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CLOSING DATE FOR PUBLIC CONSULTATION 19th MAY 2021

NW Term Maintenance Contract No.3

Year 3 Structures – Natura Impact Statement

Transport Infrastructure Ireland

12/03/2021

Notice

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Client signoff

Client	Transport Infrastructure Ireland
Project	NW Term Maintenance Contract No.3
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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 693 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 26 bridges in the North West Region and thus require Appropriate Assessment. This report is a Natura Impact Statement and provides supporting information to TII in making their Appropriate Assessment decision on these 26 bridges.

1.1. Project Background and Context

The Bridge Term Maintenance Contract for the North West region includes 693 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 will require four routine inspections throughout the term of the contract. Each and every structure has been inspected in 2017 Q4, 2019 Q1, 2020 Q1 and will again be inspected in 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 3 of the contract has been completed and routine maintenance works were conducted at bridges for which TII issued Screening for AA determinations where the proposed works were not likely to have significant effects on a European site. Year 4 of the contract is currently being progressed. However, proposed 2020 works at bridges that did not 'Screen out' are the subject of this assessment.

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

Table 1-1 EIRSPAN bridge components and works.

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

Bridge Component	Works
	47 Reshaping (imported materials)
	59 Removal of graffiti
	99 Miscellaneous works
6.0 Wing/Spandrel/Retaining Walls	03 Removal of vegetation
	50 Concrete repairs
	52 High-pressure hosing of surface
	53 Maintenance of joints
	56 Establish base protection
	57 Maintenance of base protection
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	99 Miscellaneous
7.0 Abutments	03 Removal of vegetation
	35 Maintenance of drainage channel
	50 Concrete repairs
	52 High-pressure hosing of surface
	53 Maintenance of soft joints
	56 Establish base protection
	57 Maintenance of base protection
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	99 Miscellaneous works
8.0 Piers	03 Removal of vegetation
	35 Maintenance of drainage channel
	50 Concrete repairs
	52 High-pressure hosing of surface
	56 Establish base protection
	57 Maintenance of base protection
	59 Removal of graffiti
	60 Masonry repointing
	61 Masonry repairs
	99 Miscellaneous works
9.0 Bearings	50 Concrete repairs
	54 Maintenance of bedding mortar
	58 Cleaning of bearings
	70 Patch-painting of steel
	99 Miscellaneous works
10.0 Deck/slab/arch barrel	31 Cleaning of drip-tubes
	50 Concrete repairs

Bridge Component	Works
	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

1.1.1. Procurement of Specialist Surveys

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

Under the contract the Contractor has to appoint a suitably qualified ecologist for the duration of the contract to carry out pre-construction surveys, such as invasive species and bats surveys along with check for any other protected species which may be present in the area, and oversee the ecological requirements of the project. All generated reports relating to AA, TII AA determinations and survey data are provided to the Contractor and their appointed ecologist.

2. Project Description

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

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

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

2.1. Proposed Works

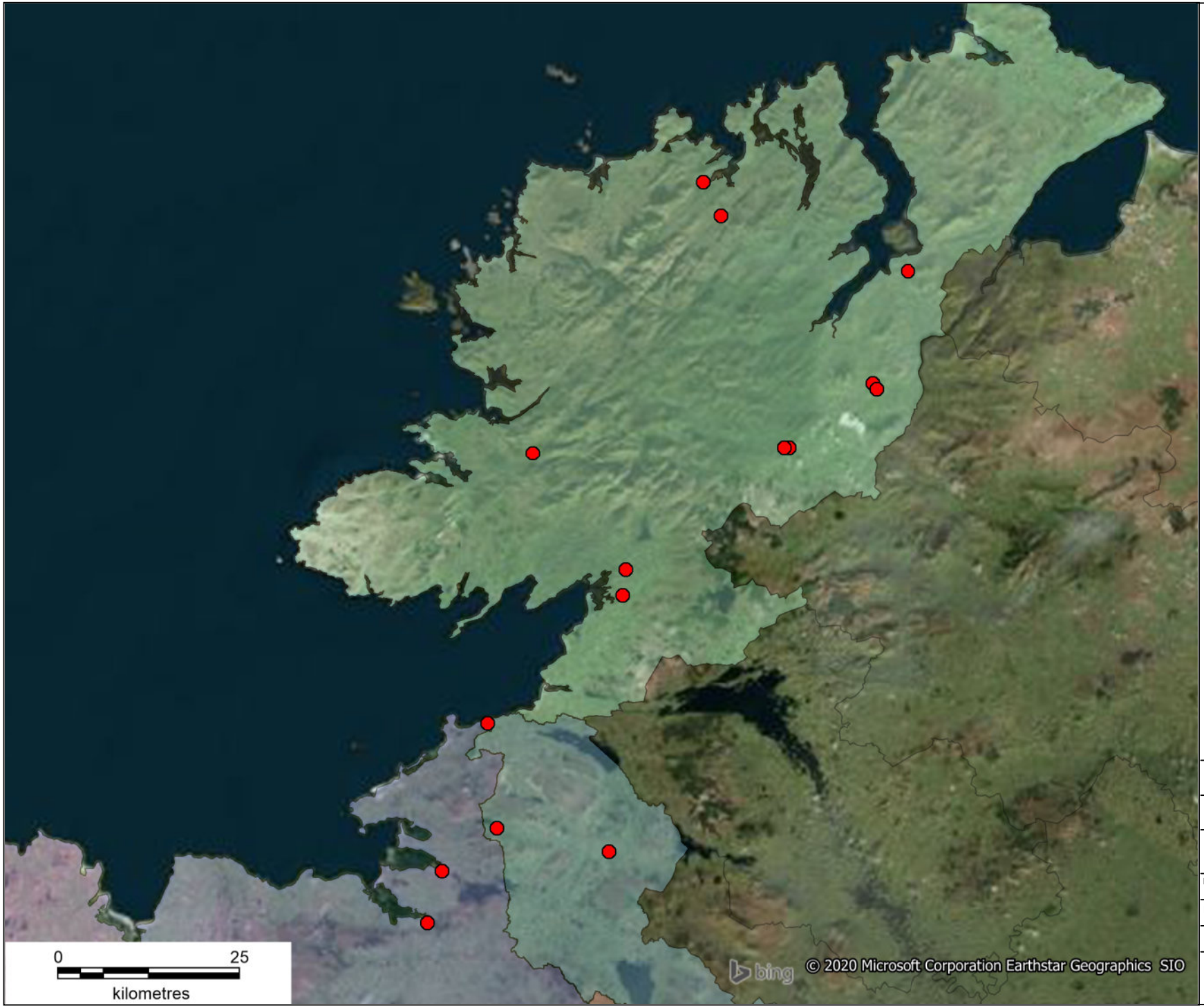
As detailed above, the Year 3 Work Orders were screened for AA and TII issued determinations for each structure. This resulted in 26 bridges being '*Screened In*', i.e. where likely significant effects could not be ruled out, requiring those structures to undergo Appropriate Assessment.

These 26 bridges are located in Counties Donegal (no. 10), Galway (no. 4), Leitrim (no. 3), Mayo (no. 5), Roscommon (no. 2), and Sligo (no. 2) which is illustrated in Figure 1-1. Table 1-2 summaries the main details pertaining to each of the 26 bridges.

The works proposed at each bridge is contained in Section 5.8. The Work Orders detail the bridge identification number and name, the component of the bridge to which a work item is proposed, the work item and the quantity (m^2) 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	Road/River Bridge	Watercourse Name (EPA)	Water Framework Directive Sub-catchment	GPS Coordinates (ITM) X	Y
Donegal	DL-N13-009.00	Castlecooley Bridge	River	CARROWEN	LeslieHill[Stream]_SC_010	633539.61	919537.61
Donegal	DL-N14-009.00	Whitecross Bridge/Annie Tourish	River	DRUMBEG	JohnstonStream_SC_010	628730.03	904060.06
Donegal	DL-N14-010.00	Tullyrap Bridge	River	DRUMBEG	JohnstonStream_SC_010	629294.97	903282.26
Donegal	DL-N15-002.70	Corcam Bridge	Non-EPA drain	Non-listed	Finn[Donegal]_SC_030	617279.60	895170.90
Donegal	DL-N15-003.00	Mullandrait Bridge	River	MULLAGHAGARRY	Finn[Donegal]_SC_030	616596.69	895208.86
Donegal	DL-N15-014.00	Drumrath Bridge/Laghey to Ballybofey Rd	River	Drumenny	Eske_SC_010	594635.31	878278.94
Donegal	DL-N15-019.00	Laghy Village Bridge	River	Tullywee	Eske_SC_010	594222.90	874688.00
Donegal	DL-N56-028.00	Glenties Bridge	River	STRACASHEL	Owenea_SC_010	581801.39	894395.31
Donegal	DL-N56-052.00	Clon Bridge	River	Faymore 38	Lackagh_SC_010	605350.40	931657.82
Donegal	DL-N56-055.00	Owencarrow River Bridge	River	Undefined	Lackagh_SC_010	607741.89	927066.53
Galway County	GC-N83-004.00	Cloonmore Bridge	River	Clare [Galway]	Clare[Galway]_SC_060	540929.30	749762.59
Galway County	GC-N59-009.00	Owenduff Bridge	River	Culfin 32	OwenduffBridgeStream_SC_010	481016.74	759615.55
Galway County	GC-N59-022.00	Lettershea Bridge no.2	River	Imleach_Dhá_Rú	Recess_SC_020	474783.81	749057.76
Galway County	GC-N59-040.00	Oughterard Bridge	River	Owenriff [Corrib]	BallycuirkeLoughStream_SC_010	511800.97	742754.49
Leitrim	LM-N15-002.00	Banduff River Bridge	River	Duff	Duff_SC_010	575394.87	856929.93
Leitrim	LM-N16-006.00	Scarden River Bridge	River	Owenmore [Manorhamilton]	Bonet_SC_010	592249.78	839024.01
Leitrim	LM-N16-017.00	Sracreeghan Bridge	River	Undefined	Drumcliff_SC_010	576586.04	842318.08
Mayo	MO-N05-002.00	Bridge Street Bridge	River	Carrowbeg [Westport]	CARROWTOOTAGH_SC_010	499788.71	784505.39
Mayo	MO-N05-025.00	Mullenmadoge Culvert West	River	Sonnagh [Moy]	Moy_SC_040	544065.32	799978.38
Mayo	MO-N58-004.00	Rathrussel Bridge	River (large drain)	-	-	527534.00	799169.00
Mayo	MO-N59-061.00	Erriff Bridge	River	Erriff 32	Erriff_SC_010	495995.87	768344.87
Mayo	MO-N59-062.00	Luga Buide Bridge	River	Undefined	Erriff_SC_010	496007.27	768249.18
Roscommon	RN-N83-001.00	Cloonfad Village Bridge	River	Cloonfad	Clare[Galway]_SC_010	550347.81	771047.58
Roscommon	RN-N63-005.20	Anrittabeg Bridge	River	KILNACLOGHY	Clooneigh_SC_010	597270.91	768955.09
Sligo	SO-N04-001.00	Michael Hughes Bridge	River	Garavogue River	Bonet_SC_030	568848.17	836387.39
Sligo	SO-N59-002.00	Ballysadare River Bridge	River	Ballysadare	Owenmore[Sligo]_SC_030	566763.00	829076.00



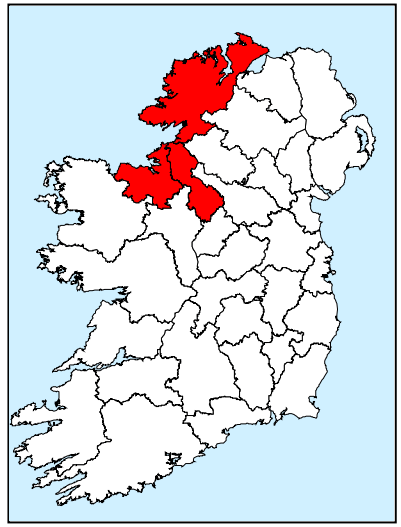
N

Legend

County

- Donegal
- Leitrim
- Sligo

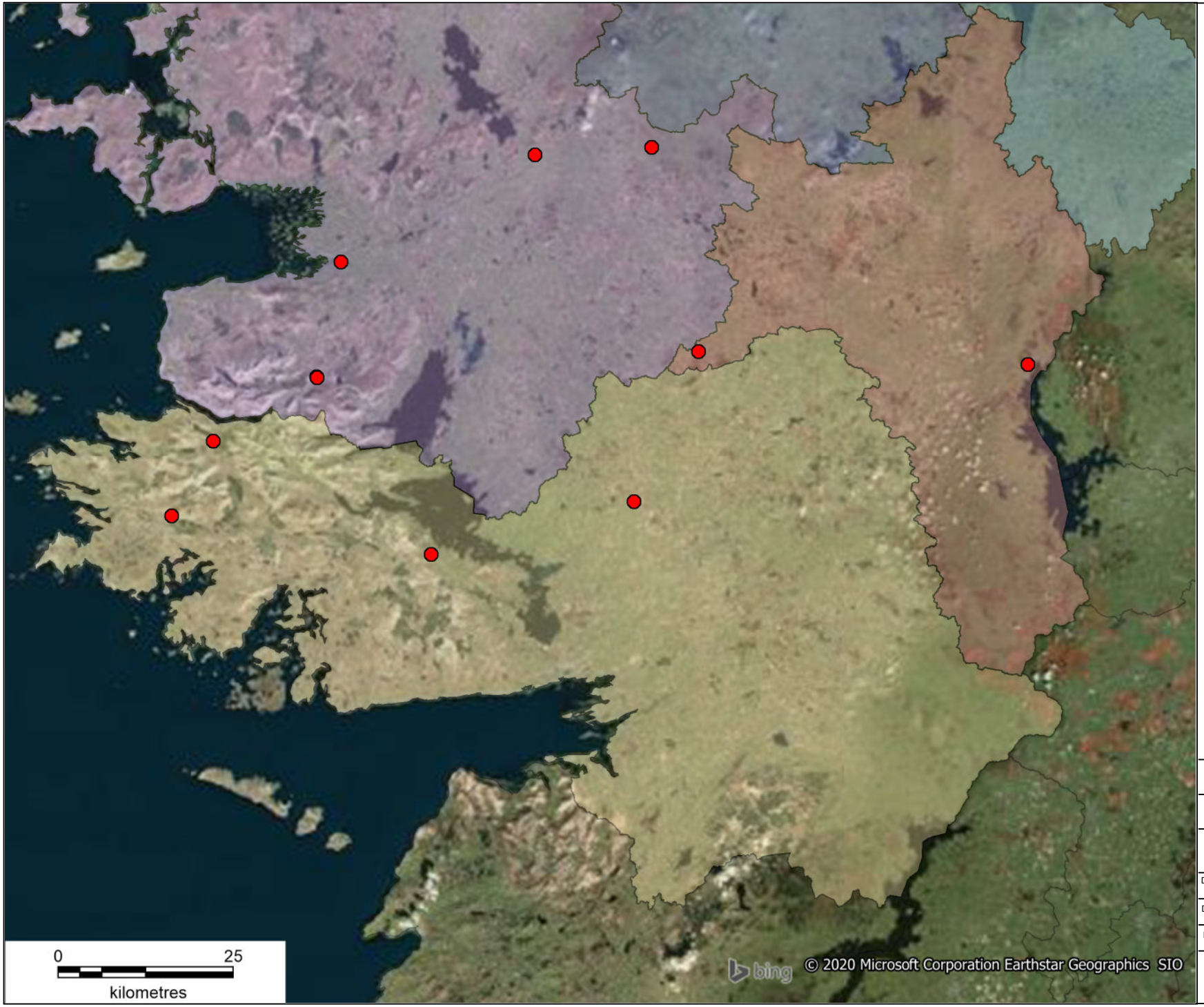
Yr 3 NIS Bridges



Client:	TII
Project:	North West Term Maintenance Contract No. 3
Title:	Location of Structures (Donegal, Leitrim, Sligo)

Drawn:	Checked:	Authorised:
EN	NS	PO'D
Date: 17/12/2020	Date: 17/12/2020	Date: 17/12/2020
Drawing No: 1.1		Rev: 1.0

ATKINS [redacted]



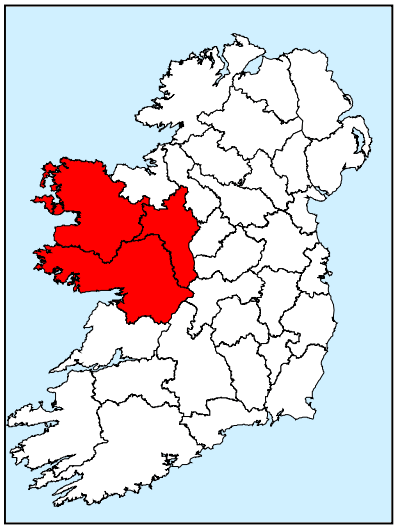
N

Legend

County

- Galway
- Leitrim
- Mayo
- Roscommon
- Sligo

Yr 3 NIS Bridges



Client:	TII
Project:	North West Term Maintenance Contract No. 3
Title:	Location of Structures (Galway, Mayo & Roscommon)

Drawn:	Checked:	Authorised:
EN	NS	PO'D
Date: 17/12/2020	Date: 17/12/2020	Date: 17/12/2020
Drawing No: 1.1		Rev: 1.0

ATKINS [redacted]

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 of in poor condition shall be removed, cleaned and replaced. There shall be no discharge of waste on site. Note that expansion joints are not hydrologically linked to the watercourse being crossed.

2.1.1.5. Installation of rubbing strips

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

2.1.1.6. Vegetation Removal

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

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

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

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

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

- Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides ('Sustainable Use of Pesticides Directive'); and,

- European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012).

- European Communities (Sustainable Use of Pesticides) (Amendment) Regulations, 2019 (S.I. No. 438 of 2019).

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

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

- European Communities (Plant Protection Products) Regulations, 2012 (S.I. No. 159 of 2012).

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

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

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

The Plant Protection Products Regulations provides that the Minister for Agriculture, Food and the Marine may establish a register of authorised products. If the Contractor is proposing to use any such products they should check to ensure that the product proposed is entered on the register (see http://www.pcs.agriculture.gov.ie/products/). Specifically, under Regulation 12(2) the user shall ensure that preference is given to the use of low risk plant protection products or biological and

cultural control measures. Where measures are not capable of performing the necessary function, a person shall prioritise the use of plant protection products that are not classified as R50 in accordance with Directive 1999/45/EC of the European Parliament.

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

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

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

2.1.1.7. Clearance of watercourse

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

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

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

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

2.1.1.8. Masonry repair and repointing

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

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

2.1.1.9. Cleaning of graffiti

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 listed on the third schedule of the 2011 Regulations to site and the further spread of diseases.

1. All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.

2. If drying out of equipment is not feasible, equipment should be either: -

    i. power steam washed at a suitably high temperature or at least 65 degrees, or

    ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer’s instructions are followed and if required, the correct contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant.

3. During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.

4. Appropriate facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.

5. Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

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

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

County	Structure_ID	Works to Riverbed (01, 04)	Removal of Vegetation (03)	Gullies/Drainage Works (30, 32, 33, 34 &35)	Masonry Repointing/Repair (60, 61)	Embankment Structural Works (44, 45 & 47)	Concrete Repairs (50)
Donegal	DL-N13-009.00	Yes	No	No	No	No	No
Donegal	DL-N14-009.00	No	No	No	No	No	Yes
Donegal	DL-N14-010.00	No	No	No	Yes	No	No
Donegal	DL-N15-002.70	No	Yes	No	No	No	Yes
Donegal	DL-N15-003.00	Yes	Yes	No	Yes	No	Yes
Donegal	DL-N15-014.00	Yes	Yes	No	No	Yes	No
Donegal	DL-N15-019.00	No	No	No	No	No	Yes
Donegal	DL-N56-028.00	No	Yes	No	Yes	No	No
Donegal	DL-N56-052.00	No	No	No	Yes	Yes	No
Donegal	DL-N56-055.00	No	Yes	No	No	No	No
Co. Galway	GC-N83-004.00	No	No	No	No	No	Yes
Co. Galway	GC-N59-009.00	No	No	No	Yes	No	Yes
Co. Galway	GC-N59-022.00	Yes	Yes	Yes	No	No	No
Co. Galway	GC-N59-040.00	No	Yes	No	Yes	No	No
Leitrim	LM-N15-002.00	Yes	No	No	No	No	No
Leitrim	LM-N16-006.00	No	No	No	Yes	No	No
Leitrim	LM-N16-017.00	No	Yes	No	Yes	No	No
Mayo	MO-N05-002.00	Yes	No	No	No	No	No
Mayo	MO-N05-025.00	No	Yes	No	No	No	No
Mayo	MO-N58-004.00	Yes	Yes	No	Yes	No	No
Mayo	MO-N59-061.00	No	Yes	Yes	Yes	No	No
Mayo	MO-N59-062.00	No	Yes	Yes	No	No	No
Roscommon	RN-N83-001.00	No	No	No	Yes	No	No
Roscommon	RN-N63-005.20	No	No	No	Yes	No	No

County	Structure_ID	Works to Riverbed (01, 04)	Removal of Vegetation (03)	Gullies/Drainage Works (30, 32, 33, 34 &35)	Masonry Repointing/Repair (60, 61)	Embankment Structural Works (44, 45 & 47)	Concrete Repairs (50)
Sligo	SO-N04-001.00	No	No	Yes	Yes	No	No
Sligo	SO-N59-002.00	No	No	No	Yes	No	No

2.2. Bridge Descriptions

2.2.1. Donegal

2.2.1.1. Castlecooley Bridge [DL-N13-009.00]

The 2-span bridge crosses the Carrowen River. The bridge comprises a concrete structure with steel pipe culverts. There are concrete parapets on both sides of the carriageway. The bridge is located 3.7km upstream of Lough Swilly SAC and 700m of Lough Swilly SPA. Plate 2.1 shows Castlecooley Bridge.

Plate 2-1 Castlecooley Bridge.

2.2.1.2. Whitecross Bridge/Annie Tourish [DL-N14-009.00]

The Whitecross / Annie Tourish Bridge is a single span masonry arch bridge. The span is 4.08m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 9.5km upstream of the River Finn SAC. Plate 2-2 shows the west elevation.

Plate 2-2 Whitecross Bridge / Annie Tourish.

2.2.1.3. Tullyrap Bridge [DL-N14-010.00]

Tullyrap Bridge is single span masonry arch bridge with masonry parapets along the carriageway. The Drumbeg River flows below the bridge. The structure is located 8.3km upstream of River Finn SAC. Plate 2.3 shows the bridge.

Plate 2-3 Tullyrap Bridge.

2.2.1.4. Corcam Bridge [DL-N15-002.70]

Corcam Bridge is a single span masonry bridge. An unnamed EPA drain flows below the bridge and enters the River Finn downstream. Masonry parapet walls are present either side of the roadway. The structure is located 500m upstream of River Finn SAC. Plate 2.4 shows the bridge.

Plate 2-4 Corcam Bridge.

2.2.1.5. Mullandrait Bridge [DL-N15-003.00]

Mullandrait Bridge is a double span masonry bridge. The Mullaghagarry River flows below the bridge. Masonry parapet walls line either side of the roadway. The structure is located 0.1km upstream of River Finn SAC. Plate 2.5 shows the bridge.

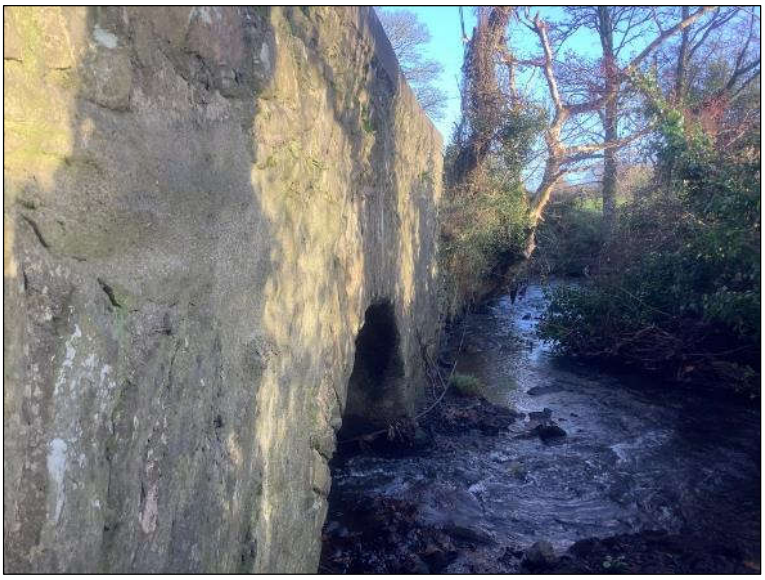


Plate 2-5 Mullandrait Bridge.

2.2.1.6. Drumrath Bridge/Laghey to Ballybofey Rd. [DL-N15-014.00]

The structure is comprised of 2 corrugated steel pipes with 3.95m diameter each. There is steel safety barrier on both sides of the carriageway and a light steel railing on the headwalls. The structure carries the N15 over the River Drumenny. The structure is within Lough Eske and Ardnamona Wood SAC and located 3.2km upstream of the Donegal Bay SPA. Plate 2-6 shows the east elevation.

Plate 2-6 Drumrath Bridge.

2.2.1.7. Laghy Village Bridge [DL-N15-019.00]

Laghy Village Bridge is concrete slab with masonry arch substructure single span bridge. Concrete parapets are present along the carriageway. The bridge spans the Tullywee River 1.3km upstream of Donegal Bay (Murvagh) SAC and 1.7km upstream of Donegal bay SPA. Plate 2.7 shows Laghy Village Bridge.

Plate 2-7 Laghy Village Bridge.

2.2.1.8. Glenties Bridge [DL-N56-028.00]

The Glenties Bridge is a 7.23m single span bridge with masonry parapets. The abutments and parapets are also masonry. There is no guard rail in place. The bridge is located within the West Of Ardara / Maas Road SAC. Plate 2-8 shows the northern abutment.

Plate 2-8 Glenties Bridge.

2.2.1.9. Clon Bridge [DL-N56-052.00]

Clon Bridge is a single span masonry arch bridge which carries the N56 road across the Faymore River via a single span concrete bridge. Masonry parapets line the carriageway. Sheephaven SAC is located 600m downstream of the bridge. Plate 2.9 shows Clon Bridge.

Plate 2-9 Clon Bridge.

2.2.1.10. 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 2.10 shows the bridge.

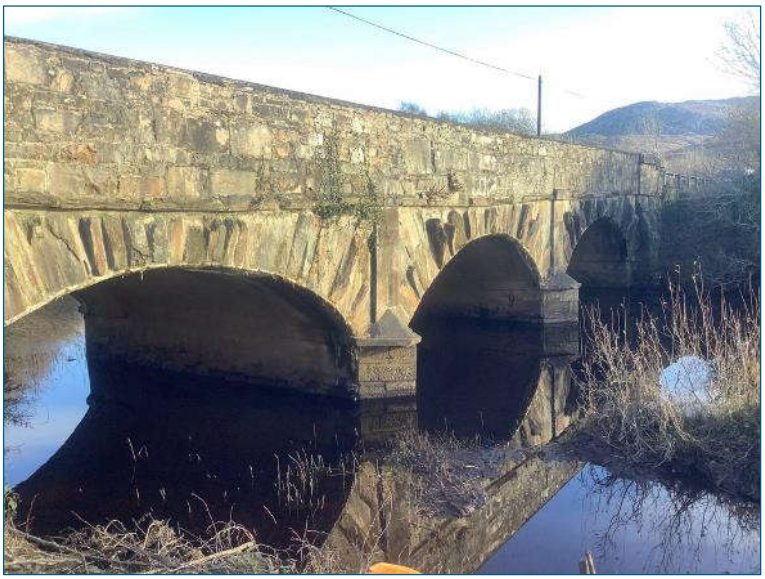


Plate 2-10 Owencarrow River Bridge.

2.2.2. Galway County

2.2.2.1. Cloonmore Bridge [GC-N83-004.00]

Cloonmore Bridge is a concrete and masonry single span bridge which carries the N83 over the Clare River. Steel safety barriers line the road. The bridge is located within Lough Corrib SAC. Plate 2.11 shows Cloonmore Bridge.

Plate 2-11 Cloonmore Bridge.

2.2.2.2. Owenduff Bridge [GC-N59-009.00]

Owenduff Bridge is a masonry single span bridge which carries the N59 over the Culfin River. Masonry parapets line the road. The bridge is located within The Twelve Bens / Garraun Complex SAC and the Culfin ultimately discharges to the West Connaught Coast SAC. Plate 2.12 shows Owenduff Bridge.

Plate 2-12 Owenduff Bridge.

2.2.2.3. Lettershea Bridge no.2 [GC-N59-022.00]

Lettershea Bridge No. 2 is a masonry single span bridge which carries the N59 over the Imleach Dhá Rú River. Masonry parapets line the carriageway. The bridge is located 50m downstream and 1.9km upstream of The Twelve Bens / Garraun Complex SAC and 5.1km upstream of the Connemara Bog Complex SPA. Plate 2.13 shows Lettershea Bridge No. 2 Bridge.

Plate 2-13 Lettershea Bridge No. 2.

2.2.2.4. Oughterard Bridge [GC-N59-040.00]

Oughterard Bridge is a masonry three-span bridge which carries the N59 over the Owenduff [Corrib] River. Masonry parapets line the carriageway. The bridge is located within the Lough Corrib SAC and 1.8km upstream of the Lough Corrib SPA. Plate 2.14 shows Oughterard Bridge.

Plate 2-14 Oughterard Bridge.

2.2.3. Leitrim

2.2.3.1. Banduff River Bridge [LM-N15-002.00]

The Banduff River Bridge is a 15.5m single span reinforced concrete bridge with steel parapets on both sides of the structure. The structure is within the Bunduff Lough and Machair / Trawalua / Mullaghmore SAC. Plate 2-15 shows the south elevation.

Plate 2-15 Banduff River Bridge.

2.2.3.2. Scarden River Bridge [LM-N16-006.00]

Scarden River Bridge is a masonry single span bridge which carries the N16 over the Owenmore [Manorhamilton] River. Masonry parapets line the road. The bridge is located within the Lough Gill SAC. Plate 2.16 shows Scarden River Bridge.

Plate 2-16 Scarden River Bridge.

2.2.3.3. Sracreeghan Bridge [LM-N16-017.00]

Sracreeghan Bridge is a masonry single span bridge which carries the N16 over an unnamed tributary of the Diffreen River. Steel safety barriers line the road above the bridge. The bridge is located 1.3km upstream of the Ben Bulben, Gleniff and Glenade Complex SAC and 12.1km upstream of Drumcliff Bay SPA. Plate 2.17 shows Sracreeghan Bridge.

Plate 2-17 Sracreeghan Bridge.

2.2.4. Mayo

2.2.4.1. Bridge Street Bridge [MO-N05-002.00]

The Bridge Street Bridge is a 3-span masonry arch bridge with masonry parapets on both sides of the structure. The maximum span is 7.75m and the minimum span is 4.2m. The rise of arch span barrel at crown is 1.47m. The structure is located 1.6km upstream of the Clew Bay Complex SAC. Plate 2-18 shows the east elevation.

Plate 2-18 Bridge Street Bridge.

2.2.4.2. Mullenmadoge Culvert West [MO-N05-025.00]

Mullenmadoge Culvert West is a single-span concrete culvert which carries the N05 over the Sonnagh [Moy] River. Steep grass embankments lead from the bridge to the road, with steel barriers lining the road. The bridge is located within the River Moy SAC. Plate 2.19 shows Mullenmadoge Culvert West.

Plate 2-19 Mullenmadoge Culvert West.

2.2.4.3. Rathrussel Bridge [MO-N58-004.00]

The Rathrussel Bridge is a 2-span reinforced concrete slab bridge with masonry and concrete parapets on both sides of the carriageway. Both spans are 3.53m. The structure is located within River Moy SAC. Plate 2-20 shows the west elevation.

Plate 2-20 Rathrussel Bridge.

2.2.4.4. Erriff Bridge [MO-N59-061.00]

Erriff Bridge is a single-span masonry bridge which carries the N59 over the Erriff River. Masonry parapets are present along the carriageway. The bridge is located within the Mweelrea/Sheeffry/Erriff Complex SAC. Plate 2.21 shows Erriff Bridge.

Plate 2-21 Erriff Bridge.

2.2.4.5. Luga Buide Bridge [MO-N59-062.00]

Luga Buide Bridge is a single-span masonry bridge which carries the N59 over an unnamed tributary of the Erriff River. Masonry parapets line the road. The bridge is located within the Mweelrea/Sheeffry/Erriff Complex SAC. Plate 2.22 shows Luga Buide Bridge.

Plate 2-22 Luga Buide Bridge.

2.2.5. Roscommon

2.2.5.1. Anrittabeg Bridge [RN-N63-005.20]

The Anrittabeg Bridge is a 2-span reinforced concrete slab bridge. The longest span is 1.16m and the shortest is 1.02m. The substructure consists of 2 mass concrete abutments and a mass concrete pier. There are masonry parapets on both sides of the carriageway. The structure is located 1.3km upstream of the Lough Ree SAC and 1.3km upstream of the Lough Ree SPA. Plate 2-23 shows the north elevation.

Plate 2-23 Anrittabeg Bridge.

2.2.5.2. Cloonfad Village Bridge [RN-N83-001.00]

The Cloonfad Village Bridge is a 2-span bridge. It is a masonry arch in the west side, and it has been widened using a reinforced concrete slab in the east side. The longest span is 3.00m and the shortest is 2.71m. The substructure consists of 2 masonry abutments and a masonry pier. There are masonry parapets on both sides of the carriageway. The structure is within Lough Corrib SAC. Plate 2-24 shows the east elevation.

Plate 2-24 Cloonfad Village Bridge.

2.2.6. Sligo

2.2.6.1. Michael Hughes Bridge [SO-N04-001.00]

Michael Hughes Bridge is a three-span concrete bridge which carries the N04 over the Garavogue River with steel barriers along the road. The bridge is located within the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA. Plate 2.25 shows Michael Hughes Bridge.

Plate 2-25 Michael Hughes Bridge.

2.2.6.2. Ballysadare River Bridge [SO-N59-002.00]

Ballysadare River Bridge is a seven-span concrete and masonry bridge which carries the N59 over the Ballysadare River. Steel safety barriers are present along the road. The bridge is located within the Unshin River SAC and 0.7km upstream of Ballysadare Bay SPA. Plate 2.26 shows Ballysadare River Bridge.

Plate 2-26 Ballysadare River 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) and also by the National Parks and Wildlife Service in 2018[1] (NPWS 2018). These guidance documents set out a staged approach to complete the AA process and outlines 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

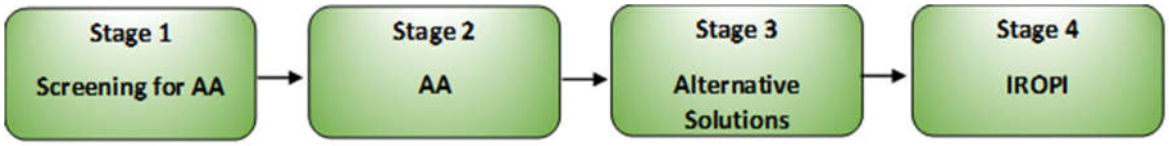


Figure 2.1 Appropriate Assessment Process (Source: DEHLG, 2009)

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 Consultations[2] (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; 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 Natura 2000 sites, hydrological connectivity and ecological data (either 3rd party data or data obtained from surveys conducted under the current contract. This GIS is regularly updated with data such as incoming survey data on bats, invasive species and freshwater pearl mussel, obtained as a result of site surveys conducted by the Contractor's appointed ecologist.

At the outset, a desk study was carried out to collate information available on European sites in the vicinity of bridge sites. These areas were viewed using Google Earth, Google maps[3] and Bing maps[4] and NBDC mapviewer. All bridge locations were also stored as *.kml* files in GoogleEarth to allow sites to be easily located and reviewed.

Data sources for the GIS include: -

- EIRSPAN bridge locations and Work Orders.
- National Parks and Wildlife Parks (NPWS) spatial data: Natura 2000 boundaries, nationally designated site boundaries, Article 17 reporting records, *Margaritifera* sensitive areas.
- Environmental Protection Agency datasets; Water/ Water Framework Directive datasets.

[2] https://www.npws.ie/development-consultations
[3] https://www.google.ie/maps
[4] http://www.bing.com/maps/

- National Biodiversity Data Centre online data.
- TII invasive species database.
- Species specific datasets obtained from NPWS, as a result of data requests. Some of these datasets are sensitive in nature, such as the distribution of freshwater pearl mussel in the region.
- Species specific data collected as part of ongoing ecological studies or site visits (e.g. data on invasive species collected by Contractor or Resident Engineer).

Geospatial analysis of all data was carried out using MapInfo v.16. In line with established best practice, locations and boundaries of all European sites connected via watercourses to proposed works were identified to establish surface water connectivity between work areas and European sites. The Environmental Protection Agency (EPA) Envision mapping[5] 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.

4.3. Statement of Authority

The NIS was prepared by Emma Nickelsen, 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 assisted in the preparation of this report.

Niamh Sweeney (BSc, MSc (Res)) is a freshwater ecologist with 8 years' experience in ecological consultancy, with specialisms in macroinvertebrate and diatom taxonomy. Niamh has worked on numerous Screenings for Appropriate Assessment, Natura Impact Statements and Ecological Impact Assessments for private architect firms, waste companies, numerous County Councils, the OPW and Inland Fisheries Ireland. Niamh carried out the preparation of this report.

Paul O'Donoghue has a BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics. His is a chartered member of the Society for the Environment (CEnv) and a full member of 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] http://gis.epa.ie/Envision

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-N13-009.00	Castlecooley Bridge	Carrowen	LeslieHill[Stream]_SC_010	No	N/A	No	N/A	Lough Swilly SAC ca. 3.7km d/s of bridge	Lough Swilly SPA ca. 700m d/s of bridge
DL-N14-009.00	Whitecross Bridge/Annie Tourish	Drumbeg	JohnstonStream_SC_010	No	N/A	No	N/A	River Finn SAC ca. 9.5km d/s of bridge	No
DL-N14-010.00	Tullyrap Bridge	Drumbeg	JohnstonStream_SC_010	No	N/A	No	N/A	River Finn SAC ca. 8.3km d/s of bridge	No
DL-N15-002.70	Corcam Bridge	Non-listed	Finn[Donegal]_SC_030	No	N/A	No	N/A	River Finn SAC ca. 500m d/s of bridge	No
DL-N15-003.00	Mullandrait Bridge	Mullaghagarry	Finn[Donegal]_SC_030	No	N/A	No	N/A	River Finn SAC ca. 0.1km d/s of bridge	No
DL-N15-014.00	Drumrath Bridge/Laghey to Ballybofey Rd	Drumenny	Eske_SC_010	Yes	Lough Eske And Ardnamona Wood SAC [000163]	No	N/A	Within	Donegal Bay SPA ca. 3.2km d/s of bridge
DL-N15-019.00	Laghy Village Bridge	Tullywee	Eske_SC_010	No	N/A	No	N/A	Yes	Donegal Bay SPA ca. 1.7km d/s of bridge
DL-N56-028.00	Glenties Bridge	Stracashel	Owenea_SC_010	Yes	West Of Ardara/Maas Road SAC [000197]	No	N/A	Donegal Bay (Murvagh) SAC ca. 1.3km d/s of bridge	u/s
DL-N56-052.00	Clon Bridge	Faymore 38	Lackagh_SC_010	No	N/A	No	N/A	Sheephaven SAC ca. 0.6km d/s of bridge	No
DL-N56-055.00	Owencarrow River Bridge	Owencarrow	Lackagh_SC_010	Yes	Cloghernagore Bog And Glenveagh National Park SAC [002047]	No	N/A	Within	Derryveagh And Glendowan Mountains SPA ca. 3.7km 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-N83-004.00	Cloonmore Bridge	Clare [galway]	Clare[Galway]_SC_060	Yes	Lough Corrib SAC [000297]	No	N/A	Within	No
GC-N59-009.00	Owenduff Bridge	Culfin 32	OwenduffBridgeStream_SC_010	Yes	The Twelve Bens/Garraun Complex SAC [002031]	No	N/A	Within. Ultimately discharges to West Connacht Coast SAC.	No
GC-N59-022.00	Lettershea Bridge no.2	Imleach_dhá_rú	Recess_SC_020	No	N/A	No	N/A	Within 50m	Connemara Bog Complex SPA ca. 5.1km d/s of bridge
GC-N59-040.00	Oughterard Bridge	Owenriff [corrib]	BallycuirkeLoughStream_SC_010	Yes	Lough Corrib SAC [000297]	No	N/A	Within	Lough Corrib SPA ca. 1.8km d/s of bridge
LM-N15-002.00	Banduff River Bridge	Duff	Duff_SC_010	No	N/A	No	N/A	Within 50m	No
LM-N16-006.00	Scarden River Bridge	Owenmore [manorhamilton]	Bonet_SC_010	Yes	Lough Gill SAC [001976]	No	N/A	Within	No
LM-N16-017.00	Sracreeghan Bridge	Undefined	Drumcliff_SC_010	No	N/A	No	N/A	Ben Bulben, Gleniff and Glenade Complex SAC ca. 1.3km d/s of bridge	Drumcliff Bay SPA ca. 12.1km d/s of bridge
MO-N05-002.00	Bridge Street Bridge	Carrowbeg [westport]	CARROWTOOTAGH_SC_010	No	N/A	No	N/A	Clew Bay Complex SAC ca. 1.6km d/s of bridge	No
MO-N05-025.00	Mullenmadoge Culvert West	Sonnagh [moy]	Moy_SC_040	Yes	River Moy SAC [002298]	No	N/A	Within	No
MO-N58-004.00	Rathrussel Bridge	Undefined	Moy_SC_070	Yes	River Moy SAC [002298]	No	N/A	Within	No
MO-N59-061.00	Erriff Bridge	Erriff 32	Erriff_SC_010	Yes	Mweelrea/Sheeffry/Erriff Complex SAC [1932]	No	N/A	Within	No
MO-N59-062.00	Luga Buide Bridge	Undefined	Erriff_SC_010	Yes	Mweelrea/Sheeffry/Erriff Complex SAC [1932]	No	N/A	Within	No

Structure ID	Structure Name	River	WFD Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
RN-N83-001.00	Cloonfad Village Bridge	Cloonfad	Clare[Galway]_SC_010	Yes	Lough Corrib SAC [000297]	No	N/A	Within	No
RN-N63-005.20	Anrittabeg Bridge	Kilnacloghy	Clooneigh_SC_010	No	N/A	No	N/A	Lough Ree SAC ca. 1.3km d/s of bridge	Lough Ree SPA ca. 1.3km d/s from bridge
SO-N04-001.00	Michael Hughes Bridge	Garavogue river	Bonet_SC_030	Yes	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627]	Yes	Cummeen Strand SPA [004135]	Within	Within
SO-N59-002.00	Ballysadare River Bridge	Ballysadare	Owenmore[Sligo]_SC_030	Yes	Unshin River SAC [001898]	No	N/A	Within	Ballysadare Bay SPA ca. 0.7km d/s of bridge

5.2. Description of the Special Areas of Conservation

5.2.1. 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 sprin habitat is fairl restricted in area, thou h has at least two dia nostic 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

Structure DL-N15-014.00 Drumrath Bridge/Laghey to Ballybofey Rd is located within Lough Eske And Ardnamona Wood SAC.

5.2.2. 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 Na as 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

Structure DL-N56-028.00 Glenties Bridge is located within West Of Ardara/Maas Road SAC.

5.2.3. Cloghernagore Bog and Glenveagh National Park SAC (002047)

Site Overview

"*Cloghernagore Bog and Glenveagh National Park SAC is an exceptionally large inland site locate 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 Callitricho-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

Structure DL-N56-055.00 Owencarrow River Bridge is located within Cloghernagore Bog And Glenveagh National Park SAC (002047).

5.2.4. Lough Corrib SAC (000297)

Site Overview

"*Lough Corrib is situated to the north of Galway city and is the second largest lake in Ireland, with an area of approximately 18,240 ha (the entire site is 20,556 ha). 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. A number of rivers are included within the cSAC as they are important for Atlantic Salmon. These rivers include the Clare, Grange, Abbert, Sinking, Dalgan and Black to the east, as well as the Cong, Bealanabrack, Failmore, Cornamona, Drimneen and Owenriff to the west. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site.*

The shallow, lime-rich waters of the southern basin of Lough Corrib support one of the most extensive beds of stoneworts (Charophytes) in Ireland. In contrast, the northern basin contains more oligotrophic and acidic waters, without Chara *species, but with Shoreweed, Water Lobelia, Pipewort (*Eriocaulon aquaticum*), Quillwort (*Isoetes lacustris*), Alternate Water-milfoil (*Myriophyllum alternifolium*) and Slender Naiad (*Najas flexilis*). The last-named is listed under the Flora (Protection) Order, 2015, and is an Annex II species under the E.U. Habitats Directive.*

*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. Wet meadows dominated by Purple Moor-grass (*Molinia caerulea*) occur in seasonally flooded areas close to the lake shore.*

*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 where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera *spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge.*

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.

*The Hill of Doon, located in the north-western corner of the lake, is a fine example of a Sessile Oak (*Quercus petraea*) woodland. The understorey is dominated by Sessile Oak, Holly (Ilex aquifolium) and occasional Juniper.*

A number of the rivers in the site support submerged and floating vegetation of the Ranunculion fluitantis and Callitricho-Batrachion, including mosses.

[redacted]*. White clawed Crayfish (*Austropotamobius *), also listed on Annex II, is well distributed throughout Lough Corrib and its in-flowing rivers over limestone.*

Lough Corrib is one the best examples of a large lacustrine catchment system in Ireland, with a range of habitats and species still well represented. These include 15 habitats which are listed on Annex I of the E.U. Habitats Directive, six of which are priority habitats, and nine species which are listed on Annex II. The lake is also internationally important for birds and is designated as a Special Protection Area.

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 Ranunculion fluitantis and Callitricho-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

Structures GC-N83-004.00 Cloonmore Bridge, GC-N59-040.00 Oughterard Bridge, and RN-N83-001.00 Cloonfad Village Bridge are located within Lough Corrib SAC.

5.2.5. Unshin River SAC (001898)

Site Overview

> "*The Unshin River runs from Lough Arrow north to Ballysadare Bay, Co. Sligo. The river is largely undrained and unaltered along much of its course. The marginal vegetation associated with the river is also included in the site, along with other semi-natural habitats adjacent to the river (included in order to enhance its protection). Many of these habitat types are interesting and of conservation value in their own right. Other watercourses included within the site are the Owenboy/ Owenbeg and a number of smaller tributaries. The Unshin River flows across a number of geological boundaries between sandstone, shales and limestone. This results in unusual physico-chemical qualities which in turn are reflected in the rich and varied plant and animal populations.*

The Unshin River supports an excellent example of floating river vegetation. The diversity of aquatic macrophytes is exceptional, and to a certain extent the unusual combinations and richness of species can be accounted for by the good quality water being discharged from Lough Arrow upstream. The lake also imparts a stabilising influence on the flow regime and provides a source of lacustrine species.

There are a number of areas of woodland, many of which flood, included within the site. These wet alluvial woodlands are found on water-logged soils.

Areas of grassland, ascribable to the E.U. Habitats Directive Annex I types: Orchid rich Calcareous Grassland and Molinia *Meadows, have been reported at Cloonmacduff, according to the Irish Semi-natural Grasslands Survey, 2010. There are also extensive wetlands within this site, and one area contains the Red Data Book plant Swamp Meadow-grass (*Poa palustris*).*

The Unshin and its tributaries form a very important system for Atlantic Salmon, a species that is listed on Annex II of the E.U. Habitats Directive. The Owenboy/ Owenbeg river is the principle spawning and nursery tributary for the system's salmon fishery. The Unshin and its tributaries is the most important salmon producing river in Co. Sligo. The system also supports a good population of Trout.

The trophic status of the river increases downstream indicating that some enrichment is taking place. However, the quality of the Unshin River and particularly its aquatic macrophyte communities, make it rare in both an Irish and European context, and it is considered one of the most pristine rivers in the country.

Qualifying Interests

- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-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]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structure SO-N59-002.00 Ballysadare River Bridge is located within Unshin River SAC.

5.2.6. River Moy SAC (002298)

Site Overview

"*This site comprises almost the entire freshwater element of the Moy and its tributaries, including both Lough Conn and Lough Cullin. The system drains a catchment area of 805 km2. Most of the site is in Co. Mayo though parts are in west Sligo and north Roscommon. The underlying geology is Carboniferous Limestone for the most part though Carboniferous Sandstone is present at the extreme west of the site with Dalradian Quartzites and schists at the south west. The river and its various tributaries rise in a number of locations some of which are upland areas dominated by blanket bog and heath. Throughout most of its course however the river flows through low-lying countryside where most of the adjoining land consists of agricultural grassland. The river eventually reaches the sea at Ballina where it flows into Killala Bay. To the west of Lough Cullin the river passes through areas where the bedrock is dominated by silicious rocks such as granite and here the character of the adjoining land changes to one where blanket bog and heath are important components of the landscape. In addition to river and lake habitats, the site contains adjoining habitats of ecological interest such as raised bogs, heath, wet grassland and deciduous woodland. Small pockets of conifer*

plantations, close to the lakes and along parts of the rivers, are included. Improved grassland is also included where it occurs along the river channels.

This extensive site contains good examples of the Annex 1 habitats active raised bog, degraded raised bog, Rhynchosporion vegetation, alkaline fen, alluvial woodland and old oak woodlands. The raised bog areas present constitute the most north-westerly examples of raised bog in Ireland, with the most important examples occurring at Derrynabrock and Tawnaghbeg. Alkaline fen is particularly well developed at Mannin and Island Lakes, an excellent example of old oak woodland is to be found just east of Pontoon along the shores of Loughs Conn and Cullin. This represents one of the largest stands of oak woodland in western Ireland. Water quality of the river channels is generally good and the majority is classified as unpolluted. The open waters of Loughs Conn and Cullin are moderately hard with relatively low colour and good transparency. Lough Conn, with a surface of 50km2, is classified as a mesotrophic system, while Lough Cullin (surface of 11 km2) is classified as an oligotrophic system. The rivers and lakes support important populations of Lutra lutra, Austropotamobius pallipes, Lampetra planeri *and* Petromyzon marinus. *The Moy system is one of the most important in Ireland for* Salmo salar *and is an internationally renowned fishery. It also has important stocks of* Salmo trutta. *Lough Conn supports a nationally important population of* Anser albifrons flavirostris *and has regionally important numbers of* Cygnus cygnus *and* Pluvialis apricaria *(all Annex I Bird Directive species). The lakes support a range of other wintering waterfowl, notably nationally important populations of* Aythya fuligula *and* Bucephala clangula. *Lough Conn / Cullin represents one of only 4 breeding sites in Ireland for* Melanitta nigra, *which in Ireland is at the south-west end of its European range. The population, however, has seriously declined in recent years. A range of mammals listed in the Red Data Book occur within the site, including* Martes martes *and* Myotis daubentoni. *At least five Red Data Book plant species occur, including* Cephalanthera longifolia *and Spiranthes romanzoffiana*."

Qualifying Interests

- Active raised bogs [7110]
- Degraded raised bogs still capable of natural regeneration [7120]
- Depressions on peat substrates of the Rhynchosporion [7150]
- Alkaline fens [7230]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structures MO-N05-025.00 Mullenmadoge Culvert West and MO-N58-004.00 Rathrussel Bridge are located within River Moy SAC.

5.2.7. Lough Gill SAC (001976)

Site Overview

"*Lough Gill is a moderate to large sized lake lying immediately east of Sligo town. It is fed by the River Bonet and drains into the sea via the Garvogue River, a short, wide and slow flowing river which passes through Sligo town. The lake lies along the junction between old metamorphic rocks to the south and limestone to the north. The water of the lake is thus*

influenced by both acidic and alkaline inputs, although nearly all the basin lies over limestone. The lake is 8 km by 2-3 km and has an area of 1,400 ha. It is a deep lake, with maximum depth at 31 m. Islands are a feature of the lake. Much of the shoreline is wooded and there is also some swamp vegetation, wet grassland and scrub along the shoreline. The lake is an important salmonid and coarse fishery and is used for a range of recreational activities. The site also includes the Shanvans and Owenmore rivers.

*An important example of a lake which appears to be naturally eutrophic. Quality generally good though blooms of blue-green algae in recent years indicate some artificial enrichment. Significant areas of alluvial forest occur along the Garvoge River (*Osmunda - Salicetum atrocinerea *type) and at the mouth of the River Bonet (*Carici remotae - Fraxientum *type). Old oak woodland of varying quality is well scattered along the shoreline and on some of the islands and is an important example of this habitat for western Ireland. At least six Red Data Book plant species have been recorded from site. Site has three species of lamprey and* Austropotamobius pallipes*. The lake and its associated rivers support an important population of* Salmo salar*.* Lutra lutra *has a good population within the site. Of minor importance for birds though the site has a small breeding colony of* Sterna hirundo*. A wide range of rare or scarce invertebrates are known from the site, as well as several Red Data Book mammal species, including* Martes martes."

Qualifying Interests

- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structure LM-N16-006.00 Scarden River Bridge is located within Lough Gill SAC.

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

Site Overview

"*The geology of the site is dominated by sandstones, shales and slates of Ordovician and Silurian age. Steep-sided mountains dominate most of the site and the tallest of these is Mweelrea which reaches an altitude of 814 m. Lowland blanket bog over flat ground occurs in patches along the northern and eastern sides of the site. Particularly fine examples of corrie lakes occur in this site. The site is drained by a number of well-developed base poor river systems, e.g. the Erriff, the Glenummera and the Bundorragh. Some of the blanket bog adjacent to the site has been planted with coniferous trees.*

This is a large upland site of great scenic value which also contains a particularly good area of coastal habitat along its westernmost boundary. The upland areas contain extensive areas of blanket bog, heath, grassland, cliff, lake and river habitats. Blanket bog is also well developed in the lowland areas and here depressions on peat substrates (Rhynchosporion) is well represented. Some of the bog, heath and grassland habitats are suffering from

overgrazing at present. The coastal area of Dooaghtry contains a range of different coastal habitats in a relatively small area - these include sand-dune, machair, lagoon, calcareous fen, heath and woodland. Overall, the site has an outstandingly high number of habitats which are listed on Annex I of the Habitats Directive. In addition, there are seven Annex II species of flora and fauna and four Annex I Bird Directive species."

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

Structures MO-N59-061.00 Erriff Bridge and MO-N59-062.00 Luga Buide Bridge are located within Mweelrea/Sheeffry/Erriff Complex SAC.

5.2.9. 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

Structure GC-N59-009.00 Owenduff Bridge is located within The Twelve Bens / Garraun Complex SAC.

5.2.10. Donegal Bay (Murvagh) SAC (000133)

Site Overview

"*This site comprises the extreme inner part of Donegal Bay. Several large rivers, notably the River Eske, enter the site. It is typically estuarine in character, with large expanses of intertidal sand and mud flats, channels, saltmarsh, sand dunes and sandy and shingle beaches. Several grassy islands occur in the site. The site provides habitat for a diversity of estuarine bird species, and the islands are used by* Anser albifrons flavirostris*. The area is underlain by limestone and shale bedrock from the carboniferous era.*

The site is a good example of a sheltered estuarine system, with extensive intertidal sand and mud flats mostly of good quality. The Murvagh peninsula still has some areas of fixed dunes and humid dune slacks, though these dune habitats are only of moderate quality. The population of Phoca vitulina *is one of the largest in the country. The site is of some importance for estuarine birds and is visited by* Anser albifrons flavirostris*.* Pyrola rotundifolia*, a Red Data Book species, is found on the site.*"

Qualifying Interests

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Dunes with *Salix repens* ssp*. argentea* (Salicion arenariae) [2170]
- Humid dune slacks [2190]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

Structure DL-N15-019.00 Laghy Village Bridge is located 1.3km upstream of Donegal Bay (Murvagh) SAC.

5.2.11. Lough Ree SAC (000440)

Site Overview

"Lough Ree is the third largest lake in Ireland and is situated in an ice-deepened depression in Carboniferous limestone on the River Shannon system between Lanesborough and Athlone. The site spans Counties Longford, Roscommon and Westmeath. Some of its features (including the islands) are based on glacial drift. It has a very long, indented shoreline and hence has many sheltered bays. Although the main habitat, by area, is the lake itself, interesting shoreline, terrestrial and semiaquatic habitats also occur.

Lough Ree and its adjacent habitats are of major ecological significance. Some of the woodlands around the lake are of excellent quality and include some of the best examples of this habitat in Ireland. St. John's Wood is particularly important; it is considered to be one of the very few candidates for ancient woodland in Ireland. The lake itself is an excellent example of a mesotrophic to moderate-eutrophic system, supporting a rare fish species and a good diversity of breeding and wintering birds."

Qualifying Interests

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Active raised bogs [7110]
- Degraded raised bogs still capable of natural regeneration [7120]
- *Alkaline fens* [7230]

- Limestone pavements [8240]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Bog woodland [91D0]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structure RN-N63-005.20 Anrittabeg Bridge is located 1.3km upstream of Lough Ree SAC.

5.2.12. Cummeen Strand / Drumcliff Bay (Sligo Bay) SAC (000627)

Site Overview

> "*This large coastal site extends from Cullamore in the north-west to Killaspug in the south-west, and from Sligo town in the south-east to Drumcliff village in the northeast. It encompasses two large, shallow bays, Drumcliff Bay and Sligo Harbour, and both Ardboline and Horse Island. Sand dunes and sand hills at Rosses Point, Killaspug, Yellow Strand and Coney Island are included, as are grasslands at Ballintemple and Ballygilgan (Lissadell), along with a variety of other habitats such as woodland, saltmarsh, sandy beaches, boulder beaches, shingle, fen, freshwater marshes, rocky sea cliffs and lakes. The site is largely underlain by Carboniferous limestone, but acidic rocks are also found on the Rosses Point peninsula. At Serpent Rock in the north-western section of the site the most complete section of the northwestern Carboniferous strata is exposed. Here are found an excellent series of fossilised corals which, in some strata, stand out from the rock matrix.*
>
> *Cummeen Strand/Drumcliff Bay (Sligo Bay) is an important site of high conservation significance, which includes a wide variety of habitat types, including several listed on Annex I of the E.U. Habitats Directive, several species listed on Annex II of this Directive, large and important populations of waterfowl and seabirds, and several rare plant species.*"

Qualifying Interests

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- *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]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

Structure SO-N04-001.00 Michael Hughes Bridge is located within Cummeen Strand / Drumcliff Bay (Sligo Bay) SAC.

5.2.13. Ben Bulben, Gleniff and Glenade Complex SAC (000623)

Site Overview

"*The site comprises a high plateau of carboniferous limestone capped by shale standing 300-650 metres above the surrounding country and sloping gently to the south-east. The edges of the plateau form steep, high cliffs, below which is found a skirt of scree. The cliffs and scree hold a rich diversity of arctic-alpine plants; the summit of the plateau is less diverse but does have extensive areas of blanket bog and heath, with rock outcropping frequently. A large number of streams drain the site, many of which form waterfalls. Glencar Lough, a medium-sized lake, is found on the southern side of the site. Wet and dry grassland, scrub, broad-leaved deciduous, flushes, swallow holes and small areas of fen and limestone pavement are also found on the site. Disused barytes workings occur above Gleniff valley.*

The site holds the finest examples of limestone cliffs in the country. These and the scree slopes below are home to extremely species-rich and diverse montane vascular plant, bryophyte and lichen floras, which include many Red Data Book species and species known only from this or one or two other sites in the country. The site holds a large number of pertifying springs, an extensive area of dry heath and a small area of alpine heath; much of the blanket bog on the site is eroding and of rather low quality. Several populations of the rare mollusc Vertigo geyeri *have recently been recorded from calcareous flushes within the site-these comprise the first records for Co. Leitrim. The occurrence of four pairs of* Falco peregrinus *breeding on the site is notable. The site is also utilised by* Lutra lutra*. The site has a little known but potentially interesting invertebrate fauna. The site is the type locality for the Ben Bulben shale, the Glencar limestone and the Dartry limestone.*"

Qualifying Interests

- 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]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
- Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Transition mires and quaking bogs [7140]
- 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 and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) [8120]
- Calcareous rocky slopes with chasmophytic vegetation [8210]
- *Vertigo geyeri* (Geyer's Whorl Snail) [1013]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structure LM-N16-017.00 Sracreeghan Bridge is located 1.3km upstream of Ben Bulben, Gleniff and Glenade Complex SAC.

5.2.14. Clew Bay Complex SAC (001482)

Site Overview

"*Clew Bay is a wide, west facing, bay on the west coast. It is open to the Atlantic westerly swells and winds, with Clare Island giving only a small amount of protection. Geomorphologically, the bay is a classic example of a drowned drumlin landscape, with numerous small islands which have been created since the last glacial period. The geomorphology of the bay has also resulted in a complex series of interlocking bays creating a wide variety of marine and terrestrial habitats. The shores of the drumlin islands and the inner part of the bay are a mixture of boulders, cobbles, pebbles and gravel, but there are extensive areas of intertidal sand and mud flats. Lough Furnace, a large, deep, stratified saline lake lagoon, is included in the site, along with some of the surrounding area of bog and heath.*

The geomorphological structure of this bay is unique in Ireland. This site is important as it has a good range of representative shallow bay communities reflecting the range of sediment types from boulders and cobbles on mixed sediment to mud and maerl beds. A number of marine species were recorded from this bay that were not recorded at any other site during the BioMar survey. The site includes a large area of tidal mud/sand flats. Clew Bay has the most significant shingle reserves in the country and has the only examples of incipient gravel barriers in Ireland. Associated with the shingle (and dunes) are excellent examples of annual vegetation of drift lines. Atlantic salt meadows are very well represented throughout the site and two dune systems also occur. Lough Furnace is a good example (and one of the largest in the country) of a deep, stratified saline lake lagoon in a natural state, of which there are very few in Ireland. A fine stand of old oak woodland occurs within the site near Newport. The legally protected plant Hammarbya paludosa *occurs within site and there is a large population of* Erica erigena *around Lough Furnace. The site has important resident populations of* Lutra lutra *and* Phoca vitulina*. The site also includes a population of* Vertigo geyeri*. The relict mysid* Neomysis integer *occurs in Lough Furance. Clew Bay is a traditional breeding site for* Sterna hirundo*,* Sterna paradisaea *and* Sterna albifrons*, and has a breeding colony of* Phalacrocorax carbo*. The bay supports a range of wintering waterfowl, with nationally important populations of* Branta leucopsis*,* Mergus merganser *and* Charadrius hiaticula."

Qualifying Interests

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Annual vegetation of drift lines [1210]
- Perennial vegetation of stony banks [1220]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Machairs (* in Ireland) [21A0]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- *Vertigo geyeri* (Geyer's Whorl Snail) [1013]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

Structure MO-N05-002.00 Bridge Street Bridge is located 1.6 km upstream of Clew Bay Complex SAC.

5.2.15. River Finn SAC (002301)

Site Overview

"This site comprises almost the entire freshwater element of the River Finn and its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. All of the site is in Co. Donegal. The underlying geology is Dalradian Schists and Gneiss for the most part though quartzites and Carboniferous Limestones are present in the vicinity of Castlefinn. The hills around Lough Finn are also on quartzite. The mountains of Owendoo and Cloghervaddy are of granite felsite and other intrusive rocks rich in silica. There are many towns along the river but not within the site, including Lifford, Castlefinn, Stranolar and Ballybofey.

*The Finn system is one of Ireland's premier salmon waters. Although the Atlantic Salmon (*Salmo salar*) 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. Commercial netting on the Foyle does not begin until June and this gives spring fish a good opportunity to get into the Finn. The Finn is important in an international context in that its populations of spring salmon appear to be stable, while they are declining in many areas of Ireland and Europe. The salmon fishing season is 1st March to 15th September. Fishing for spring salmon is best east of Stranolar while the grilse run through to the upper reaches. The grilse run peaks here, depending on water, usually in mid-June. The estimated rod catch from the Finn is approximately 500-800 spring salmon and 4,000 grilse annually, producing about 40% of the total Foyle count. The Loughs Agency has a management regime in place called the 'control of fishing regulations'. If enough salmon are not past the counter at Killygordon at a certain key date then both the angling and commercial fishing can be closed for set periods."*

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

The following structures are located upstream of River Finn SAC: -

- DL-N14-009.00 Whitecross Bridge/Annie Tourish is located 9.5 km upstream;
- DL-N14-010.00 Tullyrap Bridge is located 8.3 km upstream;
- DL-N15-002.70 Corcam Bridge is located 500m upstream;
- DL-N15-003.00 Mullandrait Bridge is located 100m upstream.

5.2.16. West Connacht Coast SAC (002998)

Site Overview

"The site encompasses a diverse range of shallow marine habitats occurring in waters less than 100 m deep. These include a variety of seabed structures including reefs, islets and sedimentary basins. The site contains physical and hydrographic features believed to be important for Bottle-nosed Dolphin, one of two cetacean species listed on Annex II of the E.U. Habitats Directive. These features include shallow coastal bays, areas of steep seafloor topography and complex

areas of strong current flow adjacent to estuaries, coastal headlands and islands, sandbanks, shoals and reefs. Its area borders existing designated sites for protected species and habitats and lies adjacent to a wide array of coastal features including sheltered bays, estuaries, coastal cliffs and sea caves, several of which are located within protected sites.

Bottle-nosed Dolphin occurs within the site in all seasons and the area comprises a key habitat for the species both regionally and within Irish waters as a whole. Survey data show that Bottle-nosed Dolphin occurrence within the site compares favourably with another designated site in Ireland, the Lower River Shannon. Local population estimates off south-west Co. Mayo and Connemara, Co. Galway describe a minimum of 123 dolphins, with possibly up to 150-200 individuals or more, occurring within the site as a whole, exceeding estimates for the Shannon Estuary population. Significant structural linkages have been established between groups of dolphins Version date: 10.02.2014 2 of 2 002998_Rev13.Doc utilising various coastal habitats within the site, while a high proportion of individuals within this Bottle-nosed Dolphin community have been shown to range freely within its coastal waters. Analyses of genetic structure also show a fine scale distinction between dolphins sampled within the site and animals sampled at the Shannon Estuary or nationally."

Qualifying Interests

- Bottle-nosed Dolphin (*Tursiops truncatus*) [1349]

Linkage to Bridges

Structure GC-N59-009.00 Owenduff Bridge is located 9 km upstream of West Connacht Coast SAC.

5.2.17. Sheephaven SAC (001190)

Site Overview

*"The site is particularly notable in a national context owing to its extensively vegetated intertidal zone. The sand-flats support one of the largest areas of annual vegetation dominated by Glasswort (*Salicornia europaea*) anywhere in Ireland and this is the largest extent of habitat known that is not affected by Common Cordgrass (*Spartina townsendii*), an invasive species that threatens this habitat. There are also excellent examples of unmodified zonation between pioneer vegetation through to upper marsh saltmarsh communities. The site is actively accreting, and this is having a positive influence on the site.*

*Large areas of sand dune occur at Rosapenna and at Marble Hill. The fore dunes are dominated by Marram (*Ammophila arenaria*), with abundant Red Fescue (*Festuca rubra*), and herbs such as Dove's-foot Crane's-bill (*Geranium molle*) and clovers (*Trifolium *spp.*) occurring on the fixed dunes behind. Some areas of sand dune at Rosapenna have been damaged through agricultural improvement, and golf course development has also had an impact on the site. Dune slacks occur at Rosapenna in both the southern end (Glenree/Magheramagorgan), in the most extensive unmodified area of dune grassland and also in the northern end, where there is an interesting co-occurrence of dry dune grassland, fen and dune slack vegetation. A small slack occurs at Marble Hill in the fixed dunes that slope down to the back strand at Clonmass. The slack area contains standing water and a drain from the surrounding land empties into it. The slack is dominated by the typical species Common Sedge (*Carex nigra*), Horsetail spp. (*Equisetum *spp.*), Marsh Pennywort (*Hydrocotyle vulgaris*), Water Mint (*Mentha aquatic*), Silverweed (*Potentilla anserina*) and the moss* Calliergonella cuspidata.

*A relatively small area of sand dune machair occurs on flat to gently undulating ground behind the dune system, to the north-west of Carrigart village. Typical species such as Red Fescue, Ribwort Plantain (*Plantago lanceolata*), Common Bird's foot-trefoil (*Lotus corniculatus*) and Daisy (*Bellis perennis*) are present. The machair displays an interesting gradation to saltmarsh vegetation.*

*An extensive area of saltmarsh occurs at Back Strand, with further areas at Ards Strand and to the west of Carrigart village. A variety of sedges (*Carex *spp.) and rushes (*Juncus *spp.) occur,*

*including Distant Sedge (*Carex distans*) and Sea Rush (*Juncus maritimus*), along with Thrift (*Armeria maritima*) and Sea Aster (*Aster tripolium*). The site includes several areas of woodland. Creeslough Wood consists of a range of deciduous trees, such as oak (*Quercus *sp.), Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*), but Downy Birch (*Betula pubescens*) is also a common tree. Ards Forest Park includes areas of deciduous woodland and conifer plantation. Rhododendron (*Rhododendron ponticum*) is widespread in parts of the wood. Two rare species of Myxomycete fungus have been recorded from Ards, namely* Cribraria rufa *and* Stemonitopsis hyperopta*.*

*The rare liverwort, Petalwort (*Petalophyllum ralfsii*), a species that is listed on Annex II of the E.U. Habitats Directive, has been recorded from this site.*

*The Marsh Fritillary (*Euphydryas aurinia*), an E.U. Habitats Directive Annex II and red-listed butterfly, is known from suitable habitat (machair and dune grassland with Devil's bit Scabious (*Succisa pratensis*) at Ards and Carrigart and it may occur elsewhere."*

Qualifying Interests

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Humid dune slacks [2190]
- Machairs (* in Ireland) [21A0]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- *Euphydryas aurinia* (Marsh Fritillary) [1065]
- *Petalophyllum ralfsii* (Petalwort) [1395]

Linkage to Bridges

Structure DL-N56-052.00 Clon Bridge is located 0.6 km upstream of Sheephaven SAC.

5.2.18. Lough Swilly SAC (002287)

Site Overview

"This large site, situated in the northern part of Co. Donegal, comprises the inner part of Lough Swilly. It extends from below Letterkenny to just north of Buncrana. Lough Swilly is a long sea lough, cutting through a variety of metamorphic rocks on the west side of Inishowen. The main rivers flowing into the site are the Swilly, Lennan and Crana. At low tide, extensive sand and mudflats are exposed, especially at the mouths of the Swilly and Lennan rivers. The site is estuarine in character, with shallow water and intertidal sand and mudflats being the dominant habitats.

Ecological communities present in the intertidal sediments at Lough Swilly SAC include fine sand community complexes, intertidal mixed sediment communities with polychaetes, subtidal mixed sediment communities with polychaetes and bivalves, muddy fine sand communities with Thyasira

flexuosa*, muddy community complexes and Ostrea edulis dominated communities. Bivalves and polychaete worms are well represented in the macro invertebrate fauna, with species such as Cockles (*Cerastoderma edule*), [redacted] Baltic Tellin (*Macoma balthica*), Ragworm (*Nereis diversicolor*) and Sand Mason (*Lanice conchilega*) being common. Common Cord-grass (*Spartina anglica*) is well established on parts of the intertidal flats. The shoreline above the flats varies from bedrock shore to shingle or cobbles, and here is found a scattering of salt tolerant plants such as Common Scurvygrass (*Cochlearia officinalis*), Sea-milkwort (*Glaux maritima*) and Red Fescue (*Festuca rubra*).*

*Saltmarshes are well represented in the inner sheltered areas of the site, with good examples in the Ramelton area. The marshes are the Atlantic salt meadow type and are characterised by such species as Thrift (*Armeria maritima*), Sea-milkwort, Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*) and Red Fescue.*

Lakes which are lagoonal in character occur at Inch and Blanket Nook. Inch Lough is a good example of a large, shallow lagoon with very low salinity in most of the lagoon. Less information is available for Blanket Nook, but it is of a higher salinity and adds to the richness of the habitat within the site as a whole. The vegetation in Inch is diverse and typically lagoonal, with well-developed charophyte communities, including a large population of Chara canescens *(a Red Data Book species).*

Over 11 hectares of Molinia Meadows, a habitat listed on Annex I of the E.U. Habitats Directive, are reported to occur at Inch Level, according to the Irish Semi-natural Grasslands Survey, 2010.

*Two woodlands occur adjacent to the north-western shore of Lough Swilly. These are Rathmullen and Carradoan Woods, the former being a Nature Reserve. They are dominated by Sessile Oak (*Quercus petraea*) and Downy Birch (*Betula pubescens*).*

*A further area of woodland, scrub and heath occurs above the north-east shore at Crockacashel and at Porthaw. Oak/Hazel (*Corylus avellana*) scrub is frequent, and there is a well-developed ground flora.*

The site supports a population of Otter, a species listed on Annex II of the E.U. Habitats Directive.

This site is of conservation importance as it contains good examples of at least five habitats listed on Annex I of the E.U. Habitats Directive (estuaries, lagoons, Atlantic salt meadows, Molinia *meadows, old oak woods) and supports a population of Otter. In addition, it is of high ornithological importance for wintering waterfowl, with 16 species occurring regularly in numbers of national importance, plus three species occurring within the site and on adjacent polders in numbers of international importance.*

Qualifying Interests

- Estuaries [1130]
- Coastal lagoons [1150]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

Structure DL-N13-009.00 Castlecooley Bridge is located 3.7 km upstream of Lough Swilly SAC.

5.3. Description of the Special Protection Areas

5.3.1. Donegal Bay SPA (004151)

Site Overview

"*The Donegal Bay SPA is a very large, marine dominated, site. It extends from Doorin Point, to the west of Donegal town, to Tullaghan Point in Co. Leitrim, a distance of approximately 15 km along its north-east/south-west axis. It varies in width from about 3 km to over 8 km. The site includes the estuary of the River Eske, which flows through Donegal town, and the estuary of the River Erne which flows through Ballyshannon. Much of the shoreline is rocky or stony, with well-developed littoral reefs in places. There are also extensive stretches of sandy beach, especially from the Murvagh peninsula southwards to Rossowlagh and at the outer part of the Erne estuary. Shingle or cobble beaches are also represented. There are extensive areas of intertidal flats associated with the Eske Estuary, reflecting the very sheltered conditions in this part of the bay. These have been shown to be biotope rich. Elsewhere a narrow fringe of intertidal flats is exposed at low tides. Salt marshes are found in the sheltered conditions of the innermost part of the bay. A number of small, grassy, islands occur in the innermost part of the bay. The shallow bay waters overlie mostly sandy substrates though reefs occur in places.*

This site supports an excellent diversity of waterfowl species associated with shallow bays. It has an internationally important wintering population of Gavia immer *and is one of the top sites in the country for this species. Also has one of the few regular populations of* Gavia arctica *in the country and a regionally important population of* Gavia stellata. *The site has nationally important populations of* Melanitta nigra *(up to 4.6% of all-Ireland total) and* Branta bernicla hrota. *A range of other species associated with estuarine and shoreline habitats occur. The site provides both feeding and roost sites for most of the species. Habitat quality is mostly good. The site has a population of* Phoca vitulina."

Qualifying Interests

- Great Northern Diver (*Gavia immer*) [A003]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Common Scoter (*Melanitta nigra*) [A065]
- Sanderling (*Calidris alba*) [A144]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Structures DL-N15-014.00 Drumrath Bridge/Laghey to Ballybofey Rd is located 3.3 km upstream and DL-N15-019.00 Laghy Village Bridge is located 1.7 km upstream of Donegal Bay SPA.

5.3.2. 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

Structure GC-N59-040.00 Oughterard Bridge is located 1.8 km upstream of Lough Corrib SPA.

5.3.3. Drumcliff Bay SPA (004013)

Site Overview

“*Drumcliff Bay is the most northerly sector of Sligo Bay's three estuarine inlets. It extends from the village of Drumcliff as far west as Raghly Point, a distance of over 9 km. The innermost part of the site is well sheltered and at low tide extensive intertidal flats are exposed. The flats support* Zostera noltii*. The outer part of the site is shallow marine water. Sandy beaches are well represented, along with some salt marsh and stony shoreline. The site includes goose-feeding fields of improved grassland at Ballygilgan and Ballintemple. Some mixed woodland is also included.*

Drumcliff Bay SPA is of importance for the diversity of wintering waterfowl and is an integral part of the larger unit of Sligo Bay. Its principal importance, however, is that it supports an internationally important population of Branta leucopsis*, which is one of the two most important flocks in the country (ca. 21% of the national total). It also supports nationally important populations of Calidris alba (4.0% of the national total) and populations of* Clangula hyemalis *and* Limosa lapponica *that are close to national importance, as well as a population of* Cygnus cygnus *of local/regional importance. More intensive survey may show that higher numbers of some species occur. Drumcliff Bay has a population of* Phoca vitulina*."*

Qualifying Interests

- Sanderling (*Calidris alba*) [A144]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Structure LM-N16-017.00 Sracreeghan Bridge is located 12.1 km upstream of Drumcliff Bay SPA.

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

Structure GC-N59-022.00 Lettershea Bridge no.2 is located 5.1 km upstream of Connemara Bog Complex SPA.

5.3.5. Lough Ree SPA (004064)

Site Overview

"*Situated on the River Shannon between Lanesborough and Athlone, Lough Ree is the third largest lake in the Republic of Ireland. It lies in an ice-deepened depression in Carboniferous Limestone. Some of its features (including the islands) are based on glacial drift. The main inflowing rivers are the Shannon, Inny and Hind, and the main outflowing river is the Shannon. The greater part of Lough Ree is less than 10 m in depth, but there are six deep troughs running from north to south, reaching a maximum depth of about 36 m just west of Inchmore. The lake has a very long, indented shoreline and hence has many sheltered bays. It also has a good scattering of islands, most of which are included in the site.*

Lough Ree SPA is of high ornithological importance for both wintering and breeding birds. It supports nationally important populations of eleven wintering waterfowl species. The site has a range of breeding waterfowl species, notably nationally important populations of Common Scoter and Common Tern. Of particular note is the regular presence of three species, Whooper Swan, Golden Plover and Common Tern, which are listed on Annex I of the E.U. Birds Directive. Parts of Lough Ree SPA are Wildfowl Sanctuaries."

Qualifying Interests

- Little Grebe (*Tachybaptus ruficollis*) [A004]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Shoveler (*Anas clypeata*) [A056]
- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Goldeneye (*Bucephala clangula*) [A067]
- Coot (*Fulica atra*) [A125]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Structure RN-N63-005.20 Anrittabeg Bridge is located 1.3 km upstream of Lough Ree SPA.

5.3.6. Cummeen Strand SPA (004035)

Site Overview

"*Cummeen Strand is a large shallow bay stretching from Sligo Town westwards to Coney Island. It is one of three estuarine bays within Sligo Bay and is situated between Drumcliff Bay to the north and Ballysadare Bay to the south. The Garavogue River flows into the bay and forms a permanent channel.*

*At low tide, extensive sand and mud flats are exposed. These support a diverse macro-invertebrate fauna which provides the main food supply for the wintering waterfowl. Of particular note is the presence of eelgrass (*Zostera noltii *and* Z. angustifolia*) beds, which provide a valuable food stock for herbivorous wildfowl. The estuarine and intertidal flat habitats are of conservation significance and are listed on Annex I of the E.U. Habitats Directive. Areas of salt marsh fringe the bay in places and provide roosting sites for birds during the high tide periods. Sand dunes occur at Killaspug Point and Coney Island, with a shingle spit at Standalone Point near Sligo Town.*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher and Redshank. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Cummeen Strand SPA is of high ornithological importance with one species, Light-bellied Brent Goose, occurring in numbers of international importance. In addition, the site supports nationally important populations of a further two species. The regular presence of Golden Plover and Bar-

tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site is also important as a component of the much larger Sligo Bay complex. Cummeen Strand is a Ramsar Convention site.

Qualifying Interests

- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Redshank (*Tringa totanus*) [A162]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Structure SO-N04-001.00 Michael Hughes Bridge is located within Cummeen Strand SPA.

5.3.7. 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

Structure DL-N56-055.00 Owencarrow River Bridge is located 3.7km upstream of Derryveagh and Glendowan Mountains SPA.

5.3.8. Lough Swilly SPA (004075)

Site Overview

"Lough Swilly is a long sea inlet cut through a variety of metamorphic rocks, situated on the west side of the Inishowen Peninsula in north Co. Donegal. The SPA comprises the inner part of Lough Swilly from just east of Letterkenny northwards to Killygarvan (c. 2 km north of Rathmullan) on the west side and to c. 2 km south of Buncrana on the east side; it includes the adjacent Inch Lough. Also forming part of the site is a series of improved pasture and arable fields on the south side of Lough Swilly between Farsetmore and Inch Levels – these are of importance to geese and swans. It includes sections of the estuaries of the River Swilly, the River Leannan and the Isle Burn and the predominant habitat is a series of extensive sand and mud flats which are exposed at low tide - both estuaries and sand/mud flats are listed on Annex I of the E.U. Habitats Directive. Other habitats represented in the site are salt marshes, lagoons (at Inch Lough and Blanket Nook), rivers and streams, sand and shingle beaches, lowland wet and dry grasslands, drainage ditches, reedbeds and scrub. Inch Lough, whilst artificial in origin, is one of the largest and best examples of a shallow, low salinity lagoon in the country; it supports what is probably the largest population in the country of the Red-listed charophyte Chara canescens. *A small sandy island, used by nesting terns, swans and gulls, occurs in the southern part of the lagoon.*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Crested Grebe, Grey Heron, Whooper Swan, Greenland White-fronted Goose, Greylag Goose, Shelduck, Wigeon, Teal, Mallard, Shoveler, Scaup, Goldeneye, Red-breasted Merganser, Coot, Oystercatcher, Knot, Dunlin, Curlew, Redshank, Greenshank, Black-headed Gull, Common Gull, Sandwich Tern and Common Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site supports an excellent diversity of waterfowl species in autumn and winter as well as breeding terns, gulls and ducks. The shallow waters provide suitable habitat for grebes and diving duck, while the intertidal flats are used by an abundance of wildfowl and waders. At high tide, the duck and wader species roost on the salt marshes and shorelines, with some species moving to the adjacent pasture and arable fields. The combination within this site of extensive feeding areas and safe resting and roosting sites makes this one of the most important wetlands in the north-west of the country for wintering waterfowl.

Qualifying Interests

- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Grey Heron (*Ardea cinerea*) [A028]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Greylag Goose (*Anser anser*) [A043]
- Shelduck (*Tadorna tadorna*) [A048]

- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Shoveler (*Anas clypeata*) [A056]
- Scaup (*Aythya marila*) [A062]
- Goldeneye (*Bucephala clangula*) [A067]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Coot (*Fulica atra*) [A125]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Knot (*Calidris canutus*) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Structure DL-N13-009.00 Castlecooley Bridge is located 0.7km upstream of Lough Swilly SPA.

5.3.9. Ballysadare Bay SPA (004129)

Site Overview

"Ballysadare Bay extends for approximately 10 km westwards from the town of Ballysadare, County Sligo. It is the most southerly of three inlets that form the eastern part of the larger Sligo Bay complex. The estuarine channel of the Ballysadare River winds its way through the bay, finally reaching the open sea near the Strandhill Dunes sand spit. The bay is underlain by sedimentary rocks of limestones, sandstones and shales which are exposed as low cliffs and small sections of bedrock shore at several locations.

The bay contains extensive intertidal sand and mudflats. The flats support good populations of macro-invertebrates which are important food items for wintering waterfowl. Common species present include the polychaete worms Hediste diversicolor*,* Arenicola marina*,* Lanice conchilega *and* Nepthys hombergii*, and the bivalves* Cerastoderma edule*,* Macoma balthica *and* Scrobicularia plana*. Also present on the intertidal flats are the vascular plants Eelgrass (*Zostera marina*) and Beaked Tasselweed (*Ruppia maritima*), which provide food for herbivorous wildfowl. Well-developed salt marshes, which provide roosting sites for birds at high tide, occur at several locations around the bay. The sandy beaches around the Strandhill peninsula are used by roosting birds.*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Grey Plover, Dunlin, Bar-tailed Godwit and Redshank. The E.U. Birds Directive pays particular attention to wetlands and, as

these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Ballysadare Bay SPA is of high ornithological importance - it supports a Light-bellied Brent Goose population of international importance as well as nationally important populations of four other wintering waterfowl species. The presence of Bar-tailed Godwit, Golden Plover and Whooper Swan is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site forms an important component of the larger Sligo Bay complex.

Qualifying Interests

- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Redshank (*Tringa totanus*) [A162]
- Wetland and Waterbirds [A999]

Linkage to Bridges

Structure SO-N59-002.00 Ballysadare River Bridge is located 0.7km upstream of Ballysadare Bay SPA.

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
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.
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.
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 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.
River Moy SAC (002298)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002298.pdf	NPWS (2016). Conservation Objectives: River Moy SAC 002298. 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.
Donegal Bay (Murvagh) SAC (000133)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000133.pdf	NPWS (2012). Conservation Objectives: Donegal Bay (Murvagh) SAC 000133. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Lough Ree SAC (000440)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000440.pdf	NPWS (2016). Conservation Objectives: Lough Ree SAC 000440. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
Cummeen Strand / Drumcliff Bay (Sligo Bay) SAC (000627)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000627.pdf	NPWS (2013). Conservation Objectives: Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC 000627. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

SAC	Link to report	Citation
Clew Bay Complex SAC (001482)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001482.pdf	NPWS (2011). Conservation Objectives: Clew Bay Complex SAC 001482. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
River Finn SAC (002301)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002301.pdf	NPWS (2017). Conservation Objectives: River Finn SAC 002301. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
West Connacht Coast SAC (002998)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002998.pdf	NPWS (2015). Conservation Objectives: West Connacht Coast SAC 002998. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Sheephaven SAC (001190)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001190.pdf	NPWS (2014). Conservation Objectives: Sheephaven SAC 001190. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Lough Swilly SAC (002287)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002287.pdf	NPWS (2011). Conservation Objectives: Lough Swilly SAC 002287. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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

- Population trend: Measure or percentage change and whether the long-term population trend is stable or increasing.

- Distribution: Number, range, timing and intensity of use of areas. There is to be no significant decrease in the range, timing or intensity of use of areas by bird species, other than that occurring from natural patterns of variation.

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

- To maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for a SPA.

- To maintain the favourable conservation condition of the wetland habitat for a SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

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

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

SPA	Link to report	Citation
Donegal Bay SPA (004151)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004151.pdf	NPWS (2012). Conservation Objectives: Donegal Bay SPA 004151. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Drumcliff Bay SPA (004013)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004013.pdf	NPWS (2013). Conservation Objectives: Drumcliff Bay SPA 004013. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Cummeen Strand SPA (004035)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004035.pdf	NPWS (2013). Conservation Objectives: Cummeen Strand SPA 004035. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Lough Swilly SPA (004075)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004075.pdf	NPWS (2011). Conservation Objectives: Lough Swilly SPA 004075. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Ballysadare Bay SPA (004129)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004129.pdf	NPWS (2013). Conservation Objectives: Ballysadare Bay SPA 004129. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

5.5. 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.

5.5.1. 'Do Nothing' Impact

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

5.5.2. Identification of potential impacts

5.5.2.1. Potential Impacts of proposed works

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

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

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

Loss or modification of habitat

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

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

Disturbance to key species

Key species are defined as those listed on the Annexes of the EU Habitats Directive and Birds Directive for which sites are desi nated. Disturbance to a s ecies can be direct throu h the h sical disturbance of that s ecies [redacted]

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 4no. single span bridges that have been called up for scour repairs or base protection works: DL-N14-009.00 Whitecross Bridge / Annie Tourish, DL-N15-019.00 Laghy Village Bridge, GC-N83-004.00 Cloonmore Bridge, GC-N59-009.00 Owenduff Bridge.

The proposed works at these single span structures will involve localised dewatering. The works at Whitecross Bridge / Annie Tourish, Laghy Village Bridge and Owenduff Bridge will not require the isolation of the entire channel to conduct works and therefore will not result in a barrier to the movement of species. Thus, impacts of habitat and species fragmentation are not anticipated. Cloonmore Bridge requires works to both sides of the river. However, due to the size of the river, these works will be done separately and will not require full dewatering of the entire channel.

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

Changes in water quality

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

5.5.3. Categorisation of EIRSPAN work types

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

Table 5-4 details the complete list of potential works that can be called up for each bridge component under the contract. Works that are contained to bridge components such as the Bridge Surface, Footways/median and Expansion Joints are contained in nature and thus, due to the nature of the works and the lack of pathway to a receptor, negative impacts are not anticipated as a result of these works.

The works identified as having potential for negative impacts (Table 5-4) are listed in the Work Orders of the bridges being considered in this assessment. Thus, the works called up for these bridges have the potential to have a negative impact on the receiving environment.

Table 5-4 Potential negative impacts of work items.

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

High-pressure hosing will not be occurring during Year 3 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 5-5.

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

Work Item	Potential Impacts of proposed works
01 Clearance of watercourse	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
03 Removal of vegetation	Loss or modification of habitat Disturbance to key species Reduction in species diversity
04 Scour repairs	Loss or modification of habitat Disturbance to key species Reduction in species diversity Changes in water quality
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

5.5.4. 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, such as [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 5-6 below details the pathway, receptor and impact for each of the EIRSPAN work types called up in the Work Orders for the 26 bridges.

Table 5-7 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).

5.5.5. [redacted]

[redacted]

5.5.6. Potential impacts post completion of the works

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

Table 5-6 Works, 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

Work Item	Pathway	Potential Impacts	Receptor
47 Reshaping (imported materials)	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
50 Concrete repairs	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
52 High-pressure hosing of surface	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
56 Establish base protection	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
57 Maintenance of base protection	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect modification of instream substrate quality (Loss or modification of habitat) - Indirect reductions in species density - Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats
60 Masonry repointing	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats

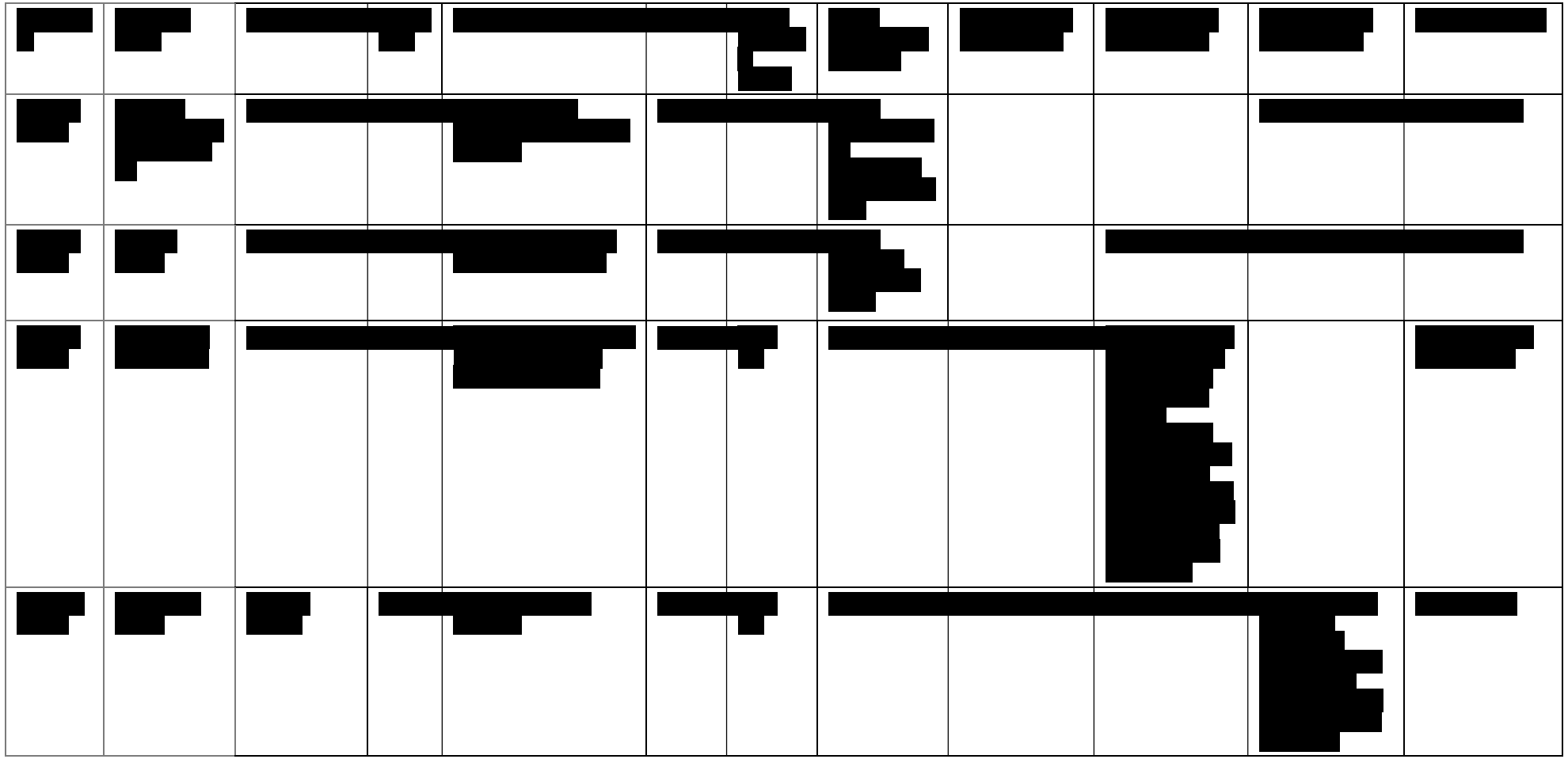
Work Item	Pathway	Potential Impacts	Receptor
61 Masonry repairs	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species
	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats

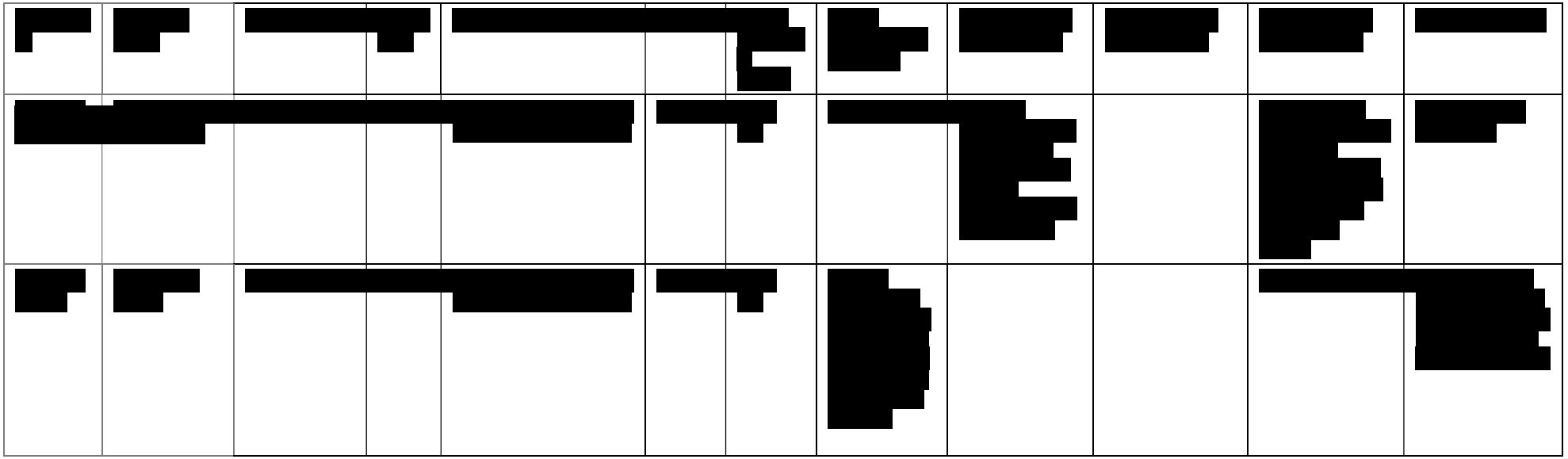
Table 5-7 Potential Impacts to European sites at each bridge.

County	Structure_ID	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)
Donegal	DL-N13-009.00	✓	✓	✓	✓	Estuary; coastal lagoon; otter; SCIs associated with SPA wetlands
Donegal	DL-N14-009.00	✓	✓	✓	✓	Salmon; otter
Donegal	DL-N14-010.00	×	✓	×	✓	Salmon; otter
Donegal	DL-N15-002.70	✓	✓	✓	✓	Salmon; otter
Donegal	DL-N15-003.00	✓	✓	✓	✓	Salmon; otter
Donegal	DL-N15-014.00	✓	✓	✓	✓	Salmon; [redacted] SCIs associated with SPA wetlands
Donegal	DL-N15-019.00	✓	✓	✓	✓	Mudflats and sandflats; harbour seal; SCIs associated with SPA wetlands
Donegal	DL-N56-028.00	✓	✓	✓	✓	Mudflats and sandflats; [redacted] salmon; otter; harbour seal
Donegal	DL-N56-052.00	✓	×	×	✓	Mudflats and sandflats
Donegal	DL-N56-055.00	✓	✓	✓	×	Salmon; [redacted] otter
Co. Galway	GC-N83-004.00	✓	✓	✓	✓	Otter; floating river vegetation; white-clawed crayfish; lamprey; salmon
Co. Galway	GC-N59-009.00	×	✓	×	✓	Salmon; [redacted] otter
Co. Galway	GC-N59-022.00	✓	✓	✓	✓	Salmon; [redacted] otter; Oligotrophic to mesotrophic standing waters; floating river vegetation
Co. Galway	GC-N59-040.00	✓	✓	✓	✓	[redacted] otter; floating river vegetation; white clawed crayfish; lamprey; salmon

County	Structure_ID	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)
Leitrim	LM-N15-002.00	✓	✓	✓	✓	Mudflats and sandflats; shallow inlets and bays; reefs
Leitrim	LM-N16-006.00	×	✓	×	✓	Otter; white-clawed crayfish; lamprey; salmon
Leitrim	LM-N16-017.00	✓	✓	✓	✓	Otter
Mayo	MO-N05-002.00	✓	✓	✓	✓	Otter; mudflats and sandflats
Mayo	MO-N05-025.00	✓	✓	✓	×	Otter; white-clawed crayfish; lamprey; salmon
Mayo	MO-N58-004.00	✓	✓	✓	✓	Otter; white-clawed crayfish; lamprey; salmon
Mayo	MO-N59-061.00	✓	✓	✓	✓	[redacted] otter; salmon; floating river vegetation
Mayo	MO-N59-062.00	✓	✓	✓	×	[redacted] otter; salmon; floating river vegetation
Roscommon	RN-N83-001.00	×	✓	×	✓	Otter; white-clawed crayfish; lamprey; salmon; floating river vegetation
Roscommon	RN-N63-005.20	×	✓	×	✓	Otter; waterbirds associated with SPA
Sligo	SO-N04-001.00	×	✓	×	✓	Estuaries; Mudflats and sandflats; lamprey; wetland birds associated with SPA
Sligo	SO-N59-002.00	×	✓	×	✓	Otter; salmon; floating river vegetation; wetland birds associated with SPA

Table 5-8 [redacted]





5.6. 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. A number of bridges are located within the same WFD catchment as the schemes but do not have hydrological connectivity with the schemes. Seven 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 NIS[6], which require further project-specific assessments to be carried out. Thus, given the nature and scale of the proposed routine maintenance bridge works, cumulative impacts with the OPW drainage programme are not anticipated.

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

Bridge Code	Location relative to OPW scheme	OPW scheme (County)
DL-N14-009.00	Ca. 2.1km upstream of scheme	Donegal (Donegal)
DL-N14-010.00	Ca. 0.95km upstream of scheme	Donegal (Donegal)
GC-N83-004.00	Within	Corrib (Galway)
GC-N59-040.00	Within	Corrib (Galway)
LM-N15-002.00	Within	Duff (Leitrim)
MO-N58-004.00	Within	Moy (Mayo)
RN-N83-001.00	Within	Corrib (Roscommon)

Farmers and landowners may also undertake general agricultural operations in areas adjacent to the proposed work areas at each bridge, which could potentially give rise to impacts of a similar nature to those arising from the proposed works. This could potentially result in an additional increased risk to water quality of the watercourses downstream of the bridges. Many agricultural operations are periodic, not continuous in nature, and qualify as a Notifiable Action that requires consultation with National Parks and Wildlife Service in advance of the works e.g. reclamation, infilling or land drainage within 30m of the river, removal of trees or any aquatic vegetation within 30m of the river, and harvesting or burning of reed or willow[7]. 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.

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

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

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].

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 5-10 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 5 - Enabling and Procurement
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
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
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

5.7. Mitigation Measures

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

5.7.1. Donegal

5.7.1.1. Castlecooley Bridge [DL-N13-009.00]

The 2-span bridge crosses the Carrowen River. The bridge comprises a concrete structure with steel pipe culverts. There are concrete parapets on both sides of the carriageway. The bridge is located 3.7km upstream of Lough Swilly SAC and 700m of Lough Swilly SPA. Plate 5.1 shows Castlecooley Bridge.

Plate 5-1 Castlecooley Bridge

The qualifying interests of the Lough Swilly SAC/SPA are listed in Section 5.2. The qualifying interests that could be impacted are the estuary, coastal lagoon, otter and SCIs associated with SPA wetlands. The potential impacts to the SAC/SPA are the loss or modification of habitat, physical disturbance of species, deterioration of surface water quality and reduction in species density.

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Riverbed	Scour repair to north east wing wall and pier (3 m^2)	Screened in – will require instream access.

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.

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 Lough Swilly SAC/SPA or any other European site.

5.7.1.2. Whitecross Bridge [DL-N14-009.00]

The Whitecross Bridge is a single span masonry arch bridge. The span is 4.08m. The substructure consists of 2 masonry abutments. There are masonry parapets on both sides of the carriageway. The structure is located 9.5km upstream of the River Finn SAC. Plate 5-2 shows the west elevation.

Plate 5-2 Whitecross Bridge.

The qualifying interests of the River Finn SAC are listed in Section 5.2. The qualifying interests that could be impacted are 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.

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

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 5-22 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Abutments	There is undermining at the east end of the north abutment up to 0.5m deep x 1.5m long x 0.25m high. The missing masonry should be replaced, and concrete base protection should be installed at this location (1 m).	Screened in – will require instream access.

Mitigation Measures

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

Maintenance of base protection

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

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. 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 should be available on site in case of failure of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

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

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

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 River Finn SAC or any other European site.

5.7.1.3. Tullyrap Bridge [DL-N14-010.00]

Tullyrap Bridge is single span masonry arch bridge with masonry parapets along the carriageway. The Drumbeg River flows below the bridge. The structure is located 8.3km upstream of River Finn SAC. Plate 5.3 shows the bridge.

Plate 5-3 Tullyrap Bridge.

The qualifying interests of the River Finn SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter and salmon. The potential impacts to the SAC are the physical disturbance of species and deterioration of surface water quality.

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-13 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-33 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Open joints should be repointed after vegetation removal (1 m2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	There is a missing masonry to the base of the north abutment measuring 0.5m high x 0.3m wide located 1.6m in from the east end. The missing masonry should be reinstated using lime mortar and pinning stones (1 m3)	Screened in – will require instream access.

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

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

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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 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 River Finn SAC or any other European site.

5.7.1.4. Corcam Bridge [DL-N15-002.70]

Corcam Bridge is a single span masonry bridge. An unnamed EPA drain flows below the bridge and enters the River Finn downstream. Masonry parapet walls are present either side of the roadway. The structure is located 500m upstream of River Finn SAC. Plate 5.4 shows the bridge.

Plate 5-4 Corcam Bridge.

The qualifying interests of the River Finn SAC are listed in Section 5.2. The qualifying interests that could be impacted are 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.

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-14 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

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

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Vegetation should be removed during routine maintenance (5 m2)	Screened out – removal of vegetation may require instream access of the erection of scaffolding; however, this will not affect the qualifying interests of the SAC.
Wing/Spandrel/Retaining Walls	Base of the NW wing wall should be reinstated (1 m2)	Screened in – will require instream access.

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.

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.

Maintenance of base protection

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

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

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

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

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

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 River Finn SAC or any other European site.

5.7.1.5. Mullandrait Bridge [DL-N15-003.00]

Mullandrait Bridge is a double span masonry bridge. The Mullaghagarry River flows below the bridge. Masonry parapet walls line either side of the roadway. The structure is located 0.1km upstream of River Finn SAC. Plate 5.5 shows the bridge.

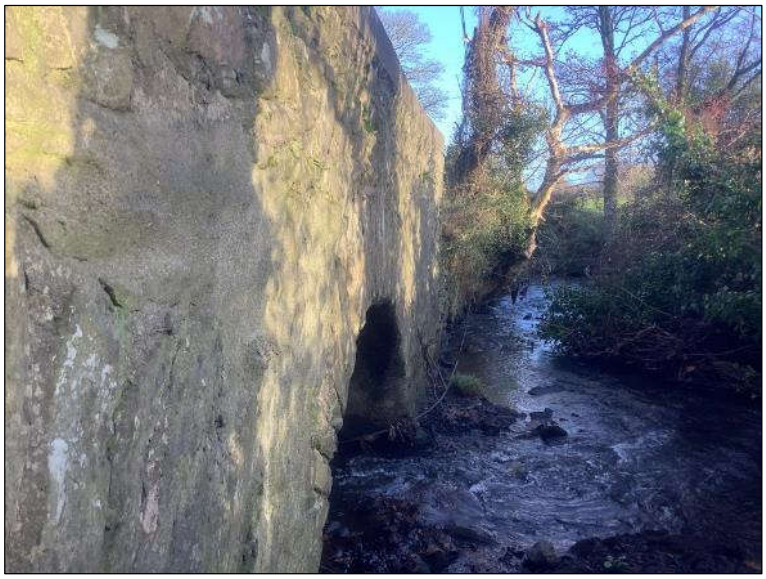


Plate 5-5 Mullandrait Bridge.

The qualifying interests of the River Finn SAC are listed in Section 5.2. The qualifying interests that could be impacted are 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.

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-15 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-55 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Removal of tree debris at watercourse (3 m2)	Screened in – will require instream access.
Wing/Spandrel/Retaining Walls	Removal of vegetation at retaining wall also large tree root 0.5m diameter pushing masonry (4 m2)	Screened in – will require instream access.
Wing/Spandrel/Retaining Walls	Masonry repair after tree and vegetation removal at south east wall (5 m3)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Riverbed	Scour protection installation to south span (23 m2)	Screened in – will require instream access.

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

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

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

Masonry Repointing

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

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

Preparation for the repointing work will include vegetation removal; 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.

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.

Scour Repairs

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

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

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

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

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 River Finn SAC or any other European site.

5.7.1.6. Drumrath Bridge/Laghey to Ballybofey Rd. [DL-N15-014.00]

The structure is comprised of 2 corrugated steel pipes with 3.95m diameter each. There is steel safety barrier on both sides of the carriageway and a light steel railing on the headwalls. The structure carries the N15 over the River Drumenny. The structure is within Lough Eske and Ardnamona Wood SAC and located 3.2km upstream of the Donegal Bay SPA. Plate 5-6 shows the east elevation.

Plate 5-6 Drumrath Bridge.

The qualifying interests of the Lough Eske and Ardnamona Wood SAC and Done al Ba SPA are listed in Section 5.2. The qualifying interests that could be impacted are salmon, [redacted] and SCIs associated with SPA wetlands. 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.

[redacted] These are a qualifying interest of the SAC. No freshwater pearl mussel were recorded in the vicinity of the bridge during 2020 surveys.

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 5-66 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Embankment has collapsed over riverbed needs to be cleared 13m^2 mainly logs and soil (13 m^2)	Screened in – will require instream access.
Embankments/Revetments	Vegetation removal 1m of structure and on top on structure, mainly grass and minor trees (560 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Embankments/Revetments	Re-establish embankment at southwest side that has collapsed (soil no need for gabion etc) (8 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Mitigation Measures

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

Removal of vegetation

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

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

Clearance of watercourse (Debris Removal)

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

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

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

Maintenance of slope protection

Maintenance of slope protection will be carried out in the dry by repairing/replacing existing slope protection with similar material used in the slope protection onsite including; paving slabs, masonry and concrete. Where concrete slope protect requires repair compacted mass concrete will be place

in scour voids and immediately in front of the affected areas over a length and width specified in the Work Order for that bridge.

No concrete, cementitious or fine partial material will be permitted to enter the watercourse. This will be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. One span/culvert structures may not have sufficient capacity accommodate the required working area for a localised diversion. In this instance fluming of the entire waterbody will be carried out in line with Inland Fisheries Ireland, 2016 *Guidelines on protection of fisheries during construction works in and adjacent to water*. The waterbodies will be diverted from upstream to downstream of the works area by means of a secure open flume arrangement, or through piping, or in limited circumstances, by means of over pumping. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. 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 Contractor must notify Inland Fisheries Ireland prior to the commencement of the proposed instream works and the associated measures outlined above must be implemented. The Contractor's ecologist will advise on whether electrofishing to remove fish from between the upstream and downstream sandbags is required. IFI issue licences for electrofishing. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. If disturbance and/or removal of silts is required to access a bridge component, the silts shall be surveyed for the presence of lamprey ammocoetes. If lamprey ammocoetes are found, they shall be translocated to suitable receptor habitats. Receptor habitats shall be selected prior to lamprey removal from the silts or electrofishing. All surveying and electrofishing activities of lamprey and salmonids, shall be carried out under licence from IFI.

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 Lough Eske and Ardnamona Wood SAC, Donegal Bay SPA or any other European site.

5.7.1.7. Laghy Village Bridge [DL-N15-019.00]

Laghy Village Bridge is concrete slab with masonry arch substructure single span bridge. Concrete parapets are present along the carriageway. The bridge spans the Tullywee River 1.3km upstream of Donegal Bay (Murvagh) SAC and 1.7km upstream of Donegal Bay SPA. Plate 5.7 shows Laghy Village Bridge.

Plate 5-7 Laghy Village Bridge.

The qualifying interests of the Donegal Bay (Murvagh) SAC and Donegal Bay SPA are listed in Section 5.2. The qualifying interests that could be impacted are mudflats and sandflats; harbour seal; and SCIs associated with SPA wetlands. The potential impacts to the SAC/SPA are the loss or modification of habitat, physical disturbance of species, deterioration of surface water quality and reduction in species density.

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

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 5-77 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	There is a scour hole (1.2 m deep x 2.45 m wide x 3.6 m transverse length) at the east slab. The abutments are undermined (between 200 and 300 mm deep) at this location. Scour protection in the form of (11 m^2)	Screened in – will require instream access.

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.

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 Donegal Bay (Murvagh) SAC, Donegal Bay SPA or any other European site.

5.7.1.8. Glenties Bridge [DL-N56-028.00]

The Glenties Bridge is a 7.23m single span bridge with masonry parapets. The abutments and parapets are also masonry. There is no guard rail in place. The bridge carries the N56 over the Stracashel River. The bridge is located within the West Of Ardara / Maas Road SAC. Plate 5-8 shows the northern abutment.

Plate 5-8 Glenties 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 mudflats and sandflats, [redacted] salmon, otter and harbour 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.

[redacted] These are a qualifying interest of the SAC. No freshwater pearl mussel were recorded in the vicinity of the bridge during 2019 or 2020 surveys.

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 5-88 - 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. (8 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation from wingwalls both sides (20 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Masonry repointing to wingwalls, 10m^2. (10 m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Masonry repointing to abutments required, 12m^2. (12 m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Masonry repointing to deck required, 20m^2. (20 m^2)	Screened out – works within the bridge deck and therefore no pathway.
Abutments	Masonry repair required to abutment, 1m^3. (1 m^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

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

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

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

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

5.7.1.9. Clon Bridge [DL-N56-052.00]

Clon Bridge carries the N56 road across the Faymore River via a single span concrete bridge. Sheephaven SAC is located 600m downstream of the bridge. Plate 5.9 shows Clon Bridge.

Plate 5-9 Clon Bridge.

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

There are no records for freshwater pearl mussel in waters hydrologically connected to the bridge.

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 5-99 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Installation of masonry parapet in the east side. (10 m^3)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Embankments/Revetments	5m^2 of slope protection rocks are failing (5 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Mitigation Measures

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

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.

Maintenance of slope protection

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

No concrete, cementitious or fine partial material will be permitted to enter the watercourse. This will be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. One span/culvert structures may not have sufficient capacity accommodate the required working area for a localised diversion. In this instance fluming of the entire waterbody will be carried out in line with Inland Fisheries Ireland, 2016 *Guidelines on protection of fisheries during construction works in and adjacent to water*. The waterbodies will be diverted from upstream to downstream of the works area by means of a secure open flume arrangement, or through piping, or in limited circumstances, by means of over pumping. The discharge pipe of such a pumping system will be required to either have a silt sock attached to prevent the discharge of silt laden water back into the watercourse, or water will be discharged to the grassy embankment and allowed to filter through the vegetation. If over pumping is required, a second pump shall be available on site in case of failure of the primary pump.

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

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

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 Sheephaven SAC or any other European site.

5.7.1.10. 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 5.10 shows the bridge.

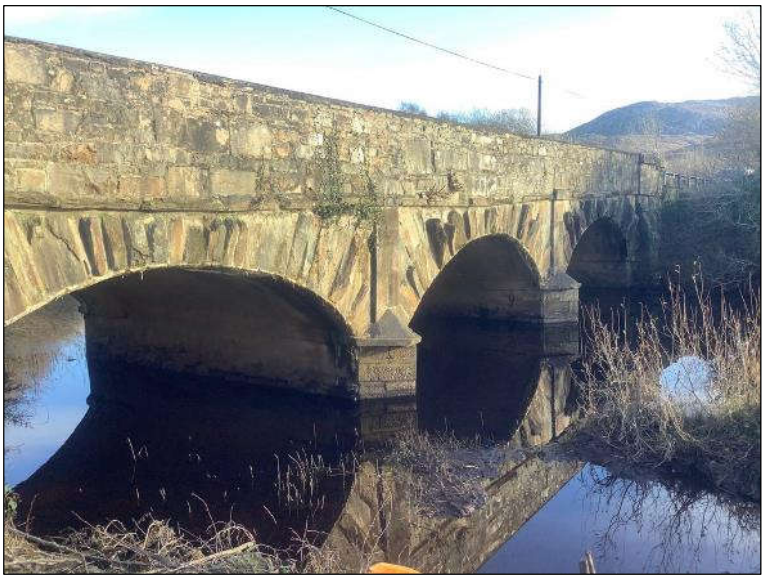


Plate 5-10 Owencarrow River Bridge.

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 salmon, [redacted] and otter. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species and reduction in species density.

[redacted]There is a lack of suitable habitat in this part of the river. The river is deep and ponded (difficult to survey), but it is not considered that suitable habitat for freshwater pearl mussel is available here and therefore assumed that they are not present here. However, freshwater pearl mussel are a qualifying interest of the SAC.

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
Parapets/Safety barrier	Vegetation removal mainly in the river face of the parapet. 20m^2 river face and 5m^2 road face. (25 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Wing/Spandrel/Retaining Walls	Removal of vegetation (2 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.

Mitigation Measures

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

Removal of vegetation

As per the Work Requirements Specification document, all vegetation removal on embankments shall involve the removal of vegetation down to ground level. There shall be no digging or grubbing out of

vegetation and remaining stumps on the embankments or activities that would result in exposed and loose soils.

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

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 Cloghernagore Bog And Glenveagh National Park SAC or any other European site.

5.7.2. Galway County

5.7.2.1. Cloonmore Bridge [GC-N83-004.00]

Cloonmore Bridge is a concrete and masonry single span bridge which carries the N83 over the Clare River. Steel safety barriers line the road. The bridge is located within Lough Corrib SAC. Plate 5.11 shows Cloonmore Bridge.

Plate 5-11 Cloonmore Bridge.

The qualifying interests of Lough Corrib SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter, floating river vegetation, white-clawed crayfish, lamprey 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.

There are no records for freshwater pearl mussel in the vicinit or downstream of the brid e. Freshwater earl mussel are a ualif in interest of the SAC [redacted]

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
Abutments	Damaged concrete base protection to abutment faces on both sides of river to be repaired. (8 m)	Screened in – will require instream access.

Mitigation Measures

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

Maintenance of base protection

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

No concrete or cementitious product will be permitted to enter the watercourse. This shall be achieved by diverting the water away from the working area with localised fixed shuttering and/or sealed sand bags. If a pumping system is required, the pumping system shall be fitted with appropriate screens to avoid fish entering the system. 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 should be available on site in case of failure of the primary pump. Tools and equipment shall not be cleaned in the watercourse, wash bags shall be used at an appropriate distance from the river. The plant will also not be permitted to enter or refuel within 50m of the watercourse.

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

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

N.B. Dewatering of the entire channel will not be permitted. Each abutment must be dewatered and works completed separately.

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 Lough Corrib SAC or any other European site.

5.7.2.2. Owenduff Bridge [GC-N59-009.00]

Owenduff Bridge is a masonry single span bridge which carries the N59 over the Culfin River. Masonry parapets line the road. The bridge is located within The Twelve Bens / Garraun Complex SAC and the Culfin ultimately discharges to the West Connaught Coast SAC. Plate 5.12 shows Owenduff Bridge.

Plate 5-12 Owenduff Bridge.

The qualifying interests of The Twelve Bens / Garraun Com lex SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter, [redacted] and salmon. The potential impacts to the SAC are the physical disturbance of species and deterioration of surface water quality.

There are no records for freshwater pearl mussel in the vicinit or downstream of the brid e. Freshwater earl mussel are a ualif in interest of the SAC [redacted]

Proposed Works

The proposed works at this bridge are detailed in Table 5-22 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-22 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Abutments	Areas of mortar loss above water level on the north abutment to be repointed, 4m^2. (4 m^2)	Screened in – will require instream access.
Abutments	Areas of undermining (150mm deep) at the east end of the north abutment and the adjacent buttress is also undermined with up to 300mm deep to be repaired, 1m. (1 m)	Screened in – will require instream access.

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.

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

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

Scour Repairs

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

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

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

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

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 The Twelve Bens / Garraun Complex SAC or any other European site.

5.7.2.3. Lettershea Bridge no.2 [GC-N59-022.00]

Lettershea Bridge No. 2 is a masonry single span bridge which carries the N59 over the Imleach Dhá Rú River. Masonry parapets line the carriageway. The bridge is located 50m downstream and 1.9km upstream of The Twelve Bens / Garraun Complex SAC and 5.1km upstream of the Connemara Bog Complex SPA. Plate 5.13 shows Lettershea Bridge No. 2 Bridge.

Plate 5-13 Lettershea Bridge No. 2.

The qualifying interests of The Twelve Bens / Garraun Com lex SAC are listed in Section 5.2. The ualif in interests that could be im acted are almon , [redacted] The potential impacts to the SAC are the loss or modification of habitat hysical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no records for freshwater earl mussel in the vicinity of the bridge. [redacted] These are a qualifying interest of the 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	Removal of debris including a bicycle at upstream from the water course (2 m^2)	Screened in – will require instream access.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation mostly moss and weeds from all parapet faces including the top (1 m^2)	Screened out – works can be carried out on foot.
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure. (40 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Bridge surface	Drainage tube to be installed installed at the east end of the south rubbing strip/ parapet to allow the water to drain into the embankment. Outfall pipe to clear the masonry parapet by min 500 mm (1 no.)	Screened in – potential for hydrocarbon pollution

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

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

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

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. As such persons entering the watercourse must tread lightly and avoid removing debris which has become embedded in the riverbed until measures outlined below are installed.

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

For larger debris that requires cutting or break up prior to its removal, this must be done using appropriate equipment; e.g. it is not permitted to drag such material ashore using the bucket on a long-reach digger. Where needed a maximum of 3 no. operatives shall be permitted to enter the watercourse in order to undertake the works. Strict adherence to biosecurity procedures and protocols is also a requirement. Biosecurity protocols are outlined in Section 2.

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.

Installation of drainage tubes

Works shall be conducted from the bridge deck and any material cut from the structure will be removed by hand and disposed of off-site. The worker must also ensure that no material or debris enters the watercourse or causes pollution to the surrounding land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste 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 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 The Twelve Bens/Garraun Complex SAC or any other European site.

5.7.2.4. Oughterard Bridge [GC-N59-040.00]

Oughterard Bridge is a masonry three-span bridge which carries the N59 over the Owenduff [Corrib] River. Masonry parapets line the carriageway. The bridge is located within the Lough Corrib SAC and 1.8km upstream of the Lough Corrib SPA. Plate 5.14 shows Oughterard Bridge.

Plate 5-14 Oughterard Bridge.

The qualifying interests of Lough Corrib SAC are listed in Section 5.2. The qualifying interests that could be impacted are salmon, otter, [redacted] floating river vegetation, lamprey and white-clawed crayfish. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

[redacted]

Proposed Works

The proposed works at this bridge are detailed in Table 5-24 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
Parapets/Safety barrier	Removal of vegetation (moss and weeds and ivy) to all sides of the parapet including the top (50 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure. (40 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation (moss and weeds and ivy) to all wing walls and spandrels (5 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Parapets/Safety barrier	Masonry repair to top of south east parapet required (1 m^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

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

[redacted]an additional barrier will be temporarily installed at the edge of the embankment to reduce potential movement of bankside soil into the water body. Prior to entry to the river or construction of a working platform the river bed in and around the works area must be surveyed[redacted] by an appropriately qualified ecologist. The ecologist will advise on whether a platform can be safely erected. If not, an alternate method, such as a bridge unit, must be used.

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

Masonry Repointing

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

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

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

5.7.3. Leitrim

5.7.3.1. Banduff River Bridge [LM-N15-002.00]

The Banduff River Bridge is a 15.5m single span reinforced concrete bridge with steel parapets on both sides of the structure. The bridge carries the N15 over the River Duff. The structure is within the Bunduff Lough and Machair / Trawalua / Mullaghmore SAC. Plate 5-15 shows the south elevation.

Plate 5-15 Banduff River Bridge.

The qualifying interests of Bunduff Lough and Machair / Trawalua / Mullaghmore SAC are listed in Section 5.2. The qualifying interests that could be impacted are mudflats and sandflats, shallow inlets and bays and reefs. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

[redacted].

Proposed Works

The proposed works at this bridge are detailed in Table 5-25 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-25 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Removal of build-up of stones in the downstream riverbed (36m^2). (36 m^2)	Screened in – will require instream access

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

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

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 Bunduff Lough and Machair / Trawalua / Mullaghmore SAC or any other European site.

5.7.3.2. Scarden River Bridge [LM-N16-006.00]

Scarden River Bridge is a masonry single span bridge which carries the N16 over the Owenmore [Manorhamilton] River. Parapets etc. The bridge is located within the Lough Gill SAC. Plate 5.16 shows Scarden River Bridge.

Plate 5-16 Scarden River Bridge.

The qualifying interests of Lough Gill SAC are listed in Section 5.2. The qualifying interests that could be impacted are salmon, otter, lamprey and white-clawed crayfish. The potential impacts to the SAC are the physical disturbance of species and deterioration of surface water quality.

There are no records of freshwater pearl mussel in the vicinity or downstream of the Scarden River Bridge.

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Deck/slab/arch barrel	Repointing of the arch barrel in the river. (10 m^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 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 Lough Gill SAC or any other European site.

5.7.3.3. Sracreeghan Bridge [LM-N16-017.00]

Sracreeghan Bridge is a masonry single span bridge which carries the N16 over an unnamed tributary of the Diffreen River. Steel safety barriers line the road above the bridge. The bridge is located 1.3km upstream of the Ben Bulben, Gleniff And Glenade Complex SAC and 12.1km upstream of Drumcliff Bay SPA. Plate 5.17 shows Sracreeghan Bridge. Reactive maintenance works which were separately considered for this bridge have been completed.

Plate 5-17 Sracreeghan Bridge.

The qualifying interests of Ben Bulben, Gleniff And Glenade Complex SAC are listed in Section 5.2. The qualifying interest that could be impacted is otter. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species density and deterioration of surface water quality.

There are no records of freshwater pearl mussel in the vicinity or downstream of the Sracreeghan Bridge.

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
Parapets/Safety barrier	Removal of vegetation from parapets including 1 tree on the north parapet external face (7 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Embankments/Revetments	Cut back all vegetation on embankments 1m offset from bridge - 15m^2 on each corner. (60 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Vegetation removal from wing walls and spandrel walls (70 m^2)	Screened out – works can be carried out on foot.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Tree removal from north wingwalls and spandrel walls. (5 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Abutments	Removal of vegetation (15 m^2)	Screened in – will require instream access
Wing/Spandrel/Retaining Walls	Masonry repair to north wingwalls and spandrel walls after removal of trees (4 m^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

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

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

Masonry Repointing

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

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

5.7.4. Mayo

5.7.4.1. Bridge Street Bridge [MO-N05-002.00]

The Bridge Street Bridge is a 3-span masonry arch bridge with masonry parapets on both sides of the structure. The maximum span is 7.75m and the minimum span is 4.2m. The rise of arch span barrel at crown is 1.47m. The structure is located 1.6km upstream of the Clew Bay Complex SAC on the Carrowbeg [Westport] River. Plate 5-18 shows the east elevation.

Plate 5-18 Bridge Street Bridge.

The qualifying interests of Clew Bay Complex SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter, mudflats and sandflats. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species and reduction in species density.

There are no records of freshwater pearl mussel in the vicinity or downstream of the Bridge Street Bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-28 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

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

Bridge Component	Work Element	Screening Recommendation
Riverbed	There is a scour hole around the north pier at inlet up to 500mm deep which should be repaired, 0.5m^2. (0.5 m^2)	Screened in – will require instream access

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 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 Clew Bay Complex SAC or any other European site.

5.7.4.2. Mullenmadoge Culvert West [MO-N05-025.00]

Mullenmadoge Culvert West is a single-span concrete culvert which carries the N05 over the Sonnagh [Moy] River. Steep grass embankments lead from the bridge to the road, with steel barriers lining the road. The bridge is located within the River Moy SAC. Plate 5.19 shows Mullenmadoge Culvert West.

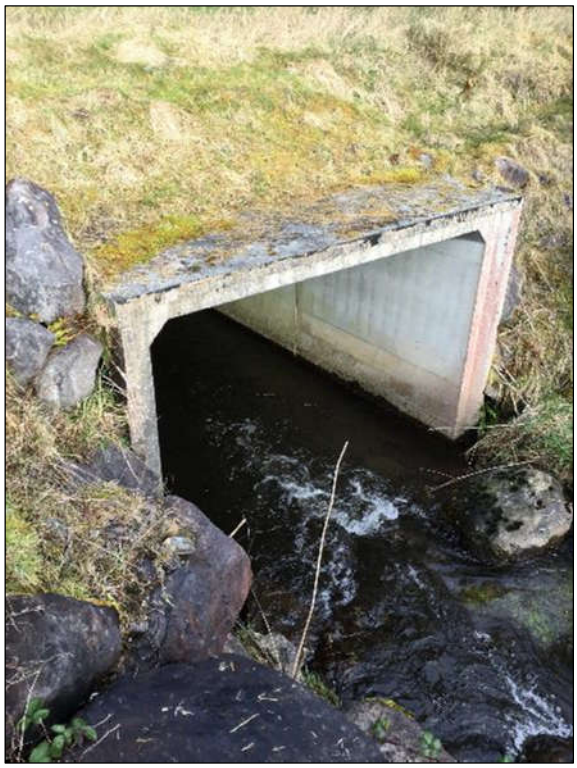


Plate 5-19 Mullenmadoge Culvert West.

The qualifying interests of River Moy SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter, white-clawed crayfish, lamprey and salmon. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species and reduction in species.

There are no records of freshwater pearl mussel in the vicinity or downstream of the Mullenmadoge Culvert West.

Proposed Works

The proposed works at this bridge are detailed in Table 5-29 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-29 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation to be removed on both sides of the embankments (including grass and moss) from top of the culvert units. All tree stumps needs to be removed from either side of the embankments. (180 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Mitigation Measures

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

Removal of vegetation

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

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area. Biosecurity protocols are outlined in Section 2.1.

N.B. It is not permitted for tree stumps to be dug / grubbed out as outlined in the work element outlined above. Trees must only be cut to ground level without disturbing the soils of the embankments.

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 River Moy SAC or any other European site.

5.7.4.3. Rathrussel Bridge [MO-N58-004.00]

The Rathrussel Bridge is a 2-span reinforced concrete slab bridge with masonry and concrete parapets on both sides of the carriageway. Both spans are 3.53m. The structure carries the N58 across an unnamed drain which enters the River Moy 130m downstream of the bridge. Rathrussel Bridge is located within River Moy SAC. Plate 5-20 shows the west elevation.

Plate 5-20 Rathrussel Bridge.

The qualifying interests of River Moy SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter, white-clawed crayfish, lamprey and salmon. The potential impacts to the SAC are the loss or modification of habitat, physical disturbance of species, reduction in species and deterioration of surface water quality.

There are no records of freshwater pearl mussel in the vicinity or downstream of the Rathrussel Bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-30 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-30 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove trees, light vegetation and the fence from the water course (50 m^2)	Screened in – will require instream access.
Deck/slab/arch barrel	Area of spalled concrete and exposed rebar west of span 2 located 1.8m in from edge, 2.2m long x 400mm wide. Adjacent section of exposed steel also for repair. Exposed filler beam in span 1 for repair, 5m^2. (5 m^2)	Screened in – use of wet mortar/concrete over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Repointing after vegetation removal (3 m^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.

Clearance of watercourse (Debris Removal)

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

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

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

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.

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 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 River Moy SAC or any other European site.

5.7.4.4. Erriff Bridge [MO-N59-061.00]

Erriff Bridge is a single-span masonry bridge which carries the N59 over the Erriff River. Masonry parapets are present along the carriageway. The bridge is located within the Mweelrea/Sheeffry/Erriff Complex SAC. Plate 5.21 shows Erriff Bridge.

Plate 5-21 Erriff Bridge.

The qualifying interests of Mweelrea/Sheeffr /Erriff Com lex SAC are listed in Section 5.2. The qualifying interests that could be impacted are [redacted] otter; salmon; floating river vegetation. The potential impacts to the SAC are the oss or modification of habitat, physical disturbance of species, reduction in species and deterioration of surface water quality.

[redacted]

Proposed Works

The proposed works at this bridge are detailed in Table 5-31 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-31 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation (moss and weeds) from all sides of the parapet including top. Ivy and trees to west parapet to be removed and treated. (10 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Embankments/Revetments	Vegetation up to 1m from the structure to be removed. (40 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Bridge surface	Vegetation (grass and weeds) along all approach walls to be removed. Drainage holes in north east approach wall to be lowered to ensure flush with adjacent road surface. (1 no.)	Screened in – works over water and therefore a surface water pathway is present.
Parapets/Safety barrier	Masonry crack to north east parapet to be repaired (1 m^3)	Screened in – use of wet mortar/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

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

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area. Biosecurity protocols are outlined in Section 2.1.

Masonry Repointing

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

Where instream work platforms are required and permitted, timbers will be positioned under each leg to prevent them sinking into the riverbed. The placement of instream supports on the riverbed must be supervised by the Contractor's ecologist, in liaison with the Resident Engineer, to ensure no risk to instream ecology. Strict application of biosecurity measures must also be applied to any work platforms used instream. Prior to entry to the river or construction of a working platform the river bed in and around the works area must be surveyed [redacted] by an appropriately qualified ecologist. The ecologist will advise on whether a platform can be safely erected. If not, an alternate method, such as a bridge unit, must be used.

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.

Installation of drainage tubes

Works shall be conducted from the bridge deck and any material cut from the structure will be removed by hand and disposed of 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 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 Mweelrea/Sheeffry/Erriff Complex SAC or any other European site.

5.7.4.5. Luga Buide Bridge [MO-N59-062.00]

Luga Buide Bridge is a single-span masonry bridge which carries the N59 over an unnamed tributary of the Erriff River. Parapets etc. The bridge is located within the Mweelrea/Sheeffry/Erriff Complex SAC. Plate 5.22 shows Luga Buide Bridge.

Plate 5-22 Luga Buide Bridge.

The qualifying interests of Mweelrea/Sheeffr /Erriff Com lex SAC are listed in Section 5.2. The qualifying interests that could be impacted are [redacted] otter; salmon; floating river vegetation. The potential impacts to the SAC are the oss or modification of habitat, physical disturbance of species and reduction in species.

No freshwater pearl mussels are present at this site. Durin s ecialist surve s and the watercourse was deemed likel to be too small to su ort mussels. [redacted]

Proposed Works

The proposed works at this bridge are detailed in Table 5-32 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

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

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Removal of vegetation (moss and weeds) from all sides of the parapet including the top (2 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Embankments/Revetments	Vegetation (moss and weeds) up to 1m from the structure to be cut back or removed. (12 m^2)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.
Wing/Spandrel/Retaining Walls	Removal of vegetation (moss) from all the wing walls (2 m^2)	Screened in - removal of vegetation may require instream access and the erection of scaffolding.
Bridge surface	Removal of vegetation and trench to be established on North west and south west sides of the parapet to drain water away from the bridge surface (1 no.)	Screened in – this activity could result in the exposure of loose soils, resulting in a sediment load to the river.

Mitigation Measures

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

Removal of vegetation

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

Instream access is not permitted for the intention of vegetation removal from embankments. As per the requirements of the Contract, if the Contractor encounters invasive plant species such as Japanese Knotweed or any other invasive species, they should cordon off the affected area and erect signage indicating the presence of the particular invasive species. No vegetation clearance works should be carried out in the affected area. Biosecurity protocols are outlined in Section 2.1.

Where drainage channels 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.

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 Mweelrea/Sheeffry/Erriff Complex SAC or any other European site.

5.7.5. Roscommon

5.7.5.1. Anrittabeg Bridge [RN-N63-005.20]

The Anrittabeg Bridge is a 2-span reinforced concrete slab bridge. The longest span is 1.16m and the shortest is 1.02m. The substructure consists of 2 mass concrete abutments and a mass concrete pier. There are masonry parapets on both sides of the carriageway. The bridge carries the N63 over the Kilnacloghy River. The structure is located 1.3km upstream of the Lough Ree SAC and 1.3km upstream of the Lough Ree SPA. Plate 5-23 shows the north elevation.

Plate 5-23 Anrittabeg Bridge.

The qualifying interests of Lough Ree SAC/SPA are listed in Section 5.2. The qualifying interests that could be impacted are otter and waterbirds associated with SPA. The potential impacts to the SAC are the physical disturbance of species and deterioration of water quality.

There are no records of freshwater pearl mussel at, or downstream of, Anrittabeg Bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-33 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-33 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Masonry cracks to be repointed on both north and south spandrel and wing walls at various locations (3 m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	There is concrete erosion and undermining of masonry at the centre of span 1 which should be reinstated, 1m^2. (1 m^2)	Screened in – will require instream access
Parapets/Safety barrier	Cracks on both masonry parapets at various locations to be repointed (5 m^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.

Scour Repairs

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

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

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

Assessment of In-combination effects

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

5.7.5.2. Cloonfad Village Bridge [RN-N83-001.00]

The Cloonfad Village Bridge is a 2-span bridge. It is a masonry arch in the west side, and it has been widened using a reinforced concrete slab in the east side. The longest span is 3.00m and the shortest is 2.71m. The substructure consists of 2 masonry abutments and a masonry pier. There are masonry parapets on both sides of the carriageway. The structure crosses the Cloonfad River and is within Lough Corrib SAC. Plate 5-24 shows the east elevation.

Plate 5-24 Cloonfad Village Bridge.

The qualifying interests of Lough Corrib SAC are listed in Section 5.2. The qualifying interests that could be impacted are otter, white-clawed crayfish, lamprey, salmon and floating river vegetation. The potential impacts to the SAC are the physical disturbance of species and deterioration of water quality.

There are no records of freshwater pearl mussel at or downstream of the Cloonfad Bridge.

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Deck/slab/arch barrel	11m^2 of masonry repointing required. (11 m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Piers	There is scour around the base of the east cutwater of the pier in span 2 which should be repaired, 1m (1 m)	Screened in – will require instream access

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.

Scour Repairs

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

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

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

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

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 Lough Corrib SAC or any other European site.

5.7.6. Sligo

5.7.6.1. Michael Hughes Bridge [SO-N04-001.00]

Michael Hughes Bridge is a three-span concrete bridge which carries the N04 over the Garavogue River with steel barriers along the road. The bridge is located within the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA. Plate 5.25 shows Michael Hughes Bridge.

Plate 5-25 Michael Hughes Bridge.

The qualifying interests of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA are listed in Section 5.2. The qualifying interests that could be impacted are estuaries, mudflats and sandflats, lamprey and wetland birds associated with SPA. The potential impacts to the SAC are the physical disturbance of species and deterioration of water quality.

No freshwater pearl mussels are present at this site or downstream of the bridge.

Proposed Works

The proposed works at this bridge are detailed in Table 5-35 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

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

Bridge Component	Work Element	Screening Recommendation
Bridge surface	Kerb drainage to be rodded. (80 m)	Screened out – drainage will be rodded and sucked out – not pathway to SAC.
Piers	The crack at the south face of the pier measuring 0.2mm wide x 0.5m long, the cracks should be repair injected. There is an area of concrete spalling measuring 0.3m^2 at the east end of south face (1 m^2).	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Beams	Concrete Repair 2m^2 - Concrete repairs required to underside of beams at NW corner adjacent to edge beams to reinstate concrete at locations where 6no. concrete	Screened in – use of wet mortar/concrete over water and therefore a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
	cores were extracted previously (c.25mm Ø).	

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.

Concrete repairs

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

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

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

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

Assessment of In-combination effects

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

5.7.6.2. Ballysadare River Bridge [SO-N59-002.00]

Ballysadare River Bridge is a seven-span concrete and masonry bridge which carries the N59 over the Ballysadare River. Steel safety barriers are present along the road. The bridge is located within the Unshin River SAC and 0.7km upstream of Ballysadare Bay SPA. Plate 5.26 shows Ballysadare River Bridge.

Plate 5-26 Ballysadare River Bridge.

The qualifying interests of Unshin River SAC and Ballysadare Bay SPA are listed in Section 5.2. The qualifying interests that could be impacted are otter, salmon, floating river vegetation and wetland birds associated with SPA. The potential impacts to the SAC are the physical disturbance of species and deterioration of water quality.

No freshwater pearl mussels are present at this site or downstream of the bridge.

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Abutments	Cracks and loose material to be repaired and graffiti to be removed (5 m^3)	Screened in – works over water and therefore a surface water pathway is present. Potential for chemical agents to enter the adjacent watercourse.
Piers	There are cracks with calcite staining evident on the west face of the first pier from west. There is mortar and masonry loss to the south cutwater to be repointed (1 m^3)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Parapets/Safety barrier	Cracks on both parapet upstands to be repaired (1 m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Cracks and spalling on the north spandrel walls to be repaired (5 m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Open joints to arch barrels should be repointed There is concrete spalling with exposed reinforcement at the third and fourth span from west to be cleaned and treated with anti-corrosion paint before (5 m^2)	Screened in – works 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.

Concrete repairs

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

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

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

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

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.

Graffiti Removal

Graffiti removal is not permitted at this structure 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 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 Unshin River SAC, Ballysadare Bay SPA or any other European site.

6. Conclusions

This NIS provides the competent authority with supporting information to undertake Appropriate Assessment in relation to the proposed works at 26 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 26 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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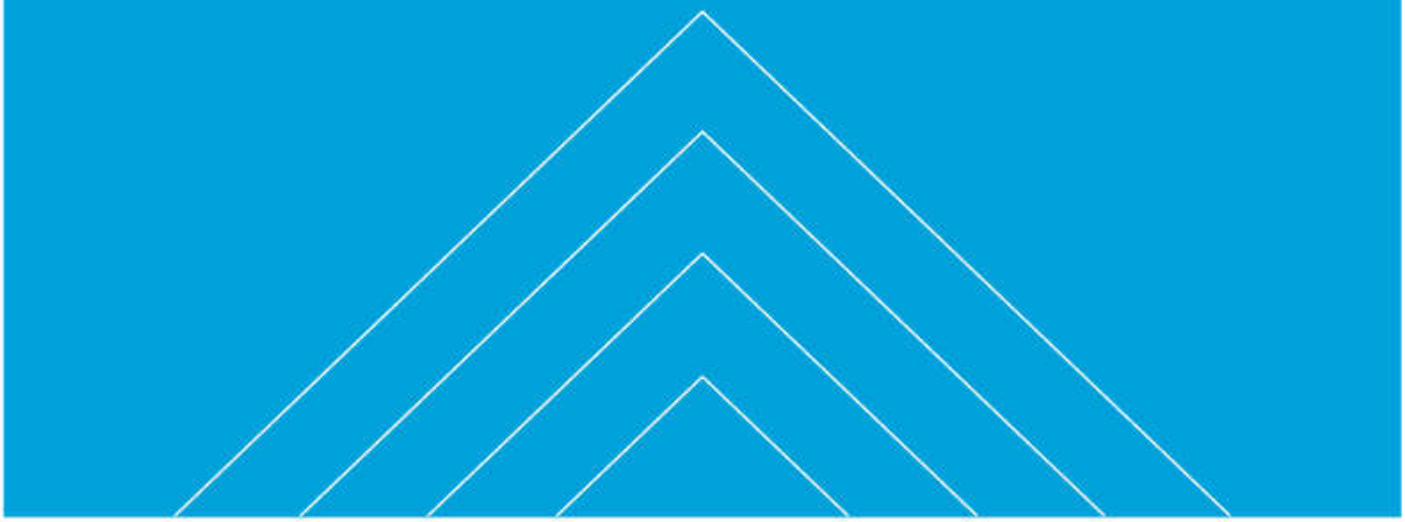
Appendices



Appendix A. Qualifying Interests of European sites

Lough Eske And Ardnamona Wood SAC (000163)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N15-014.00	Yes	Drumenny River	Eske_SC_010

SCI Description

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]

West Of Ardara/Maas Road SAC (000197)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-028.00	Yes	Stracashel	Owenea_SC_010

SCI Description

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]

Cloghernagore Bog And Glenveagh National Park SAC (002047)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-055.00	Yes	Owencarrow River	Lackagh_SC_010

SCI Description

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
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]
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]

Lough Corrib SAC (000297)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
GC-N83-004.00	Yes	Clare [Galway]	Clare[Galway]_SC_060
GC-N59-040.00	Yes	Owenriff [Corrib]	BallycuirkeLoughStream_SC_010
RN-N83-001.00	Yes	Cloonfad	Clare[Galway]_SC_010

SCI Description

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 Ranunculion fluitantis and Callitricho-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]

Unshin River SAC (001898)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
SO-N59-002.00	Yes	Ballysadare	Owenmore[Sligo]_SC_030

SCI Description

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-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]
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
Salmo salar (Salmon) [1106]
Lutra lutra (Otter) [1355]

River Moy SAC (002298)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
MO-N05-025.00	Yes	Sonnagh [Moy]	Moy_SC_040
MO-N58-004.00	Yes	Undefined	Moy_SC_070

SCI Description

Active raised bogs [7110]
Degraded raised bogs still capable of natural regeneration [7120]
Depressions on peat substrates of the Rhynchosporion [7150]
Alkaline fens [7230]
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]
Austropotamobius pallipes (White-clawed Crayfish) [1092]
Petromyzon marinus (Sea Lamprey) [1095]
Lampetra planeri (Brook Lamprey) [1096]
Salmo salar (Salmon) [1106]
Lutra lutra (Otter) [1355]

Lough Gill SAC (001976)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
LM-N16-006.00	Yes	Owenmore [Manorhamilton]	Bonet_SC_010

SCI Description

Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]
Austropotamobius pallipes (White-clawed Crayfish) [1092]
Petromyzon marinus (Sea Lamprey) [1095]
Lampetra planeri (Brook Lamprey) [1096]
Lampetra fluviatilis (River Lamprey) [1099]
Salmo salar (Salmon) [1106]
Lutra lutra (Otter) [1355]

Mweelrea/Sheeffry/Erriff Complex SAC (001932)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
MO-N59-061.00	Yes	Erriff 32	Erriff_SC_010
MO-N59-062.00	Yes	Undefined	Erriff_SC_010

SCI Description

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]

The Twelve Bens / Garraun Complex SAC (002031)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-009.00	Yes	Culfin 32	OwenduffBridgeStream_SC_010
SCI Description			
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]			

Donegal Bay (Murvagh) SAC (000133)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N15-019.00	1.3km d/s	Tullywee	Eske_SC_010
SCI Description			
Mudflats and sandflats not covered by seawater at low tide [1140] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170] Humid dune slacks [2190] *Phoca vitulina* (Harbour Seal) [1365]			

Lough Ree SAC (000440)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
RN-N63-005.20	1.3km d/s	KILNACLOGHY	Clooneigh_SC_010
SCI Description			
Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] *Alkaline fens* [7230] Limestone pavements [8240] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Bog woodland [91D0] *Lutra lutra* (Otter) [1355]			

Cummeen Strand / Drumcliff Bay (Sligo Bay) SAC (000627)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
SO-N04-001.00	Yes	Garavogue River	Bonet_SC_030

SCI Description

Estuaries [1130]
Mudflats and sandflats not covered by seawater at low tide [1140]
Embryonic shifting dunes [2110]
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
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]
Petrifying springs with tufa formation (*Cratoneurion*) [7220]
Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]
Petromyzon marinus (Sea Lamprey) [1095]
Lampetra fluviatilis (River Lamprey) [1099]
Phoca vitulina (Harbour Seal) [1365]

Ben Bulben, Gleniff and Glenade Complex SAC (000623)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
LM-N16-017.00	1.3km d/s	Undefined	Drumcliff_SC_010

SCI Description

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]
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
Transition mires and quaking bogs [7140]
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 and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) [8120]
Calcareous rocky slopes with chasmophytic vegetation [8210]
Vertigo geyeri (Geyer's Whorl Snail) [1013]
Lutra lutra (Otter) [1355]

Clew Bay Complex SAC (001482)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
MO-N05-002.00	1.6km d/s	Carrowbeg [Westport]	CARROWTOOTAGH_SC_010
SCI Description			
Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Machairs (* in Ireland) [21A0] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Vertigo geyeri* (Geyer's Whorl Snail) [1013] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			

River Finn SAC (002301)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N14-009.00	River Finn SAC ca. 9.5km d/s of bridge	DRUMBEG	JohnstonStream_SC_010
DL-N14-010.00	River Finn SAC ca. 8.3km d/s of bridge	DRUMBEG	JohnstonStream_SC_010
DL-N15-002.70	River Finn SAC ca. 500m d/s of bridge	Non-listed	Finn[Donegal]_SC_030
DL-N15-003.00	River Finn SAC ca. 0.1km d/s of bridge	MULLAGHAGARRY	Finn[Donegal]_SC_030
SCI Description			
Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Northern Atlantic wet heaths with *Erica tetralix* [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]			

Sheephaven SAC (001190)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N56-052.00	Sheephaven SAC ca. 0.6km d/s of bridge	Faymore 38	Lackagh_SC_010

SCI Description

Mudflats and sandflats not covered by seawater at low tide [1140]
Annual vegetation of drift lines [1210]
Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Salicornia and other annuals colonising mud and sand [1310]
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
Mediterranean salt meadows (Juncetalia maritimi) [1410]
Embryonic shifting dunes [2110]
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
Humid dune slacks [2190]
Machairs (* in Ireland) [21A0]
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
Euphydryas aurinia (Marsh Fritillary) [1065]
Petalophyllum ralfsii (Petalwort) [1395]

Lough Swilly SAC (002287)

Structure ID	Within SAC	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N13-009.00	Lough Swilly SAC ca. 3.7km d/s of bridge	CARROWEN	LeslieHill[Stream]_SC_010

SCI Description

Estuaries [1130]
Coastal lagoons [1150]
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
Lutra lutra (Otter) [1355]

Donegal Bay SPA (004151)

Structure ID	Within SPA	Watercourse (Source: EPA)	WFD Sub-Catchment
DL-N15-014.00	Donegal Bay SPA ca. 3.2km d/s of bridge	Drumenny	Eske_SC_010
DL-N15-019.00	Donegal Bay SPA ca. 1.7km d/s of bridge	Tullywee	Eske_SC_010

SCI Description

Great Northern Diver (*Gavia immer*) [A003]
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
Common Scoter (*Melanitta nigra*) [A065]
Sanderling (*Calidris alba*) [A144]
Wetland and Waterbirds [A999]

Lough Corrib SPA (004042)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-040.00	Lough Corrib SPA ca. 1.8km d/s of bridge	Owenriff [Corrib]	BallycuirkeLoughStream_SC_010
SCI Description			
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]			

Drumcliff Bay SPA (004013)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
LM-N16-017.00	Drumcliff Bay SPA ca. 12.1km d/s of bridge	Undefined	Drumcliff_SC_010
SCI Description			
Sanderling (*Calidris alba*) [A144] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999]			

Connemara Bog Complex SPA (004181)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-022.00	Connemara Bog Complex SPA ca. 5.1km d/s of bridge	Imleach_Dhá_Rú	Recess_SC_020
SCI Description			
Cormorant (*Phalacrocorax carbo*) [A017] Merlin (*Falco columbarius*) [A098] Golden Plover (*Pluvialis apricaria*) [A140] Common Gull (*Larus canus*) [A182]			

Lough Ree SPA (004064)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
RN-N63-005.20	Lough Ree SPA ca. 1.3km d/s from bridge	KILNACLOGHY	Clooneigh_SC_010
SCI Description			
Little Grebe (*Tachybaptus ruficollis*) [A004] Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Shoveler (*Anas clypeata*) [A056] Tufted Duck (*Aythya fuligula*) [A061] Common Scoter (*Melanitta nigra*) [A065] Goldeneye (*Bucephala clangula*) [A067] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Common Tern (*Sterna hirundo*) [A193] Wetland and Waterbirds [A999]			

Cummeen Strand SPA (004035)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
SO-N04-001.00	Yes	Garavogue River	Bonet_SC_030
SCI Description			
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Oystercatcher (*Haematopus ostralegus*) [A130] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]			

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

Lough Swilly SPA (004075)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N13-009.00	Lough Swilly SPA ca. 700m d/s of bridge	CARROWEN	LeslieHill[Stream]_SC_010
SCI Description			
Great Crested Grebe (*Podiceps cristatus*) [A005] Grey Heron (*Ardea cinerea*) [A028] Whooper Swan (*Cygnus cygnus*) [A038] Greylag Goose (*Anser anser*) [A043] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Shoveler (*Anas clypeata*) [A056] Scaup (*Aythya marila*) [A062] Goldeneye (*Bucephala clangula*) [A067] Red-breasted Merganser (*Mergus serrator*) [A069] Coot (*Fulica atra*) [A125] Oystercatcher (*Haematopus ostralegus*) [A130] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Sandwich Tern (*Sterna sandvicensis*) [A191] Common Tern (*Sterna hirundo*) [A193] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]			

Ballysadare Bay SPA (004129)			
Structure ID	**Within SPA**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
SO-N59-002.00	Ballysadare Bay SPA ca. 0.7km d/s of bridge	Ballysadare	Owenmore[Sligo]_SC_030
SCI Description			
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Grey Plover (*Pluvialis squatarola*) [A141] Dunlin (*Calidris alpina*) [A149] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]