *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]

Linkage to Bridges

GC-N59-039.00. Glengowla Bridge. Within SAC.

5.2.3. Mweelrea/Sheeffry/Erriff Complex SAC (001932)

Site Overview

“A number of lowland blanket bog sites are located within the complex. Lowland blanket bog was formerly more extensive in the area but is now fragmented by coniferous forestry plantations, particularly in the Erriff Valley.

Rhynchosporion vegetation is best developed in the lowland blanket bog areas, where pools, wet hollows and quaking areas occur.

Areas of quaking bog are often associated with soakways which flow through lowland blanket bog areas. These habitats correspond with the E.U. Annex I listed habitat ‘Transition mires and quaking bogs’.

Dystrophic lakes occur at this site in association with the extensive tracts of lowland blanket bogs, particularly in the northern and eastern parts of the site. They range in size from tens of square metres to two hectares.

Wet heath occurs at this site in upland regions, where peat depth is restricted. Vegetation can be similar to lowland blanket bog, and is typically dominated by Deergrass, Cross-leaved Heath, Purple Moor-grass, Bog-myrtle and bog mosses.

The site contains a scattering of large, base-poor lakes, the largest concentration of which is in the Doo Lough valley.

*The site also contains a number of fine examples of upland corrie lakes which are situated in the northern and eastern sides of the Mweelrea, Sheeffry and Maumtrasna mountain ranges. These fall into the category of ‘oligotrophic to mesotrophic standing waters’. Some of these lakes are relatively large, while others are no more than a couple of hectares, and all of these lakes lie above 200 m. As an example, at one of these lakes, Lough Glenawough, a sparse base-poor vegetation is supported with species such as Bulbous Rush, Water Lobelia, Quillwort (*Isoetes lacustris*) and Shoreweed being found.*

*As mentioned already, this site contains a number of extensive and important river systems. The species Bulbous Rush (*Juncus bulbosus* var. *fluitans*), Alternate Watermilfoil (*Myriophyllum alterniflorum*), Broad-leaved Pondweed (*Potamogeton natans*), Lesser Spearwort and the moss *Fontinalis squamosa* have been recorded from the Erriff River, and Broad-leaved Pondweed, water-starworts (*Callitriche* spp.), Branched Bur-reed (*Sparganium erectum*), Spiked Water-milfoil (*M. spicatum*) and Bulbous Rush from the Carrownisky River in the north-west of the site.*

*The coastal plain at Dooaghtry represents perhaps the finest example of machair habitat in Ireland. This area includes dunes, machair, oak (*Quercus* sp.)/birch (*Betula* sp.) woodland, freshwater lakes, lagoon, marsh and saltmarsh, and supports a rich flora, including the orchids Marsh Helleborine, Narrow-leaved Helleborine (*Cephalanthera longifolia*) and Irish Lady’s-tresses (*Spiranthes romanzoffiana*), all listed in the Irish Red Data Book, and the latter two protected under the Flora (Protection) Order, 2015. The rare liverwort, Petalwort (*Petalophyllum ralfsii*), a species listed under Annex II of the E.U. Habitats Directive and also protected under the Flora (Protection) Order, 2015, has been recorded from this area also.*

Mediterranean and Atlantic saltmarsh both occur at this site and are largely confined to the Dooaghtry area.

Corragaun Lough is a medium-sized (10 ha), shallow (1 m), sedimentary lagoon with a dune barrier. The dunes have been considerably reduced in size since early maps were drawn due to infilling of the lagoon and onshore movement of the sand.

The whorl snails, *Vertigo angustior* and *V. geyeri*, both of which are listed on Annex II of the E.U. Habitats Directive, occur at Dooa htr .

The Erriff River system supports an important population of Salmon (*Salmo salar*), also listed on Annex II. Arctic Char has been recorded from Doo Lough and there is a pre-1930 record of this fish species from Lough Glenawough. Arctic Char is listed in the Irish Red Data Book as threatened in Ireland. Otters are known to breed in the lakes at this site, and this species is also listed on Annex II of the E.U. Habitats Directive.”

Qualifying Interests

- Coastal lagoons [1150]
- Annual vegetation of drift lines [1210]
- 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]
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150]
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]
- Machairs (* in Ireland) [21A0]
- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]
- Natural dystrophic lakes and ponds [3160]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Alpine and Boreal heaths [4060]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- Alkaline fens [7230]
- 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]
- *Vertigo geyeri* (Geyer's Whorl Snail) [1013]

- *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
- [REDACTED]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Petalophyllum ralfsii* (Petalwort) [1395]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

MO-N59-053.20. Bracklagh Bridge located 750m upstream of Mweelrea/Sheeffry/Erriff Complex SAC.

MO-N59-053.50. Carrowrevagh Bridge located 250m upstream of Mweelrea/Sheeffry/Erriff Complex SAC.

5.2.4. The Twelve Bens/Garraun Complex SAC (002031)

Site Overview

“This is an extensive site situated in the north-west of Connemara in Co. Galway and dominated by mountainous terrain. The site is bounded to the south by the Connemara Bog Complex, to the east by the Maumturk Mountains and to the north by Killary Harbour. Included within the site are the Twelve Bens mountain range, the mountains to the north of Kylemore (Doughruagh, Garraun and Benchoona), rivers including the Ballynahinch and Owenglin systems and an area of coastal heath and machair near Glassilaun. The site also includes some extensive tracts of lowland blanket bog which are continuous with the mountains. Most of the mountain summits reach a height in excess of 500 m, the highest being Ben Baun in the Twelve Bens which reaches 730 m. The site includes a large portion of the Connemara National Park and a Statutory Nature Reserve at Derryclare Wood.

The site contains several small areas of Sessile Oak (Quercus petraea) woodland, a habitat which is particularly rare in Connemara. The best examples on the site of this habitat are found at Kylemore and on the north shore of Derryclare Lough. Derryclare Wood, a Statutory Nature Reserve, has been particularly well studied. It is composed mostly of Sessile Oak, with some Rowan (Sorbus aucuparia), Downy Birch (Betula pubescens) and occasional Ash (Fraxinus excelsior) forming the canopy layer. There is a well-developed lichen and fungus flora present. The fungal parasite, Hemigrapha astericus, a native of Australia and South America, was first recorded in the northern hemisphere from this wood. The Kylemore woods, though heavily infested by Rhododendron (Rhododendron ponticum), still retain a diverse flora and support interesting communities of mosses and liverworts, including such species as Radula voluta, Lejeunea holtii, L. hibernica, L. flava subsp. moorei, Cephalozia hibernica, Teleranea nematodes, Campylopus setifolius, Oxystegus hibernicus, Grimmia hartmanii and G. funalis.”

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]
- Alpine and Boreal heaths [4060]
- Blanket bogs (* if active bog) [7130]
- Depressions on peat substrates of the Rhynchosporion [7150]
- 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]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- [REDACTED]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

GC-N59-010.00. Kylemore Abbey Bridge ca. 0.1km upstream of SAC.

GC-N59-023.00. Emlaghdauroe Bridge. Within SAC.

5.2.5. West Of Ardara/Maas Road SAC (000197)

Site Overview

“The site comprises most of the peninsula situated west of the Ardara/Maas road, an area of blanket bog, lakes and heath to the east of this road, two large bays to the north and south of the peninsula, the lower section of the Gweebarra River and the island of Inishkeel situated 1km to the north of the peninsula. Much of the marine component of the site comprises shallow bays, estuaries, sand and sandflats. A large area of the site comprises a mosaic of blanket bog, heath, exposed rock, lakes and other wetlands, and humid grassland, but coastal habitats such as sand dunes, machair and salt marshes are well represented. Small areas of scrub and broad-leaved deciduous woodland are scattered throughout the site. Many of the coastal sections of the site are underlain by metamorphic rocks and limestone; most of the inland section of the site is underlain by intrusive igneous granodiorites.

*An exceptionally diverse, large site with a wide range of marine, coastal and inland habitats, many of which are of very high quality. The site holds several rare or scarce plant and animal species, including *Najas flexilis* which has been recorded from two stations on the site, *Petalophyllum ralfsii*, [REDACTED] *Vertigo geyeri*, *Lutra lutra*, *Salmo salar*, *Phoca vitulina* and a large population of *Euphydryas aurinia*. The site is notable for the many important bird populations that occur, including nine species listed on Annex I of Council Directive 79/409/EEC.”*

Qualifying Interests

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Large shallow inlets and bays [1160]
- Annual vegetation of drift lines [1210]
- 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]
- Decalcified fixed dunes with *Empetrum nigrum* [2140]
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150]
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]

- Humid dune slacks [2190]
- Machairs (* in Ireland) [21A0]
- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Alpine and Boreal heaths [4060]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
- Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510]
- Blanket bogs (* if active bog) [7130]
- Depressions on peat substrates of the Rhynchosporion [7150]
- Alkaline fens [7230]
- *Vertigo geyeri* (Geyer's Whorl Snail) [1013]
- [REDACTED]
- *Euphydryas aurinia* (Marsh Fritillary) [1065]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]
- *Petalophyllum ralfsii* (Petalwort) [1395]
- *Najas flexilis* (Slender Naiad) [1833]

[Linkage to Bridges](#)

DL-N56-026.00. Kilraine Bridge ca. 0.3km upstream of SAC.

DL-N56-027.00. Mullanieran Bridge. Within SAC.

5.2.6. Maumturk Mountains SAC (002008)

Site Overview

“Wet heath is widespread within this site on the margins of areas of blanket bog and on the lower slopes of mountains where peat depth is less than 1m. On drier, more steep slopes, dry heath is present with Bell Heather (Erica cinerea) a typical frequent species. Over-grazing by sheep has greatly modified the structure and composition of the heath communities, with a reduction in Heather cover and in places the initiation of soil erosion.

Blanket bog also occurs within this site, some of which is intact and of good quality, with a particularly good example at Caher.

Rhynchosporion vegetation is associated with the blanket bog in a few areas of the site. It is characterised by well-developed inter-connecting pool systems with quaking carpets of Sphagnum.

Oligotrophic lakes are well represented in this site, occurring mainly in the southeast near Maam Cross. Spawning salmon and trout occur in Maumwee Lough, and perhaps others.

Other habitats present include lowland blanket bog, siliceous quartzite scree, exposed rock, upland grassland on peaty and mineral substrates, river valleys and streams, lakes, and woodland on lake islands.

*Several other Red Data Book plant species are also found on the site, including Slender Cottongrass (*Eriophorum gracile*) and Slender Naiad (*Najas flexilis*), both occurring in just single locations. There is an old record from near Maam Cross for Wood Bitter-vetch (*Vicia orobus*), but this has not been seen on the site in recent years.*

The site is very important for salmon, a species listed on Annex II of the E.U. Habitats Directive. The rivers and lakes, and especially the Bealnabrack system, provide high quality spawning and nursery rivers.

This site is of conservation interest as it is a good example of an extensive mountain landscape, containing blanket bog, large areas of heath, siliceous rocky vegetation, oligotrophic lakes and upland grassland. The areas of blanket bog at Teernakill and Caher are largely unaffected by over-grazing and are in very good condition. The presence of rare and protected plant species and of the scarce Arctic Char adds to the interest of the site.”

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- Alpine and Boreal heaths [4060]
- Blanket bogs (* if active bog) [7130]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Siliceous rocky slopes with chasmophytic vegetation [8220]
- *Salmo salar* (Salmon) [1106]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

GC-N59-029.00. Caher Bridge. Within SAC.

5.2.7. Leannan River SAC (002176)

Site Overview

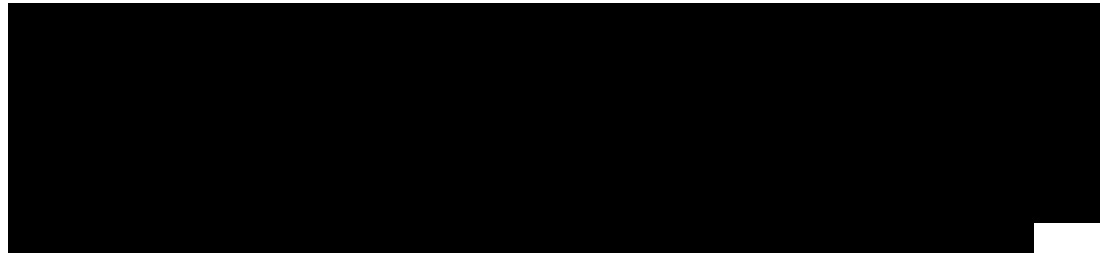
“The river has good water quality and its banks are fringed more or less continuously by deciduous woodland. The adjacent habitat is mainly wet grassland which has been improved to varying degrees for grazing. There is also a good scattering of woodland, mostly deciduous, in the surrounding area.

*Gartan Lough and Lough Akibbon are excellent examples of oligotrophic lakes, a habitat type listed in Annex I of the E.U. Habitats Directive. Both are medium sized lakes and have vegetation that includes Shoreweed (*Littorella uniflora*), Quillwort (*Isoetes lacustris*), Water Lobelia (*Lobelia dortmanna*), Bulbous Rush (*Juncus bulbosus*), Bog Pondweed (*Potamogeton polygonifolius*) and the scarce Pillwort (*Pilularia globulifera*). Of particular note is the presence of Slender Naiad (*Najas flexilis*) in Lough Akibbon, as this species is listed in Annex II of the Habitats Directive, as well as on the Flora (Protection) Order, 2015. The other large lake in the site, Lough Fern, is a more mesotrophic lake system.*




The site also supports Atlantic Salmon, another species listed in Annex II of the E.U. Habitats Directive. The Leannan is a good spring and grilse salmon river with extensive spawning habitats and good water quality. Lough Gartan has a population of Arctic Char (*Salvelinus alpinus*), a species listed in the Red Data Book.

Otter, a species listed on Annex II, is also known at the site. The site has a population of Leisler's Bat (*Nyctalus leisleri*) (67 individuals in July 1993), also a Red Data Book species.



Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]
- 
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

DL-N56-057.00. Termon Bridge. Within SAC.

DL-N56-058.00. Procklis Bridge. Within SAC.

DL-N56-059.00. Lurgy Bridge. Within SAC.

5.2.8. Cloghernagore Bog And Glenveagh National Park SAC (002047)

Site Overview

“Cloghernagore Bog and Glenveagh National Park SAC is an exceptionally large inland site located in the centre of north-west Donegal. It includes a rich diversity of habitats and landscape features, including mountains, exposed rock and scree, blanket bogs, dry, wet and alpine heath, upland grassland, wet grassland, rivers, lakes, scrub and woodland. The Gweebarra fault bisects the area forming a long valley, orientated north-east to south-west, in which Lough Barra and Lough Veagh (Beagh) are situated. The area is generally mountainous, taking in most of the Derryveagh and Glendowan ranges and including the two highest mountains in Donegal, Errigal (751 m) and Slieve Snaght (678 m). Towards the centre-west of the site are the fine ice-carved cliffs of the Poisoned Glen and Bingorms, which contrast dramatically with the gently undulating expanses of blanket bog in the south-west and north-east of the site. The underlying rock is predominantly granite, with a few intrusive dykes. However, around Errigal the geology is more complex with bands of schists, quartzite, granodiorite and limestone occurring.

The site is of great scientific and conservation value, particularly for the large areas of excellent, little-damaged blanket bog it contains, including the largest intact area of blanket bog in north-west Ireland. It also includes good quality examples of seminatural deciduous woodland, heath, oligotrophic lakes and inland cliffs. The importance of the site is increased by the presence of a wide range of plant and animal species, including many rare or threatened Red Data Book species, and several that are listed on Annex II of the E.U. Habitats Directive or Annex I of the E.U. Birds Directive.”

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Alpine and Boreal heaths [4060]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Blanket bogs (* if active bog) [7130]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- [REDACTED]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]

Linkage to Bridges

DL-N56-055.00. Owencarrow River Bridge. Within SAC.

5.2.9. Lough Eske And Ardnamona Wood SAC (000163)

Site Overview

“This is a diverse site, most of which comprises a soft-water lake, Lough Eske, which occupies a large glacial-scoured hollow. Two rivers enter the lake, one from the north, one from the south-east. A third river, the R. Eske, is the lake outflow, situated in the south. A large area of old Oak (Quercus sp.) woodland, Ardnamona Wood, is found on the western side of the lake. Areas of freshwater marsh, fen, blanket bog, flush, heath, scrub and a variety of woodland and grassland types also occur within the site. The site is situated on a geological transition zone, being underlain by Dalradian schist and gneiss on the east and lower Carboniferous sandstone and limestone (predominantly the former) to the west and south.

This is a high quality site which includes a wide variety of habitats and species, several of which are rare in Ireland. The stand of old Oak woodland is a particularly fine example of this type of habitat and one that is generally rare in Ireland. The lake is a good example of the type and is notable for the stock of Arctic Charr (Salvelinus alpinus) that it holds. The site supports an important population of Salmo salar. A good example of poor intermediate fen vegetation occurs at the north end of the lake. The petrifying spring habitat is fairly restricted in area, though has at least two diastrophic bryophyte species. [REDACTED] The site holds many plant species that are rare in Ireland or in County Donegal, including Trichomanes speciosum and Omalotheca sylvatica which are legally protected.”

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Petrifying springs with tufa formation (Cratoneurion) [7220]
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
- [REDACTED]
- Salmo salar (Salmon) [1106]
- Trichomanes speciosum (Killarney Fern) [1421]

Linkage to Bridges

DL-N15-012.00. Druminnin Bridge. Within SAC.

5.3. Description of the Special Protection Areas

5.3.1. Lough Corrib SPA (004042)

Site Overview

“Lough Corrib is the largest lake in the Republic of Ireland. The lake can be divided into two parts: a relatively shallow basin, underlain by Carboniferous limestone, in the south and a larger, deeper basin, underlain by more acidic granite, schists, shales and sandstones, to the north. The main inflowing rivers are the Black, Clare, Dooghta, Cregg, Owenriff and the channel from Lough Mask. The main outflowing river is the Corrib, which reaches the sea at Galway City. Lough Corrib is classified as a mesotrophic system and overall water quality is considered to be satisfactory. The shallow, lime-rich waters of the southern basin of the lake support one of the most extensive beds of charophytes (Chara spp.) in Ireland, which occur mixed with submerged pondweeds (Potamogeton spp.). Large areas of reedswamp vegetation, dominated by varying mixtures of Phragmites australis and Scirpus lacustris, occur around the margins of the lake. Reedswamp usually grades into species-rich marsh vegetation. Of particular note are the extensive beds of Cladium mariscus that have developed over the marly peat deposits in sheltered bays. The lake has numerous islands, from rocky islets to larger islands with grassland or woodland. The surrounding lands are mostly pastoral farmland, to the south and east, and bog and heath, to the west and north. Lough Corrib is an internationally renowned salmonid fishery.

The site is of international importance for wintering Aythya ferina but also qualifies for international importance because it regularly supports well in excess of 20,000 waterfowl. It is one of the top five sites in the country for wintering waterfowl. Of particular importance is that it is the most important site in the country for Aythya ferina, Aythya fuligula and Fulica atra supporting 21%, 46% and 13% of the respective national totals. It also has nationally important populations of wintering Cygnus olor, Anas strepera, Anas clypeata, Pluvialis apricaria and Vanellus vanellus. The lake is a traditional site for Anser albifrons flavirostris. Small numbers of Cygnus cygnus winter. Lough Corrib is a traditional breeding site for gulls and terns. There are nationally important colonies of Sterna hirundo and Sterna paradisaea, as well as Larus ridibundus and Larus canus. Considerable higher numbers of gulls bred in the 1970s and 1980s. Whilst only colonised in the 1970s/80s by nesting Melanitta nigra, Lough Corrib now supports approximately half of the national population of this rare duck, which is a Red Data Book species. The population has been stable since the mid-1990s. Lough Corrib supports a range of species listed on Annex II of the E.U. Habitats Directive, including Lutra lutra, Salmo salar and Najas flexilis.”

Qualifying Interests

- Gadwall (*Anas strepera*) [A051]
- Shoveler (*Anas clypeata*) [A056]
- Pochard (*Aythya ferina*) [A059]
- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Hen Harrier (*Circus cyaneus*) [A082]
- Coot (*Fulica atra*) [A125]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Common Tern (*Sterna hirundo*) [A193]
- Arctic Tern (*Sterna paradisaea*) [A194]

- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
- Wetland and Waterbirds [A999]

Linkage to Bridges

GC-N59-039.00. Glengowla Bridge. Lough Corrib SPA ca. 6.8km downstream of bridge.

5.3.2. Derryveagh And Glendowan Mountains SPA (004039)

Site Overview

“Derryveagh and Glendowan Mountains SPA is an extensive upland site in north-west Co. Donegal, comprising Glenveagh National Park, a substantial part of the Derryveagh and Glendowan Mountains and a number of the surrounding lakes. Much of the site is over 300 m above sea level, rising to a peak of 678 m at Slieve Snaght. The solid geology is predominantly quartzite. The substrate over much of site is peat, with blanket bog and heath comprising the principal habitats.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Merlin, Peregrine, Golden Plover and Dunlin.

This site is one of only a few locations where Red-throated Diver breed in Ireland and the birds also use a number of lakes within the site for feeding. A survey in 2010 recorded 6 pairs at the site. The extensive bog and heath habitats provide excellent foraging habitat for both Peregrine (5-6 pairs in 2002) and Merlin (estimated 6-11 pairs). Peregrine nest on the crags and cliffs, whilst Merlin nest in the heather or in old crows’ nests in trees. The site is very important for breeding Golden Plover and Dunlin (subsp. schinzii) with 18 and 5 pairs respectively recorded in 2002.

Red Grouse is also widespread on the bogs and Ring Ouzel, a rare species of the uplands, breeds sparingly, with at least 2 pairs recorded in a 2002 survey. Several pairs of Whinchat, a scarce Irish species, breed within the site. Goosander is also a regular visitor to the lakes, though breeding within the site has not been proved. Snowy Owl has also attempted to breed within the site - a clutch of eggs was laid but these did not hatch. Wood Warbler is present annually, with perhaps three pairs occurring. Redstart has bred on at least one occasion but there have been few sightings in recent years, and it is not known if breeding occurs regularly.

Glenveagh National Park is the central location for the Golden Eagle re-introduction programme, which commenced in 2000. With time, this species may become successfully re-established as a breeding species in Ireland.

The site is of high ornithological importance with nationally important breeding populations of five species. Of particular note is that five of the species that occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Red-throated Diver, Peregrine, Merlin, Golden Plover and Dunlin (subsp. schinzii). A large proportion of Lough Barra Bog, a Ramsar Convention site and a Statutory Nature Reserve, is within the Derryveagh and Glendowan Mountains SPA.

Qualifying Interests

- Red-throated Diver (*Gavia stellata*) [A001]
- Merlin (*Falco columbarius*) [A098]
- Peregrine (*Falco peregrinus*) [A103]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Dunlin (*Calidris alpina schinzii*) [A466]

Linkage to Bridges

DL-N56-055.00. Owencarrow River Bridge. Derryveagh and Glendowan Mountains SPA ca. 3.7km downstream of bridge.

5.3.3. Lough Fern SPA (004060)

Site Overview

“Lough Fern is of ornithological importance for wintering waterfowl and particularly diving duck. Whilst bird counts at the site extend back to the 1970s, these have been irregular and there have been few in recent years. Nationally important numbers of Pochard have been recorded at the site (604, two year mean peak, 1995/96 and 1998/99). Other species present include Tufted Duck (181), Goldeneye (27) and Whooper Swan (18), as well as small numbers of dabbling ducks such as Wigeon and Mallard. Little Grebe and Water Rail also use the site. It appears that numbers of the main species fluctuate widely, suggesting that the lake may be an important temporary refuge when birds are displaced from other sites.

Lough Fern is of ornithological importance as it supports a nationally important population of Pochard. The occurrence of Whooper Swan, albeit in small numbers, is of note as this species is listed on Annex I of the E.U. Birds Directive. Part of Lough Fern SPA is a Wildfowl Sanctuary.”

Qualifying Interests

- Pochard (*Aythya ferina*) [A059]
- Wetland and Waterbirds [A999]

Linkage to Bridges

DL-N56-057.00. Termon Bridge. Lough Fern SPA ca. 7.6km downstream of bridge.

DL-N56-058.00. Procklis Bridge. Lough Fern SPA ca. 4.7km downstream of bridge.

DL-N56-059.00. Lurgy Bridge. Lough Fern SPA ca. 3.5km downstream of bridge.

5.3.4. Connemara Bog Complex SPA (004181)

Site Overview

“The Connemara Bog Complex SPA is a large site encompassing much of the south Connemara lowlands of Co. Galway. The site consists of three separate areas - north of Roundstone, south of Recess and north-west of Spiddal. It is underlain predominantly by a variety of igneous and metamorphic rocks including granite, schist, gneiss and gabbro. The whole area was glaciated during the last Ice Age which scoured the lowlands of Connemara.

Connemara Bog Complex SPA is of high ornithological importance, in particular for its nationally important breeding populations of Cormorant, Merlin, Golden Plover and Common Gull. It is of note that three of the regularly occurring species, Greenland White-fronted Goose, Merlin and Golden Plover, are listed on Annex I of the E.U. Birds Directive.”

Qualifying Interests

- Cormorant (*Phalacrocorax carbo*) [A017]
- Merlin (*Falco columbarius*) [A098]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Common Gull (*Larus canus*) [A182]

Linkage to Bridges

GC-N59-023.00. Emlaghdauroe Bridge. Connemara Bog Complex SPA ca. 3.2km downstream of bridge.

GC-N59-024.00. Lettery Bridge. Connemara Bog Complex SPA ca. 4.6km downstream of bridge

GC-N59-029.00. Caher Bridge. Connemara Bog Complex SPA ca. 15.2km downstream of bridge.

5.4. Conservation Objectives

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

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

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

Favourable conservation status of a habitat is achieved when: -

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

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

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

Table 5.2 displays links and citations to Conservation Objectives documents for each SAC 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
Connemara Bog Complex SAC (002034)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002034.pdf	NPWS (2015). Conservation Objectives: Connemara Bog Complex SAC 002034. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Lough Corrib SAC (000297)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000297.pdf	NPWS (2017). Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
Mweelrea/Sheeffry/Erriff Complex SAC (001932)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001932.pdf	NPWS (2017). Conservation Objectives: Mweelrea/Sheeffry/Erriff Complex SAC 001932. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
The Twelve Bens/Garraun Complex SAC (002031)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002031.pdf	NPWS (2017). Conservation Objectives: The Twelve Bens/Garraun Complex SAC 002031. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
West Of Ardara/Maas Road SAC (000197)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000197.pdf	NPWS (2015). Conservation Objectives: West of Ardara/Maas Road SAC 000197. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Maumturk Mountains SAC (002008)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002008.pdf	NPWS (2017) Conservation Objectives: Maumturk Mountains SAC 002008. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
Leannan River SAC (002176)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002176.pdf	NPWS (2019) Conservation Objectives: Leannan River SAC 002176. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
Cloghernagore Bog and Glenveagh National Park SAC (002047)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002047.pdf	NPWS (2017) Conservation Objectives: Cloghernagore Bog and Glenveagh National Park SAC 002047. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
Lough Eske and Ardnamona Wood SAC (000163)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000163.pdf	NPWS (2019) Conservation Objectives: Lough Eske and Ardnamona Wood SAC 000163. Version 1. National Parks and Wildlife Service, Department of Culture, 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 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. Site specific Conservation Objectives have not been developed for the SPAs considered in the preparation of this report. The generic objectives above apply to these sites.

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

SPA	Link to report	Citation
Lough Corrib SPA (004042)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf	NPWS (2021) Conservation objectives for Lough Corrib SPA [004042]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Derryveagh and Glendowan Mountains SPA (004039)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004039.pdf	NPWS (2021) Conservation objectives for Derryveagh and Glendowan Mountains SPA [004039]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Lough Fern SPA (004060)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004060.pdf	NPWS (2021) Conservation objectives for Lough Fern SPA [004060]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Connemara Bog Complex SPA (004181)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004181.pdf	NPWS (2021) Conservation objectives for Connemara Bog Complex SPA [004181]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

5.5. Other Ecological Data

5.5.1. Otter

As discussed above a number of bridges are on rivers for which Otter is a qualifying interest. Table 5-4 presented the results of an assessment of the potential for otter holts to occur close to proposed bridge works.

As there is a significant amount of vegetation around a number of bridges the environs of the bridge are to be checked for otter prior to the commencement of works (see Table 5-4). Works are not permitted to continue if an otter holt is located close to the bridge until its status is further confirmed. The bridges to be checked are as follows.

- DL-N56-026.00
- DL-N56-059.00
- GC-N59-010.00
- GC-N59-023.00

5.5.3. Vegetation

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

From a review of bridge photographs very few structures supported significant growths of vegetation on the structure itself. It should be noted that these structures are subject to ongoing maintenance and so are not covered by large areas of vegetation. In cases where vegetation was present, the main species noted were moss, Ivy (*Hedera helix hibernica*), bramble (*Rubus fruticosus* agg.), polypody (*Polypodium* sp.), rustyback (*Ceterach officinarum*), ivy-leaved toadflax (*Cymbalaria muralis*), dandelion (*Taraxacum* agg.), grasses as well as trees such as ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*); (see e.g. Plate 2-2 Kilraine Bridge).

The SACs in the North West Region that have qualifying interests that may constitute saxicolous vascular, bryophyte and lichen species, in which the bridges in this assessment are situated, are: -

- Mweelrea/ Sheeffry/ Erriff Complex SAC (001932);
- The Twelve Bens/ Garraun Complex SAC (002031);
- Mamturk Mountains SAC (002008);
- Cloghermagore Bog and Glenveagh National Park SAC (002047);
- Lough Eske and Ardnamona Wood SAC (000163).

These SACs are designated for the following habitats and species:

- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia landani*) [8110];
- Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) [8120];
- Calcareous rocky slopes with *chasmophytic* vegetation [8210];
- Siliceous rocky slopes with *chasmophytic* vegetation [8220];
- Killarney Fern (*Trichomanes speciosum*) [1421].



Killarney fern is a qualifying interest of Cloghermogore Boag and Glenveagh Park SAC and Lough Eske and Ardnamona Wood SAC. Although it is unlikely that vegetation types associated with scree and rocky slopes would be present on masonry bridges, as a precautionary measure, all masonry bridges located within the SACs listed above, where vegetation removal from the structure is proposed, will be subject to surveys prior to the commencement of works (please see Section 5.8 ‘Mitigation Measures’).



Masonry bridges located within the SACs, where vegetation removal from the structure is proposed are: -


- GC-N59-010.00


- GC-N59-023.00
- GC-N59.029.00
- DL-N15-012.00


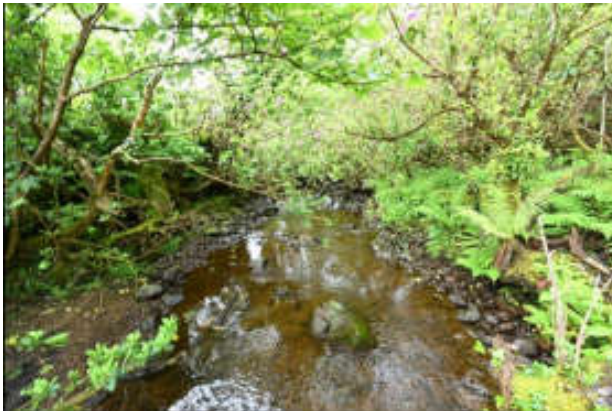
Table 5-4 Review of Structures with respect to Otter.



Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
DL-N15-012.00	Within Lough Eske and Ardnamona Wood SAC	No	No	N.A	N.A
DL-N56-026.00	West Of Ardara/Maas Road SAC ca. 0.3km d/s of bridge	Yes	No		Immediate environs of bridge cannot be discounted as location for an otter holt based on photos.
DL-N56-027.00	Within West Of Ardara/Maas Road SAC	Yes	2021 bat survey	 Upstream	No reference to Otter in 2021 bat survey. Immediate environs of bridge sub-optimal location for an otter holt.



Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
				 <p data-bbox="1144 724 1267 746">Downstream</p>	
DL-N56-055.00	Within Cloghernagore Bog And Glenveagh National Park SAC	Yes	No		Immediate environs of bridge sub-optimal location for an otter holt based on photos.



Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
DL-N56-057.00	Within Leannan River SAC	Yes	2020 bat survey		<p>Otter spraints under arch in 2020.</p> <p>Immediate environs of bridge sub-optimal location for an otter holt.</p>

Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
DL-N56-058.00	Within Leannan River SAC	Yes	2020 bat survey		<p>No reference to otter in 2020 bat surveys.</p> <p>Immediate environs of bridge sub-optimal location for an otter holt.</p>

Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
DL-N56-059.00	Within Leannan River SAC	Yes	No		Immediate environs of bridge cannot be discounted as location for an otter holt based on photos.
GC-N59-010.00	The Twelve Bens/Garraun Complex SAC ca. 0.1km d/s of bridge	Yes	No		Immediate environs of bridge cannot be discounted as location for an otter holt based on photos.

Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
GC-N59-023.00	Within The Twelve Bens/Garraun Complex SAC	Yes	No		Immediate environs of bridge cannot be discounted as location for an otter holt based on photos.
GC-N59-024.00	Within 50m of The Twelve Bens/Garraun Complex SAC	Yes	No		Immediate environs of bridge sub-optimal location for an otter holt based on photos.
GC-N59-029.00	Within Maunturk Mountains SAC	No	N.A	N.A	N.A

Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
GC-N59-035.00	Within Connemara Bog Complex SAC	Yes	No		Immediate environs of bridge sub-optimal location for an otter holt based on photos.
GC-N59-039.00	Within Lough Corrib SAC	Yes	2020 bat survey		No reference to otter in 2020 bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Connectivity to SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photos	Information from bat survey
MO-N59-053.20	Bridge located 750m upstream of Mweelrea/Sheeffry/Erriff Complex SAC 001932	Yes	No		Immediate environs of bridge sub-optimal location for an otter holt based on photos.
MO-N59-053.50	Bridge located 250m upstream of Mweelrea/Sheeffry/Erriff Complex SAC 001932	Yes	No		Immediate environs of bridge sub-optimal location for an otter holt based on photos.

[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. Likelihood of Potential Impacts on European sites

The available information on European sites was reviewed to establish whether or not the proposed works have the potential to have an adverse effect on the integrity of the designated sites. The likelihood of impacts on the qualifying interests of the European sites identified in this report is based on information collated from the desk study, GIS database, bridge photos, work orders and other available existing information.

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

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

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

5.6.1. ‘Do Nothing’ Impact

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

5.6.2. Identification of potential impacts

5.6.2.1. Potential Impacts of proposed works

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

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

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

Loss or modification of habitat

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

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

Disturbance to species for which a European site is designated

Species of concern are those species 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 in 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 road, and the nature and duration of the works, the displacement of species from suitable habitat areas, e.g. wintering birds from feeding or roosting/breeding areas, is not anticipated to be significant.

Habitat / species fragmentation

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

Rivers are corridors for the movement and migration of species. The nature of the proposed works is such that only localised de-watering will be required where necessary, e.g. repair of undermining to a pier or abutment. Localised de-watering activities at a multiple arch bridge do not present impacts regarding the movement of species as one arch will always be open and unobstructed.

Where a bridge is a single span structure, there is potential for the temporary obstruction of species movement. There are 5 no. single span bridges that have been called up for scour repairs or base protection works: DL-N15-012.00 Druminnin Bridge; GC-N59-010.00 Kylemore Abbey Bridge; GC-N59-035.00 Bunsannive Bridge; MO-N59-053.20 Bracklagh Bridge and MO-N59-053.50 Carrowrevagh Bridge.

The proposed works at these single span structures will involve localised dewatering. The works at each bridge will not require the isolation of the entire channel to conduct works, as they are called up to just one side of the channel, and therefore will not result in a barrier to the movement of species. 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 that are impedin flow in the channel, e.g. fallen trees. This impact could affect species [REDACTED] [REDACTED] 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 sites.

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

5.6.3. Categorisation of EIRSPAN work types

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

Table 5-6 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 5-6) 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 5-6 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	

High-pressure hosing will not be occurring during Year 4 maintenance works. Of the works listed above, 13 were found to have a potential impact to negatively impact a SAC and / or SPA and are listed in Table 5-7.

Table 5-7 Work items identified as having negative impacts to be considered further.

Work Item	Potential Impacts of proposed works
01 Clearance of watercourse	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
03 Removal of vegetation	Loss or modification of habitat Disturbance to key species Reduction in species diversity
04 Scour repairs	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
44 Maintenance of gabion	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
45 Maintenance of slope protection	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
47 Reshaping (imported materials)	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
56 Establish base protection	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
57 Maintenance of base protection	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
59 Removal of graffiti	Reduction in species diversity Changes in water quality
60 Masonry repointing	Disturbance to key species Changes in water quality
61 Masonry repairs	Disturbance to key species Changes in water quality

5.6.4. Potential impacts during the works

The above section identifies 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, [REDACTED] 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 5-8 below details the pathway, receptor and impact for each of the EIRSPAN work types called up in the Work Orders for the 16 bridges.

Table 5-9 details the potential impacts posed at a bridge and the qualifying interests (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 qualifying interests within the zone of influence (Zoi).

[REDACTED]

[REDACTED]

[REDACTED]

5.6.6. Otter

The potential for impacts on Otter is summarised in Table 5-4.

5.6.7. Potential impacts post completion of the works

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

Table 5-8 Works, potential impacts and receptors.

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

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

Table 5-9 Potential Impacts to European sites at each bridge.

Structure ID	Structure name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within Zol (via direct or indirect impacts)
DL-N15-012.00	Druminnin Bridge	No	Yes	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Killarney Fern
DL-N56-026.00	Kilraine Bridge	Yes	No	Yes	Yes	Estuaries; Mudflats; Large shallow inlets and bays; Salt meadows; Oligotrophic waters; FWPM; Salmon; Otter; Seal
DL-N56-027.00	Mullanieran Bridge	Yes	Yes	Yes	Yes	Estuaries; Mudflats; Large shallow inlets and bays; Salt meadows; Oligotrophic waters; FWPM; Salmon; Otter; Seal
DL-N56-055.00	Owencarrow River Bridge	Yes	No	Yes	Yes	Oligotrophic waters; Floating river vegetation; FWPM; Salmon; Otter; Killarney Fern
DL-N56-057.00	Termon Bridge	No	Yes	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Otter
DL-N56-058.00	Procklis Bridge	No	Yes	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Otter
DL-N56-059.00	Lurgy Bridge	No	Yes	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Otter; Wetland SCIs of SPA
GC-N59-010.00	Kylemore Abbey Bridge	No	No	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Otter
GC-N59-023.00	Emlaghdauroe Bridge	No	Yes	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Otter
GC-N59-024.00	Lettery Bridge	No	Yes	Yes	Yes	Oligotrophic waters; FWPM; Salmon; Otter
GC-N59-029.00	Caher Bridge	No	Yes	Yes	Yes	Oligotrophic waters; Salmon
GC-N59-035.00	Bunskannive Bridge	Yes	Yes	Yes	Yes	Reefs; Oligotrophic waters; Floating river vegetation; Salmon; Otter
GC-N59-039.00	Glengowla Bridge	Yes	Yes	Yes	Yes	Oligotrophic waters; Floating river vegetation; FWPM; White-clawed crayfish; Lamprey; Salmon; Otter; Wetland SCIs of SPA

Structure ID	Structure name	Loss or modification of habitat	Physical disturbance of species	Reduction in species density	Deterioration of surface water quality	QIs within ZOI (via direct or indirect impacts)
MO-N59-053.20	Bracklagh Bridge	Yes	No	Yes	Yes	Oligotrophic waters; Floating river vegetation; FWPM; Salmon; Otter
MO-N59-053.50	Carrowrevagh Bridge	Yes	No	Yes	Yes	Oligotrophic waters; Floating river vegetation; FWPM; Salmon; Otter

5.7. Cumulative impacts

Local Authorities prepare County and Development Plans and Local Action Plans that set out policies and objectives for the development of the County during the period of the Plan. The Plans seek to secure the sustainable development and improvement of economic, environmental, cultural and social assets of the counties. These Plans under go Appropriate Assessment, for which a Natura Impact Report (NIR) was prepared for the Plans of the counties in the North West 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 12 arterial drainage and embankment schemes in the North West Region. The Corrib scheme is a very large and extensive scheme that is divided into 3 sub-schemes; Corrib Clare, Corrib Headford and Corrib Mask. Two bridges fall either within or are located upstream of a scheme.

The OPW has carried out a Strategic Environmental Assessment and NIS of the drainage maintenance activities for 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 NIS⁸, which require further project-specific assessments to be carried out. Thus, given the nature and scale of the proposed routine maintenance bridge works, cumulative impacts with the OPW drainage programme are not anticipated.

Table 5-10 Bridges within / upstream of an OPW works scheme.

Bridge Code	Location relative to OPW scheme	OPW scheme
GC-N59-039.00	500m upstream of scheme	Corrib Headford

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 willow⁹. Agricultural operations must also comply with the EC (Environmental Impact Assessment) (Agriculture) Regulations 2011 and amendment 2017 S.I. No. 456/2011 and 407/2017 in relation to activities covered by the regulations: -

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

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

Projects that have been granted planning permission in the vicinity of the structures in this assessment are located along the adjacent national and local roads. These generally include retention of existing developments, extensions to domestic dwellings, or the construction of new domestic dwellings or extensions to such dwellings. Regarding potential impacts to water quality, these projects will have to comply with the EPA's Code of Practice for Wastewater Treatment Systems for Single Houses (EPA, 2009; 2018) and abide by any conditions of the planning consent. [see MyPlan.ie].

⁸ <https://www.gov.ie/en/collection/10685d-arterial-drainage-maintenance-sea-2018-2021/>

⁹ Notifiable Actions <https://www.npws.ie/farmers-and-landowners/notifiable-actions>

A number of road schemes are proposed in the North West Region. Examples of such infrastructure projects include are listed below, as informed through communication with TII. 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. The proposed bridge maintenance works are localised, small scale works where the working period is short and temporary in nature. Mitigation measures, where applicable, are itemised for each bridge in Section 5.8 and following the application of the mitigation measures, cumulative impacts are not anticipated.

Table 5-11 TII Road Schemes in the North West Region.

Scheme	Region	Phase
N2 Ardee to South of Castleblayney Bypass	North	Phase 2 - Options Selection
N2 Clontibret to NI Border	North	Phase 2 - Options Selection
N3 Virginia Bypass	North	Phase 2 - Options Selection
N4 Carrick-on-Shannon to Dromod	North	Phase 2 - Options Selection
M4 Mullingar to Longford (Roosky)	North	Phase 2 - Options Selection
N17 Knock to Collooney	North	Phase 2 - Options Selection
N52 Tullamore to Kilbeggan	North	Phase 2 - Options Selection
Galway - Athlone Cycleway	West	Phase 2 - Options Selection
N2 Slane Bypass	North	Phase 3 - Design and Environmental Evaluation
N6 Galway City Ring Road	West	Phase 4 - Statutory Processes
N13 Ballybofey Stranorlar Bypass	North	Phase 3 - Design and Environmental Evaluation
N13/14/56 Letterkenny Bypass and D/C to Manorcunningham	North	Phase 3 - Design and Environmental Evaluation
N14 Manorcunningham to Lifford	North	Phase 3 - Design and Environmental Evaluation
N5 Ballaghaderreen to Scramoge	West	Phase 5 - Enabling and Procurement
N14/15/A5 Link	North	Phase 4 - Statutory Processes/Phase 5 Enabling and Procurement
N52 Ardee Bypass	North	Phase 2 - Options Selection
N59 Moycullen Bypass	West	Phase 6 – Construction and Implementation
N4 Collooney to Castlebaldwin	North	Phase 6 - Construction and Implementation
N5 Westport to Turlough	West	Phase 6 - Construction and Implementation
N56 Cloghbolie to Boyoughter	North	Complete
N56 Boyoughter to Kilkenny	North	Complete
N56 Kilkenny to Letterilly	North	Phase 6 - Construction and Implementation
N56 Letterilly to Kilraine	North	Phase 6 - Construction and Implementation
N56 Dungloe to Cloghbolie	North	Phase 6 - Construction and Implementation
N56 Mountcharles to Drumbeigh	North	Complete
N56 Drumbeigh to Inver	North	Phase 6 - Construction and Implementation
Maynooth - Galway Cycleway Design (Maynooth to Athlone - Cycleway Bridge)	North	Various
N2 Monaghan to Emyvale P3	North	Complete
N4 Sligo Urban Improvement Scheme - Option 1	North	Phase 6 - Construction and Implementation

Scheme	Region	Phase
N26 Cloongullane Bridge Realignment	West	Phase 6 - Construction and Implementation
N52 Cloghan to Billistown - Phase 2	North	Complete
N59 Westport to Mulranny - Kilmeena LVNS	West	Complete
N59 Maam Cross to Bunnakill LVNS	West	Phase 6 - Construction and Implementation (almost complete substantial completion cert to be issued next week)
N59 West of Letterfrack Widening	West	Complete
N60 Lagnamuck	West	Complete
N60 Oran	West	Complete
N67 Ballinderreen to Kinvara Phase 2	West	Phase 6 - Construction and Implementation (almost complete substantial completion cert to be issued next week)

5.8. Mitigation Measures

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

5.8.1. Donegal

5.8.1.1. Druminnin Bridge [DL-N15-012.00]

The Druminnin Bridge is a single span concrete structure with an overall span width of 10.1m. Steel safety barriers line the carriageway. The bridge carries the N15 over the Clogher Stream and is located 35m upstream of Lough Eske and Ardnamona Wood SAC. Plate 5.1 displays the west elevation of the structure.



Plate 5-1 Druminnin Bridge.

The qualifying interests of the Lough Eske and Ardnamona Wood SAC are listed in Section 5.2. The qualifying interests that could be impacted are Oligotrophic waters, [REDACTED] salmon and Killarney fern. The potential impacts to the SAC are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

The freshwater pearl mussel survey conducted in 2021 found that freshwater pearl mussel are not present at this site. No live mussels or dead shells were found in the survey stretch. [REDACTED]

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation to be removed 1m either side of structure and on top on structure. Mostly Trees 200m diameter (40m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Remove vegetation, mostly moss, from wing walls and head walls (20m ²)	Screened in - Pre-construction survey for Killarney fern (QI) required.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Repair collapsed gabion in the NW embankment. (1m ²)	Screened in – will require instream access.
Deck/slab/arch barrel	Repair minor spalling to the panel at NW corner. (0.1m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Removal of vegetation

The Contractor’s ecologist shall carry out a survey of this structure for Killarney fern, including gametophyte colonies. If Killarney fern is not recorded, the proposed works can proceed. If Killarney fern is recorded, the ecologist shall identify these areas. The proposed vegetation removal shall not be carried out in these identified areas.

Establishing base protection

Establishment of base protection will be carried out in the dry by installing rock armour along the base of the embankment.

No concrete, cementitious or fine particle 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. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. 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.

Concrete repairs

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

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

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

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

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 Lough Eske and Ardnamona Wood SAC or any other European site.

5.8.1.2. Kilraine Bridge [DL-N56-026.00]

Kilraine Bridge is a double span masonry arch structure with pipe extensions with an overall span width of 7m. Masonry parapet walls line the road. The bridge carries the N56 over the Kilrean Upper Stream 300m upstream of West Of Ardara/Maas Road SAC. Plate 5.2 displays the structure.



Plate 5-2 Kilraine Bridge.

The qualifying interests of the West Of Ardara/Maas Road SAC are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats, large shallow inlets and bays, salt meadows, oligotrophic waters, salmon, otter, seal. The potential impacts to the SAC are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

The freshwater pearl mussel survey conducted in 2021 found that freshwater pearl mussel are not present at this site. This watercourse is too small to support freshwater pearl mussel and none were found. [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. As there is a significant amount of vegetation around the bridge the environs are to be checked for otter prior to the commencement of works (see Table 5-4). Works are not permitted to continue if an otter holt is located close to the bridge until its status is further confirmed.

Table 5-13 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Vegetation removal from both faces of both parapets including copings (10m ²)	Screened Out
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. Vegetation mostly consists of grass. (16m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Vegetation removal from all wing walls, including ivy. (10m ²)	Screened Out
Piers	Vegetation removal from both cutwaters. (3m ²)	Screened Out
Bridge surface	Establish drainage facility, one at each side of the bridge. (2 no.)	Screened Out
Parapets/Safety barrier	Masonry repointing where required. (2m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Repointing of all wingwalls after vegetation removal and where required. (10m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

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 West Of Ardara/Maas Road SAC or any other European site.

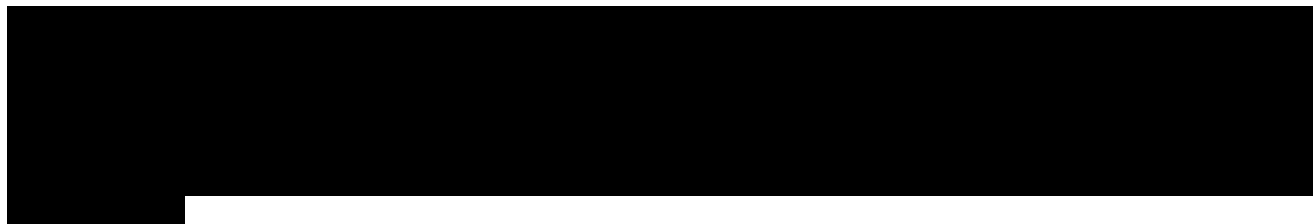
5.8.1.3. Mullanieran Bridge [DL-N56-027.00]

Mullaneiran Bridge is a triple span masonry arch and concrete slab structure with an overall span width of 14.3. Masonry parapet walls line the road. The bridge carries the N56 over the Owenea River within West Of Ardara/Maas Road SAC. Plate 5.3 displays the west elevation.



Plate 5-3 Mullanieran Bridge.

The qualifying interests of the West Of Ardara/Maas Road SAC are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats, large shallow inlets and bays, salt meadows, oligotrophic waters, salmon, otter, seal. 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.



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
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. Vegetation mostly consists of bushes. (16m ²)	Screened Out
Bridge surface	Rodding of transverse aco drainage to footway bridge	Screened Out
Wing/Spandrel/Retaining Walls	Masonry repointing to SE wing wall. (2m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Spalling repair to the NE wing wall. (0.3m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

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.

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.

[REDACTED] All masonry works must be completed on foot from the banks or from an over bridge unit attached to the deck.

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 West Of Ardara/Maas Road SAC or any other European site.

5.8.1.4. Owencarrow River Bridge [DL-N56-055.00]

The Owencarrow River Bridge is a 3-span masonry bridge which carries the N56 over the Owencarrow River. Masonry parapets line the road. The bridge is located within the Cloghernagore Bog and Glenveagh National Park SAC. Derryveagh and Glendowan Mountains SPA is located 3.7km downstream of the bridge. Plate 5.4 shows the bridge.

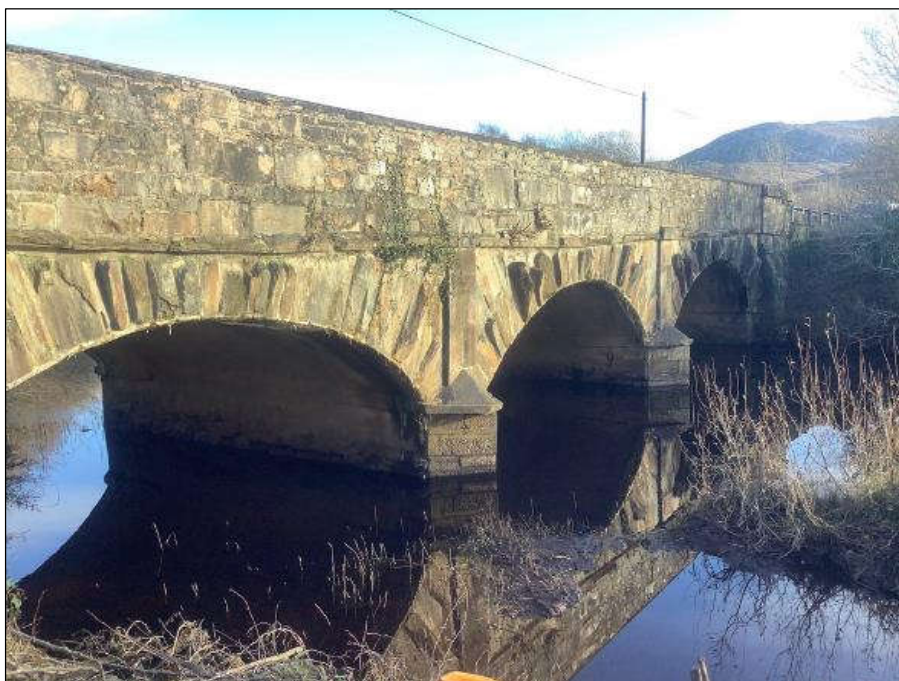


Plate 5-4 Owencarrow River Bridge.

The qualifying interests of the Cloghernagore Bog and Glenveagh National Park SAC and Derryveagh and Glendowan Mountains SPA are listed in Section 5.2. The qualifying interests that could be impacted are

oligotrophic waters, floating river vegetation, [REDACTED] salmon, otter and Killarney fern. The potential impacts to the SAC are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

No freshwater pearl mussel were recorded in the vicinity of Owencarrow (New) Bridge during the current survey. The river is deep and ponded here and is not considered to provide suitable freshwater pearl mussel habitat. The river was difficult to survey under the bridge, but it is considered that mussels are absent here. There are no records of mussels downstream from this bridge [REDACTED]

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
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. (20m ²)	Screened Out
Parapets/Safety barrier	Masonry repointing at both parapets at various locations. (10m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Parapets/Safety barrier	Masonry repair to the north end of west parapet. (2m ³)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

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 West Of Ardara/Maas Road SAC Cloghernagore Bog and Glenveagh National Park SAC and Derryveagh and Glendowan Mountains SPA or any other European site.

5.8.1.5. Termon Bridge [DL-N56-057.00]

Termon Bridge is a double span masonry arch bridge with an overall span width of 7.2m. Masonry parapet walls line the roadway. The bridge crosses the Drumluragh River and is located within Leannan River SAC and 7.6km upstream of Lough Fern SPA. Plate 5.5 shows the face of Termon Bridge.



Plate 5-5 Termon Bridge.

The qualifying interests of the Leannan River SAC and Lough Fern SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, [redacted] salmon and otter. The potential impacts to the SAC are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

No mussels were recorded within the survey area at this site. It is considered unlikely that they occur in the Drumluragh River. [redacted]

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
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. Vegetation mostly consists of bushes. (10m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Vegetation removal from all wing walls. (5m ²)	Screened Out
Abutments	Gunite repair to the base of both abutments where required. (0.2m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.
Piers	Gunite repair to the base of the pier at both sides where required. (0.3m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Concrete repairs

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

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

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Leannan River SAC and Lough Fern SPA or any other European site.

5.8.1.6. Procklis Bridge [DL-N56-058.00]

Procklis Bridge is a single span masonry arch structure with concrete slab extension with an overall span width of 6.3m. The road is lined by steel safety barriers. The bridge crosses the Lurgy River within Leannan River SAC and 4.7km upstream of Lough Fern SPA. Plate 5.6 displays the western elevation of the structure.



Plate 5-6 Procklis Bridge.

The qualifying interests of the Leannan River SAC and Lough Fern SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, [REDACTED] salmon and otter. The potential impacts to the SAC are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

No freshwater pearl mussel were recorded during the 2021 survey. This stretch of the watercourse is not considered to provide suitable habitat for freshwater pearl mussel.

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
Parapets/Safety barrier	Vegetation removal from SW parapet, mainly moss. (2m ²)	Screened Out
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. (24m ²)	Screened Out
Abutments	Clear drainage channels to abutments (7m)	Screened Out
Wing/Spandrel/Retaining Walls	Masonry repointing to the south wing walls. (6m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Parapets/Safety barrier	Concrete repair to SW parapet. (0.3m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

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.

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Leannan River SAC and Lough Fern SPA or any other European site.

5.8.1.7. Lurgy Bridge [DL-N56-059.00]

Lurgy Bridge is a single span concrete slab structure with an overall span width of 10.62m. Steel safety barriers line the road. The bridge crosses the Lurgy River within Leannan River SAC and 3.5km upstream of Lough Fern SPA. Plate 5.7 displays the face of the structure.



Plate 5-7 Lurgy Bridge.

The qualifying interests of the Leannan River SAC and Lou h Fern SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, [REDACTED] salmon, otter and the wetland SCIs of SPA. The potential impacts to the SAC/SPA are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

No freshwater pearl mussel were recorded during the current survey. This stretch of the watercourse is not considered to provide suitable habitat for freshwater pearl mussel.

As there is a significant amount of vegetation around the bridge the environs are to be checked for otter prior to the commencement of works (see Table 5-4). Works are not permitted to continue if an otter holt is located close to the bridge until its status is further confirmed.

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
Riverbed	Remove from the watercourse the debris and blocks from the fallen parapet. (8m ²)	Screened in – Instream access required.
Parapets/Safety barrier	Vegetation removal from west parapet edge beam, mainly moss. (5m ²)	Screened Out
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. (5m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Vegetation removal from all wing wall, including ivy at the SE wing wall. (15m ²)	Screened Out
Bridge surface	Clean of drain gully. (1 no.)	Screened Out
Parapets/Safety barrier	Masonry repair to rebuild the NE wall. (3m ³)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Concrete repair to the east parapet edge beam at the north side. (0.3m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.
Abutments	Concrete repair to cover the exposed reinforcement at several location in both north and south abutments. (0.2m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.
Abutments	Removal of graffiti from the north abutment. (4m ²)	Screened in – use of paint over water and therefore a surface water pathway is present.

Mitigation Measures

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

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. 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, such as the installation of a floating silt curtain, to contain such silt shall be placed downstream of the works area prior to the commencement of works.

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

Masonry Repointing

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

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

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

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

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

Concrete repairs

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

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

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

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

The construction site must be designed to allow free passage of 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.

Graffiti Removal

Graffiti removal is not permitted at this structure as it is located over water within an SAC and shall not be carried out by the Contractor.

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 Leannan River SAC and Lough Fern SPA or any other European site.

5.8.2. Galway

5.8.2.1. Kylemore Abbey Bridge [GC-N59-010.00]

Kylemore Abbey Bridge is a single span masonry arch and concrete slab structure with an overall span width of 6.58m. Masonry walls and steel safety barriers line the road. The bridge crosses a tributary of the Dawros River 100m upstream of The Twelve Bens/Garraun Complex SAC. Plate 5.8 displays the north elevation of the structure.



Plate 5-8 Kylemore Abbey Bridge.

The qualifying interests of the The Twelve Bens/Garraun Complex SAC are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, [REDACTED] salmon and otter. The potential impacts to the SAC are the deterioration of surface water quality and reduction in species density.

There are no freshwater pearl mussel in this watercourse. This stream is also very silted with excessive algae growths. [REDACTED]

Although it is unlikely that vegetation types associated with scree and rocky slopes would be present on masonry bridges, as a precautionary measure, all this bridge will be subject to a survey prior to the commencement of works.

As there is a significant amount of vegetation around the bridge the environs are to be checked for otter prior to the commencement of works (see Table 5-4). Works are not permitted to continue if an otter holt is located close to the bridge until its status is further confirmed.

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
Riverbed	Repair undermined section under east abutment at north end (0.5m ³ in total). (0.5m ²)	Screened in – Instream access required.
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed (20m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Remove vegetation to the NE training wall. (2m ²)	Screened in - Pre-construction survey for vegetation types associated with scree and rocky slopes (QI) required.
Parapets/Safety barrier	Repair missing masonry to the west end of the south parapet (0.1m ³).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/Revetments	Install rock amour to protect NE embankment which is eroded at base (1m ³).	Screened in – Instream access required.

Mitigation Measures

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

Removal of vegetation

The Contractor’s ecologist shall carry out a survey of this structure for vegetation types associated with scree and rocky slopes. If such vegetation types are not recorded, the proposed works can proceed. If vegetation types associated with scree and rocky slopes are recorded, the ecologist shall identify these areas. The proposed vegetation removal shall not be carried out in these identified areas.

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. 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.

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.

Establishing base protection

Establishment of base protection will be carried out in the dry by installing rock armour along the base of the embankment.

No concrete, cementitious or fine particle 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. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. 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 construction site must be designed to allow free passage of otter commuting routes. Measures will comprise capping of pipes when not in use, provisions of a mammal ramp within excavations, and any artificial lighting will be directed away from the watercourse.

Assessment of In-combination effects

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

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on The Twelve Bens/Garraun Complex SAC or any other European site.

5.8.2.2. Emlaghdauroe Bridge [GC-N59-023.00]

Emlaghdauroe Bridge is a single span masonry arch and concrete slab structure with an overall span width of 4.7m. Masonry walls and steel safety barriers line the road. The bridge spans an unnamed stream that flows into Ballynahinch Lake. It is located within The Twelve Bens/Garraun Complex SAC. Connemara Bog Complex SPA is located 3.2km downstream of the bridge. Plate 5.9 displays the south elevation.

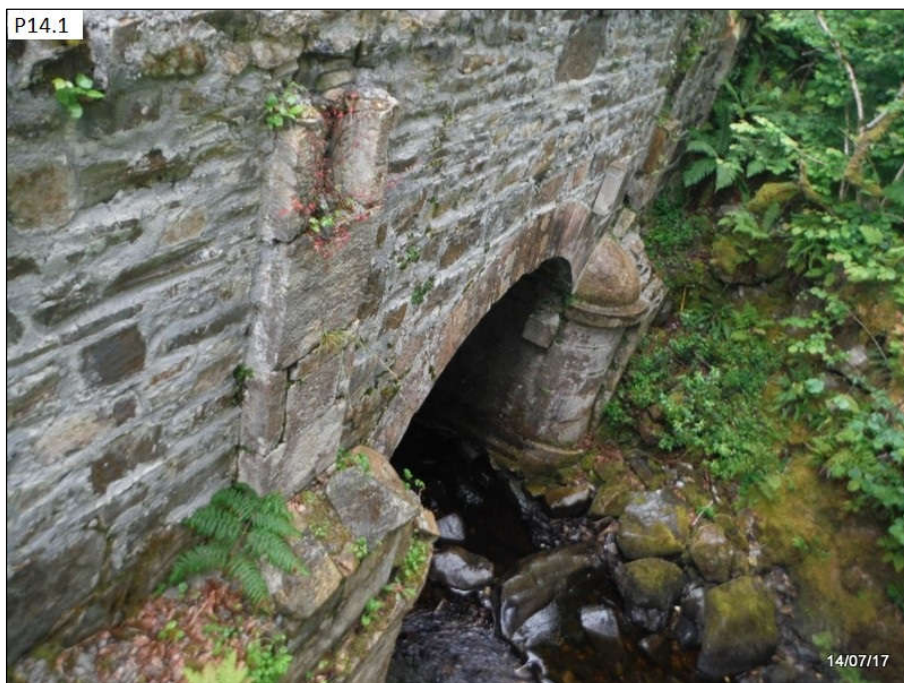


Plate 5-9 Emlaghdauroe Bridge.

The qualifying interests of the The Twelve Bens/Garraun Complex SAC and Connemara Bog Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, [REDACTED] salmon and otter. The potential impacts to the SAC are the physical disturbance of species deterioration of surface water quality and reduction in species density.

There are no freshwater pearl mussel in this watercourse. This stream is also very silted with excessive algae growths. [REDACTED]

Although it is unlikely that vegetation types associated with scree and rocky slopes would be present on masonry bridges, as a precautionary measure, all this bridge will be subject to a survey prior to the commencement of works.

As there is a significant amount of vegetation around the bridge the environs are to be checked for otter prior to the commencement of works (see Table 5-4). Works are not permitted to continue if an otter holt is located close to the bridge until its status is further confirmed.

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 to be removed from the embankments at both sides of structure. (50m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Remove vegetation from north wing walls and spandrel wall. (10m ²)	Screened in - Pre-construction survey for vegetation types associated with scree and rocky slopes (QI) required.
Wing/Spandrel/Retaining Walls	Masonry repointing to the base of north wing walls. (2m ²)	Screened Out
Deck/slab/arch barrel	Masonry repointing to both ends of arch barrel (including voussoirs on north elevation). (3m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Minor masonry repair to both ends of the arch barrel. (0.1m ³)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

Removal of vegetation

The Contractor’s ecologist shall carry out a survey of this structure for vegetation types associated with scree and rocky slopes. If such vegetation types are not recorded, the proposed works can proceed. If vegetation types associated with scree and rocky slopes are recorded, the ecologist shall identify these areas. The proposed vegetation removal shall not be carried out in these identified areas.

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 The Twelve Bens/Garraun Complex SAC and Connemara Bog Complex SPA or any other European site.

5.8.2.3. Lettery Bridge [GC-N59-024.00]

Lettery Bridge is a single span concrete slab structure with an overall span width of 8.17m. Masonry parapet walls line the roadway. The bridge crosses an unnamed stream within 50m of The Twelve Bens/Garraun Complex SAC. Connemara Bog Complex SPA is located 4.6km downstream of the bridge. Plate 5.10 displays the south elevation.



Plate 5-10 Lettery Bridge.

The qualifying interests of the The Twelve Bens/Garraun Complex SAC and Connemara Bog Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, salmon and otter. The potential impacts to the SAC are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

There are no freshwater pearl mussel in this watercourse. This stream is also very silted with excessive algae growths.

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
Embankments/Revetments	1m vegetation (briars etc) clearance to the embankments, including 1m strip behind parapets to access the structure and river (60m ²)	Screened Out
Abutments	Repair cracked and displaced section of NE concrete abutment. Repair minor concrete spall to the top of SE abutment. (1.2m ²)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Concrete repairs

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

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

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on The Twelve Bens/Garraun Complex SAC and Connemara Bog Complex SPA or any other European site.

5.8.2.4. Caher Bridge [GC-N59-029.00]

Caher Bridge is a single span masonry arch bridge with an overall span width of 6.12m. Steel safety barriers line the road. The bridge crosses the Owentooey River within Maumturk Mountains SAC and 15.2km upstream of Connemara Bog Complex SPA. Plate 5.11 displays the south elevation.



Plate 5-11 Caher Bridge.

The qualifying interests of the Maumturk Mountains SAC and Connemara Bog Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters and salmon. The potential impacts to the SAC are the physical disturbance of species, deterioration of surface water quality and reduction in species density.



Although it is unlikely that vegetation types associated with scree and rocky slopes would be present on masonry bridges, as a precautionary measure, all this bridge will be subject to a survey prior to the commencement of works.

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
Embankments/Revetments	Areas of vegetation (moss and weeds and ivy) to be removed from the embankments at both sides of structure. (50m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Remove vegetation from all wing walls and spandrels. (20m ²)	Screened in - Pre-construction survey for vegetation types associated with scree and rocky slopes (QI) required.
Wing/Spandrel/Retaining Walls	Masonry repointing to all wing walls and spandrel walls after vegetation removal. (20m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Masonry repointing to the west abutment. (4m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

Removal of vegetation

The Contractor's ecologist shall carry out a survey of this structure for vegetation types associated with scree and rocky slopes. If such vegetation types are not recorded, the proposed works can proceed. If vegetation types associated with scree and rocky slopes are recorded, the ecologist shall identify these areas. The proposed vegetation removal shall not be carried out in these identified areas.

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 Maumturk Mountains SAC and Connemara Bog Complex SPA or any other European site.

5.8.2.5. Bunsannive Bridge [GC-N59-035.00]

The Bunsannive Bridge is a single span bridge. It is a masonry arch in the north side, and it has been widened using a reinforced concrete slab in the south side. The span is 3.17m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is within Connemara Bog Complex SAC and located 2.5km upstream of the of Connemara Bog Complex SPA. Plate 5.12 shows the south elevation.



Plate 5-12 Bunsannive Bridge.

The qualifying interests of the Connemara Bog Complex SAC and Connemara Bog Complex SPA are listed in Section 5.2. The qualifying interests that could be impacted are reefs, oligotrophic waters, floating river vegetation, otter and salmon. 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.

This site does not provide suitable habitat for freshwater pearl mussel, and none were found during the survey. [REDACTED] This stream is considered too small to support this species. It should be noted that freshwater pearl mussel are not a qualifying interest of the Connemara Bog Complex SAC.

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	Concrete repair to undermined wingwall at downstream end at west side (2m ²)	Screened in – Instream access required.
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure. (40m ²)	Screened Out
Wing/Spandrel/Retaining Walls	Vegetation removal to buttress at SW corner. (20m ²)	Screened Out
Abutments	Masonry repointing to localised open joints at centre of structure particularly to the west abutment (6m ²)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.

Mitigation Measures

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

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 Connemara Bog Complex SAC and Connemara Bog Complex SPA or any other European site.

5.8.2.6. Glengowla Bridge [GC-N59-039.00]

Glengowla Bridge is a single span concrete slab structure with an overall span width of 3.67m. Concrete parapet walls line the road. The bridge crosses the Bunowen River within Lough Corrib SAC and 6.8km upstream of Lough Corrib SPA. Plate 5.13 displays the north elevation.



Plate 5-13 Glengowla Bridge.

The qualifying interests of the Lough Corrib SAC and Lough Corrib SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters, floating river vegetation, [REDACTED] white-clawed crayfish, lamprey, salmon, otter, wetland SCIs of SPA. 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.

This site does not provide suitable habitat for freshwater pearl mussel and none were found during the survey. [REDACTED]

Proposed Works

The proposed works at this bridge are detailed in Table 5-24 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-24- Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure. (20m ²)	Screened Out
Abutments	Repair localised spalling to north end of the west abutment. (0.01m ²)	Screened in – Instream access required.

Mitigation Measures

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

Concrete repairs

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

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

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

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Lough Corrib SAC and Lough Corrib SPA or any other European site.

5.8.3. Mayo

5.8.3.1. Bracklagh Bridge [MO-N59-053.20]

Bracklagh Bridge is a single span masonry box structure. There are no safety barriers or parapet walls along the road. The bridge carries the N59 over the Rooghaun Stream 750m upstream of Mweelrea/Sheeffry/Erriff Complex SAC. Plate 5.15 displays the bridge.

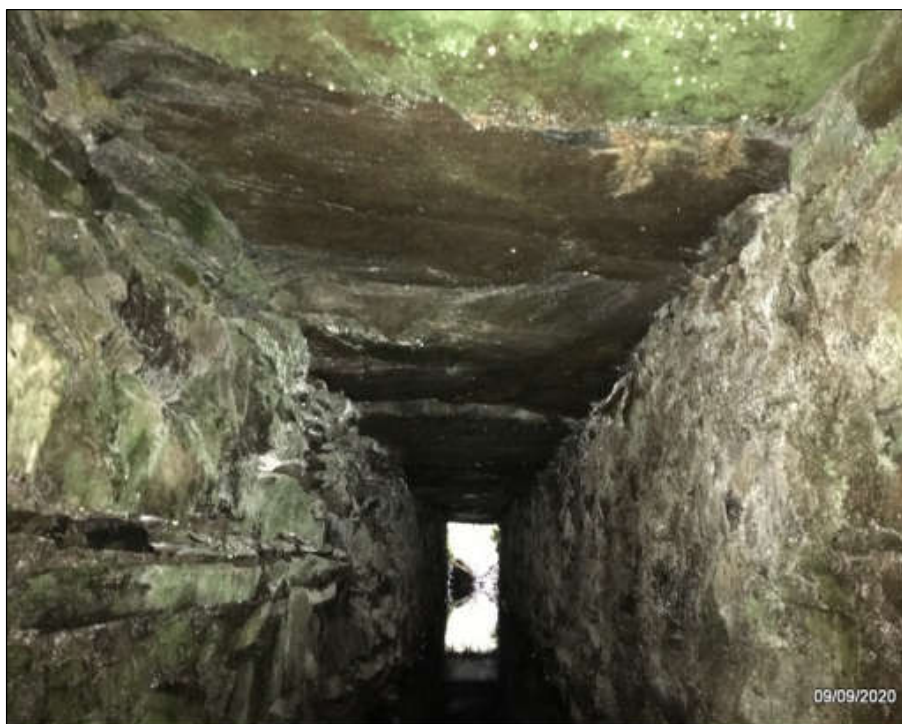


Plate 5-15 Bracklagh Bridge.

The qualifying interests of the Mweelrea/Sheeffry/Erriff Complex SAC are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters; floating river vegetation; [REDACTED] salmon and otter. The potential impacts to the SAC are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

This site does not provide suitable habitat for freshwater pearl mussel and none were found during the survey. [REDACTED]

Proposed Works

The proposed works at this bridge are detailed in Table 5-26 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-26- Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove vegetation debris, plastic sheeting, timber log/planks and build-up of silt obstructing north entrance to structure, also build-up of silt fronting end of pier at south elevation of structure. 2.5m ²	Screened in – Instream access required.
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. 8m ²	Screened Out
Wing/Spandrel/Retaining Walls	Remove vegetation from masonry headwalls and wingwalls throughout. 15.5m ²	Screened Out
Abutments	Remove vegetation from west abutment at south end 1m ²	Screened Out
Piers	Remove vegetation from both end faces of pier and from east face of pier at south end. 2m ²	Screened Out

Bridge Component	Work Element	Screening Recommendation
Deck/slab/arch barrel	Remove vegetation from top of bridge deck at both ends 4m ²	Screened Out
Wing/Spandrel/Retaining Walls	Carry out masonry repointing to headwalls and wingwalls throughout. 15.5m ²	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Carry out masonry repointing to both abutments. 10m ²	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Piers	Carry out masonry repointing to pier (all faces). 6m ²	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/Revetments	Base of north west embankment eroded and undermined; reshape with rock armour. 3m ³	Screened in – Instream access required.
Embankments/Revetments	Install Kee Clamp or similar approved handrailing as edge protection on both sides of structure.	Screened Out

Mitigation Measures

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

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed. 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, such as the installation of a floating silt curtain, to contain such silt shall be placed downstream of the works area prior to the commencement of works.

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

Note: The removal of silt is not permitted and must not be conducted at this structure. The removal of debris and decomposing vegetation within the watercourse may be removed by hand. No digging within the watercourse may occur.

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.

Establishing base protection

Establishment of base protection will be carried out in the dry by installing rock armour along the base of the embankment.

No concrete, cementitious or fine particle 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. A secondary pump shall be stored on site in the event of a malfunction of the primary pump. 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 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 pans and projects, as outlined in Section 5.7.

Conclusion/ Recommendation

With respect to the works and mitigation measures proposed above, it is the opinion of the authors of this report that, provided the mitigation measures described above are implemented, the works proposed at this bridge will not result in adverse effects on Mweelrea/Sheeffry/Erriff Complex SAC or any other European site.

5.8.3.2. Carrowrevagh Bridge [MO-N59-053.50]

Carrowrevagh Bridge is a single span masonry arch and concrete slab structure. Masonry and concrete parapet walls line the road. The bridge carries the N59 over the Rooghaun Stream 250m upstream of Mweelrea/Sheeffry/Erriff Complex SAC. Plate 5.16 displays the bridge.



Plate 5-16 Carrowrevagh Bridge.

The qualifying interests of the Mweelrea/Sheeffry/Erriff Complex SAC are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters; floating river vegetation; [REDACTED] salmon and otter. The potential impacts to the SAC are the loss or modification of habitat deterioration of surface water quality and reduction in species density.

This site does not provide suitable habitat for freshwater pearl mussel and none were found during the survey. [REDACTED]

Proposed Works

The proposed works at this bridge are detailed in Table 5-27 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-27- Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove localised build-up of silt at base of north west embankment adjacent to bridge. 1m ²	Screened in – Instream access required.
Riverbed	Scour repairs to localised undermining (up to 200mm deep) of concrete scour protection to west abutment near south end of bridge. Scour repairs to scour	Screened in – Instream access required.

Bridge Component	Work Element	Screening Recommendation
	hole (up to 150mm deep) on south elevation 0.3m ²	
Parapets/Safety barrier	Remove vegetation from parapets throughout; south parapet (15m ²), north parapet (9m ²).	Screened Out
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. 17m ²	Screened Out
Wing/Spandrel/Retaining Walls	Remove vegetation from south wingwalls and spandrel wall (7m ²) and from north wingwalls and headwall (11m ²). Remove vegetation from north east training wall (2m ²).	Screened Out
Abutments	Remove vegetation from base of west concrete abutment towards north end. 1m ²	Screened Out
Parapets/Safety barrier	Carry out masonry repointing to south parapet throughout. 15m ²	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Carry out masonry repointing to south wingwalls and spandrel wall where vegetation removed (7m ²). Carry out masonry repointing to north east masonry training wall (1m ²)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Reinstate partially collapsed/dislodged masonry to wingwall at base of south west embankment 0.5m ³	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Carry out repointing to minor areas of both masonry abutments. 1m ²	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Carry out masonry repointing to arch barrel throughout including voussoirs to south arch ring adjacent to concrete deck extension. 17m ²	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Carry out masonry repairs to cracked voussoir to south ring to arch. 0.01m ³	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/Revetments	Install Kee Clamp or similar approved handrailing as edge protection on north side of structure.	Screened Out
Deck/slab/arch barrel	Carry out patch repairs to 2 No. localised areas of concrete spalls with exposed corroded rebar at north end of soffit to concrete deck extension. Carry out patch repairs to localised concrete spall at south end of soffit to concrete deck extension adjacent to south ring to masonry arch. 1m ²	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Clearance of watercourse (Debris Removal)

Vegetation debris and waste debris shall only be removed from watercourses by hand. As per the Works Requirements Specification document, no live aquatic vegetation or silt shall be removed from the riverbed.

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, such as the installation of a floating silt curtain, to contain such silt shall be placed downstream of the works area prior to the commencement of works.

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

Note: The removal of silt is not permitted and must not be conducted at this structure. The removal of debris and decomposing vegetation within the watercourse may be removed by hand. No digging within the watercourse may occur.

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. 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.

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

Concrete repairs

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

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

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

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

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

Assessment of In-combination effects

Following the application of the mitigation measures described above, there will be no residual impacts arising from the proposed works. Considering this, the small scale 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 Mweelrea/Sheeffry/Erriff Complex SAC or any other European site.

6. Conclusions

This NIS provides the competent authority with supporting information to undertake Appropriate Assessment in relation to the proposed works at 16 bridges in the North West Region under the Term Maintenance Contract No 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 16 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 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 26 bridges, will not have an adverse effect on the integrity of those SACs and SPAs.

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Appendices

Appendix A. Special Conservation Interests (SCIs) of Natura 2000 sites

A.1. Special Areas of Conservation (SAC)

Connemara Bog Complex SAC (002034)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N59-035.00	Within SAC	Recess	Recess_SC_010
SCI Description			
<p>1065 Marsh Fritillary (<i>Euphydryas aurinia</i>) 1106 Atlantic salmon (<i>Salmo salar</i>) 1355 Otter (<i>Lutra lutra</i>) 1833 Slender Naiad (<i>Najas flexilis</i>) 1150 * Coastal lagoons 1170 Reefs 3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoeto-Nanojuncetea</i> 3160 Natural dystrophic lakes and ponds 3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) 7130 Blanket bogs (* if active bog) 7140 Transition mires and quaking bogs 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 7230 Alkaline fens 91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>* indicates a priority habitat under the Habitats Directive</p>			

Lough Corrib SAC (000297)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N59-039.00	Within SAC	Bunowen [Oughterard]	BallycuirkeLoughStream_SC_010
SCI Description			
<p>1092 White-clayed crayfish (<i>Austropotamobius pallipes</i>) 1095 Sea lamprey (<i>Petromyzon marinus</i>) 1096 Brook lamprey (<i>Lampetra planeri</i>) 1106 Atlantic salmon (<i>Salmo salar</i>) 1303 Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>) 1355 Otter (<i>Lutra lutra</i>) 1833 Slender naiad (<i>Najas flexilis</i>) 6216 Slender Green Feather-moss (<i>Hamatocaulis vernicosus</i>) 3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoeto-Nanojuncetea</i> 3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. 3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) 6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>* 7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>) 7230 Alkaline fens 8240 Limestone pavements* 91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles 91D0 Bog woodland*</p> <p>* indicates a priority habitat under the Habitats Directive</p>			

Mweelrea/Sheeffry/Erriff Complex SAC (001932)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
MO-N59-053.20	750m upstream of Mweelrea/Sheeffry/Erriff Complex SAC	Rooghaun 32	Erriff_SC_010
MO-N59-053.50	250m upstream of Mweelrea/Sheeffry/Erriff Complex SAC	Rooghaun 32	Erriff_SC_010
SCI Description			
<p>1013 Geyer's whorl snail (<i>Vertigo geyeri</i>) 1014 Narrow-mouthed whorl snail (<i>Vertigo angustior</i>) [REDACTED]</p> <p>1106 Atlantic salmon (<i>Salmo salar</i>) 1355 Otter (<i>Lutra lutra</i>) 1395 Petalwort (<i>Petalophyllum ralfsii</i>) 1833 Slender Naiad (<i>Najas flexilis</i>) 1150 Coastal lagoons* 1210 Annual vegetation of drift lines 1330 Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2150 Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) 2170 Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) 3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoeto-Nanojuncetea</i> 3160 Natural dystrophic lakes and ponds 3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 4060 Alpine and Boreal heaths 5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels 7130 Blanket bogs (* if active bog) 7140 Transition mires and quaking bogs 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)* 7230 Alkaline fens 8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) 8210 Calcareous rocky slopes with <i>chasmophytic</i> vegetation 8220 Siliceous rocky slopes with <i>chasmophytic</i> vegetation 21A0 Machairs (* in Ireland)</p> <p>* indicates a priority habitat under the Habitats Directive</p>			

The Twelve Bens/Garraun Complex SAC (002031)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N59-010.00	Bridge ca. 0.1km upstream of SAC	Dawros 32	Dawros_SC_010
GC-N59-023.00	Within SAC	Undefined	Recess_SC_020
SCI Description			
<p>1106 Salmon <i>Salmo salar</i></p> <p>1355 Otter <i>Lutra lutra</i></p> <p>1833 Slender Naiad <i>Najas flexilis</i></p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea</p> <p>4060 Alpine and Boreal heaths</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7150 Depressions on peat substrates of the Rhynchosporion</p> <p>8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)</p> <p>8210 Calcareous rocky slopes with chasmophytic vegetation</p> <p>8220 Siliceous rocky slopes with chasmophytic vegetation</p> <p>91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>* indicates a priority habitat under the Habitats Directive</p>			

West of Ardara/Maas Road SAC (000197)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-026.00	Bridge ca. 0.3km upstream of SAC	Kilrean Upper	Owenea_SC_010
DL-N56-027.00	Within SAC	Owenea	Owenea_SC_010
SCI Description			
<p>1013 Geyer's Whorl Snail (<i>Vertigo geyeri</i>)</p> <p>1065 Marsh Fritillary (<i>Euphydryas aurinia</i>)</p> <p>1106 Atlantic salmon (<i>Salmo salar</i>)</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>1365 Harbour seal (<i>Phoca vitulina</i>)</p> <p>1395 Petalwort (<i>Petalophyllum ralfsii</i>)</p> <p>1833 Slender naiad (<i>Najas flexilis</i>)</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1160 Large shallow inlets and bays</p> <p>1210 Annual vegetation of drift lines</p> <p>1330 Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>2140 Decalcified fixed dunes with <i>Empetrum nigrum</i></p> <p>2150 Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)</p> <p>2170 Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</p> <p>2190 Humid dune slacks</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoeto-Nanojuncetea</i></p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>4030 European dry heaths</p> <p>4060 Alpine and Boreal heaths</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</p> <p>6510 Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>)</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p> <p>7230 Alkaline fens</p> <p>21A0 Machairs (* in Ireland)</p> <p>* indicates a priority habitat under the Habitats Directive</p>			

Maumturk Mountains SAC (002008)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N59-029.00	Within SAC	Owentooley	Recess_SC_010
SCI Description			
<p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Siliceous rocky slopes with chasmophytic vegetation [8220] <i>Salmo salar</i> (Salmon) [1106] <i>Najas flexilis</i> (Slender Naiad) [1833]</p>			

Leannan River SAC (002176)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-057.00	Within SAC	Drumluragh	Leannan_SC_020
DL-N56-058.00	Within SAC	Lurgy 39	Leannan_SC_020
DL-N56-059.00	Within SAC	Lurgy 39	Leannan_SC_020
SCI Description			
<p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] [REDACTED] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833]</p>			

Cloghernagore Bog And Glenveagh National Park SAC (002047)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-055.00	Within SAC	Undefined	Lackagh_SC_010
SCI Description			
<p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] [REDACTED] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p>			

Lough Eske and Ardnamona Wood SAC (000163)			
Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N15-012.00	Within SAC	Clogher [Donegal]	Eske_SC_010
SCI Description			
<p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Old sessile oak woods with <i>Ilex</i> and <i>i</i> in the British Isles [91A0] [REDACTED] <i>Salmo salar</i> (Salmon) [1106] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p>			

A.2. Special Protection Areas for birds (SPA)

Lough Corrib SPA (004042)			
Structure ID	Within SPA/ distance to SPA downstream of bridge	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N59-023.00	SPA ca. 3.2km downstream of bridge	Undefined	Recess_SC_020
GC-N59-024.00	SPA ca. 4.6km downstream of bridge	Undefined	Recess_SC_020
GC-N59-029.00	SPA ca. 15.2km downstream of bridge	Owentooey	Recess_SC_010
SCI Description			
Gadwall (<i>Anas strepera</i>) [A051] Shoveler (<i>Anas clypeata</i>) [A056] Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Common Scoter (<i>Melanitta nigra</i>) [A065] Hen Harrier (<i>Circus cyaneus</i>) [A082] Coot (<i>Fulica atra</i>) [A125] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]			

Derryveagh And Glendowan Mountains SPA (004039)			
Structure ID	Within SPA/ distance to SPA downstream of bridge	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-055.00	SPA ca. 3.7km downstream of bridge	Undefined	Lackagh_SC_010
SCI Description			
Red-throated Diver (<i>Gavia stellata</i>) [A001] Merlin (<i>Falco columbarius</i>) [A098] Peregrine (<i>Falco peregrinus</i>) [A103] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Dunlin (<i>Calidris alpina schinzii</i>) [A466]			

Lough Fern SPA (004060)			
Structure ID	Within SPA/ distance to SPA downstream of bridge	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-057.00	SPA ca. 7.6km downstream of bridge	Drumluragh	Leannan_SC_020
DL-N56-058.00	SPA ca. 4.7km downstream of bridge	Lurgy 39	Leannan_SC_020
DL-N56-059.00	SPA ca. 3.5km downstream of bridge	Lurgy 39	Leannan_SC_020
SCI Description			
Pochard (<i>Aythya ferina</i>) [A059] Wetland and Waterbirds [A999]			

Connemara Bog Complex SPA (004181)			
Structure ID	Within SPA/ distance to SPA downstream of bridge	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N59-023.00	SPA ca. 3.2km downstream of bridge	Undefined	Recess_SC_020
GC-N59-024.00	SPA ca. 4.6km downstream of bridge.	Undefined	Recess_SC_020
GC-N59-029.00	SPA ca. 15.2km downstream of bridge.	Owentooey	Recess_SC_010
SCI Description			
Cormorant (<i>Phalacrocorax carbo</i>) [A017] Merlin (<i>Falco columbarius</i>) [A098] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Common Gull (<i>Larus canus</i>) [A182]			



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