



Guidelines for Fisheries Protection during Development Works (Foyle and Carlingford areas)



Wetlands = Fish

Wetlands = Water storage

Wetlands = Flood management

Wetlands = Climate change mitigation

Wetlands = Carbon sink

Wetlands = Landscape

Wetlands = Wildlife and plant habitat

Wetlands = Biodiversity



A priority habitat!

Potential Impacts on Fish and Fish Habitat from Roads and Watercourse Crossings

These Guidelines were originally written by Mr Donal F Murphy, BE FIEI MIFM, with the assistance of staff of the Eastern Regional Fisheries Board in a document titled 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites', and subsequently amended (with permission) for the Foyle and Carlingford areas by the Loughs Agency (Foyle, Carlingford and Irish Lights Commission).

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Riverwatch is the Loughs Agency's Interpretive Centre located on the banks of the Foyle in Prehen.

It is a unique education resource and tourist attraction available to schools, communities and businesses organisations all over Ireland. Its aim is to ensure the environmental survival and maintain the economic benefits of the Foyle and Carlingford waterways through increasing the level of knowledge of those directly and indirectly using its resources.

Riverwatch has three main goals:

- to act as a focus and source of information;
- to raise environmental awareness of the general public;
- to inform the public of the social, environmental and economic resources of the loughs and their tributaries.



Riverwatch

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or e-mail riverwatch@loughs-agency.org



Loughs Agency

The Loughs Agency is one of six “North / South Implementation Bodies” set up under the Belfast Agreement. It operates across both jurisdictions (Northern Ireland and the Republic of Ireland) and is a key body in the management and conservation of fisheries in the Foyle and Carlingford areas.

The name ‘Loughs Agency’ refers to the fact that the body has a remit that covers the water catchment areas of the two sea loughs of Carlingford Lough and Lough Foyle.

The functions of the Loughs Agency are:-

- the development of Carlingford Lough and Lough Foyle for commercial and recreational purposes in respect of marine, fishery and aquaculture matters
- the development of marine tourism
- the management, conservation, protection, improvement and development of the inland fisheries of the Carlingford and Foyle areas
- the development and licensing of aquaculture

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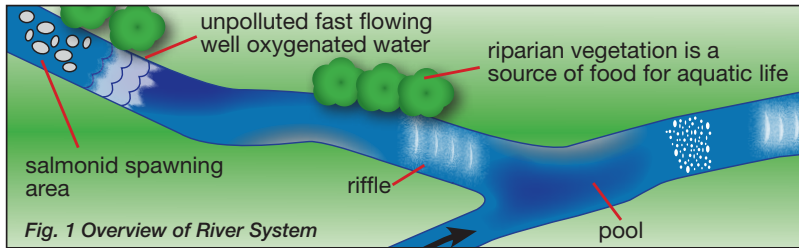
Introduction

The Loughs Agency of the Foyle, Carlingford and Irish Lights Commission (FCILC) is charged under the Fisheries Acts with the responsibility to protect and conserve all freshwater fisheries within its areas of jurisdiction. Every river, stream, canal, lake, pond and reservoir within these areas must be regarded as constituting and/or supporting a Fishery under the meaning of the Acts unless otherwise regarded by the Loughs Agency.

The fisheries resource is also protected under national and EU legislation. Some notes on the legal protection given to fishery habitats are contained in Appendix I. While general and specific requirements for the conservation and protection of the fisheries habitat may be set out in the planning conditions under which a project is approved, many issues regarding the timing, management, organisation, and methods of execution of the works inevitably arise during the construction phase. These Guidance Notes are aimed to identify the likely impact on fisheries habitat in the course of construction and development work, and to outline practical measures for the avoidance and mitigation of damage. These guidelines should not be regarded as all-embracing. Each project must be assessed on a case by case basis. It is, therefore, essential to consult with the Loughs Agency. It may also be necessary to seek professional expert advice. All information contained in these guidelines were up to date at time of print.

Fish and their Requirements

Fish need unpolluted water and abundant food in a habitat that provides spawning areas, shelter and freedom of movement. The bed and soil of a natural river and the associated aquatic and riparian vegetation combine to provide the food chain on which fish depend. A natural river channel is characterised by the morphological features which are vital for the life cycle of fish: gravel shoals or reed beds for spawning, pools and riffles where fish rest and feed, and turbulent reaches which enhance oxygenation.



All elements of this natural environment must be protected. These guidance notes outline:

- important practical measures to minimise the impact of construction and development
- works on fisheries habitat.

Potential Impacts on Fish and Fish Habitat from Roads and Watercourse Crossings

Barriers to fish passage	<ul style="list-style-type: none"> • Blockages in watercourses - physical or hydraulic.
Water pollution	<ul style="list-style-type: none"> • Sedimentation - impacts include smothering fish eggs and causing mortalities in fish of all ages, reducing abundance of food and impeding movement of fish. • Cement, grout and concrete - toxic to fish. • Oil and fuels - direct impacts on fish, fish food and fish habitats.
Removal of bed material	<ul style="list-style-type: none"> • Causes loss of instream vegetation and food. May destroy spawning or nursery habitats.
Disturbance of riparian vegetation	<ul style="list-style-type: none"> • Loss of shelter and cover, loss of food (plant debris and vegetation invertebrates).

Design Stage Permanent River Crossings

1. *Bridges*

Clear span bridging is the preferable option, causing no changes to bed and banks and no impact on fish migration. If piers are required keep them slim-line to minimise changes to the channel. Bed and bank work should be executed in natural materials. Adequate clearance should be allowed under bridges for angler access and mammal passage, if required, particularly in the case of a motorway project.

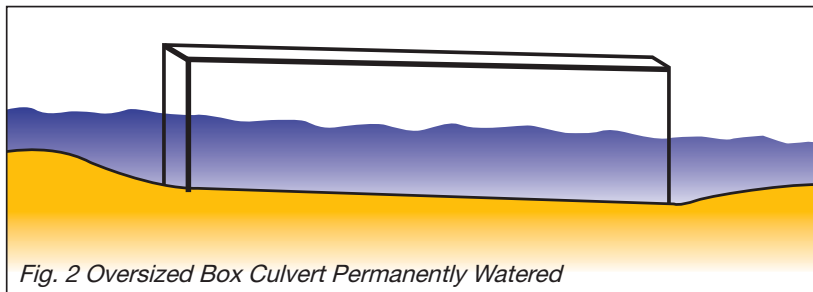
2. *Culverts*

Culverts are likely to obstruct or delay upstream fish passage unless the depths and velocities of flow in them are within the swimming capabilities of the species to be catered for. Entry and exit conditions are also critical for ease of fish passage.

- Where possible, arch-type, “bottom less” units should be used so that the natural stream bed can be retained.
- The next best option is to use box culverts incorporating the design principles set out hereafter.
- The use of round/oval culverts should be limited to short runs and temporary crossings.

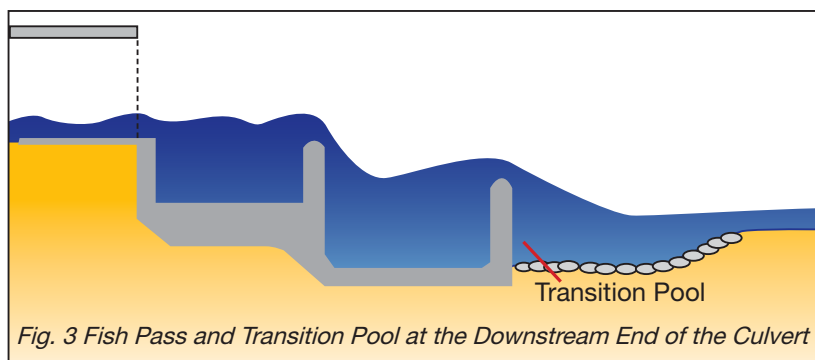
Design Principles

1. Culvert should be as short as possible
2. Where the topography allows, they should be laid so as to remain backwatered in drought flow to a depth of not less than 500mm at the upstream invert, thereby providing a fishway over their full length.
3. In all cases, provisions must be made to ensure that the velocity of flow will be less than the swimming speed which can be comfortably maintained by the weakest upstream migrants.
4. Transition pools should be formed at each end to allow upstream migrants to enter and exit without stress or delay.
5. Culverts should be daylit over their full length: if necessary, light-ports should be provided at suitable intervals.
6. The use of trash screens should be avoided.



Design Options

1. To conform to the principles set out above, culverts always need to be oversized and, generally, laid below the river-bed grade level by about 500 mm.
2. Where the bed gradient is too steep for full backwatering, the best option for achieving low velocity and adequate fishway is to provide a fish-pass at the downstream end, as shown in Figure 3.

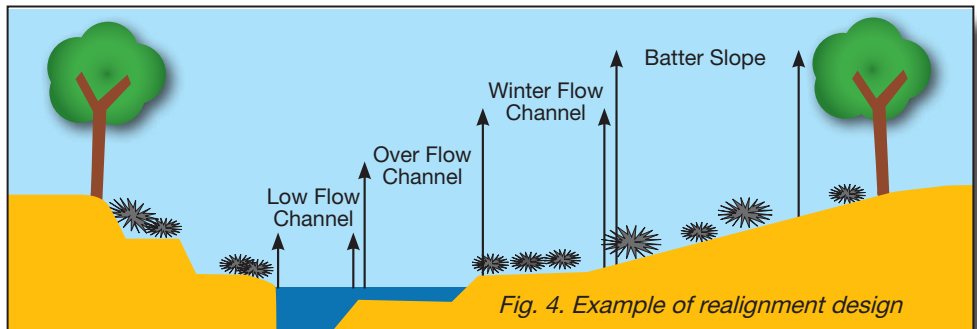


3. Alternatively, the downstream water-level may be raised by providing one or more ponding weirs below the outfall. Such weirs should have fish notches to facilitate upstream movement. The pools formed by them should provide adequate resting and take-off conditions for fish.

4. In some cases it may be acceptable to use notched baffles to control the velocity and provide fishway in the culvert. As already recommended the culverts should be oversized to compensate for flood conditions.
5. More rarely, shaping and roughening of the invert may serve to provide flow conditions suitable for fish passage, especially during low flow. The objective is to create a low flow channel along the centre of the culvert.

Permanent River Diversions and/or Realignment

While permanent diversions are not encouraged, in limited circumstances they will be permitted. The new channel should display hydraulic and morphological characteristics fulfilling the requirements of fisheries habitats. Bed and bank work should be executed in natural materials.



Road run-off

All surface water collected from the road drainage should be treated in a sustainable manner to minimize the impact on water quality and prevent habitat degradation. Treatment should be designed with adequate storage capacity and in a manner to facilitate maintenance.

Construction Stage

Minimising impact: Site Layout and Organisation

The following measures are critical for preserving water quality and aquatic habitats.

1. Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds well away from the watercourse. Refuelling of machinery, etc., should be carried out in bunded areas.
2. Run off from machine service and concrete mixing areas must not enter the watercourse.
3. Stockpile areas for sands and gravel should be kept to minimum size, well away from the watercourse.
4. Run off from the above should only be routed to the watercourse via suitably designed and sited settlement ponds/filter channels.
5. Settlement ponds should be inspected daily and maintained regularly.
6. Temporary crossings should be designed to the criteria laid down for permanent works.
7. Watercourse banks should be left intact if possible. If they have to be disturbed, all practicable measures should be taken to prevent soils from entering the watercourse.

In stream Works

1. In stream works may only be carried out in accordance with the Loughs Agency's general requirements set out below.
2. Preparatory works - such as constructing temporary crossings, forming cofferdams, creating diversions, - must be carried out in accordance with an approved Method Statement and under supervision by the Loughs Agency's officers. Similar requirements apply during removal and reinstatement.
3. In stream machine works should be minimised, and any machines working in the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fluids.
4. In stream earthworks must be executed so as to minimise the suspension of solids.
5. Construction works, especially ones involving the pouring of concrete, must be conducted in the dry.
6. When cofferdams are being kept dry by pumping, the discharge must be routed to an approved settlement facility before return to the river.
7. Every care must be taken to insure against spillage of concrete or leakage of cement grout within cofferdams.
8. Temporary diversions may be used to facilitate working in the dry, subject to permission by the Loughs Agency. Advance notice must be given and a Method Statement must be furnished and approved. Such approval will be subject to the Board's officers being satisfied that the diversion channel can be so designed as to accommodate fish migration.
9. The diversion channel should be formed in the dry, and arrangements should be made for authorised personnel to remove all fish from the natural channel before the flow is diverted.

Substrate Removal or Disturbance

It is an offence to remove or disturb any material, including sand or gravel from the bed of any freshwater river within the Foyle and Carlingford Areas without the consent of the Loughs Agency contrary to Section 46 of the Foyle Fisheries Act (NI) 1952, as amended by Article 18(3) of the Foyle and Carlingford Fisheries (NI) Order 2007 (within Northern Ireland) or Section 47 of the Foyle Fisheries Act 1952, as amended by Article 18(3) of the Foyle and Carlingford Fisheries Act 2007 (within the Republic of Ireland).

Consent may be obtained by contacting the Environmental Officer at the Loughs Agency prior to any proposed development works that may require the removal or disturbance of substrate.

Note that it is an offence under section 41 of the Foyle Fisheries Act (1952) (within Northern Ireland) or under section 171(1) of the Fisheries (Consolidation) Act 1959, as extended by Section 10 of the Foyle Fisheries (Amendment) Act, 1961 and as amended (Republic of Ireland), to cause pollution which is detrimental to fisheries interests.

Summary of the Loughs Agency's General Requirements

- In salmonid catchments, all in-stream works should be carried out during the period May to September (see table on next page).
- No in stream works shall be carried out without the consent of the Loughs Agency. A method statement must be agreed well in advance.
- The Loughs Agency should be given sufficient notice before any consented in-stream works commence.
- If a section of watercourse is to be de-stocked work must be carried out by authorised personnel. If this work is to be carried out by Fishery Officers, four to six weeks notice must be given and the cost will be recouped by the Agency.
- There must be no discharge of suspended solids or any other deleterious matter to watercourses.
- Fish passage conditions must be maintained at all times.

The following table presents an overview of whether any in stream works would normally be permitted by the Loughs Agency within the Foyle and Carlingford areas. In any event, early contact must be established with Fishery Inspectors or the Environmental Officer to discuss all proposed development works that are likely to impact on watercourses and fisheries.

Normal periods of permission for in stream works within Foyle and Carlingford areas*

Jan	Instream Works Not Permitted	<ul style="list-style-type: none"> • Some late spawning • Incubation of eggs continues • Kelts descending
Feb	Instream Works Not Permitted	<ul style="list-style-type: none"> • Incubation of eggs continues • Kelts descending • Spring Salmon runs
Mar	Instream Works Not Permitted	<ul style="list-style-type: none"> • Incubation of eggs continues and swim-up of young salmonids begins • Spring Salmon runs • Coarse fish spawning
Apr	Instream Works Not Permitted	<ul style="list-style-type: none"> • Incubation ending • Swim-up on-going • Young salmonids dispersing • Smolts migrating to sea • Coarse fish spawning
May	Instream Works Permitted	<ul style="list-style-type: none"> • Young salmonids migrating downstream into nursery areas • Smolts migrating to sea • Coarse fish spawning and fry dispersing
June	Instream Works Permitted	<ul style="list-style-type: none"> • Young salmonids in nursery areas • Adult Sea Trout returning to rivers • Coarse fish spawning and fry feeding
July	Instream Works Permitted	<ul style="list-style-type: none"> • Grilse and Sea Trout moving upstream
Aug	Instream Works Permitted	<ul style="list-style-type: none"> • Low river flows • Sea Trout run tailing off
Sept	Instream Works Permitted	<ul style="list-style-type: none"> • Low river flows
Oct	Instream Works Not Permitted	<ul style="list-style-type: none"> • Spawning run commences as flows increase
Nov	Instream Works Not Permitted	<ul style="list-style-type: none"> • Spawning and incubation of eggs underway
Dec	Instream Works Not Permitted	<ul style="list-style-type: none"> • Spawning and incubation of eggs continues

* Depending on location within the catchment, sensitive time periods may vary

Species Information

The following tables in this section present an overview of some of the protected species and their ecological characteristics found within the Foyle and Carlingford areas.

1.) Atlantic salmon (*Salmo salar*)

During their life cycle Atlantic salmon undergo various phases or life cycle stages. The table below outlines these stages

Stage	Name	Location	Definition
1	Alevin	Freshwater	From hatching to end of dependence on yolk sac for feeding
2	Fry	Freshwater	From consumption of yolk sac to end of first summer
3	Parr	Freshwater	From end of first summer to smolt
4	Smolt	Freshwater	Physiological adaptation for migration to marine environment becomes silvered
5	Post smolt	Marine	From exiting river to end of first winter in sea
6	Grilse	Marine/ Freshwater	Adult salmon after first sea winter
	Multi Sea Winter (MSW)	Marine/ Freshwater	Adult salmon after more than one winter at sea often referred to as spring fish
7	Kelt	Freshwater	Spent or spawned fish

Life cycle phases of Atlantic salmon

Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec

	Spawning and Hatching
	Alevin Fry and Parr In nursery areas
	Downstream Migration
	Upstream migration

Seasonality of salmon life cycle stages

2.) Trout (*Salmo trutta*) (Both the migratory Sea Trout and resident Brown Trout)

Both the resident brown trout and the migratory sea trout are distributed widely throughout the Foyle and Carlingford areas including both Lough Foyle and Carlingford Lough. Sea trout in the Carlingford area tend to be larger in size from those in the Foyle area.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sea Trout												
Brown Trout												

Sensitivity stages for Sea Trout and Brown Trout in the Foyle and Carlingford areas

	Sub Optimal period
	Least sensitive period
	Most sensitive period

3.) European Eel (*Anguilla anguilla*)

The European Eel is widely distributed throughout the Foyle and Carlingford including the tidal rivers and estuaries.

Sensitivity Stages

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
European Eel												

Sensitivity for European eel in the Foyle and Carlingford areas

	Sub Optimal period
	Least sensitive period
	Most sensitive period

4.) Lamprey

There are three species of Lamprey present across the Foyle and Carlingford catchments. Sea Lamprey, River Lamprey and Brook Lamprey.

Sea Lamprey (*Petromyzon marinus*)

Confirmed observations from the River Faughan, River Finn and River Mourne, may be present elsewhere.

Sensitivity Stages

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sea Lamprey												

Approximate sensitivity cycle stages for Sea Lamprey in the Foyle and Carlingford areas.

	Spawning and Hatching
	Larvae (Lamprey) in nursery area
	Upstream migration
	Downstream Migration

Species	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Sea Lamprey												

Periods of greatest sensitivity.

Brook Lamprey (*Lampetra Planeri*)
Foyle and Carlingford Areas

Brook Lamprey are common across the Foyle and Carlingford areas.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brook Lamprey												

Approximate sensitivity stages for Brook Lamprey in the Foyle and Carlingford areas.

	Spawning and Hatching
	Larvae (Lamprey) in nursery area

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brook Lamprey												

Periods of greatest sensitivity.

Appendix 1

Some notes on Legal Protection given to Fisheries Habitat in Legislation

- The enforcement authority for inland fisheries within the Foyle and Carlingford areas is the Loughs Agency and the legislation charges them with the protection of fisheries and the general enforcement of the Foyle Fisheries Act 1952 (as amended).
- The Foyle Fisheries Act provides a wide range of measures to protect fish; however the protection of fishery habitat is limited to a number of sections of the Acts.
- Section 131 of the Fisheries (Consolidation) Act 1959 (Republic of Ireland) and Section 46 of the Foyle Fisheries Act (Northern Ireland) 1952 protects spawning salmon and trout and creates the offence that where any person during the annual close season: wilfully obstructs the passage of salmon or trout or the smolts or fry thereof. or injures or disturbs any salmon or trout, or any spawn, fry or smolts hereof. or injures or disturbs any spawning bed, bank shallow where such spawn of fry or smolts may be, is guilty of committing an offence with a maximum penalty of 12 months in jail and a €635 (£500) fine may be imposed.
- Section 171 of the Fisheries (Consolidation) Act 1959 creates the offence of throwing, emptying, permitting or causing to fall onto any waters deleterious matter.
- Section 41 of the Foyle Fisheries Act (Northern Ireland) 1952 creates an offence of causing or knowingly permit deleterious matter to enter a river.
- Deleterious matter is defined as not only as any substance that is liable to injure fish but is also liable to injure their spawning grounds or the food of any fish or to injure fish in their value as human food or to impair the usefulness of the bed and soil of any waters as spawning grounds or other capacity to produce the food of fish.

- In addition to a maximum fine of €1,270 and six months imprisonment by the District Court, the full cost of the damage done and restoration is also chargeable against the offender - Section 10 of the Water Pollution Act 1977 (as amended by Section 7 of the Water Pollution Act 1990).
- Section 173 of the Fisheries Consolidation Act 1959 and Section 46 of the Foyle Fisheries Act (Northern Ireland) 1952, creates a number of offences which including that where any person: wilfully obstructs the passage of the smolts or fry of salmon, trout, or eels, or injures or disturbs the spawn or fry of salmon, trout or eels, or injures or disturbs any spawning bed, bank or shallow where the spawn or fry of salmon or trout or eels, is guilty of committing an offence along with a penalty of €635. There is an additional provision that any engine device used in the commission of the offence shall as a statutory consequence of conviction stand forfeit.
- Fishery habitat protection has been further enhanced by other national and E.U. legislation including the provisions under the Water Framework Directive and the Habitats Directive.
- It is an offence to remove or disturb any material, including sand or gravel from the bed of any freshwater river within the Foyle and Carlingford Areas without the consent of the Loughs Agency contrary to Section 46 of the Foyle Fisheries Act (NI) 1952, as amended by Article 18(3) of the Foyle and Carlingford Fisheries (NI) Order 2007 (within Northern Ireland) or Section 47 of the Foyle Fisheries Act 1952, as amended by Article 18(3) of the Foyle and Carlingford Fisheries Act 2007 (within the Republic of Ireland).

Summary of Relevant Legislation

- The Foyle Fisheries Acts 1952 (as amended).
- The Fisheries (Consolidation) Act 1959 (as amended).
- The Fisheries (Amendment) Act 1999 (No. 35 of 1999).
- The Freshwater Fish Directive - Council Directive on the quality of fresh waters needing protection or improvement in order to support fish life (78/659/EC) as transposed into Irish law under the E.C. (Quality of Salmonid Waters) Regulations 1988* (S.I. No. 293 of 1988), and in Northern Ireland under The Surface Waters (Fishlife) (Classification) (Amendment) Regulations (Northern Ireland) 2003*
- The Habitats Directive - Council Directive on the conservation of the natural habitats of wild fauna and flora (92/43/EEC) as transposed into Irish law under the E.C. (Natural Habitats Regulations 1997 (S.I. No. 94 of 1997), and in Northern Ireland under The Conservation (Natural habitats, etc) Regulations (Northern Ireland) 1995.
- The Local Government (Water Pollution) Act 1977 (as amended).

The Water (Northern Ireland) Order 1999.

** Both of these will be repealed in 2013 and encompassed under the EU Water Framework Directive*



The information in this guide is correct to the best knowledge of the Loughs Agency at the time of going to print. No liability will be accepted for any actions or consequences arising from any errors or any changes in circumstances (real or perceived).

24hr
Hotline

Emergency Response

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ISBN 978-0-9567910-1-6



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