NW Term Maintenance Contract No.3

Year 4 Structures – Natura Impact Statement Part 1

Transport Infrastructure Ireland

08/11/2021

Notice

This document and its contents have been prepared and are intended solely as information for Transport Infrastructure Ireland and use in relation to Report

WS Atkins International Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document history

Revision	Purpose description	Origin-ated	Checked	Reviewed	Author-ised	Date
Rev 0	NIS	EN	PO'D	PO'D	MJ	02/07/2021
Rev 1	NIS	EN	PO'D	PO'D	MJ	31/08/2021
Rev 2	Minor amendments – For issue	EN/ NS	NS	POD	MJ	08/11/2021

Client signoff

Client	Transport Infrastructure Ireland
Project	NW Term Maintenance Contract No.3
Job number	5162160
Client signature / date	

Contents

Figures

Tables

1. Introduction

The EIRSPAN Bridge Management System covers all aspects of bridge management including routine maintenance. Over the past number of years routine maintenance contracts have been undertaken by private contractors under Bridge Term Maintenance contracts. In the North West Region, the most recent contract concluded in December 2016. A Bridges Term Maintenance Contract for 714 bridges in the North West Region is being progressed by Transport Infrastructure Ireland (TII) under a new contract.

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

As part of this contract, Atkins Ireland was commissioned by TII to provide a report to support TII in making a screening decision as to whether Appropriate Assessment of proposed routine maintenance works to bridges in the north west of Ireland (i.e. Task Order 289) under the North West Bridges Term Maintenance Contract No.3 would be required. TII undertook the Screening for Appropriate Assessment and issued determinations for each structure.

TII determined that likely significant effects could not be ruled out for a total of 44 bridges in the North West Region and thus require Appropriate Assessment. This report is a Natura Impact Statement and provides supporting information to TII in making their Appropriate Assessment decision on 28 of these bridges. The remaining bridges require specialist ecological surveys before a NIS can be conducted. These remaining structures will undergo Appropriate Assessment once specialist surveys have been conducted.

1.1. Project Background and Context

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

Each of these bridges have required four routine inspections throughout the term of the contract. Each and every structure has been inspected in 2017 Q4, 2019 Q1, 2020 Q1 and 2021 Q1. When data from the inspections is entered into the database Works Orders are generated and it is intended that annual routine maintenance work will be undertaken by an appointed Contractor between 1st March and 30th September in each of the years 2018, 2019, 2020 and 2021. It is these Works Orders that are subject to ecological assessment.

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

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

- Cleaning of graffiti.

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

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

Table 1-1 EIRSPAN bridge components and works.

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

2. Project Description

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

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

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

2.1. Proposed Works

As detailed above, the Year 4 Work Orders were screened for AA and TII issued determinations for each structure. This resulted in 44 bridges being '*Screened In*', i.e. where likely significant effects could not be ruled out, requiring those structures to undergo Appropriate Assessment. This report is a Natura Impact Statement and provides supporting information to TII in making their Appropriate Assessment decision on 28 of these bridges. The remaining 16 bridges require specialist ecological surveys before a NIS can be conducted. These remaining structures will undergo Appropriate Assessment once specialist surveys have been conducted.

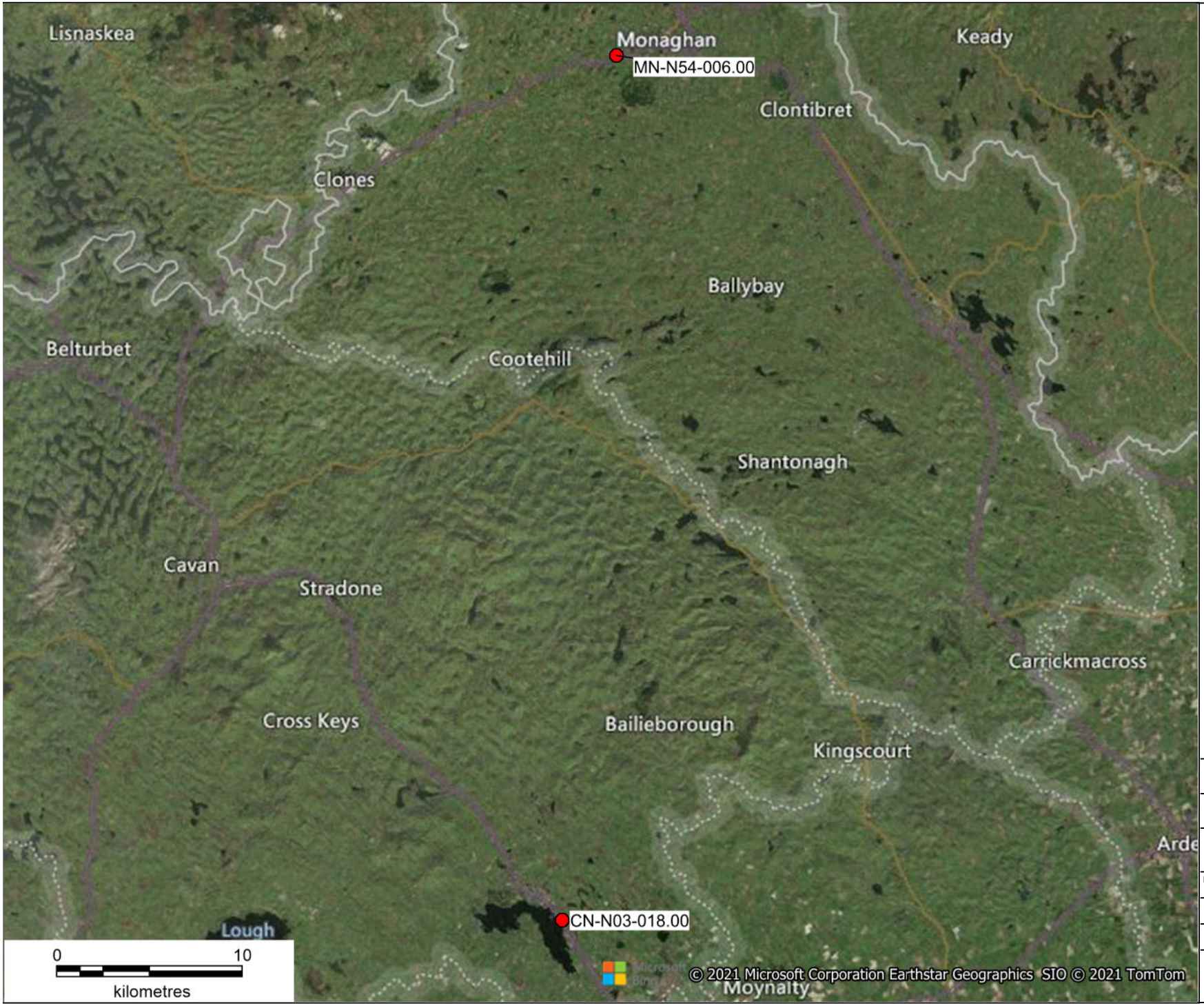
These 28 bridges are located in Counties Cavan (no. 1), Donegal (no. 5), Galway (no. 6), Leitrim (no. 7), Mayo (no. 4), Monaghan (1), Roscommon (no. 1), and Sligo (no. 3) which is illustrated in Figure 1-1. Table 2-1 summaries the main details pertaining to each of the 28 bridges.

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	Townland	Road/River Bridge	Watercourse Name (Epa)	Water Framework Directive Sub-catchment	GPS Coordinates (ITM) X	Y
Cavan	CN-N03-018.00	Ballachanea Bridge	Ballaghanea	River	Lislea 07	Blackwater[Kells]_SC_020	662198.84	786206.14
Donegal	DL-N13-009.00	Castlecooley Bridge	Castlecooley	River	Carrowen	Lesliehill[Stream]_SC_010	633539.6089	919537.6136
Donegal	DL-N14-010.00	Tullyrap Bridge	Tullyrap	River	Drumbeg	Johnstonstream_SC_010	629294.97	903282.26
Donegal	DL-N15-005.00	Cappry Bridge	Cappry	River	(Burn) Daurnett	Finn[Donegal]_SC_040	611996.86	893607.33
Donegal	DL-N56-032.00	Gweebarra Burn Bridge	Kincrum	River	Mulnamin_BEG	Gweebarra_SC_010	579669.92	899393.03
Donegal	DL-N56-033.00	Gweebarra Bridge	Kincrum	River	Undefined		579682.78	899534.92
Galway County	GC-N59-014.00	Barnaderg Bay Bridge No.2	Keelkyle/Baunoge	River	Rosleague	Dawros_SC_010	469522.61	757249.35
Galway County	GC-N59-015.00	Roscrea Bridge	Roscrea	River	Traheen	Dawros_SC_010	468836.78	756695.84
Galway County	GC-N59-020.00	Killymongaun Bridge	Killymongaun	River	Owenglin	Bunnahowna_SC_010	467589.1	750486.85
Galway County	GC-N59-038.00	Letterfore Bridge	Letterfore	River	Undefined	Ballycuirkeloughstream_SC_010	504173.91	743950.54
Galway County	GC-N83-002.00	Dunmore Bridge	Dunmore	River	Sinking	Sinking_SC_010	550874.91	763521.83
Galway County	GC-N84-008.00	Shrule Bridge	Shrule	River	Black [Shrule]	Black[Shrule]_SC_010	528003.53	752623.66
Leitrim	LM-N16-001.00	Glenfarne Bridge	Glenfarne	River	Laghty	Macneanloughsconnector_SC_010	601201.68	837289.31
Leitrim	LM-N16-006.00	Scarden River Bridge	Moneenshinnagh	River	Owenmore [Manorhamilton]	Bonet_SC_010	592249.78	839024.01
Leitrim	LM-N16-008.00	Owenbeg Bridge	Clooneen	River	Brackary	Bonet_SC_010	588321.36	839471.07
Leitrim	LM-N16-009.00	Windy Bridge	Carrickleitrim	River	Owenmore [Manorhamilton]	Bonet_SC_010	587739.66	839195.79
Leitrim	LM-N16-010.00	Owenmore River Bridge	Carrickleitrim	River	Tawnymanus	Bonet_SC_010	587626.87	839141.4
Leitrim	LM-N16-016.00	Lughnafaughery Bridge	Lughnafaughery	River	Edenbaun 35	Drumcliff_SC_010	577474.34	842053.12

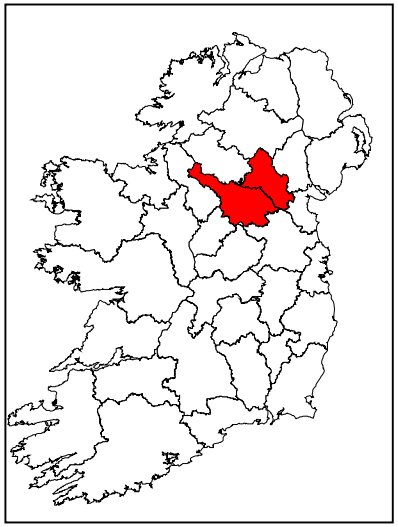
County	Structure ID	Structure Name	Townland	Road/River Bridge	Watercourse Name (Epa)	Water Framework Directive Sub-catchment	GPS Coordinates (ITM) X	Y
Leitrim	LM-N16-017.00	Sracreeghan Bridge	Sracreeghan	River	Undefined	Drumcliff_SC_010	576586.04	842318.08
Mayo	MO-N05-038.00	Cranmore Culvert	Cranmore	River	Fauleens 34	Moy_SC_030	554088.15	800151.28
Mayo	MO-N17-002.00	Bracklagh Bridge	Bracklagh	River	Bracklagh 34	Moy_SC_030	547982.57	799906.92
Mayo	MO-N59-005.00	Cloonawillin Bridge	Cloonawillin	River	Abbeytown 34	Deel[Crossmolina]_SC_020	511622.81	817239.62
Mayo	MO-N59-067.00	Glelnanane Bridge	Glenanane	River	Undefined	Erriff_SC_010	490469.36	764541.08
Monaghan	MN-N54-006.00	Tullybryan Bridge No.2	Tullybryan	River	Ballyleck Lake Stream	Blackwater[Monaghan]_SC_010	664512.6	832989
Roscommon	RN-N63-005.00	Moneen Culvert	Moneen	River	Keelcurragh	Clooneigh_SC_010	596520.84	768628.85
Sligo	SO-N17-007.00	Bridge At Yeats Inn, Curry Town	Curry	River	Undefined	Moy_SC_030	549445.19	806370.96
Sligo	SO-N17-008.00	Curry Bridge	Curry	River	Owengarve [Sligo]	Moy_SC_030	549333.21	806100.03
Sligo	SO-N59-017.00	Rosnamuckyduff Bridge	Tullylin	River	Tullylin_Or_Ballyfeenaun	Leaffony_SC_010	533734.69	828087.37



N

Legend

- Bridges



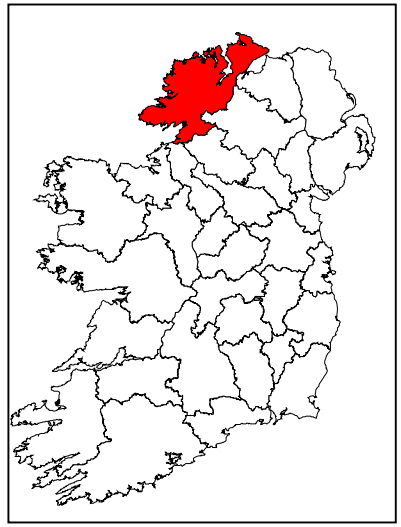
Client: Transport Infrastructure Ireland		
Project: NW Term Maintenance Contract No.3		
Title: Location of Structures in Cavan and Monaghan		
Drawn: EN	Checked: NS	Authorised: PO'D
Date: 27/08/2021	Date: 27/08/2021	Date: 21/05/2020 ~~27/08/2021~~
Drawing No: 1.1		Rev: 1.0

ATKINS [redacted]

N

Legend

- Bridges



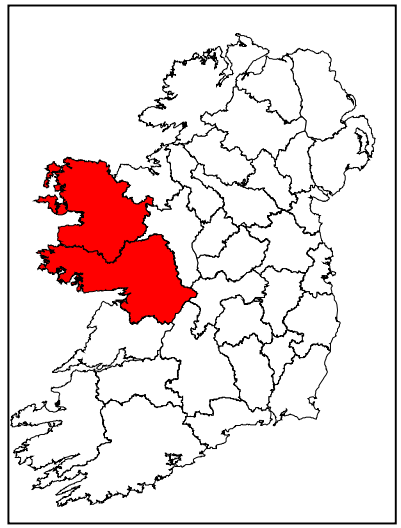
Client: Transport Infrastructure Ireland		
Project: NW Term Maintenance Contract No.3		
Title: Location of Structures in Donegal		
Drawn: EN	Checked: NS	Authorised: PO'D
Date: 27/08/2021	Date: 27/08/2021	Date: 21/05/2020 ~~27/08/2021~~
Drawing No: 1.2		Rev: 1.0

ATKINS [redacted]

N

Legend

- Bridges



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

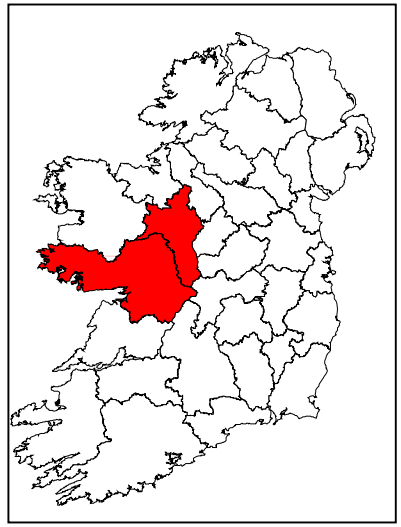
Drawn: EN	Checked: NS	Authorised: PO'D
Date: 27/08/2021	Date: 27/08/2021	Date: 21/05/2020 ~~27/08/2021~~
Drawing No: 1.3		Rev: 1.0

ATKINS [redacted]

N

Legend

- Bridges



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

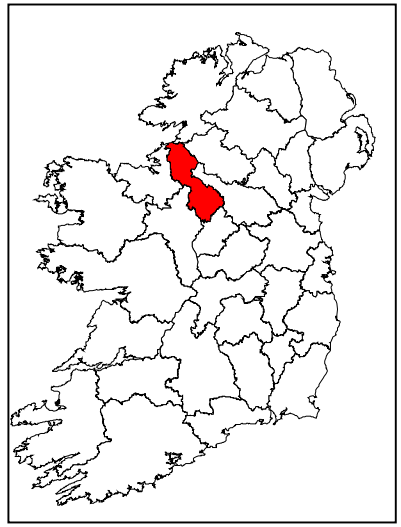
Drawn: EN	Checked: NS	Authorised: PO'D
Date: 27/08/2021	Date: 27/08/2021	Date: 21/05/2020 ~~27/08/2021~~
Drawing No: 1.4		Rev: 1.0

ATKINS [redacted]

N

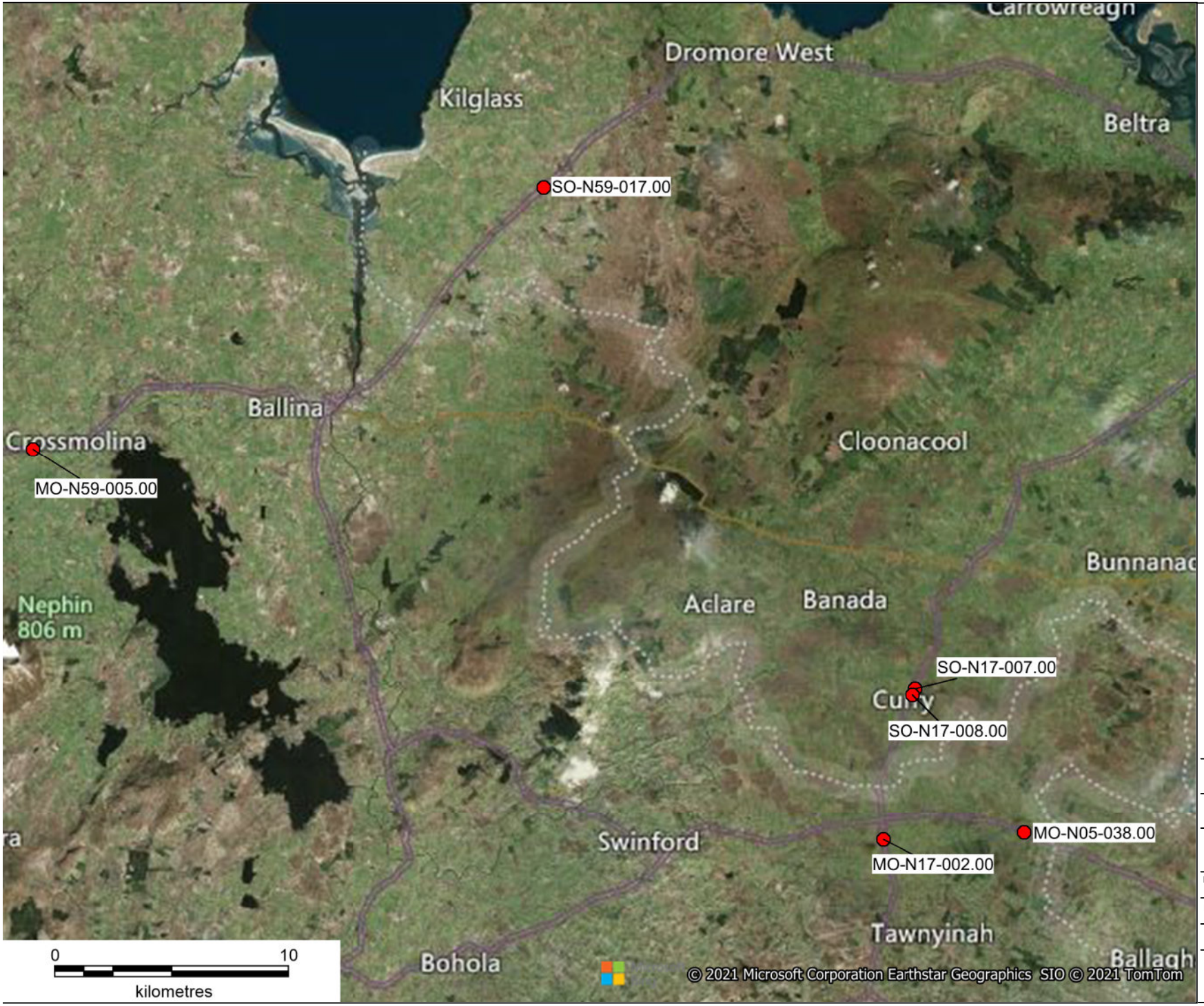
Legend

- Bridges



Client:	Transport Infrastructure Ireland		
Project:	NW Term Maintenance Contract No.3		
Title:	Location of Structures in Leitrim		
Drawn: EN	Checked: NS	Authorised: PO'D	
Date: 27/08/2021	Date: 27/08/2021	Date: 21/05/2020 ~~27/08/2021~~	
Drawing No: 1.5		Rev: 1.0	

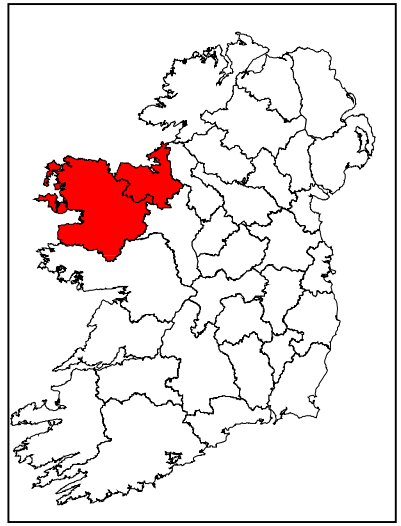
ATKINS [redacted]



N

Legend

- Bridges



Client:	Transport Infrastructure Ireland
Project:	NW Term Maintenance Contract No.3
Title:	Location of Structures in North Mayo & Sligo

Drawn: EN	Checked: NS	Authorised: PO'D
Date: 27/08/2021	Date: 27/08/2021	Date: 21/05/2020 ~~27/08/2021~~
Drawing No: 1.6		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 & use of herbicides

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.1.1.7. Clearance of watercourse

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

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

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

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

2.1.1.8. Masonry repair and repointing

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

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

2.1.1.9. Cleaning of graffiti

Graffiti can be removed using a variety of techniques depending on the structure. These may include water-soluble sprays and aerosols, gels and poultices, and high-pressure hosing, stiff brush and

abrasives when so approved by the Employers Representative. Mechanical abrasive graffiti removal shall be carried out as a last resort by specialist firms and should only be carried out on uncoated concrete substrates. Typical methods include lower pressure water cleaning with or without detergents as well as sand or grit blasting. Note that certain methods of graffiti removal and / or graffiti removers may harm the surrounding finish and therefore will not be permitted for use. In contrast, others might be too weak and ineffective against spray paint.

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

In all cases the appointed Contractor will confirm the approach they propose to use for graffiti removal and what chemicals, if any, are to be used. Where working closer to water only those chemicals/ gels approved for use near water can be used to remove graffiti.

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

2.1.1.10. Maintenance of gabions

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

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

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

2.1.1.11. Reshaping (imported materials)

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

2.1.1.12. Maintenance of slope protection

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

2.1.1.13. Concrete Repairs

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

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

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

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

2.1.1.14. Establishing base protection

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

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

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

2.1.2. Biosecurity protocols

Biosecurity protocols shall be implemented during the construction phase of the proposed project to prevent the introduction of invasive species and the further spread of diseases. This should include species listed on the 3rd Schedule of the 2011 Regulations (S.I. 477 of 2011); as well as non-3rd Schedule invasive species that could have significant effects on European sites to site; and diseases such a crayfish plague.

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

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

The following biosecurity measures will be adopted: -

1. All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.
2. Prior to being brought on site, equipment should be: -
    i. power steam washed at a suitably high temperature or at least 65 degrees, or
    ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer's instructions are followed and if required, the correct contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant
3. During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.

4. Appropriate facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.
5. Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

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

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

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

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

County	Structure ID	Townland	01 Clearance of watercourse	03 Removal of vegetation	04 Scour repairs	30 Clean drains & gullies	45 Maintenance of slope protection	47 Reshaping	50 Concrete repairs	55 Repair of parapet	56 Establish base protection	57 Maintenance of base protection	60 Masonry repointing	61 Masonry repairs
Cavan	CN-N03-018.00	Ballaghanea		Yes		Yes			Yes				Yes	
Donegal	DL-N13-009.00	Castlecooley							Yes					
Donegal	DL-N14-010.00	Tullyrap		Yes	Yes	Yes								Yes
Donegal	DL-N15-005.00	Cappry	Yes	Yes									Yes	
Donegal	DL-N56-032.00	Kincrum		Yes					Yes					
Donegal	DL-N56-033.00	Kincrum		Yes		Yes			Yes					
Co. Galway	GC-N59-014.00	Keelkyle/ Baunoge		Yes	Yes					Yes	Yes		Yes	Yes
Co. Galway	GC-N59-015.00	Roscrea		Yes	Yes								Yes	
Co. Galway	GC-N59-020.00	Killymongaun		Yes								Yes		
Co. Galway	GC-N59-038.00	Letterfore		Yes									Yes	
Co. Galway	GC-N83-002.00	Dunmore		Yes									Yes	
Co. Galway	GC-N84-008.00	Shrule		Yes					Yes	Yes			Yes	
Leitrim	LM-N16-001.00	Glenfarne	Yes	Yes	Yes				Yes					
Leitrim	LM-N16-006.00	Moneenshinnagh		Yes									Yes	Yes
Leitrim	LM-N16-008.00	Clooneen		Yes		Yes							Yes	
Leitrim	LM-N16-009.00	Carrickleitrim		Yes									Yes	

County	Structure ID	Townland	01 Clearance of watercourse	03 Removal of vegetation	04 Scour repairs	30 Clean drains & gullies	45 Maintenance of slope protection	47 Reshaping	50 Concrete repairs	55 Repair of parapet	56 Establish base protection	57 Maintenance of base protection	60 Masonry repointing	61 Masonry repairs
Leitrim	LM-N16-010.00	Carrickleitrim	Yes	Yes									Yes	
Leitrim	LM-N16-016.00	Lughnafaughery												Yes
Leitrim	LM-N16-017.00	Sracreeghan											Yes	
Mayo	MO-N05-038.00	Cranmore		Yes				Yes						
Mayo	MO-N17-002.00	Bracklagh		Yes	Yes									
Mayo	MO-N59-005.00	Cloonawillin	Yes	Yes										
Mayo	MO-N59-067.00	Glenanane	Yes	Yes						Yes	Yes		Yes	Yes
Monaghan	MN-N54-006.00	Tullybryan		Yes	Yes				Yes					
Roscommon	RN-N63-005.00	Moneen	Yes	Yes							Yes			
Sligo	SO-N17-007.00	Curry	Yes	Yes					Yes				Yes	
Sligo	SO-N17-008.00	Curry		Yes	Yes	Yes			Yes					
Sligo	SO-N59-017.00	Tullylin		Yes	Yes								Yes	

2.2. Bridge Descriptions

2.2.1. Cavan

2.2.1.1. Ballachanea Bridge [CN-N03-018.00]

Ballachanea Bridge is a 3-span masonry arch bridge with secondary concrete slab structure. Masonry and concrete parapets line the road. It has a length of 9.16m and carries the N03 over the Lislea River. The River Boyne and River Blackwater SAC ca. 3.2km downstream of bridge. Connectivity is through Lough Ramor. Plate 2.1a and 2.1b below display the masonry and concrete slab elements of the bridge.

Plate 2-1a Ballachanea Bridge – masonry element.

Plate 2-1b Ballachanea Bridge – concrete slab element.

2.2.2. Donegal

2.2.2.1. Castlecooley Bridge [DL-N13-009.00]

Castlecooley Bridge is double span concrete pipe structure with concrete parapets along the carriageway. The structure is 2.98m wide. The Carrowen River flows below the bridge. The structure is located 3.7km upstream of Lough Swilly SAC and 700m upstream of Lough Swilly SPA. Plate 2.2 shows the bridge.

Plate 2-2 Castlecooley Bridge.

2.2.2.2. Tullyrap Bridge [DL-N14-010.00]

Tullyrap Bridge is single span masonry arch bridge with masonry parapets along the carriageway. The structure is 4.3m wide. 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.

2.2.2.3. Cappry Bridge [DL-N15-005.00]

Cappry Bridge is a 2-span pie and concrete slab structure with concrete railings along the roadside. The bridge is 4.48m in width and carries the N15 over the Burn Daurnett Stream. River Finn SAC is located ca. 2.8km downstream of the bridge. Plate 2.4 shows the concrete slab structure.

Plate 2-4 Cappry Bridge.

2.2.2.4. Gweebarra Burn Bridge [DL-N56-032.00]

Gweebarra Burn Bridge is a single-span masonry arch and concrete slab structure with masonry parapet walls. The bridge carries the N56 over the Mulnamin Beg River. It is located within the West Of Ardara/Maas Road SAC. Plates 2.5 and 2.6 show the arch and slab elements of the bridge.

Plate 2-5 Gweebarra Burn Bridge – masonry arch.

Plate 2-6 Gweebarra Burn Bridge – concrete slab.

2.2.2.5. Gweebarra Bridge [DL-N56-033.00]

The Gweebarra Bridge is a 11-span reinforced concrete arch bridge with in-situ concrete parapets on both sides of the carriageway. The maximum span is 18.29m and the minimum span is 8.80m. Spans 3/5/7/9 are suspended spans of 8.64m length. The structure is within the West of Ardara/Maas Road SAC. Plate 2.7 shows the west elevation.

Plate 2-7 Gweebarra Bridge.

2.2.3. Galway County

2.2.3.1. Barnaderg Bay Bridge No.2 [GC-N59-014.00]

Barnaderg Bay Bridge No.2 is a single span masonry arch bridge with masonry parapets lining the road. The maximum span is 6.23m. The bridge carries the N59 over the Rosleague River. Illaunnanoon SPA is ca. 1.5km from the bridge. The outer reaches of the Harbour are designated as West Connacht Coast SAC (002998) - ca. 5km from the bridge. Plate 2.8 shows Barnaderg Bay Bridge No. 2.

Plate 2-8 Barnaderg Bay Bridge No.2.

2.2.3.2. Roscrea Bridge [GC-N59-015.00]

Roscrea Bridge is a double span masonry structure with masonry parapet walls along the road. The span width is 10.35m. The bridge carries the N59 over the Traheen River. Illaunnanoon SPA is ca. 1.3km from the bridge. The outer reaches of the Harbour are designated as West Connacht Coast SAC (002998) - ca. 5km from the bridge. Plate 2.9 shows Roscrea Bridge.

Plate 2-9 Roscrea Bridge.

2.2.3.3. Killymongaun Bridge [GC-N59-020.00]

The Killymongaun Bridge is a single span precast concrete slab bridge. The span is 4.51m. The substructure consists of 2 reinforced concrete abutments. There are heavy steel parapets on both sides of the carriageway. The structure is within The Twelve Bens / Garraun Complex SAC. Plate 2-10 shows the south elevation.

Plate 2-10 Killymongaun Bridge.

2.2.3.4. Letterfore Bridge [GC-N59-038.00]

The Letterfore Bridge is a 3.67m single span masonry arch bridge with reinforced concrete extension to north end. The rise of arch barrel at crown is 1.49m. The bridge is located in the Connemara Bog Complex SAC and located 12.6km upstream of the Lough Corrib SPA. Plate 2-11 shows the north elevation. Rhododendron was noted growing close to this structure.

Plate 2-11 Letterfore Bridge.

2.2.3.5. Dunmore Bridge [GC-N83-002.00]

Dunmore Bridge is a five-span masonry arch bridge with masonry parapet walls. The span width is 23.8m. The bridge carries the N83 over the Sinking River within Lough Corrib SAC. Plate 2.12 shows the bridge.

Plate 2-12 Dunmore Bridge.

2.2.3.6. Shrule Bridge [GC-N84-008.00]

Shrule Bridge is a single arch masonry structure with masonry parapet walls. The span width is 7.56m. The bridge carries the N84 over the Black Shrule River within Lough Corrib SAC. Plate 2.13 shows the bridge.

Plate 2-13 Shrule Bridge.

2.2.4. Leitrim

2.2.4.1. Glenfarne Bridge [LM-N16-001.00]

Glenfarne Bridge is a single span masonry structure with masonry parapet walls. The span width is 3.1m. The bridge carries the N16 over the Laghty River over 20km upstream of Upper Lough Erne SAC/SPA. Plate 2.14 shows the masonry face of the structure.

Plate 2-14 Glenfarne Bridge.

2.2.4.2. 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 2.15 shows Scarden River Bridge.

Plate 2-15 Scarden River Bridge.

2.2.4.3. Owenbeg Bridge [LM-N16-008.00]

Owenbeg Bridge is a single arch masonry structure with masonry parapet walls. The span width is 4.18m. The bridge carries the N16 over the Brackary River. Lough Gill SAC is located 60m downstream of the bridge. Plate 2.16 shows the masonry face and arch of the bridge. Giant rhubarb can be seen growing close to this structure.

Plate 2-16 Owenbeg Bridge.

2.2.4.4. Windy Bridge [LM-N16-009.00]

Windy Bridge is a single span masonry arch structure with parapet walls. The span width is 10.8m. The bridge carries the N16 over the Owenmore Manorhamilton River. It is located within Lough Gill SAC. Plate 2.17 shows the bridge.

Plate 2-17 Windy Bridge.

2.2.4.5. Owenmore River Bridge [LM-N16-010.00]

The Owenmore River Bridge is a 3.70m single span masonry arch bridge. There are masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 0.6m. The structure is within the Lough Gill SAC. Plate 2-18 shows the north elevation.

Plate 2-18 Owenmore River Bridge.

2.2.4.6. Lughnafaughery Bridge [LM-N16-016.00]

The Lughnafaughery Bridge is a 3.09m single span masonry arch bridge. There are masonry parapets on both sides of the carriageway. The bridge carries the N16 over the Edenbaun River. Ben Bulben, Gleniff And Glenade Complex SAC is 2.1km downstream of the bridge, Ultimately discharging to sites in Sligo Harbour. Drumcliff Bay SPA is 12.8km downstream of the bridge. Plate 2-19 shows the south elevation.

Plate 2-19 Lughnafaughery River Bridge.

2.2.4.7. 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 2.20 shows Sracreeghan Bridge.

Plate 2-20 Sracreeghan Bridge.

2.2.5. Mayo

2.2.5.1. Cranmore Culvert [MO-N05-038.00]

Cranmore Culvert is a single span concrete culvert with steel safety barriers along the roadside. The span width is 2.9m. The culvert spans the Fauleens Stream 1.5km upstream of the River Moy SAC. Plate 2.21 shows the culvert and embankments.

Plate 2-21 Cranmore Culvert.

2.2.5.2. Bracklagh Bridge [MO-N17-002.00]

Bracklagh Bridge is a single span masonry bridge with a concrete slab secondary structure. The span width is 2.8m. The bridge carries the N17 over the Bracklagh River within the River Moy SAC. Plate 2.22 shows the masonry side of the bridge.

Plate 2-22 Bracklagh Bridge – masonry component.

2.2.5.3. Cloonawillin Bridge [MO-N59-005.00]

Cloonawillin Bridge is a single span concrete slab and box structure with concrete breeze block parapet walls. The span width is 2.4m. The bridge spans the Abbeytown River. River Moy SAC is located ca. 3.3km downstream and Lough Conn and Lough Cullin SPA is located ca. 12.4km downstream of the bridge. Plate 2.23 displays the face of the bridge.

Plate 2-23 Cloonawillin Bridge.

2.2.5.4. Glelnanane Bridge [MO-N59-067.00]

Glelnanane Bridge is a single span masonry bridge with masonry parapet walls. The span width is 3.71m. The bridge carries the N59 over an unnamed tributary of the Erriff River. The bridge is located within Mweelrea/Sheeffry/Erriff Complex SAC. Plate 2.24 displays the masonry face of the bridge.

Plate 2-24 Glelnanane Bridge.

2.2.6. Monaghan

2.2.6.1. Tullybryan Bridge No.2 [MN-N54-006.00]

Tullybryan Bridge No.2 is a single span concrete and steel pipe culvert with concrete parapet walls. The span width is 4.5m. The structure spans the Ballyleck Lake Stream and is located over 60km upstream of Lough Neagh SPA. Plate 2.25 shows the structure.

Plate 2-25 Tullybryan Bridge No. 2.

2.2.7. Roscommon

2.2.7.1. Moneen Culvert [RN-N63-005.00]

The Moneen Culvert is a 2-span precast reinforced concrete piped culvert. The two span lengths are 1.35m each. There are masonry parapets on both sides of the carriageway. The structure is located 2.1km upstream of the Lough Ree SAC and 2.2km upstream of the Lough Ree SPA. Plate 2-26 shows the south elevation.

Plate 2-26 Moneen Culvert.

2.2.8. Sligo

2.2.8.1. Bridge at Yeats Inn, Curry town [SO-N17-007.00]

The Bridge at Yeats Inn, Curry Town is a single span masonry bridge with a slab sub structure on the western face with concrete safety barriers along the roadside. The span width is 3m. The bridge is located within River Moy SAC. Plate 2.27a shows the masonry (east) face of the bridge while Plate 2.27b shows the concrete slab structure of the western side.

Plate 2-27a Bridge at Yeats Inn, Curry town. Masonry face.

Plate 2-27b Bridge at Yeats Inn, Curry town. Concrete slab face.

2.2.8.2. Curry Bridge [SO-N17-008.00]

Curry bridge is a single span concrete slab structure with steel parapet railings along the road. The span width is 21.05m. The bridge carries the N17 over the Owengarve River within the River Moy SAC. Plate 2.28 shows the concrete slab structure.

Plate 2-28 Curry Bridge.

2.2.8.3. Rosnamuckyduff Bridge [SO-N59-017.00]

Rosnamuckyduff Bridge is a double span masonry arch structure with masonry parapet walls with steel safety barriers on top along the roadside. The span width is 4.42m. The bridge spans the Tullylin Stream 9.2km upstream of Killala Bay/Moy Estuary SAC. Plate 2.29 shows the masonry face of the bridge.

Plate 2-29 Rosnamuckyduff Bridge.

3. Scope of Study

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

3.1. Legislative Context

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

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

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

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

> *"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*
>
> *Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."*

3.2. Appropriate Assessment Process

Guidance on the AA process was produced by the European Commission (EC, 2001; 2018), which was subsequently used to develop guidance for Ireland by the Department of Environment, Heritage and Local Government in 2009 (DEHLG, 2009), National Parks and Wildlife Service in 2018[1] (NPWS 2018) and the Office of the Planning Regulator (2021). These guidance documents set out a staged approach to complete the AA process and outline the issues and tests at each stage. The stages outlined below are taken from the guidance document Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHLG, 2009).

[1] https://www.npws.ie/development-consultations

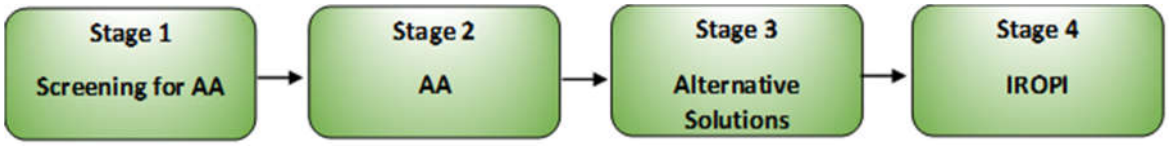


Figure 2.1 Appropriate Assessment Process (Source: DEHLG, 2009)

3.2.1. Screening for Appropriate Assessment

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

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

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

3.2.2. Appropriate Assessment

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

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

3.2.3. Alternative Solutions

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

3.2.4. IROPI

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

The AA process only progresses through the full process for certain plans and projects. For example, for a project not connected with the management of a European site and where no likely significant effects on a European site in view of its conservation objectives are identified, the process stops at Screening for AA. Throughout the process the precautionary principle must be applied, which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty (EC, 2001; 2018).

4. Methods

4.1. Legislation & Guidance Documents

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

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna (Habitats Directive);
- Statutory Instrument No. 477/2011 — European Communities (Birds and Natural Habitats) Regulations 2011;
- National Parks and Wildlife Service - Development 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;
- Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01; and,
- Case C-323/17 People Over Wind & anor. V. Coillte.

4.2. Data Collation

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

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

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

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

- National Parks and Wildlife Parks (NPWS) spatial data: Natura 2000 boundaries nationally designated site boundaries, Article 17 reporting records, [redacted]
- Environmental Protection Agency datasets; Water/ Water Framework Directive datasets.
- National Biodiversity Data Centre online data.
- TII invasive species database.
- S ecies s ecific datasets obtained from NPWS as a result of data re uests. [redacted]
- Species specific data collected as part of ongoing ecological studies or site visits (e.g. data on invasive species collected by Contractor or Resident Engineer).

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

4.2.2. Procurement of Specialist Surveys

S ecialist surveys are procured for each year of the contract, in particular for bats [redacted] The bridges surveyed each year are dependent on the nature and extent of works to be carried out and the otential for such s ecies to be present at the site, [redacted] Where relevant, the results of these surveys inform the Screening for Appropriate Assessment decisions. All survey data is inputted to the project Geographical Information System database on an ongoing basis.

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

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

[5] http://gis.epa.ie/Envision

4.2.3. Protected Species

TII recently consulted with the Department of Tourism, Culture, Art, Gaeltacht, Sports and Media (DTCAGSM[6]; dated 17th May 2021) pursuant to the requirements of Regulation 49(9)(c) of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). This consultation related to works on structures in Year 3 of the EIRSPAN Bridge repair project which required preparation of a Natura Impact Statement as well as a number of additional projects to repair damaged culverts. All comments received across these consultations have been considered in the current assessment.

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

4.2.3.1. Otter

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

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

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

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

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

- The River Boyne and River Blackwater SAC (002299)
- River Finn SAC (002031)

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

- West Of Ardara/Maas Road SAC (000197)
- The Twelve Bens / Garraun Complex SAC (0020131)
- Connemara Bog Complex SAC (002034)
- Lough Corrib SAC (000297)
- Lough Gill SAC (001976)
- Ben Bulben, Gleniff and Glenade Complex SAC (000623)
- River Moy SAC (002298)
- Mweelrea/Sheeffry/Erriff Complex SAC (001932)
- Lough Ree SAC (000440)

As example of the relevant Attributes, in this case for the River Moy SAC, is presented in Table 4.1. This is extracted from the Conservation Objectives for the River Moy SAC 002298 as prepared by NPWS (2016).

Table 4.1 – Conservation Objectives for Otter in the River Moy SAC (from NPWS, 2016).

Conservation Objectives for : River Moy SAC [002298]

1355 Otter *Lutra lutra*

To maintain the favourable conservation condition of Otter in River Moy SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 1068.8ha	No field survey. Areas mapped to include 10m terrestrial buffer along lake shorelines and along river banks identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 479.4km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 1248.2ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase. For guidance, see map 8	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

Each bridge location was considered for its potential to support Otter and in particular for the potential that an Otter holt might be recorded close to the bridge. This is returned to in detail below (see e.g Table 5.4).

4.2.3.2. Bats

In the case of bats, each year bridges to be repaired are assessed for the potential to negatively impact upon bats. In 2021 we have commenced the Year 4 assessments and therefore now have access to targeted bat surveys at a range of bridges undertaken over a 4 year period, as well as any historic data. In particular, for example, all masonry bridges where masonry repair works are called up are assessed and where appropriate a bat specialist is procured to survey these structures to check whether they support roosting bats. This involves checking of the structure for potential bat roosts / roosting bats and where necessary a bat emergence survey is undertaken to determine if bats are roosting at a structure. Specialist bat surveyors are procured by Atkins on behalf of TII to undertake this work. Copies of bat survey reports can be provided to the Department if deemed appropriate.

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

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

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

4.2.3.3. Nesting Birds

In the correspondence noted above (dated 17th May 2021), the Department notes that while works are to take place between July 1st and September 30th, that this is within the nesting period for birds (i.e. 1st March to 31st August). It should be noted, however, that the proposed works window coincides with the Fisheries Open Season for instream works as defined by Inland Fisheries Ireland (July-September; IFI, 2016) in order to avoid negative impacts to watercourses and fisheries. This does, as noted, present a potential conflict with nesting birds which must be accounted for.

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

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

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

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

4.2.3.4. Vegetation

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

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

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

4.3. Statement of Authority

The NIS was prepared by Emma Nickelsen, Niamh Sweeney under the direction of Paul O'Donoghue.

Emma Nickelsen has a BSc (Hons) in Environmental Biology and an MSc in Marine Biology. Emma has worked in ecological and environmental consultancy since 2017, working on a wide range of projects including bridge works, road construction, local amenity development and renewable energy. A focus of Emma's work to date has been on conducting Appropriate Assessment screenings, ecological appraisals and supporting the preparation of Natura Impact Statements and Ecological Impact Statements. Emma carried out the preparation of this report.

Niamh Sweeney (BSc, MSc (Res)) is a freshwater ecologist with over 10 years' experience in ecological consultancy, with specialisms in macroinvertebrate and diatom taxonomy. Niamh has worked on numerous Screenings for Appropriate Assessment, Natura Impact Statements and Ecological Impact Assessments for private architect firms, waste companies, numerous County Councils, the Office of Public Works (OPW) and Inland Fisheries Ireland. Niamh assisted in the preparation of this report.

Paul O'Donoghue has a BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics. 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. Appropriate Assessment

5.1. Connectivity of the Works Area to European sites

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

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

Given nature and scale of the proposed works and localised access requirements for the 28 bridges being considered in this assessment, the maximum distance where works are likely from a bridge is 20m upstream or downstream of a bridge. Thus, direct impacts are anticipated to occur within the immediate vicinity of the bridge.

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

Thus, given the nature of the proposed project the potential zone of influence will be limited to European sites they 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
CN-N03-018.00	Ballachanea Bridge	Lislea 07	Blackwater[Kells]_Sc_020	No	N/A	No	N/A	River Boyne and River Blackwater SAC ca. 3.2km d/s of bridge. Connectivity is through Lough Ramor.	River Boyne and River Blackwater SPA ca. 3.2km d/s of bridge. Connectivity is through Lough Ramor.
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-N14-010.00	Tullyrap Bridge	Drumbeg	Johnstonstream_SC_010	No	N/A	No	N/A	River Finn SAC ca. 8.3km d/s of bridge	No
DL-N15-005.00	Cappry Bridge	(Burn) Daurnett	Finn[Donegal]_Sc_040	No	N/A	No	N/A	River Finn SAC ca. 2.8km d/s of bridge	No
DL-N56-032.00	Gweebarra Burn Bridge	Mulnamin_Beg	Gweebarra_SC_010	Yes	West Of Ardara/Maas Road SAC	No	N/A	Within	No
DL-N56-033.00	Gweebarra Bridge	Undefined		Yes	West Of Ardara/Maas Road SAC	No	N/A	Within	No
GC-N59-014.00	Barnaderg Bay Bridge No.2	Rosleague	Dawros_SC_010	No	N/A	No	N/A	West Connacht Coast SAC ca. 4.5km d/s via inner estuary	Illaunnanoon SPA ca. 850m d/s of bridge.
GC-N59-015.00	Roscrea Bridge	Traheen	Dawros_SC_010	No	N/A	No	N/A	West Connacht Coast SAC ca. 5km d/s via inner estuary	Illaunnanoon SPA ca. 1.3km u/s of bridge.
GC-N59-020.00	Killymongaun Bridge	Owenglin	Bunnahowna_SC_010	Yes	The Twelve Bens/Garraun Complex SAC	No	N/A	Within	No
GC-N59-038.00	Letterfore Bridge	Undefined	Ballycuirkeloughstream_SC_010	Yes	Connemara Bog Complex SAC	No	N/A	Within	Lough Corrib SPA ca. 12.6km d/s of bridge
GC-N83-002.00	Dunmore Bridge	Sinking	Sinking_SC_010	Yes	Lough Corrib SAC	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
GC-N84-008.00	Shrule Bridge	Black [Shrule]	Black[Shrule]_Sc_010	Yes	Lough Corrib SAC	No	N/A	Within	No
LM-N16-001.00	Glenfarne Bridge	Laghty	Macneanloughsconnector_SC_010	No	N/A	No	N/A	>20km u/s of Upper Lough Erne SAC (UK0016614)	>20km u/s of Upper Lough Erne SPA (UK9020071)
LM-N16-006.00	Scarden River Bridge	Owenmore [Manorhamilton]	Bonet_SC_010	Yes	Lough Gill SAC	No	N/A	Within	No
LM-N16-008.00	Owenbeg Bridge	Brackary	Bonet_SC_010	No	N/A	No	N/A	Lough Gill SAC ca. 0.06km d/s of bridge	No
LM-N16-009.00	Windy Bridge	Owenmore [Manorhamilton]	Bonet_SC_010	Yes	Lough Gill SAC	No	N/A	Within	No
LM-N16-010.00	Owenmore River Bridge	Tawnymanus	Bonet_SC_010	Yes	Lough Gill SAC	No	N/A	Within	No
LM-N16-016.00	Lughnafaughery Bridge	EDENBAUN 35	Drumcliff_SC_010	No	N/A	No	N/A	Ben Bulben, Gleniff And Glenade Complex SAC ca. 2.1km d/s of bridge. Ultimately discharging to sites in Sligo Harbour.	Drumcliff Bay SPA ca. 12.8km d/s of bridge
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-N05-038.00	Cranmore Culvert	Fauleens 34	Moy_SC_030	No	N/A	No	N/A	River Moy SAC ca. 1.5km d/s of bridge	No
MO-N17-002.00	Bracklagh Bridge	Bracklagh 34	Moy_SC_030	Yes	River Moy SAC	No	N/A	River Moy SAC	No
MO-N59-005.00	Cloonawillin Bridge	Abbeytown 34	Deel[Crossmolina]_Sc_020	No	N/A	No	N/A	River Moy SAC ca. 3.3km d/s of bridge	Lough Conn and Lough Cullin SPA ca. 12.4km d/s of bridge
MO-N59-067.00	Glelnanane Bridge	Undefined	Erriff_SC_010	Yes	Mweelrea/Sheeffry/Erriff Complex SAC	No	N/A	Within	No
MN-N54-006.00	Tullybryan Bridge No.2	Ballyleck Lake Stream	Blackwater[Monaghan]_Sc_010	No	N/A	No	N/A	No	Lough Neagh SPA greater than 60km d/s

Structure ID	Structure Name	River	Wfd Subcatchment	Within SAC	SAC Name	Within SPA	SPA Name	Hydrological link to SAC	Hydrological Link to SPA
RN-N63-005.00	Moneen Culvert	Keelcurragh	Clooneigh_SC_010	No	N/A	No	N/A	Lough Ree SAC ca. 2.1km d/s of bridge	Lough Ree SPA ca. 2.2km d/s from bridge
SO-N17-007.00	Bridge at Yeats Inn, Curry town	Undefined	Moy_SC_030	Yes	River Moy SAC	No	N/A	Within	No
SO-N17-008.00	Curry Bridge	Owengarve [Sligo]	Moy_SC_030	Yes	River Moy SAC	No	N/A	Within	No
SO-N59-017.00	Rosnamuckyduff Bridge	Tullylin_Or_Ballyfeenaun	Leaffony_SC_010	No	N/A	No	N/A	Killala Bay/Moy Estuary SAC ca. 9.2km d/s of bridge	No

5.2. Description of the Special Areas of Conservation

5.2.1. Ben Bulben, Gleniff And Glenade Complex SAC (000623)

Site Overview

"*Throughout the site, on scree slopes and on cliffs, there are a large number of calcareous springs and seepage areas. Many of these have tufa deposits associated with them. Drier areas on the calcareous and siliceous screes, cliffs and rocky slopes, support somewhat different vegetation.*

Habitats Directive Annex I priority types: Species-rich Nardus Grassland and Orchid-rich Calcareous Grassland have been reported to occur from the Leitrim part of the site, according to the Irish Semi-natural Grasslands Survey, 2009.

Many fast-flowing upland streams rise on the summit of the plateau and flow down its sides. Some of these streams carry base-rich water and support a species-rich bryophyte flora, often associated with tufa deposits. The streams on the site show a good range of riverine structures, with pools, riffles, cascades, waterfalls, tufa deposits, petrifying springs and swallow holes. There are also some streams which have intermittent flow and which are typical of high-level karst streams, very few of which occur in the country.

This plateau area is recognised as, botanically, one of the richest in Ireland. It provides the best example in the country of alpine and arctic-alpine vegetation and includes two vascular species which are not known to occur elsewhere in Ireland, as well as a host of rare mosses and liverworts. The site contains a diverse range of good quality upland habitats. The petrifying springs with tufa deposits are of particular interest and are good examples of a habitat which is considered to be threatened in Europe and given priority status on Annex I of the E.U. Habitats Directive."

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]
- Blanket bogs (* if active bog) [7130]
- 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

LM-N16-016.00. Lughnafaughery Bridge. Ben Bulben, Gleniff And Glenade Complex SAC ca. 2.1km d/s of bridge. Ultimately discharging to sites in Sligo Harbour.

LM-N16-017.00. Sracreeghan Bridge. Ben Bulben, Gleniff And Glenade Complex SAC ca. 1.3km d/s of bridge.

5.2.2. Connemara Bog Complex SAC (002034)

Site Overview

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

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

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

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

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

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

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

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

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

Qualifying Interests

- Coastal lagoons [1150]

- Reefs [1170]
- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130]
- Natural dystrophic lakes and ponds [3160]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- Depressions on peat substrates of the Rhynchosporion [7150]
- Alkaline fens [7230]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- *Euphydryas aurinia* (Marsh Fritillary) [1065]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

GC-N59-038.00. Letterfore Bridge. Within SAC.

5.2.3. Killala Bay/Moy Estuary SAC (000458)

Site Overview

*"Extensive sandflats and mudflats are exposed in the estuary and bay at low tide. For the most part, these flats are unvegetated, but mats of Eelgrass (*Zostera *spp.), Beaked Tasselweed (*Ruppia maritima*) and green algae (Enteromorpha spp.) occur which provide important feeding material for birds. The estuary is generally in a natural state and is considered to be one of the best examples of a largely unpolluted system in Ireland.*

*The dune systems at Bartragh Island, Inishcrone and Ross, to the north-west, are well-developed and constitute good examples of dunes with a rich and diverse flora. Dunes dominated by Marram (*Ammophila arenaria*) are located at all three sub-sites. At Enniscrone they stretch the length of the strand and are particularly well developed towards the western end. They are found along the northern stretch of Ross and also run the length of Bartragh Island.*

Although much of the fixed dune area has been developed as golf course or improved for agriculture, the site still contains a relatively large area of intact fixed dunes, a priority habitat listed on Annex I of the E.U. Habitats Directive.

Saltmarshes are present in sheltered parts of the site, some of which occur in association with the dune systems.

Elsewhere along the coastline are sandy beaches, shingle beaches and some bedrock shores which are occasionally backed by clay sea-cliffs, such as at Moyne.

*The site holds populations of three species listed on Annex II of the E.U. Habitats Directive: Common Seal (maximum count of 108 in the all-Ireland survey of 2003); Sea Lamprey and Narrow-mouthed Whorl Snail (*Vertigo angustior*).*"

Qualifying Interests

- Estuaries [1130]
- 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]
- 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]
- *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Phoca vitulina* (Harbour Seal) [1365]

Linkage to Bridges

SO-N59-017.00. Rosnamuckyduff Bridge. Killala Bay/Moy Estuary SAC ca. 9.2km d/s of bridge.

5.2.4. Lough Corrib SAC (000297)

Site Overview

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

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

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

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

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

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

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

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

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

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140]
- Water courses of plain to montane levels with the 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

GC-N83-002.00. Dunmore Bridge. Within SAC.

GC-N84-008.0. Shrule Bridge. Within SAC.

5.2.5. Lough Gill SAC (001976)

Site Overview

"*Lough Gill is a large lake, being 8 km long, and has steep limestone shores and underwater cliffs. It is over 20 m deep in places. The lake appears to be naturally eutrophic. The aquatic macrophyte flora is very limited, probably due to the rapid increase in depth around most of the margin.*

*The Old Oak Woodlands within this site are dominated by oak (*Quercus *spp.), Rowan (*Sorbus aucuparia*) and willows (*Salix *spp.). A number of interesting tree species occur. Strawberry Tree (*Arbutus unedo*) is found in its most northerly site in the world. Yew (*Taxus baccata*) occurs in abundance. Bird Cherry (*Prunus padus*), a Red Data Book species, is also found, as is the nationally scarce Rock Whitebeam (*Sorbus rupicola*). Some areas of conifer plantation occur in association with these woodlands.*

There is a fringe of deciduous woodland along most of the length of the Garvoge River. In parts it is dense and impenetrable, with a very wet marshy underlayer.

*Areas of unimproved wet and dry grassland also occur within the site, the former particularly by the lake and the latter well developed in the north-east of the site and in the vicinity of O'Rourke's Table. Orchid-rich Calcareous Grassland, a priority habitat listed on Annex I of the E.U. Habitats Directive, has been reported from Clogher Beg, according to the Irish Semi-natural Grasslands Survey, 2010. Heath covered hillsides above the woods are dominated by Heather (*Calluna vulgaris*).*

*The site is of considerable importance for the presence of four Red Data Book fish species that are listed on Annex II of the E.U. Habitats Directive - Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Sea Lamprey (*Petromyzon marinus*) and Atlantic Salmon (*Salmo salar*). The Lough Gill system gets a very early run of spring salmon, while the Bonet holds stocks of salmon from spring right through to the end of the season. White-clawed Crayfish (*Austropotamobius pallipes*), Otter and Pine Marten are well established on this site, the first two are both Annex II species. The woodlands have a fauna which includes several rare snail species.*"

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

LM-N16-006.00. Scarden River Bridge. Within SAC.

LM-N16-008.00. Owenbeg Bridge. Lough Gill SAC ca. 0.06km d/s of bridge.

LM-N16-009.00. Windy Bridge. Within SAC.

LM-N16-010.00. Owenmore River Bridge. Within SAC.

5.2.6. Lough Ree SAC (000440)

Site Overview

"*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 been classified as mesotrophic in quality, but the size of the system means that a range of conditions prevail depending upon, for example, rock type. This gives rise to local variations in nutrient status and pH, which in turn results in variations in the phytoplankton and macrophyte flora. Therefore, species indicative of oligotrophic, mesotrophic, eutrophic and base-rich situations occur. The water of Lough Ree tends to be strongly peat-stained, restricting macrophytes to depths of less than 2 m, and as a consequence, macrophytes are restricted to sheltered bays, where a typical Shannon flora occurs.*

*Reedbeds of Common Reed (*Phragmites australis*) are an extensive habitat in a number of more sheltered places around the lake, but single-species 'swamps' consisting of such species as Common Club-rush (*Scirpus lacustris*), Slender Sedge (*Carex lasiocarpa*), Great Fen-sedge (*Cladium mariscus*) and two scarce species of sedge (*Carex appropinquata *and* C. elata*) also occur in suitable places.*

*Lowland wet grassland is found in abundance around the shore and occurs in two types. One is 'callowland', grassland which floods in winter. This provides feeding for winter waterfowl and breeding waders. The other is an unusual community on stony wet lake shore which is found in many places around the lake and is characterized by Water Germander (*Teucrium scordium*), a scarce plant species almost confined to this lake and Lough Derg.*

Dry calcareous grassland occurs scattered around the lake shore.

Limestone pavement occurs occasionally around the lake shore. The most substantial area is at Rathcline in the extreme north-east. While this has been planted with commercial forestry since the 1950s, it still displays a diverse representation of pavement types, from the typical clint-gryke system to large blocky pavements and scattered boulders.

Dry broadleaved semi-natural woodland occurs in several places around the lake, most notably at St John's Wood and on Hare Island. St John's Wood is recognised as the largest and most natural woodland in the Midlands.

Small examples of raised bog occur, which are of interest in that they show a natural transition through wet woodland and/or swamp to lakeshore habitats. Active Raised Bog

*(ARB) habitat 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. Results from surveys of the raised bog habitat in 2003 indicate the presence of 5.9 ha of Active Raised Bog (ARB). Also present are examples of Degraded Raised Bog (DRB) capable of regeneration.*

Associated with the extensive raised bog system at Clooncraff/Clonlarge are areas of bog woodland. At least two small areas of woodland occur on the raised bog domes. However, it would appear that this habitat is in the early stages of development.

Smaller lakes occur around the lake shore, especially on the east side, and these often have the full range of wetland habitats contained within and around them. A number of small rivers also pass through the site.

There is a population of Otter around the lake. This species is listed in the Red Data Book as being threatened in Europe and is protected under Annex II of the E.U. Habitats Directive."

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]
- Bog woodland [91D0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

RN-N63-005.00. Moneen Culvert. Lough Ree SAC ca. 2.1km d/s of bridge.

5.2.7. Lough Swilly SAC (002287)

Site Overview

"*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.*

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.

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.

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*), but many other species are present including exotics such as Beech (*Fagus sylvatica*). Alder (*Alnus glutinosa*) and willows (*Salix *spp.) occur in the wetter parts. An area of wet heath, dominated by Heather (*Calluna vulgaris*), occurs on the hill above Carradoran Wood. These woodlands display a generally intact structure and support a range of breeding birds, including Woodcock.*

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

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

DL-N13-009.00. Castlecooley Bridge. Lough Swilly SAC ca. 3.7km d/s of bridge

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

Site Overview

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

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

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

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

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

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

The site also contains a number of fine examples of upland corrie lakes which are situated in the northern and eastern sides of the Mweelrea, Sheeffry and Maumtrasna mountain ranges. These fall into the category of 'oligotrophic to mesotrophic standing waters'. Some

*of these lakes are relatively large, while others are no more than a couple of hectares, and all of these lakes lie above 200 m. As an example, at one of these lakes, Lough Glenawough, a sparse base-poor vegetation is supported with species such as Bulbous Rush, Water Lobelia, Quillwort (*Isoetes lacustris*) and Shoreweed being found.*

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

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

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

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

The whorl snails, Vertigo angustior *and* V. geyeri*, both of which are listed on Annex II of the E.U. Habitats Directive, occur at Dooa htr .* [redacted] *The Erriff River system supports an important population of Salmon (*Salmo salar*), also listed on Annex II. Arctic Char has been recorded from Doo Lough and there is a pre-1930 record of this fish species from Lough Glenawough. Arctic Char is listed in the Irish Red Data Book as threatened in Ireland. Otters are known to breed in the lakes at this site, and this species is also listed on Annex II of the E.U. Habitats Directive.*"

Qualifying Interests

- Coastal lagoons [1150]
- Annual vegetation of drift lines [1210]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]
- Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170]
- Machairs (* in Ireland) [21A0]
- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]
- Natural dystrophic lakes and ponds [3160]

- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- European dry heaths [4030]
- Alpine and Boreal heaths [4060]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- Depressions on peat substrates of the Rhynchosporion [7150]
- Petrifying springs with tufa formation (Cratoneurion) [7220]
- Alkaline fens [7230]
- Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]
- Calcareous rocky slopes with chasmophytic vegetation [8210]
- Siliceous rocky slopes with chasmophytic vegetation [8220]
- *Vertigo geyeri* (Geyer's Whorl Snail) [1013]
- *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
- [redacted]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Petalophyllum ralfsii* (Petalwort) [1395]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

MO-N59-067.00. Glelnanane Bridge. Within SAC.

5.2.9. River Boyne and River Blackwater SAC (002299)

Site Overview

> "*The main areas of alkaline fen in this site are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. The hummocky nature of the local terrain produces frequent springs and seepages which are rich in lime. A series of base-rich marshes have developed in the poorly-drained hollows, generally linked with these three lakes.*
>
> *Wet woodland fringes many stretches of the Boyne. The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build-up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, willow (Salix spp.) woodland.*
>
> *The dominant habitat along the edges of the river is freshwater marsh. The secondary habitat associated with the marsh is wet grassland.*
>
> *Along much of the Boyne and along tributary stretches are found areas of mature deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. Many of these are planted in origin. However, the steeper areas of King*

Williams Glen and Townley Hall wood have been left unmanaged and now have a more natural character.

Other habitats present along the Boyne and Blackwater include lowland dry grassland, improved grassland, reedswamp, weedy waste ground, scrub, hedge, drainage ditch and canal.

*The Boyne and its tributaries form one of Ireland's premier game fisheries and the area offers a wide range of angling, from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic Salmon (*Salmo salar*) use the tributaries and headwaters as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the Habitats Directive. Atlantic Salmon run the Boyne almost every month of the year.*

The Blackwater is a medium sized limestone river which is still recovering from the effects of the arterial drainage scheme of the 1970s. Salmon stocks have not recovered to the numbers that existed pre-drainage.

*This site is also important for the populations of two other species listed on Annex II of the E.U. Habitats Directive which it supports, namely River Lamprey (*Lampetra fluviatilis*), which is present in the lower reaches of the Boyne River, and Otter (*Lutra lutra*), which can be found throughout the site. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. Common Frog, another Red Data Book species, also occurs within the site. All of these animals, with the addition of the Stoat and Red Squirrel, which also occur within the site, are protected under the Wildlife Act, 1976.*"

Qualifying Interests

- Alkaline fens [7230]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Linkage to Bridges

CN-N03-018.00. Ballachanea Bridge. River Boyne and River Blackwater SAC ca. 3.2km d/s of bridge. Connectivity is through Lough Ramor.

5.2.10. 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

DL-N14-010.00. Tullyrap Bridge. River Finn SAC ca. 8.3km d/s of bridge.

DL-N15-005.00. Cappry Bridge. River Finn SAC ca. 2.8km d/s of bridge.

5.2.11. 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 km^2. 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 50km^2, is classified as a mesotrophic system, while Lough Cullin (surface of 11 km^2) 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

MO-N05-038.00. Cranmore Culvert. River Moy SAC ca. 1.5km d/s of bridge.

MO-N17-002.00. Bracklagh Bridge. Within SAC.

MO-N59-005.00. Cloonawillin Bridge. River Moy SAC ca. 3.3km d/s of bridge.

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

Site Overview

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

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

Qualifying Interests

- Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]
- Alpine and Boreal heaths [4060]
- Blanket bogs (* if active bog) [7130]
- Depressions on peat substrates of the Rhynchosporion [7150]
- Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]
- Calcareous rocky slopes with chasmophytic vegetation [8210]
- Siliceous rocky slopes with chasmophytic vegetation [8220]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- [redacted]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Najas flexilis* (Slender Naiad) [1833]

Linkage to Bridges

GC-N59-020.00. Killymongaun Bridge. Within SAC.

5.2.13. Upper Lough Erne SAC (UK0016614)

Site Overview

"The open waters of the main lough and smaller satellite loughs contain a variety of aquatic communities typical of natural eutrophic lakes. In addition, the shallow sheltered shores support extensive swamp, fen and marsh communities. Behind the open grazed foreshore is species-rich grassland, which occasionally extends back into the old adjacent field systems. Alluvial woodland is found where the shoreline is ungrazed or only very lightly grazed, while occasionally the dryer soils of the drumlins behind support a natural Oak woodland; this is particularly well developed within the Crom Estate to the south and the small island to the north of the Lough. Such diversity of good habitats and communities is reflected in the very large number of rare and notable plants and insects flourishing here: the woods being particularly important for breeding passerines and home for some notable mammals."

Qualifying Interests

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150]
- 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]
- Bog woodland [91D0]
- Alkaline fens [7230]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
- *Lutra lutra* (Otter) [1355]
- *Salmo salar* (Salmon) [1106]

Linkage to Bridges

LM-N16-001.00. Glenfarne Bridge. >20km u/s of Upper Lough Erne SAC.

5.2.14. 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

GC-N59-014.00. Barnaderg Bay Bridge No.2. West Connacht Coast SAC 4.5km d/s of bridge separated by inner estuary.

GC-N59-015.00 Roscrea Bridge. West Connacht Coast SAC. 3.5km d/s of bridge separated by inner estuary.

5.2.15. 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

DL-N56-032.00. Gweebarra Burn Bridge. Within SAC.

DL-N56-033.00. Gweebarra Bridge. Within SAC.

5.3. Description of the Special Protection Areas

5.3.1. 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

LM-N16-017.00. Sracreeghan Bridge. Drumcliff Bay SPA ca. 12.1km d/s of bridge.

5.3.2. Illaunnanoon SPA (004221)

Site Overview

"*Illaunnanoon, also known as Lamb's Island, is a small low-lying island located c. 2 km west of Letterfrack, Co. Galway, situated at the mouth of Barnaderg Bay on the east side of Ballynakill Harbour. It is composed of metamorphic rocks and supports a sward of coastal grassland. The site comprises the island and the surrounding marine waters and intertidal rocks.*

Illaunnanoon supports a nationally important population of Sandwich Tern (80 pairs in 1984, 35 pairs in 1995 and 90 pairs in 2001). Other species recorded on the island in 2001 include Common Tern (20 pairs), Black-headed Gull (70 pairs) and Common Gull (12 pairs).

Illaunnanoon SPA is of conservation importance due to the presence of a breeding population of Sandwich Tern that exceeds the qualifying threshold for national importance. The presence of two species, Sandwich Tern and Common Tern, which are listed on Annex I of the E.U. Birds Directive is of note."

Qualifying Interests

- Sandwich Tern (*Sterna sandvicensis*) [A191]

Linkage to Bridges

GC-N59-014.00. Barnaderg Bay Bridge No.2. Illaunnanoon SPA ca. 850m d/s of bridge.

GC-N59-015.00. Roscrea Bridge. Illaunnanoon SPA ca. 1.3km u/s of bridge.

5.3.3. Lough Conn and Lough Cullin SPA (004228)

Site Overview

"*The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Greenland White-fronted Goose, Tufted Duck, Common Scoter and Common Gull. 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.*

Lough Conn and Lough Cullin is one of only four breeding sites in the country for Common Scoter, which in Ireland is at the south-west end of its European range.

The site also supports a good diversity of wintering waterfowl species, including Greenland White-fronted Goose and a nationally important population of Tufted Duck. The occurrence of Greenland White-fronted Goose, Whooper Swan and Golden Plover is of note as these species are listed on Annex I of the E.U. Birds Directive. Part of the Lough Conn and Lough Cullin SPA is a Wildfowl Sanctuary."

Qualifying Interests

- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Common Gull (*Larus canus*) [A182]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
- Wetland and Waterbirds [A999]

Linkage to Bridges

MO-N59-005.00. Cloonawillin Bridge. Lough Conn and Lough Cullin SPA ca. 12.4km d/s of bridge.

5.3.4. Lough Corrib SPA (004042)

Site Overview

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

The site is of international importance for wintering Aythya ferina *but also qualifies for international importance because it regularly supports well in excess of 20,000 waterfowl. It is one of the top five sites in the country for wintering waterfowl. Of particular importance is that it is the most important site in the country for* Aythya ferina*,* Aythya fuligula *and* Fulica atra *supporting 21%, 46% and 13% of the respective national totals. It also has nationally important*

populations of wintering Cygnus olor*,* Anas strepera*,* Anas clypeata*,* Pluvialis apricaria *and* Vanellus vanellus*. The lake is a traditional site for* Anser albifrons flavirostris*. Small numbers of* Cygnus cygnus *winter. Lough Corrib is a traditional breeding site for gulls and terns. There are nationally important colonies of* Sterna hirundo *and* Sterna paradisaea*, as well as* Larus ridibundus *and* Larus canus*. Considerable higher numbers of gulls bred in the 1970s and 1980s. Whilst only colonised in the 1970s/80s by nesting* Melanitta nigra*, Lough Corrib now supports approximately half of the national population of this rare duck, which is a Red Data Book species. The population has been stable since the mid-1990s. Lough Corrib supports a range of species listed on Annex II of the E.U. Habitats Directive, including* Lutra lutra*,* Salmo salar *and* Najas flexilis."

Qualifying Interests

- Gadwall (*Anas strepera*) [A051]
- Shoveler (*Anas clypeata*) [A056]
- Pochard (*Aythya ferina*) [A059]
- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Hen Harrier (*Circus cyaneus*) [A082]
- Coot (*Fulica atra*) [A125]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Common Tern (*Sterna hirundo*) [A193]
- Arctic Tern (*Sterna paradisaea*) [A194]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
- Wetland and Waterbirds [A999]

Linkage to Bridges

GC-N59-038.00. Letterfore Bridge. Lough Corrib SPA ca. 12.6km d/s of bridge.

5.3.5. Lough Neagh SPA (UK9020091)

Site Overview

"*Situated in the centre of Northern Ireland, Lough Neagh is the largest lake in the British Isles. The Special Protection Area includes three eutrophic water bodies, Lough Neagh and two related loughs, Lough Beg and Portmore Lough, together with surrounding swamp, fen, wet grassland and swampy woodland.*

The boundary of the proposed Special Protection Area follows the boundaries of the Lough Neagh ASSI, Lough Beg ASSI and Portmore Lough ASSI. The site also forms part of another site which is listed as a wetland of international importance under the Ramsar Convention.

Under Article 4.1 of EC Directive 79/409, it further qualifies by regularly supporting whooper swans and also under Article 4.1 by regularly supporting nationally important numbers of breeding common tern.

Finally, under Article 4.2 of the Directive, it qualifies as a wetland of international importance by regularly supporting over 20,000 of a variety of species of waterfowl in winter. Pochard, tufted duck, goldeneye, little grebe, great crested grebe, cormorant, mute swan, greylag goose, shelduck, wigeon, gadwall, teal, mallard, shoveler, scaup, and coot.

Lough Neagh is also notable for supporting an important assemblage of breeding birds, some species which occur in nationally important numbers - great-crested grebe, gadwall, pochard, tufted duck, snipe, redshank common gull, lesser black-backed gull and black-headed gull. Other important breeding wetland species include shelduck, teal, shoveler, lapwing and curlew."

Qualifying Interests

- Pochard (*Aythya ferina*) [A059]
- Tufted Duck (*Aythya fuligula*) [A061]
- Goldeneye (*Bucephala clangula*) [A067]
- Bewick Swan (*Cygnus columbianus bewickii*) [A037]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Common Tern (*Sterna hirundo*) [A193]
- Waterbird assemblage

Linkage to Bridges

MN-N54-006.00. Tullybryan Bridge No.2. Lough Neagh SPA greater than 60km d/s.

5.3.6. 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 10m in depth, but there are six deep troughs running from north to south, reaching a maximum depth of about 36m 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

RN-N63-005.00. Moneen Culvert. Lough Ree SPA ca. 2.2km d/s from bridge.

5.3.7. Lough Swilly SPA (004064)

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

DL-N13-009.00. Castlecooley Bridge. Lough Swilly SPA ca. 700m d/s of bridge.

5.3.8. River Boyne and River Blackwater SPA (004232)

Site Overview

"*The site is a Special Protection Area (SPA) under the E.U. Birds Directive of special conservation interest for the following species: Kingfisher.*

A survey in 2010 recorded 19 pairs of Kingfisher (based on 15 probable and 4 possible territories) in the River Boyne and River Blackwater SPA. A survey conducted in 2008 recorded 20-22 Kingfisher territories within the SPA. Other species which occur within the site include Mute Swan (90), Teal (166), Mallard (219), Cormorant (36), Grey Heron (44), Moorhen (84), Snipe (32) and Sand Martin (553) – all figures are peak counts recorded during the 2010 survey.

The River Boyne and River Blackwater Special Protection Area is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive."

Qualifying Interests

- Kingfisher (*Alcedo atthis*) [A229]

Linkage to Bridges

CN-N03-018.00. Ballachanea Bridge. River Boyne and River Blackwater SPA ca. 3.2km d/s of bridge. Connectivity is through Lough Ramor.

5.3.9. Upper Lough Erne SPA (UK9020071)

Site Overview

"*Upper Lough Erne Lough is situated in County Fermanagh in the west of Northern Ireland and is a very large and complex freshwater system. A series of flooded drumlins in the course of the River Erne give rise to a complex of islands, bays and many lakes bordered by damp pastures, fens, reedswamp, alder/willow carr and oak woodland.*

The Special Protection Area site boundary is entirely coincident with the composite boundary of the following ASSIs: Corraslough Point, Dernish Island, Finn Floods, Inishroosk, Killymackan Lough, Upper Lough Erne - Belleisle, Upper Lough Erne - Crom, Upper Lough Erne - Galloon and Upper Lough Erne - Trannish.

The site qualifies under Article 4.1 of EC Directive 79/409 on the Conservation of Wild Birds by regularly supporting internationally important numbers of wintering whooper swans. Upper Lough Erne provides a core protected area for whooper swans in the region of Northern Ireland, as there is interchange between the swans using protected areas and those ranging more widely on surrounding farmland.

Upper Lough Erne contributes to the maintenance of the geographic range of the Annex 1 Greenland white-fronted goose population of Northern Ireland through supporting regionally important numbers. It also supports an important assemblage of breeding birds including common tern and in the past supported breeding corncrake. Both are Annex 1 species.

Other migratory birds breeding on the site include great crested grebe and important concentrations of three species of waders which are declining elsewhere, curlew, snipe and redshank.

Nationally important wintering wildfowl species, many of which are migratory, include great crested grebe, cormorant, mute swan, tufted duck, wigeon, teal, goldeneye, coot, mallard, snipe, curlew, and redshank."

Qualifying Interests

- Whooper Swan (*Cygnus cygnus*) [A038]

Linkage to Bridges

LM-N16-001.00. Glenfarne Bridge. >20km u/s of Upper Lough Erne 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
Ben Bulben, Gleniff And Glenade Complex SAC (000623)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000623.pdf	NPWS (2021). Conservation objectives for Ben Bulben, Gleniff and Glenade Complex SAC [000623]. Generic Version 8.0. Department of Housing, Local Government and Heritage
Connemara Bog Complex SAC (002034)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002034.pdf	NPWS (2015). Conservation Objectives: Connemara Bog Complex SAC 002034. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Killala Bay/Moy Estuary SAC (000458)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000458.pdf	NPWS (2012). Conservation Objectives: Killala Bay/Moy Estuary SAC 000458. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

SAC	Link to report	Citation
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.
Lough Gill SAC (001976)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001976.pdf	NPWS (2021). Conservation objectives for Lough Gill SAC [001976]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
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.
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, 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.
River Boyne and River Blackwater SAC (002299)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002299.pdf	NPWS (2021). Conservation objectives for River Boyne and River Blackwater SAC [002299]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
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.
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.
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.
Upper Lough Erne SAC (UK0016614)	https://www.daera-ni.gov.uk/sites/default/files/publications/doe/land-information-upper-lough-erne-conservation-objectives-2015.pdf	DAERA (2015) Conservation Objectives: Upper Lough Erne SAC (UK0016614). Version 2
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.
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.

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
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
Illaunnanoon SPA (004221)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004221.pdf	NPWS (2021). Conservation objectives for Illaunnanoon SPA [004221]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Lough Conn and Lough Cullin SPA (004228)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004228.pdf	NPWS (2021). Conservation objectives for Lough Conn and Lough Cullin SPA [004228]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Lough Corrib SPA (004042)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf	NPWS (2021). Conservation objectives for Lough Corrib SPA [004042]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Lough Neagh SPA (UK9020091)	https://www.daera-ni.gov.uk/sites/default/files/publications/doe/lough-neagh-lough-beg-spa-conservation-objectives-2015.pdf	DAERA (2015). Conservation Objectives: Lough Neagh SPA (UK9020091). Version 4
Lough Ree SPA (004064)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004064.pdf	NPWS (2021). Conservation objectives for Lough Ree SPA [004064]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Lough Swilly SPA (004075)	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004075.pdf	NPWS (2011) Conservation Objectives: Lough Swilly SAC 002287 and Lough Swilly SPA 004075. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht
River Boyne and River Blackwater SPA	https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004232.pdf	NPWS (2021). Conservation objectives for River Boyne and River Blackwater SPA [004232]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Upper Lough Erne SPA (UK9020071)	https://www.daera-ni.gov.uk/sites/default/files/publications/doe/upper-lough-erne-spa-conservation-objectives-2015.pdf	DAERA (2015). Conservation Objectives: Upper Lough Erne SPA (UK9020071). Version 3

5.5. Other Ecological Data

5.5.1. Otter

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

5.5.2. Vegetation

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

From a review of bridge photographs very few structures supported significant growths of vegetation on the structure itself. It should be noted that these structures are subject to ongoing maintenance and so are not covered by large areas of vegetation. In cases where vegetation was present, the main species noted were moss, Ivy (*Hedera helix hiberncia*), bramble (*Rubus fruticosus* agg.), polypody (*Polypodium* sp.), rustyback (*Ceterach officinarum*), ivy-leaved toadflax (*Cymbalaria muralis*), dandelion (*Taraxacum* agg.), grasses as well as trees such as ash (*Fraxinus* excelsior) and Sycamore (*Acer pseudoplatanus*); (see e.g. Plate 5.16, Scarden River Bridge; Plate 5.22 Bracklagh Bridge).

Only LM-N16-017 supported large areas of moss and liverworts.

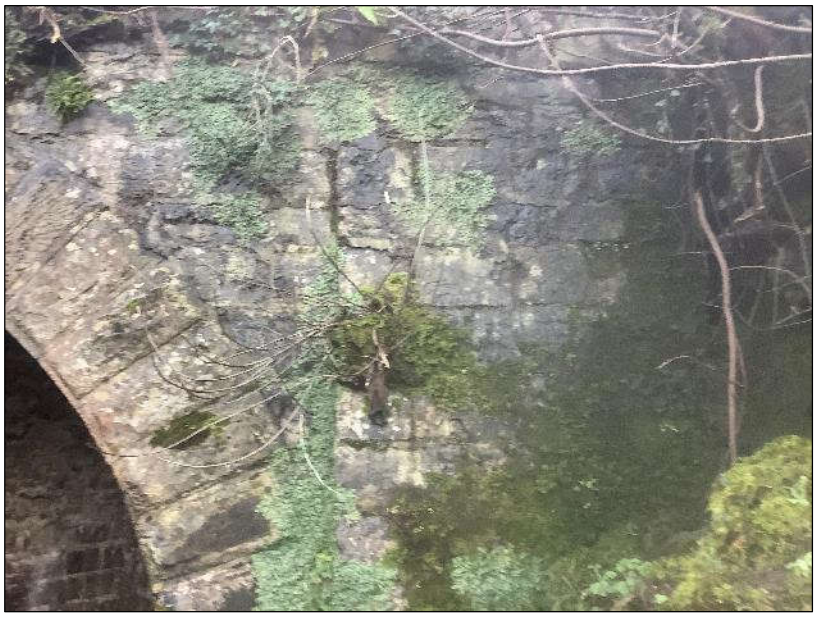


Plate 5-1 Heavy growth of moss and liverworts on LM-N16-017.

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

- Ben Bulben, Glenniff And Glenade Complex SAC (000623); and,
- Mweelrea/ Sheeffry/ Erriff Complex SAC (001932).

These SACs are designated for the following habitats and species: -

- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia landani*) [8110];

- Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) [8120];
- Calcareous rocky slopes with *chasmophytic* vegetation [8210]
- Siliceous rocky slopes with *chasmophytic* vegetation

Although it is unlikely that such vegetation types would be present on masonry bridges, as a precautionary measure, all masonry bridges located within these 2 SACs, where vegetation removal from the structure is proposed, were considered further.

No masonry bridges are located within Ben Bulben, Glenniff And Glenade Complex SAC (000623). One masonry bridge (MO-N59-067.00) is located within Mweelrea/ Sheeffry/ Erriff Complex SAC (001932), however vegetation removal from the structure is not proposed at the bridge.

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

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
CN-N03-018.00 Ballachanea Bridge	No. The River Boyne and River Blackwater SAC (002299) ca. 3.2km downstream of bridge. Connectivity is through Lough Ramor.	Yes	Bat Survey, 2020 & 2021	 	No reference to Otter in either 2020 or 2021 bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.
DL-N13-009.00 Castlecooley Bridge	No. Lough Swilly SAC ca. 3.7km d/s of bridge	Yes	No	 	Due to nature of vegetation/ cover in the vicinity of the bridge, potential for otter cannot be discounted.
DL-N14-010.00 Tullyrap Bridge	No. The structure is located 8.3km upstream of River Finn SAC (002031).	Yes	No	 	Otter prints were recorded in sand under the arch during 2020 bat survey. Immediate environs of bridge sub-optimal location for an otter holt.
DL-N15-005.00 Cappry Bridge	No. River Finn SAC (002031) is located ca. 2.8km downstream of the bridge.	Yes	No	 	Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
					
DL-N56-032.00 Gweebarra Burn Bridge	Within West Of Ardara/Maas Road SAC (000197)	Yes	Bat Survey 2021	 	No reference to otter in 2021 bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
DL-N56-033.00 Gweebarra Bridge	Within West Of Ardara/Maas Road SAC (000197)	Yes	No	 	Immediate environs of bridge sub-optimal location for an otter holt.
GC-N59-014.00 Barnaderg Bay Bridge No.2	No. Illaunnanoon SPA is ca. 1.5km from the bridge. The outer reaches of the Harbour are designated as West Connacht Coast SAC (002998) - ca. 5km from the bridge.	No	n.a.	n.a.	n.a.
GC-N59-015.00 Roscrea Bridge	No. Illaunnanoon SPA is ca. 1.3km from the. The outer reaches of the Harbour are designated as West Connacht Coast SAC (002998) - ca. 5km from the bridge.	No	n.a.	n.a.	n.a.
GC-N59-020.00 Killymongaun Bridge	Within The Twelve Bens / Garraun Complex SAC (0020131).	Yes	No	 	Immediate environs of bridge sub-optimal location for an otter holt.
GC-N59-038.00 Letterfore Bridge	Within Connemara Bog Complex SAC (002034).	Yes	Bat Survey 2021		No reference to otter in 2021 bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
GC-N83-002.00 Dunmore Bridge	Within Lough Corrib SAC (000297).	Yes	Bat Survey 2021	   	No reference to otter in 2021 bat surveys. Immediate environs of bridge sub-optimal location for an otter holt. Urban environment.
GC-N84-008.00 Shrule Bridge	Within Lough Corrib SAC (000297).	Yes	Bat Survey 2021		No reference to otter in 2021 bat surveys. Immediate environs of bridge sub-optimal location for an otter holt. Urban environment.
LM-N16-001.00 Glenfarne Bridge	No. 20km upstream of Lough Erne SAC (UK0016614) /SPA.	No	n.a.	n.a.	n.a.
LM-N16-006.00 Scarden River Bridge	Within Lough Gill SAC (001976).	Yes	Bat Survey 2020 & 2021		Otter tracks were recorded in sand upstream of the bridge in 2021. Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
LM-N16-008.00 Owenbeg Bridge	Lough Gill SAC is located 60m downstream of the bridge.	Yes	Bat Survey 2020	 	No reference to otter bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.
LM-N16-009.00 Windy Bridge	Within Lough Gill SAC (001976).	Yes	n.a.	  	Immediate environs of bridge sub-optimal location for an otter holt.
LM-N16-010.00 Owenmore River Bridge	Within Lough Gill SAC (001976).	Yes	n.a.	 	Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
LM-N16-016.00 Lughnafaughery Bridge	No	Yes	Bat Survey 2020	 	No reference to otter bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.
LM-N16-017.00 Sracreeghan Bridge	No. The bridge is located 1.3km upstream of the Ben Bulben, Gleniff and Glenade Complex SAC (000623) and 12.1km upstream of Drumcliff Bay SPA.	Yes	Bat Survey 2021	   	Otter spraints were recorded on concrete plinth under arch.
MO-N05-038.00 Cranmore Culvert	No. 1.5km upstream of the River Moy SAC (002298).	Yes	n.a.	 	Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
					
MO-N17-002.00 Bracklagh Bridge	Within River Moy SAC (002298).	Yes	Bat Survey 2020		No reference to otter in bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.
MO-N59-005.00 Cloonawillin Bridge	No. River Moy SAC is located ca. 3.3km downstream and Lough Conn and Lough Cullin SPA is located ca. 12.4km downstream of the bridge.	Yes	Bat Survey 2021		Immediate environs of bridge sub-optimal location for an otter holt due to lack of cover.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
MO-N59-067.00 Glelnanane Bridge	Within Mweelrea/Sheeffry/Erriff Complex SAC (001932).	Yes	Bat Survey 2020	  	No reference to otter bat surveys. While the river is clearly of high quality for otter, the immediate environs of bridge is a sub-optimal location for an otter holt.
MN-N54-006.00 Tullybryan Bridge No.2	No. Upstream of Lough Neagh SPA.	No	n.a.	n.a.	n.a.
RN-N63-005.00 Moneen Culvert	No. The structure is located 2.1km upstream of the Lough Ree SAC (000440) and 2.2km upstream of the Lough Ree SPA.	Yes	Bat Survey 2021		No reference to otter bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.

Structure ID	Within SAC	Is Otter a QI?	Field Surveys undertaken by an Ecologist in 2020 or 2021	Photo (showing both upstream & downstream)	Information from bat survey
SO-N17-007.00 Bridge At Yeats Inn, Curry Town	Within River Moy SAC (002298).	Yes	Bat Survey 2021		No reference to otter bat surveys. Immediate environs of bridge sub-optimal location for an otter holt.
SO-N17-008.00 Curry Bridge	Within River Moy SAC (002298).	Yes	n.a.	  	Immediate environs of bridge sub-optimal location for an otter holt.
SO-N59-17.00 Rosnamuckyduff Bridge	No. The bridge spans the Tullylin Stream 9.2km upstream of Killala Bay/Moy Estuary SAC (000458).	No	n.a.	n.a.	n.a.

5.6. Likelihood of Potential Impacts on European sites

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

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

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

- Direct impacts refer to impacts arising as a direct result of the works, such as physical disturbance of habitat, loss of habitat and direct mortalities of species.

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

5.6.1. 'Do Nothing' Impact

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

5.6.2. Identification of potential impacts

5.6.2.1. Potential Impacts of proposed works

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

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

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

Loss or modification of habitat

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

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

Disturbance to species for which a European site is designated

Species of concern are those species listed on the Annexes of the EU Habitats Directive and Birds Directive for which sites are designated. Disturbance to a species can be direct through the h sical disturbance of that s ecies such as accessin the watercourse and erectin scaffoldin [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 6 no. single span bridges that have been called up for scour repairs or base protection works: DL-N14-010.00 Tullyrap Bridge; LM-N16-001.00 Glenfarne Bridge; LM-N16-009.00 Windy Bridge; MO-N17-002.00 Bracklagh Bridge; MO-N59-067.00 Glelnanane Bridge and SO-N17-008.00 Curry Bridge.

The proposed works at these single span structures will involve localised dewatering. The works at each bridge will not require the isolation of the entire channel to conduct works, as they are called up to just one side of the channel, and therefore will not result in a barrier to the movement of species. Thus, impacts of habitat and species fragmentation are not anticipated.

Reduction in species diversity

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

As discussed above, the proposed works could potentially cause the modification of river substrates due to the disturbance and re-settling of accumulated silts upstream of and beneath obstructions that are im edin flow in the channel, e.g. fallen trees. This impact could affect species such as [redacted] crayfish, salmon and lamprey and indirectly affect otter due to the biomass of their food source being affected.

Changes in water quality

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

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

5.6.3. Categorisation of EIRSPAN work types

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

Table 5-5 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 5-5) 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 5-5 Potential negative impacts of work items.

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

High-pressure hosing will not be occurring during Year 4 maintenance works. Of the works listed above, 13 were found to have a potential impact to negatively impact a SAC and / or SPA and are listed in Table 5-6.

Table 5-6 Work items identified as having negative impacts to be considered further.

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

5.6.4. Potential impacts during the works

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

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

Table 5-7 below details the pathway, receptor and impact for each of the EIRSPAN work types called up in the Work Orders for the 28 bridges.

Table 5-8 details the potential impacts posed at a bridge and the qualifying interests (QIs) potentially affected. The geographic location of the bridge, proposed works, nature of connectivity to a European site, and the site's structure, function and conservation objectives were considered when determining the potential impacts and qualifying interests within the zone of influence (ZoI).

[redacted]

5.6.6. Otter

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

5.6.7. Potential impacts post completion of the works

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

Table 5-7 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
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
61 Masonry repairs	Land & Air	- Direct physical disturbance of aquatic species (Disturbance to key species)	Annex II species

Work Item	Pathway	Potential Impacts	Receptor
	Surface water	- Indirect impacts to surface water quality	Surface water dependent Annex II species and Annex I habitats

Table 5-8 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)
Cavan	CN-N03-018.00	No	No	Yes	Yes	Lamprey; Salmon; Otter; Kingfisher
Donegal	DL-N13-009.00	Yes	No	Yes	Yes	Estuaries; Otter; wetland SCIs of SPA
Donegal	DL-N14-010.00	No	Yes	Yes	Yes	Salmon; Otter
Donegal	DL-N15-005.00	No	Yes	Yes	Yes	Salmon; Otter
Donegal	DL-N56-032.00	Yes	Yes	Yes	Yes	Estuaries; Mudflats and sandflats; Large shallow inlets and bays; Salmon; Otter; Harbour seal
Donegal	DL-N56-033.00	Yes	Yes	Yes	Yes	Estuaries; Mudflats and sandflats; Large shallow inlets and bays; Salmon; Otter; Harbour seal
Galway County	GC-N59-014.00	No	No	Yes	Yes	Sandwich Tern; Bottlenose Dolphin
Galway County	GC-N59-015.00	No	No	Yes	Yes	Sandwich Tern; Bottlenose Dolphin
Galway County	GC-N59-020.00	No	Yes	Yes	Yes	Salmon; Otter
Galway County	GC-N59-038.00	Yes	Yes	Yes	Yes	Oligotrophic waters; Natural lakes; Floating river vegetation; Salmon; Otter; SCIs of SPA
Galway County	GC-N83-002.00	Yes	Yes	Yes	Yes	Floating river vegetation; White-clawed crayfish; Lamprey; Salmon; Otter; Lesser horseshoe bat
Galway County	GC-N84-008.00	Yes	Yes	Yes	Yes	Floating river vegetation; White-clawed crayfish; Lamprey; Salmon; Otter; Lesser horseshoe bat
Leitrim	LM-N16-001.00	No	No	Yes	Yes	Salmon; Otter
Leitrim	LM-N16-006.00	No	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter

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-N16-008.00	No	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Leitrim	LM-N16-009.00	No	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Leitrim	LM-N16-010.00	No	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Leitrim	LM-N16-016.00	Yes	No	Yes	Yes	Floating river vegetation; Otter; SCIs of SPA
Leitrim	LM-N16-017.00	Yes	No	Yes	Yes	Floating river vegetation; Otter; SCIs of the SPA
Mayo	MO-N05-038.00	No	No	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Mayo	MO-N17-002.00	No	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Mayo	MO-N59-005.00	No	No	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter; SCIs of the SPA
Mayo	MO-N59-067.00	Yes	Yes	Yes	Yes	Oligotrophic waters; Salmon; Otter
Monaghan	MN-N54-006.00	No	No	Yes	Yes	Wetland SCIs of the SPA
Roscommon	RN-N63-005.00	Yes	No	Yes	Yes	Natural eutrophic lakes; Otter; Wetland SCIs of the SPA
Sligo	SO-N17-007.00	Yes	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Sligo	SO-N17-008.00	Yes	Yes	Yes	Yes	White-clawed crayfish; Salmon; Lamprey; Otter
Sligo	SO-N59-017.00	Yes	No	Yes	Yes	Estuaries; Mudflats and sandflats; Lamprey; Harbour seal

5.7. Cumulative impacts

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

The Office of Public Works (OPW) has 12 arterial drainage and embankment schemes in the North West Region. The Corrib scheme is a very large and extensive scheme that is divided into 3 sub-schemes; Corrib Clare, Corrib Headford and Corrib Mask. 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[7], 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
CN-N03-018.00	Within	Boyne
DL-N14-010.00	U/S	Deele & Swillyburn
GC-N83-002.00	Within	Corrib Clare
GC-N84-008.00	Within	Corrib Headford
LM-N16-008.00	U/S	Bonet
LM-N16-009.00	Within	Bonet
LM-N16-010.00	Within	Bonet
MO-N05-038.00	U/S	Moy
MO-N17-002.00	U/S	Moy
MO-N59-005.00	Within	Moy
MN-N54-006.00	Within	Monaghan Blackwater
SO-N17-007.00	U/S	Moy
SO-N17-008.00	Within	Moy

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[8]. 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,

[7] https://www.gov.ie/en/collection/10685d-arterial-drainage-maintenance-sea-2018-2021/
[8] Notifiable Actions https://www.npws.ie/farmers-and-landowners/notifiable-actions

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

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

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

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 6 – Construction and Implementation
N4 Collooney to Castlebaldwin	North	Phase 6 - Construction and Implementation

Scheme	Region	Phase
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 (almost complete substantial completion cert to be issued next week)
N59 West of Letterfrack Widening	West	Complete
N60 Lagnamuck	West	Complete
N60 Oran	West	Complete
N67 Ballinderreen to Kinvara Phase 2	West	Phase 6 - Construction and Implementation (almost complete substantial completion cert to be issued next week)

5.8. Mitigation Measures

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

5.8.1. Cavan

5.8.1.1. Ballachanea Bridge [CN-N03-018.00]

Ballachanea Bridge is a 3-span masonry arch bridge with secondary concrete slab structure. Masonry and concrete parapets line the road. It has a length of 9.16m and carries the N3 over the Lislea River. The River Boyne and River Blackwater SAC/SPA ca. 3.2km downstream of bridge. Connectivity is through Lough Ramor. Plate 5.2a and 5.2b below display the masonry and concrete slab elements of the bridge.

Plate 5-2a Ballachanea Bridge – masonry element.

Plate 5-2b Ballachanea Bridge – concrete slab element.

The qualifying interests of the River Boyne and River Blackwater SAC/SPA are listed in Section 5.2. The qualifying interests that could be impacted are Lamprey; Salmon; Otter and Kingfisher. The potential impacts to the SAC/SPA are the deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-11 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
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. Vegetation mostly consists of bushes and high grass. (16m^2)	Screened Out
Wing/Spandrel/Retaining Walls	Vegetation removal to east spandrel walls (5m^2)	Screened Out
Bridge surface	Drainage channel to be cleared of vegetation on the west side (2 no.)	Screened Out
Wing/Spandrel/Retaining Walls	Repointing to east spandrel wall after vegetation removal (3m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Piers	Repair concrete to the east pier cutwater on the north pier (1m^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.

Masonry Repointing

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

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

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

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

carefully removed and the waste mortar will be removed off-site and disposed of appropriately at an approved site.

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

Concrete repairs

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

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

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

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

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 Boyne and River Blackwater SAC/SPA or any other European site.

5.8.2. Donegal

5.8.2.1. Castlecooley Bridge [DL-N13-009.00]

Castlecooley Bridge is double span concrete pipe structure with concrete parapets along the carriageway. The structure is 2.98m wide. The Carrowen River flows below the bridge. The structure is located 3.7km upstream of Lough Swilly SAC and 700m upstream of Lough Swilly SPA. Plate 5.3 shows the bridge.

Plate 5-3 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 Estuaries, Otter and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

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

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

Bridge Component	Work Element	Screening Recommendation
Deck/slab/arch barrel	Repairs to small corrugated pipe culvert North culvert at the east side is collapsed and it requires concrete repair (0.4m3) at the bedding and the replacement of the corrugated steel pipe (2m).	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.

Concrete repairs

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

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

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

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

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

Assessment of In-combination effects

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

5.8.2.2. Tullyrap Bridge [DL-N14-010.00]

Tullyrap Bridge is single span masonry arch bridge with masonry parapets along the carriageway. The structure is 4.3m wide. The Drumbeg River flows below the bridge. The structure is located 8.3km upstream of River Finn SAC. Plate 5.4 shows the bridge.

Plate 5-4 Tullyrap Bridge.

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

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Riverbed	The scour hole on the north end of the bed is to be infilled with rock armour to prevent further erosion and undermining of foundation stones ($5m^2$)	Screened in – will require instream access.
Parapets/Safety barrier	Vegetation removal from both parapets including ivy. ($2m^2$)	Screened Out
Embankments/Revetments	Vegetation to be removed from embankments. ($6m^2$)	Screened Out
Wing/Spandrel/Retaining Walls	Vegetation removal to NE wing wall and ivy removal to NW wing wall. ($15m^2$)	Screened Out
Bridge surface	Establish drainage facility to east side at the north. (1 no.)	Screened Out
Parapets/Safety barrier	Reallocate masonry displaced at east parapet. ($0.4m^3$)	Screened Out

Mitigation Measures

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

Scour Repairs

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

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

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

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

Assessment of In-combination effects

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

5.8.2.3. Cappry Bridge [DL-N15-005.00]

Cappry Bridge is a 2-span pie and concrete slab structure with concrete railings along the roadside. The bridge is 4.48m in width and carries the N15 over the Burn Daurnett Stream. River Finn SAC is located ca. 2.8km downstream of the bridge. Plate 5.5 shows the concrete slab structure.

Plate 5-5 Cappry Bridge.

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

Proposed Works

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

Table 5-14 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove tree and debris trailer at second pier upstream counting from south ($20m^2$)	Screened in – will require instream access.
Parapets/Safety barrier	Remove vegetation from east fact external parapet and west external face of masonry parapet ($4m^2$)	Screened out
Embankments/Revetments	Vegetation removal from embankments. Mostly trees and bushes ($10m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Remove tree from second spam from south east spandrel ($3m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Removal of vegetation to SE wingwall ($10m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Repointing to SE wingwall after devegetation ($3m^2$)	Screened out

Mitigation Measures

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

Clearance of watercourse (Debris Removal)

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

Where there is any doubt the Contractor must seek the advice of their appointed ecologist. Care is to be taken not to disturb the riverbed when removing debris from the watercourse in order to minimise any disturbance of silt.

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

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.

5.8.2.4. Gweebarra Burn Bridge [DL-N56-032.00]

Gweebarra Burn Bridge is a single-span masonry arch and concrete slab structure with masonry parapet walls. The bridge carries the N56 over the Mulnamin Beg River. It is located within the West Of Ardara/Maas Road SAC. Plates 5.6 and 5.7 show the arch and slab elements of the bridge.

Plate 5-6 Gweebarra Burn Bridge – masonry arch.

Plate 5-7 Gweebarra Burn Bridge – concrete slab.

The qualifying interests of the West Of Ardara/Maas Road SAC are listed in Section 5.2. The qualifying interests that could be impacted are Estuaries, Mudflats and sandflats, Large shallow inlets and bays, 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.

Proposed Works

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

Table 5-15 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation removal from embankments. ($10m^2$)	Screened out
Wing/Spandrel/Retaining Walls	There is a crack in the NW buttress which should be repaired with mortar. ($0.5m^2$)	Screened in – will require concrete works conducted instream

Mitigation Measures

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

Concrete repairs

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

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

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

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

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

Assessment of In-combination effects

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

5.8.2.5. Gweebarra Bridge [DL-N56-033.00]

The Gweebarra Bridge is a 11-span reinforced concrete arch bridge with in-situ concrete parapets on both sides of the carriageway. The maximum span is 18.29m and the minimum span is 8.80m. Spans 3/5/7/9 are suspended spans of 8.64m length. The structure is within the West of Ardara/Maas Road SAC. Plate 5.8 shows the west elevation.

Plate 5-8 Gweebarra Bridge.

The qualifying interests of the West Of Ardara/Maas Road SAC are listed in Section 5.2. The qualifying interests that could be impacted are Estuaries, Mudflats and sandflats, Large shallow inlets and bays, 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.

Proposed Works

The proposed works at this bridge are detailed in Table 5-16 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-16 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. Vegetation mostly consists of bushes. (24m^2)	Screened out
Wing/Spandrel/Retaining Walls	Walls Ivy removal from the SE wing wall. (30m^2)	Screened out
Bridge surface	Gullies to be cleaned. (12 no.)	Screened out
Parapets/Safety barrier	Repair spalling with exposed reinforcement at the north-middle side of east parapet and the crack at the north side of west parapet. (0.2m^2)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.
Piers	Extensive exposed reinforcement has been found in the piers due to insufficient cover. Concrete should be applied to increase the cover width. (10m^2)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.
Deck/slab/arch barrel	Spalling with exposed reinforcement has been noted at the east side of the two northmost spans. This spalling should be repaired. (4m^2)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.
Beams/girders/transverse beams	Exposed reinforcement to the east beam at the northmost span has been noted due to insufficient cover. Concrete should be applied to increase the width of the cover. (3m^2)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Concrete repairs

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

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

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

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

land during works. Irrespective of the approach to works adopted, as noted above a geotextile membrane shall be held in place below the area of the works to prevent any waste material entering the watercourse. Once the area has been repaired and brushed back to the desired finish, the geotextile will be carefully removed, and the waste material will be removed off-site and disposed of appropriately at an approved site.

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

Assessment of In-combination effects

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

5.8.3. Galway County

5.8.3.1. Barnaderg Bay Bridge No.2 [GC-N59-014.00]

Barnaderg Bay Bridge No.2 is a single span masonry arch bridge with masonry parapets lining the road. The maximum span is 6.23m. The bridge carries the N59 over the Rosleague River. Illaunnanoon SPA is ca. 1.5km from the bridge. The outer reaches of the Harbour are designated as West Connacht Coast SAC (002998) - ca. 5km from the bridge. Plate 5.9 shows Barnaderg Bay Bridge No.2.

Plate 5-9 Barnaderg Bay Bridge No.2.

The qualifying interests of the Illaunnanoon SPA and West Connacht Coast SAC are listed in Section 5.2. The qualifying interests that could be impacted are Sandwich Tern and Bottlenose Dolphin. The potential impacts to the SPA/SAC are the deterioration of surface water quality and reduction in species density.

Proposed Works

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

Table 5-17 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Vegetation to be removed from 1m strip on embankments adjacent to structure ($30m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Remove vegetation from SE wing wall including buttress($7m^2$). Remove localised tree root to east head wall over south span (0.5). Remove vegetation to NE wing wall ($3m^2$). Remove vegetation to SW wing wall ($4m^2$). ($14.5m^2$)	Screened out
Parapets/Safety barrier	Repoint parapet on east elevation over both spans. ($3m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Repointing to wing walls including buttress. ($14.5m^2$)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Carry out localised masonry repairs where the SE buttress is undermined. ($0.1m^3$)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.
Embankments/Revetments	Install rock armour 10m in length to NE embankment on approach to bridge ($15m^3$).	Screened in – will require instream access and will cause release of silts.
Wing/Spandrel/Retaining Walls	Extend concrete scour protection where SE buttress is undermined (total $1m^3$).	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Masonry Repointing

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

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

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

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

Establishing base protection

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

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

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

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

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.

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 on Illaunnanoon SPA and West Connacht Coast SAC or any other European site.

5.8.3.2. Roscrea Bridge [GC-N59-015.00]

Roscrea Bridge is a double span masonry structure with masonry parapet walls along the road. The span width is 10.35m. The bridge carries the N59 over the Traheen River. Illaunnanoon SPA is ca. 1.3km from the structure. The outer reaches of the Harbour are designated as West Connacht Coast SAC (002998) - ca. 5km from the bridge. Plate 5.10 shows Roscrea Bridge.

Plate 5-10 Roscrea Bridge.

The qualifying interests of the Illaunnanoon SPA and West Connacht Coast SAC are listed in Section 5.2. The qualifying interests that could be impacted are Sandwich Tern and Bottlenose Dolphin. The potential impacts to the SPA/SAC are the deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-18 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-18 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Parapets/Safety barrier	Remove vegetation from all sides of the parapet including the top. (3m^2)	Screened out
Embankments/Revetments	Removal of vegetation from embankments 1m strip clearance on all sides (30m^2)	Screened out
Wing/Spandrel/Retaining Walls	Carry out masonry repointing to the NW buttress to wing wall. (3.5m^2)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.
Piers	Repair undermining to concrete scour protection to west face of the central pier.	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Masonry Repointing

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

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

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

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

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.

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 on Illaunnanoon SPA and West Connacht Coast SAC or any other European site.

5.8.3.3. Killymongaun Bridge [GC-N59-020.00]

The Killymongaun Bridge is a single span precast concrete slab bridge. The span is 4.51m. The substructure consists of 2 reinforced concrete abutments. There are heavy steel parapets on both sides of the carriageway. The structure is within The Twelve Bens / Garraun Complex SAC. Plate 5-11 shows the south elevation.

Plate 5-11 Killymongaun Bridge.

The qualifying interests of the Twelve Bens / Garraun Complex SAC are listed in Section 5.2. The qualifying interests that could be impacted are Salmon and Otter. The potential impacts to the SAC are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-19 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-19 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure. DO NOT REMOVE JAPANESE KNOT WEED ($5m^2$)	Screened out – Biosecurity protocols will be followed
Embankments/Revetments	Reinstatement of gabions on upstream end and drown stream ends at west side of structure. reinstatement of fill behind gabions which has also collapsed. ($60m^2$)	Screened in – will require instream works.

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 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.

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

5.8.3.4. Letterfore Bridge [GC-N59-038.00]

The Letterfore Bridge is a 3.67m single span masonry arch bridge with reinforced concrete extension to north end. The rise of arch barrel at crown is 1.49m. The bridge is located in the Connemara Bog Complex SAC and located 12.6km upstream of the Lough Corrib SPA. Plate 5-12 shows the north elevation.

Plate 5-12 Letterfore Bridge.

The qualifying interests of the Connemara Bog Complex SAC and Lough Corrib SPA are listed in Section 5.2. The qualifying interests that could be impacted are oligotrophic waters; natural lakes; floating river vegetation; salmon; otter and wetland SCIs of SPA. The potential impacts to the SAC/SPA are the loss or modification of habitat, physical disturbance of species, deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-20 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

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

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure. (20m^2)	Screened out – Biosecurity protocols will be followed
Deck/slab/arch barrel	Masonry repointing to localised mortar loss at arch barrel. (2m^2)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.

Mitigation Measures

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

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.

Note: Stands of *Rhododendron ponticum* on the banks shall be avoided by workers to prevent further spread.

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

5.8.3.5. Dunmore Bridge [GC-N83-002.00]

Dunmore Bridge is a five-span masonry arch bridge with masonry parapet walls. The span width is 23.8m. The bridge carries the N83 over the Sinking River within Lough Corrib SAC. Plate 5.13 shows the bridge.

Plate 5-13 Dunmore Bridge.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-21 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-21 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation from 1m strip from embankments and on revetments (40m^2)	Screened out
Wing/Spandrel/Retaining Walls	Removal of vegetation from all wing walls and arch barrels. (5m^2)	Screened out
Wing/Spandrel/Retaining Walls	Repointing of wing walls and arch barrels, mainly the SW wing wall. (10m^2)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.

Mitigation Measures

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

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 on Lough Corrib SAC or any other European site.

5.8.3.6. Shrule Bridge [GC-N84-008.00]

Shrule Bridge is a single arch masonry structure with masonry parapet walls. The span width is 7.56m. The bridge carries the N84 over the Black Shrule River within Lough Corrib SAC. Plate 5.14 shows the bridge.

Plate 5-14 Shrule Bridge.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-22 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
Parapets/Safety barrier	Removal of vegetation to external face of west parapet to the south side. (1m^2)	Screened out
Embankments/Revetments	Areas of vegetation to be removed from the embankments at both sides of structure including the top of the training wall 5m^2 each 4 in total (40m^2)	Screened out
Wing/Spandrel/Retaining Walls	Removal of vegetation to SW spandrel wall 1 tree included small (5.1m^2)	Screened out
Parapets/Safety barrier	Masonry repointing to the external face of the east parapet north side (1m^2)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.
Parapets/Safety barrier	Masonry repointing to north west (1m^2)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Masonry repointing to buttress SW after vegetation removal (2m^2)	Screened in – use of wet masonry over water and therefore a surface water pathway is present.
Parapets/Safety barrier	Isolated Concrete repair to inside face of east parapet and the west spalled concrete (0.2m^2)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Masonry Repointing

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

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

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

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

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

Concrete repairs

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

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

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

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

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

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 Corrib SAC or any other European site.

5.8.4. Leitrim

5.8.4.1. Glenfarne Bridge [LM-N16-001.00]

Glenfarne Bridge is a single span masonry structure with masonry parapet walls. The span width is 3.1m. The bridge carries the N16 over the Laghty River over 20km upstream of Lough Erne SAC/SPA. Plate 5.15 shows the masonry face of the structure.

Plate 5-15 Glenfarne Bridge.

The qualifying interests of the Lough Erne SAC/SPA are listed in Section 5.2. The qualifying interests that could be impacted are salmon and otter. The potential impacts to the SAC are the deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-23 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	Clear accumulated vegetation from watercourse under bridge: total 1m^2 (1m^2)	Screened In – Instream works may release accumulated silts
Riverbed	Repair undermining to scour protection to west abutment at south end: total 0.1m^3.	Screened In – Instream works required
Embankments/Revetments	Removal of vegetation from 1m strip next to bridge on all 4 sides. (5m^2 x 4) (20m^2)	Screened out
Wing/Spandrel/Retaining Walls	Remove tree root on the south spandrel wall. (1m^2)	Screened out
Deck/slab/arch barrel	Repair circumferential crack to gunite to arch barrel near centre of arch. (3m^2)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

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.

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 on Lough Erne SAC/SPA or any other European site.

5.8.4.2. 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 5.16 shows Scarden River Bridge.

Plate 5-16 Scarden River Bridge.

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

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Cut back 10m^2 of grass and scrub from all 4 embankments (40m^2)	Screened out
Wing/Spandrel/Retaining Walls	Vegetation removal from wing walls and spandrel walls (20m^2)	Screened out
Wing/Spandrel/Retaining Walls	Repoint south spandrel and wingwalls (15m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Carry out masonry repairs to minor areas of south spandrel (0.1m^3)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

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 on Lough Gill SAC or any other European site.

5.8.4.3. Owenbeg Bridge [LM-N16-008.00]

Owenbeg Bridge is a single arch masonry structure with masonry parapet walls. The span width is 4.18m. The bridge carries the N16 over the Brackary River. Lough Gill SAC is located 60m downstream of the bridge. Plate 5.17 shows the masonry face and arch of the bridge.

Plate 5-17 Owenbeg Bridge.

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

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Embankments/Revetments	Removal of vegetation from embankments on upstream side and on Downstream side (30m^2)	Screened out
Bridge surface	Cleaning and removal of vegetation from drain gullies on bridge surface and through parapet (5 no.)	Screened out
Abutments	Carry out masonry repointing to base of west abutment: total 10m^2 (10m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

Masonry Repointing

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

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

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

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

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

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

Assessment of In-combination effects

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

5.8.4.4. Windy Bridge [LM-N16-009.00]

Windy Bridge is a single span masonry arch structure with parapet walls. The span width is 10.8m. The bridge carries the N16 over the Owenmore Manorhamilton River. It is located within Lough Gill SAC. Plate 5.18 shows the bridge.

Plate 5-18 Windy Bridge.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-26 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
Embankments/Revetments	Removal of vegetation from embankments 1m strip clearance on all sides (40m^2)	Screened out
Wing/Spandrel/Retaining Walls	Remove vegetation from spandrel/wingwalls (1m^2)	Screened out
Abutments	Remove vegetation from west abutment: total (0.5m^2)	Screened out
Wing/Spandrel/Retaining Walls	Carry out masonry repointing to spandrel walls (3m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Carry out masonry repointing to base of west abutment (4m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Wing/Spandrel/Retaining Walls	Repair to spall on south arch ring (0.01m^3)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

Masonry Repointing

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

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

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

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

The construction site must be designed to allow free passage of 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 Lough Gill SAC or any other European site.

5.8.4.5. Owenmore River Bridge [LM-N16-010.00]

The Owenmore River Bridge is a 3.70m single span masonry arch bridge. There are masonry parapets on both sides of the carriageway. The rise of arch barrel at crown is 0.6m. The structure is within the Lough Gill SAC. Plate 5-19 shows the north elevation.

Plate 5-19 Owenmore River Bridge.

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

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove vegetation and debris from watercourse under bridge (12m^2)	Screened in – Instream access required. May cause silt plumes
Embankments/Revetments	Vegetation up to 1m from the structure to be cut back or removed. (20m^2)	Screened out
Wing/Spandrel/Retaining Walls	Remove vegetation (mostly moss) from training walls (12m^2)	Screened out
Deck/slab/arch barrel	Carry out masonry repointing to arch soffit at crown approx. 3m from north end (2m^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, such as the installation of a floating silt curtain, to contain such silt shall be placed downstream of the works area prior to the commencement of works.

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

Masonry Repointing

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

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

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

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

The construction site must be designed to allow free passage of 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 Lough Gill SAC or any other European site.

5.8.4.6. Lughnafaughery Bridge [LM-N16-016.00]

The Lughnafaughery Bridge is a 3.09m single span masonry arch bridge. There are masonry parapets on both sides of the carriageway. The bridge carries the N16 over the Edenbaun River. Ben Bulben, Gleniff And Glenade Complex SAC is 2.1km downstream of the bridge, Ultimately discharging to sites in Sligo Harbour. Drumcliff Bay SPA is 12.8km downstream of the bridge. Plate 5-20 shows the south elevation.

Plate 5-20 Lughnafaughery River Bridge

The qualifying interests of the Ben Bulben, Gleniff and Glenade Complex SAC and Drumcliff Bay SPA are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; otter and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

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
Wing/Spandrel/Retaining Walls	Works to safety barrier and SW retaining wall: - Take down & rebuild localised section of SW masonry retaining wall (1.5m3) adjacent to bridge where bulging up to 250mm present (riverside). Reinstate VRS post and concrete surround & 4m long VRS rail.	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 Repair and 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 on Ben Bulben, Gleniff and Glenade Complex SAC, Drumcliff Bay SPA or any other European site.

5.8.4.7. 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 5.21 shows Sracreeghan Bridge.

Plate 5-21 Sracreeghan Bridge.

The qualifying interests of the Ben Bulben, Gleniff and Glenade Complex SAC and Drumcliff Bay SPA are listed in Section 5.2. The qualifying interests that could be impacted are floating river vegetation; otter and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

Otter spraints were recorded at the bridge by the contractor's ecologist in 2019.

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
Wing/Spandrel/Retaining Walls	Carry out masonry repointing to south spandrel and wingwalls (6m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Carry out masonry repointing to north end of both abutments (3m^2)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.

Mitigation Measures

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

Masonry Repointing

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

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 on Ben Bulben, Gleniff and Glenade Complex SAC, Drumcliff Bay SPA or any other European site.

5.8.5. Mayo

5.8.5.1. Cranmore Culvert [MO-N05-038.00]

Cranmore Culvert is a single span concrete culvert with steel safety barriers along the roadside. The span width is 2.9m. The culvert spans the Fauleens Stream 1.5km upstream of the River Moy SAC. Plate 5.22 shows the culvert and embankments.

Plate 5-22 Cranmore Culvert.

The qualifying interests of the River Moy SAC are listed in Section 5.2. The qualifying interests that could be impacted are white-clawed crayfish; salmon; lamprey and otter. The potential impacts to the SAC/SPA are the deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-30 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
Embankments/Revetments	A 1m strip of vegetation should be cleared on all 4 embankments ($17m^2$)	Screened out
Embankments/Revetments	Reshaping of both south embankments. ($10m^3$)	Screened in – Works instream required.

Mitigation Measures

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

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

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 Moy SAC or any other European site.

5.8.5.2. Bracklagh Bridge [MO-N17-002.00]

Bracklagh Bridge is a single span masonry bridge with a concrete slab secondary structure. The span width is 2.8m. The bridge carries the N17 over the Bracklagh River within the River Moy SAC. Plate 5.33 shows the masonry side of the bridge.

Plate 5-33 Bracklagh Bridge – masonry component.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-31 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
Riverbed	Carry out localised scour repairs at base south east embankment adjacent to Structure. (0.5m^2)	Screened in – Works instream required.
Parapets/Safety barrier	Remove vegetation from east parapet. (1m^2)	Screened out
Embankments/Revetments	Vegetation to be removed from the embankment. Note that there is a corrugated fence on one of the embankments. Embankment consists of long grass and bushes. (25m^2)	Screened out

Mitigation Measures

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

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

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.

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 Moy SAC or any other European site.

5.8.5.3. Cloonawillin Bridge [MO-N59-005.00]

Cloonawillin Bridge is a single span concrete slab and box structure with concrete breeze block parapet walls. The span width is 2.4m. The bridge spans the Abbeytown River. River Moy SAC is located ca. 3.3km downstream and Lough Conn and Lough Cullin SPA is located ca. 12.4km downstream of the bridge. Plate 5.24 displays the face of the bridge.

Plate 5-24 Cloonawillin Bridge.

The qualifying interests of the River Moy SAC and Lough Conn and Lough Cullin SPA are listed in Section 5.2. The qualifying interests that could be impacted are white-clawed crayfish; salmon; lamprey; otter and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the physical disturbance of species, deterioration of surface water quality and reduction in species density.

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove silt deposit at the south precast section. (10m^2)	Screened in – Works instream required.
Embankments/Revetments	Vegetation to be removed either side (10m^2)	Screened out
Wing/Spandrel/Retaining Walls	Remove vegetation from wing walls and head walls. (6m^2)	Screened out

Mitigation Measures

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

Clearance of watercourse (Debris Removal)

The area of silt build up at the inlet to the culvert is visible in Plate 5.24 below. This material shall only be removed from watercourses by hand. The Contractor must seek the advice of their appointed ecologist prior to commencing works. No gravel, pebble or cobble material shall be disturbed or removed from the riverbed. As there is a risk of significant silt release to the waterbody, 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 secured downstream of, or around, the works area prior to the commencement of works.

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

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.

Plate 5-25 Silt build up at inlet to the culvert.

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 Moy SAC, Lough Conn and Lough Cullin SPA or any other European site.

5.8.5.4. Glelnanane Bridge [MO-N59-067.00]

Glelnanane Bridge is a single span masonry bridge with masonry parapet walls. The span width is 3.71m. The bridge carries the N59 over an unnamed tributary of the Erriff River. The bridge is located within Mweelrea/Sheeffry/Erriff Complex SAC. Plate 5.26 displays the masonry face of the bridge.

Plate 5-26 Glelnanane Bridge.

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

Proposed Works

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

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

Bridge Component	Work Element	Screening Recommendation
Riverbed	Remove compacted mud a. on stream bed lodged against bottom of wingwall b. to face of wingwall extension to expose wall – $1m^3$ total ($3m^2$)	Screened in – Works instream required.
Riverbed	Provide a base of rock armouring/stone pitching to stream bed at base of wingwall over 3m. ($3m^2$)	Screened in – Works instream required.
Embankments/Revetments	Vegetation up to 1m of structure to be removed. Vegetation consists of grass and weeds. (20m2). Clear vegetation from south west approach embankment ($5m^2$), remove large tree (girth < 500mm) & exposed roots, remove standalone concrete fence post on top of embankment adjacent to bridge.	Screened out
Embankments/Revetments	Strip topsoil ($1m^3$) and excavate embankment ($3m^3$) to accommodate new rock armour detail to TII CC-SCD-00550 though slope varies 1V to 1H at bridge to 2V to 2.5H at a distance of 3m from bridge, alignment of rock armour at top of embankment set back 700mm from hard strip to carriageway.	Screened In

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Repoint base of south west wingwall and wingwall extension ($2m^2$) ($5m^2$)	Screened out – masonry works over land
Parapets/Safety barrier	Extend south Parapet at west end to match existing over a length of 1.4m constructing from sound masonry to wingwall extension ($2m^3$).	Screened out – masonry works over land

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)

Plate 5.26 displays the mud from the embankment that has slipped into the watercourse and requires removal. This will then be replaced by rock armour as per the second works order.

Vegetation debris and waste debris shall only be removed from watercourses by hand. The Contractor must seek the advice of their appointed ecologist. As there is a risk of significant silt release to the waterbody, 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 secured downstream of, or around, 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 Contractor must notify Inland Fisheries Ireland prior to the commencement of any proposed instream works and the associated mitigation 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. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence.

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.

Work to Embankment

As noted, once vegetation clearance on the embankment has been undertaken, it is necessary to strip topsoil ($1m^3$) and excavate embankment ($3m^3$) to accommodate the proposed new rock armour detail to TII CC-SCD-00550 (though slope varies 1V to 1H at bridge to 2V to 2.5H at a distance of 3m from bridge). Alignment of rock armour at top of embankment will be set back 700mm from hard strip to carriageway.

Note the measures to be put in place as set out under *Clearance of* Watercourse, as set out above. Silt fences will be required for the duration of these works to the embankment and placement of the rock armour.

Plate 5-27 Mud to be removed.

Establishing base protection

Establishment of base protection will be carried out in the dry by installing rock armour or stone pitching along the base of the wingwall where mud has slipped from the embankment as shown in Plate 5.26 above.

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

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

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

The Contractor must notify Inland Fisheries Ireland prior to the commencement of any proposed instream works and the associated mitigation 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. Where dewatering activities occur, instream silts should not be disturbed or removed from the river channel. All surveying and electrofishing activities of protected species, i.e. crayfish, lamprey and salmonids, shall be carried out under licence.

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

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

5.8.6. Monaghan

5.8.6.1. Tullybryan Bridge No.2 [MN-N54-006.00]

Tullybryan Bridge No.2 is a single span concrete and steel pipe culvert with concrete parapet walls. The span width is 4.5m. The structure spans the Ballyleck Lake Stream and is located over 60km upstream of Lough Neagh SPA. Plate 5.28 shows the structure.

Plate 5-28 Tullybryan Bridge No.2.

The qualifying interests of the Lough Neagh SPA are listed in Section 5.2. The qualifying interests that could be impacted are the wetland SCIs of the SPA. The potential impacts to the SPA are the deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-34 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
Riverbed	Scour repairs to the upstream south side in pier and base of SE wing wall. (1m^2)	Screened in – Works instream required.
Embankments/Revetments	Vegetation to be removed from 1m strip on embankments adjacent to structure, (30m^2)	Screened out
Parapets/Safety barrier	Concrete repair to the vertical crack of the north parapet and to the horizontal cracks of the south pilasters. (1m^2)	Screened out

Mitigation Measures

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

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.

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 Neagh SPA or any other European site.

5.8.7. Roscommon

5.8.7.1. Moneen Culvert [RN-N63-005.00]

The Moneen Culvert is a 2-span precast reinforced concrete piped culvert. The two span lengths are 1.35m each. There are masonry parapets on both sides of the carriageway. The structure is located 2.1km upstream of the Lough Ree SAC and 2.2km upstream of the Lough Ree SPA. Plate 5-29 shows the south elevation.

Plate 5-29 Moneen Culvert.

The qualifying interests of the Lough Ree SAC/SPA are listed in Section 5.2. The qualifying interests that could be impacted are the natural eutrophic lakes; otter and wetland SCIs of the SPA. The potential impacts to the SAC/SPA are the deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-35 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
Riverbed	Clear overgrown vegetation to upstream (20m^2)	Screened in – Works instream required.
Embankments/Revetments	Removal of vegetation 1m strip from all embankments (15m2)	Screened out
Piers	Remove vegetation from upstream cutwater (1m^2)	Screened out
Embankments/Revetments	Install gabion wall to the downstream collapsed slopes (10m^2)	Screened in – Works instream and over water required.

Mitigation Measures

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

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. If over pumping is required, a second pump shall be available on site in case of failure of the primary pump.

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

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

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

Assessment of In-combination effects

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

Conclusion/ Recommendation

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

5.8.8. Sligo

5.8.8.1. Bridge at Yeats Inn, Curry town [SO-N17-007.00]

The Bridge at Yeats Inn, Curry Town is a single span masonry bridge with a slab sub structure on the western face with concrete safety barriers along the roadside. The span width is 3m. The bridge is located within River Moy SAC. Plate 2.30a shows the masonry (east) face of the bridge while Plate 2.30b shows the concrete slab structure of the western side.

Plate 2-30a Bridge at Yeats Inn, Curry town. Masonry face.

Plate 2-30b Bridge at Yeats Inn, Curry town. Concrete slab face.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-36 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
Riverbed	Clear watercourse upstream and under arch. ($3m^2$)	Screened in – Works instream required.
Embankments/Revetments	All vegetation to be removed. ($20m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Remove vegetation from east wing walls and spandrel wall. ($20m^2$)	Screened out
Deck/slab/arch barrel	Masonry repointing to localised mortar loss. ($3m^2$)	Screened in – use of wet mortar over water and therefore a surface water pathway is present.
Abutments	Replace failed joints between concrete units.	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

Clearance of watercourse (Debris Removal)

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

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

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

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

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 on River Moy SAC or any other European site.

5.8.8.2. Curry Bridge [SO-N17-008.00]

Curry bridge is a single span concrete slab structure with steel parapet railings along the road. The span width is 21.05m. The bridge carries the N17 over the Owengarve River within the River Moy SAC. Plate 5.31 shows the concrete slab structure.

Plate 5-31 Curry Bridge.

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

Proposed Works

The proposed works at this bridge are detailed in Table 5-37 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-37 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Repair undermining to south abutment. ($1m^2$)	Screened in – Works instream required.
Embankments/Revetments	1 metre strip to be cleared along each embankment. ($15m^2$)	Screened out
Abutments	Remove ivy to south abutment. ($5m^2$)	Screened out
Bridge surface	All four gullies to be cleaned. (4 no.)	Screened out
Abutment	Concrete repair to exposed base of the south abutment on top of rock armour set back from the watercourse. ($5m^2$)	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Bridge Component	Work Element	Screening Recommendation
Wing/Spandrel/Retaining Walls	Seal crack to the top of SE wing wall. (1m^2). Abutment concrete repair - 5m^2. Concrete repair to exposed base of the south abutment (on top of rock armour; set back from watercourse).	Screened in – use of wet concrete over water and therefore a surface water pathway is present.

Mitigation Measures

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

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.

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 on River Moy SAC or any other European site.

5.8.8.3. Rosnamuckyduff Bridge [SO-N59-017.00]

Rosnamuckyduff Bridge is a double span masonry arch structure with masonry parapet walls with steel safety barriers on top along the roadside. The span width is 4.42m. The bridge spans the Tullylin Stream 9.2km upstream of Killala Bay/Moy Estuary SAC. Plate 2.32 shows the masonry face of the bridge.

Plate 2-32 Rosnamuckyduff Bridge.

The qualifying interests of the Killala Bay/Moy Estuary SAC are listed in Section 5.2. The qualifying interests that could be impacted are the estuaries; mudflats and sandflats; lamprey and harbour seal. The potential impacts to the SAC are the loss or modification of habitat, deterioration of surface water quality and reduction in species density.

Proposed Works

The proposed works at this bridge are detailed in Table 5-38 below. The table also contains a screening recommendation regarding the potential for the works to give rise to likely significant effects.

Table 5-38 - Work elements and potential for likely significant effects.

Bridge Component	Work Element	Screening Recommendation
Riverbed	Concrete scour repairs to undermining of the pier at the NE and SE corners. ($2m^2$)	Screened in – Works instream required.
Embankments/Revetments	Vegetation removal on embankments up to 1m of structure ($16m^2$)	Screened out
Piers	Remove vegetation from south end of pier. ($1m^2$)	Screened out
Wing/Spandrel/Retaining Walls	Repointing crack to the south spandrel wall. ($3m^2$)	Screened out

Mitigation Measures

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

Scour Repairs

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

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

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

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 Killala Bay/Moy Estuary SAC or any other European site.

6. Conclusions

This NIS provides the competent authority with supporting information to undertake Appropriate Assessment in relation to the proposed works at 28 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 28 bridges, alone and in combination with other plans and projects, considering a sites' structure, function and conservation objectives. Where potential significant impacts were identified, mitigation measures have been recommended to preclude these impacts.

Thus the potential direct, indirect and cumulative impacts on the qualifying interests and conservation objectives for SACs and SPAs within the zone of influence of the proposed project, and the implementation of the proposed mitigation measures, it has been concluded by the authors of this report that the proposed project, i.e. maintenance works at 28 bridges, will not have an adverse effect on the integrity of those SACs and SPAs.

References

Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. *Irish Wildlife Manuals*, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Chanin, P. (2003). Monitoring the otter *Lutra lutra*. *Conserving Natura 2000 Rivers Monitoring Series* No. 10, English Nature, Peterborough.

Chapman, P.J. and Chapman, L.L. (1982). *Otter Survey of Ireland, 1980-81*. The Vincent Wildlife

NRA (2009) Survey Guidelines for National Road Schemes. National Roads Authority. Dublin, Ireland.

CIEEM (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

Cooper, L. M. (2004). Guidelines for Cumulative Effects Assessment in SEA of Plans, EPMG Occasional Paper 04/LMC/CEA, Imperial College London.

DoEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government. Dublin.

EPA (2009). Code of Practice; Wastewater Treatment Systems and Disposal Systems serving Single Houses (p.e. ≤10). Environmental Protection Agency, Co. Wexford, Ireland.

EPA (2018). Code of Practice, Domestic Waste Water Treatment Systems (Population Equivalent ≤10) Draft 26 November 2018. Environmental Protection Agency, Ireland.

European Commission (2001). Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

European Commission (2017). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Union Habitats Directive, (1992). Council Directives 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland. 4. 2020-2026. *Irish Birds* 43: 1–22 (2021).

Inland Fisheries Ireland, (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Water. Available at: https://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html

Marnell, F. (2016). Otter (*Lutra lutra*). Pp 100-101. In Lysaght, L. and Marnell, F. (Eds) (2016). *Atlas of Mammals in Ireland 2010-2015*. National Biodiversity Data Centre, Waterford.

NRA (2009a). *Survey Guidelines for National Road Schemes*. National Roads Authority. Dublin, Ireland.

NRA (2009b). *Guidelines for the treatment of otter prior to the construction of National Road Scheme.* National Roads Authority. Dublin, Ireland.

NPWS (2009). *Threat response plan: Otter (2009-2011).* National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

NPWS (2013). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3. Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2016). Conservation Objectives: River Moy SAC 002298. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.

[redacted]

Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013) National Otter Survey of Ireland 2010/12. *Irish Wildlife Manuals* No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Scott Wilson and Levett-Therivel, (2006). Appropriate Assessment of Plans. Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants.

TII (2017). EIRSPAN Bridge Management System Routine Maintenance Manual. AM-STR-06055 February 2017.

NPWS Documents

Special Areas of Conservation

DAERA (2015). Conservation Objectives: Upper Lough Erne SAC (UK0016614). Version 2.

NPWS (2011) Conservation Objectives: Lough Swilly SAC 002287 and Lough Swilly SPA 004075. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012). Conservation Objectives: Killala Bay/Moy Estuary SAC 000458. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015). Conservation Objectives: Connemara Bog Complex SAC 002034. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015). Conservation Objectives: West Connacht Coast SAC 002998. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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.

NPWS (2016). Conservation Objectives: Lough Ree SAC 000440. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2016). Conservation Objectives: River Moy SAC 002298. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017). Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017). Conservation Objectives: Mweelrea/Sheeffry/Erriff Complex SAC 001932. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2017). Conservation Objectives: River Finn SAC 002301. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

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.

NPWS (2021). Conservation objectives for Ben Bulben, Gleniff and Glenade Complex SAC [000623]. Generic Version 8.0. Department of Housing, Local Government and Heritage

NPWS (2021). Conservation objectives for Lough Gill SAC [001976]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

NPWS (2021). Conservation objectives for River Boyne and River Blackwater SAC [002299]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Special Protection Areas for birds

DAERA (2015). Conservation Objectives: Upper Lough Erne SPA (UK9020071). Version 3

DAERA (2015). Conservation Objectives: Lough Neagh SPA (UK9020091). Version 4

NPWS (2011). Conservation Objectives: Lough Swilly SAC 002287 and Lough Swilly SPA 004075. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013). Conservation Objectives: Drumcliff Bay SPA 004013. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2021). Conservation objectives for Illaunnanoon SPA [004221]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

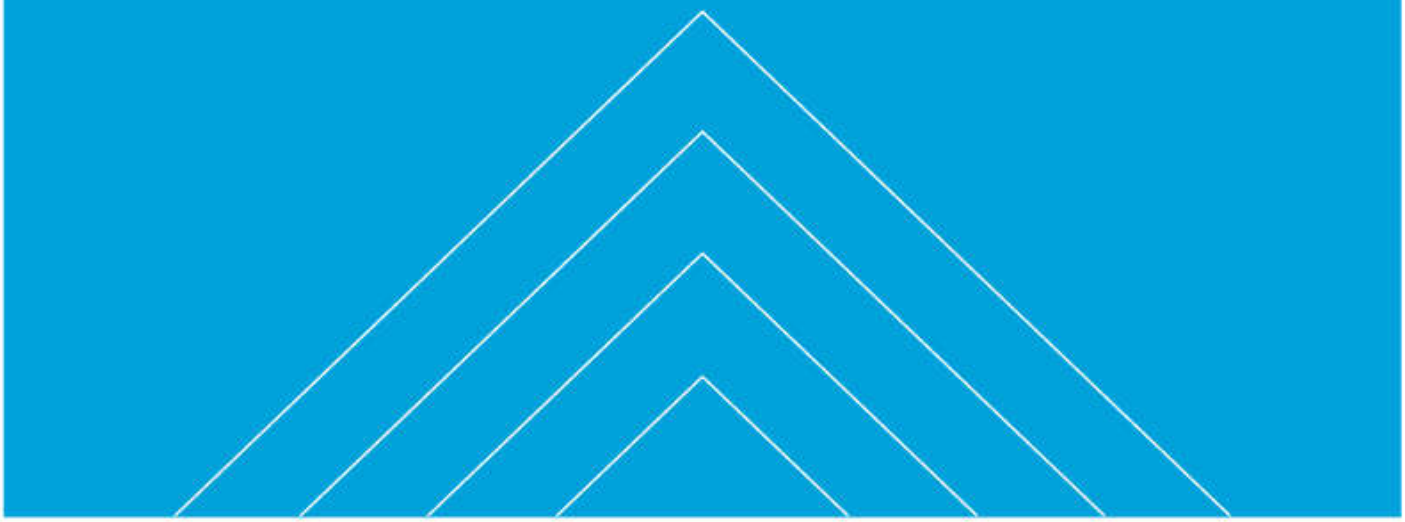
NPWS (2021). Conservation objectives for Lough Conn and Lough Cullin SPA [004228]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

NPWS (2021). Conservation objectives for Lough Corrib SPA [004042]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

NPWS (2021). Conservation objectives for Lough Ree SPA [004064]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

NPWS (2021). Conservation objectives for River Boyne and River Blackwater SPA [004232]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Appendices



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

A.1. Special Areas of Conservation (SAC)

Ben Bulben, Gleniff And Glenade Complex SAC (000623)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
LM-N16-017.00	No. SAC is ca. 1.3km d/s of bridge	Undefined	Drumcliff_SC_010
SCI Description			
1013 Geyer's whorl snail *(Vertigo geyeri)* 1355 Otter *(Lutra lutra)* 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths 4060 Alpine and Boreal heaths 5130 *Juniperus communis* formations on heaths or calcareous grasslands 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco-Brometalia)* (* important orchid sites) 6230 * Species-rich Nardus grasslands, on *silicious* substrates in mountain areas (and submountain areas in Continental Europe) 6430 *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels 7140 Transition mires and quaking bogs 7220 * Petrifying springs with tufa formation (*Cratoneurion*) 7230 Alkaline fens 8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Galeopsietalia ladani)* 8120 Calcareous and calcshist screes of the montane to alpine levels *(Thlaspietea rotundifolii)* 8210 Calcareous rocky slopes with chasmophytic vegetation * indicates a priority habitat under the Habitats Directive			

Connemara Bog Complex SAC (002034)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-038.00	Within	Undefined	Ballycuirke Lough Stream_SC_010
SCI Description			
1065 Marsh Fritillary *(Euphydryas aurinia)* 1106 Atlantic salmon *(Salmo salar)* 1355 Otter *(Lutra lutra)* 1833 Slender Naiad *(Najas flexilis)* 1150 * Coastal lagoons 1170 Reefs 3110 Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea* 3160 Natural dystrophic lakes and ponds 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7130 Blanket bogs (* if active bog) 7140 Transition mires and quaking bogs 7150 Depressions on peat substrates of the Rhynchosporion 7230 Alkaline fens 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles * indicates a priority habitat under the Habitats Directive			

Lough Gill SAC (001976)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
LM-N16-006.00	Within SAC	Owenmore [Manorhamilton]	Bonet_SC_010
LM-N16-008.00	Lough Gill SAC ca. 0.06km d/s of bridge	Brackary	Bonet_SC_010
LM-N16-009.00	Within SAC	Owenmore [Manorhamilton]	Bonet_SC_010
LM-N16-010.00	Within SAC	Tawnymanus	Bonet_SC_010
SCI Description			
1092 White-clayed crayfish *(Austropotamobius pallipes)* 1095 Sea lamprey *(Petromyzon marinus)* 1096 Brook lamprey *(Lampetra planeri)* 1099 River lamprey *(Lampetra fluviatilis)* 1106 Atlantic salmon *(Salmo salar)* 1355 Otter *(Lutra lutra)* 91E0 Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior *(Alno-Padion, Alnion incanae, Salicion albae)** 3150 Natural eutrophic lakes with *Magnopotamion or Hydrocharition* - type vegetation 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia)* (* important orchid sites) * indicates a priority habitat under the Habitats Directive			

Lough Ree SAC (0010440)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
RN-N63-005.00	Lough Ree SAC ca. 2.1km d/s of bridge	KEELCURRAGH	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] Bog woodland [91D0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Lutra lutra* (Otter) [1355] * indicates a priority habitat under the Habitats Directive			

River Boyne and River Blackwater SAC (002299)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
CN-N03-018.00	River Boyne and River Blackwater SAC ca. 3.2km d/s of bridge. Connectivity is through Lough Ramor	Lislea 07	Blackwater[Kells]_SC_020
SCI Description			
Alkaline fens [7230] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *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-N59-067.00	Within SAC	Undefined	Erriff_SC_010

SCI Description

1013 Geyer's whorl snail *(Vertigo geyeri)*
1014 Narrow-mouthed whorl snail *(Vertigo angustior)*
[redacted]
1106 Atlantic salmon *(Salmo salar)*
1355 Otter *(Lutra lutra)*
1395 Petalwort *(Petalophyllum ralfsii)*
1833 Slender Naiad *(Najas flexilis)*
1150 Coastal lagoons*
1210 Annual vegetation of drift lines
1330 Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)*
1410 Mediterranean salt meadows *(Juncetalia maritimi)*
2110 Embryonic shifting dunes
2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
2150 Atlantic decalcified fixed dunes *(Calluno-Ulicetea)*
2170 Dunes with Salix *repens ssp. argentea (Salicion arenariae)*
3110 Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)*
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea*
3160 Natural dystrophic lakes and ponds
3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
4010 Northern Atlantic wet heaths with *Erica tetralix*
4030 European dry heaths
4060 Alpine and Boreal heaths
5130 *Juniperus communis* formations on heaths or calcareous grasslands
6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
7130 Blanket bogs (* if active bog)
7140 Transition mires and quaking bogs
7150 Depressions on peat substrates of the *Rhynchosporion*
7220 Petrifying springs with tufa formation *(Cratoneurion)**
7230 Alkaline fens
8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Galeopsietalia ladani*)
8210 Calcareous rocky slopes with *chasmophytic* vegetation
8220 Siliceous rocky slopes with *chasmophytic* vegetation
21A0 Machairs (* in Ireland)

* indicates a priority habitat under the Habitats Directive

River Finn SAC (002301)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N14-010.00	River Finn SAC ca. 8.3km d/s of bridge.	Drumbeg	JohnstonStream_SC_010
DL-N15-005.00	River Finn SAC ca. 2.8km d/s of bridge.	(Burn) Daurnett	Finn[Donegal]_SC_040

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]

River Moy SAC (002298)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
MO-N05-038.00	River Moy SAC ca. 1.5km d/s of bridge.	FAULEENS 34	Moy_SC_030
MO-N17-002.00	Within SAC	BRACKLAGH 34	Moy_SC_030
MO-N59-005.00	River Moy SAC ca. 3.3km d/s of bridge.	Moy 34	
SCI Description			
1092 White-clayed crayfish *(Austropotamobius pallipes)* 1095 Sea lamprey *(Petromyzon marinus)* 1096 Brook lamprey *(Lampetra planeri)* 1106 Atlantic salmon *(Salmo salar)* 1355 Otter *(Lutra lutra)* 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the *Rhynchosporion* 7230 Alkaline fens 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles * indicates a priority habitat under the Habitats Directive			

The Twelve Bens/Garraun Complex SAC (002031)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-020.00	Within SAC	Owenglin	Bunnahowna_SC_010
SCI Description			
1092 White-clayed crayfish *(Austropotamobius pallipes)* 1095 Sea lamprey *(Petromyzon marinus)* 1096 Brook lamprey *(Lampetra planeri)* 1106 Atlantic salmon *(Salmo salar)* 1355 Otter *(Lutra lutra)* 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the *Rhynchosporion* 7230 Alkaline fens 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles * indicates a priority habitat under the Habitats Directive			

Upper Lough Erne SAC (UK0016614)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
LM-N16-001.00	>20km u/s of Upper Lough Erne SAC	LAGHTY	MacneanLoughsconnector_SC_01
SCI Description			
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] 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] Bog woodland [91D0] Alkaline fens [7230] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] *Lutra lutra* (Otter) [1355] *Salmo salar* (Salmon) [1106] * indicates a priority habitat under the Habitats Directive			

West Connacht Coast SAC (002998)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-014.00	West Connacht Coast SAC 4.5km d/s of bridge separated by inner estuary.	ROSLEAGUE	Dawros_SC_010
GC-N59-015.00	West Connacht Coast SAC 3.5km d/s of bridge separated by inner estuary.	Traheen	Dawros_SC_010
SCI Description			
Bottle-nosed Dolphin (*Tursiops truncatus*) [1349]			

West of Ardara/Maas Road SAC (000197)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N56-032.00	Within SAC	MULNAMIN_BEG	Gweebarra_SC_010
DL-N56-033.00	Within SAC	Undefined	
SCI Description			

1013 Geyer's Whorl Snail *(Vertigo geyeri)*

[redacted]

1065 Marsh Fritillary *(Euphydryas aurinia)*
1106 Atlantic salmon *(Salmo salar)*
1355 Otter *(Lutra lutra)*
1365 Harbour seal *(Phoca vitulina)*
1395 Petalwort *(Petalophyllum ralfsii)*
1833 Slender naiad *(Najas flexilis)*
1130 Estuaries
1140 Mudflats and sandflats not covered by seawater at low tide
1160 Large shallow inlets and bays
1210 Annual vegetation of drift lines
1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)*
1410 Mediterranean salt meadows *(Juncetalia maritimi)*
2110 Embryonic shifting dunes
2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
2140 Decalcified fixed dunes with *Empetrum nigrum*
2150 Atlantic decalcified fixed dunes *(Calluno-Ulicetea)*
2170 Dunes with *Salix repens* ssp. argentea *(Salicion arenariae)*
2190 Humid dune slacks
3110 Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)*
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea*
4010 Northern Atlantic wet heaths with *Erica tetralix*
4030 European dry heaths
4060 Alpine and Boreal heaths
5130 *Juniperus communis* formations on heaths or calcareous grasslands
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco-Brometalia)* (* important orchid sites)
6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils *(Molinion caeruleae)*
6510 Lowland hay meadows *(Alopecurus pratensis, Sanguisorba officinalis)*
7130 Blanket bogs (* if active bog)
7150 Depressions on peat substrates of the *Rhynchosporion*
7230 Alkaline fens
21A0 Machairs (* in Ireland)

* indicates a priority habitat under the Habitats Directive

Lough Corrib SAC (000297)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N83-002.00	Within SAC	Sinking	Sinking_SC_010
GC-N84-008.00	Within SAC	Black [Shrule]	Black[Shrule]_SC_010
SCI Description			
[redacted] 1092 White-clayed crayfish *(Austropotamobius pallipes)* 1095 Sea lamprey *(Petromyzon marinus)* 1096 Brook lamprey *(Lampetra planeri)* 1106 Atlantic salmon *(Salmo salar)* 1303 Lesser horseshoe bat *(Rhinolophus hipposideros)* 1355 Otter *(Lutra lutra)* 1833 Slender naiad *(Najas flexilis)* 6216 Slender Green Feather-moss *(Hamatocaulis vernicosus)* 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea* 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco-Brometalia)* (* important orchid sites) 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils *(Molinion caeruleae)* 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the *Rhynchosporion* 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** 7220 Petrifying springs with tufa formation *(Cratoneurion)* 7230 Alkaline fens 8240 Limestone pavements* 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91D0 Bog woodland* * indicates a priority habitat under the Habitats Directive			

Lough Swilly SAC (002287)			
Structure ID	**Within SAC**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N13-009.00	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] * indicates a priority habitat under the Habitats Directive			

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

Drumcliff Bay SPA (004013)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**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			
A144 Sanderling *(Calidris alba)* A157 Bar-tailed Godwit *(Limosa lapponica)* A999 Wetland and Waterbirds			

Illaunnanoon SPA (004221)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-014.00	Illaunnanoon SPA ca. 850m d/s of bridge.	ROSLEAGUE	Dawros_SC_010
GC-N59-015.00	Illaunnanoon SPA ca. 1.3km u/s of bridge.	Traheen	Dawros_SC_010
SCI Description			
Sandwich Tern (*Sterna sandvicensis*) [A191]			

Lough Conn and Lough Cullin SPA (004228)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
MO-N59-005.00	Lough Conn and Lough Cullin SPA ca. 12.4km d/s of bridge.	ABBEYTOWN 34	Deel[Crossmolina]_SC_020
SCI Description			
Tufted Duck (*Aythya fuligula*) [A061] Common Scoter (*Melanitta nigra*) [A065] Common Gull (*Larus canus*) [A182] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]			

Lough Corrib SPA (004042)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
GC-N59-038.00	Lough Corrib SPA ca. 12.6km d/s of bridge.	Undefined	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]			

Lough Neagh SPA (UK9020091)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
MN-N54-006.00	Lough Neagh SPA greater than 60km d/s.	Ballyleck lake stream	Blackwater[Monaghan]_SC_010
SCI Description			
Pochard (*Aythya ferina*) [A059] Tufted Duck (*Aythya fuligula*) [A061] Goldeneye (*Bucephala clangula*) [A067] Bewick Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Common Tern (*Sterna hirundo*) [A193] Waterbird assemblage			

Lough Ree SPA (004064)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
RN-N63-005.00	Lough Ree SPA ca. 2.2km d/s from bridge.	KEELCURRAGH	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]			

River Boyne and River Blackwater SPA (004232)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
CN-N03-018.00	River Boyne and River Blackwater SPA ca. 3.2km d/s of bridge. Connectivity is through Lough Ramor.	Lislea 07	Blackwater[Kells]_SC_020
SCI Description			
Kingfisher (*Alcedo atthis*) [A229]			

Upper Lough Erne SPA (UK9020071)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
LM-N16-001.00	>20km u/s of Upper Lough Erne SPA	LAGHTY	MacneanLoughsconnector_SC_010
SCI Description			
Whooper Swan (*Cygnus cygnus*) [A038]			

Lough Swilly SPA (004064)			
Structure ID	**Within SPA/ distance to SPA downstream of bridge**	**Watercourse (Source: EPA)**	**WFD Sub-Catchment**
DL-N13-009.00	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]			

[redacted]