Northern Ireland
Environment Agency

River Basin Management Plans

Programme of measures

Key Sectors —Historical Engineering, Urban Development, Public Water Supply, Hydropower, Agriculture, Forestry

Pressure Type — Freshwater Morphology

NIEA Northern Ireland Environment Agency
www.ni-environment.gov.uk

Introduction

Many of Northern Ireland's rivers and lakes have a history of engineering interventions which have had an important role in the growth of the economy. Embankments, erosion protection and dredging have allowed urban development and cultivation of agricultural land adjacent to rivers and lakes. Weirs have helped irrigate crops and generate energy. Bridges, culverts and other similar structures underpin Northern Ireland's transport network. We have also physically modified many of our waters for water supply and treatment, coastal defence/ protection, forestry, fisheries and for navigational and recreational purposes. The resulting changes to the physical habitat of our water environment include the straightening and deepening of rivers, lowering of lake water levels, the reinforcement of banks, the culverting of rivers and the installation of bridges, weirs and impoundments.

The Water Framework Directive (WFD) requires Member States to ensure that the physical condition of surface waters supports ecology. We have classified our surface waters for morphology, however morphological quality elements only contribute to status classification for water bodies at high ecological status (i.e. if the water is at high status for all other parameters a morphological impact can cause it to be downgraded to good status). The River Hydromorphological Assessment Technique (commonly referred to as RHAT) has been used to assess river sites including those at high status. The tool classifies river hydromorphology by scoring it based on departure from naturalness. In terms of lake morphology classification, a lake MiMAS tool (Morphological Impact Assessment System) was used and again was only used in the status classification for lake water bodies at high ecological status.

Six rivers were classified as high status for biology, chemistry, specific pollutants and hydrology. Four of these were downgraded to good status due to morphological pressures, the remaining two were not downgraded as morphology was also high status. One lake classified as high status was downgraded due to morphological pressures.

Heavily Modified Water Bodies

In some areas rivers and lakes have been altered to such a degree that attempting to return them to a natural condition would now be economically or technically infeasible. Such water bodies have been designated as Heavily Modified Water Bodies (HMWBs) if the adaptions are for a current specified use. Instead of "good ecological status", the environmental objective for HMWBs is 'good ecological potential' (GEP), which has to be achieved by 2015 unless alternative objectives have been set. These designated water bodies will require mitigation measures that maximise their ecological potential, as opposed to 'restoring' the natural condition. The Northern Ireland Environment Agency (NIEA) held a series of workshops to define ecological potential of the designated HMWBs. A UK technique was used to determine ecological potential based on whether all possible mitigation measures were in place in a water body. For example, where all mitigation measures for the water use are in place and considered effective, GEP or better is assigned. Where all mitigation measures for the water use are not in place 'Moderate Ecological Potential' or worse is assigned. Chemical and Biological monitoring are then taken into account which can also assign poor or bad ecological potential. More information on the process that was used to assess whether a water body was heavily modified and how ecological potential was defined can be found on the *Quality of Our Water Environment* section of the NIEA website.

Freshwater Sampling

What causes the environmental impact?

Morphological alterations arising from anthropogenic sources can cause significant changes in ecology, can result in habitat loss and can change how much and how fast water drains off the land. Examples of activities causing morphological alterations which can lead to damage or loss of habitats and changes to ecological processes are listed below:

- Construction of impounding structures such as dams and weirs on rivers and lakes for water supply and hydro-electric power;
- Dredging for navigation causing disturbance to the substrate;
- Construction of flood walls or embankments for flood defence;
- Historic planting of forests close to the banks of rivers;
- Land-use pressures from agriculture and urbanisation such as straightening, channelisation and culverting of rivers;

Old weirs and dams may impede fish movements and can restrict the access of migratory fish to upstream spawning areas, limiting the fish productivity of a catchment and its potential for fisheries. Straightening and deepening of rivers for navigation can result in direct habitat loss and can reduce storage of flood water within the system which can result in an increased risk of flooding. Engineering structures within the water environment such as culverts, bank reinforcement structures and pipes reduce habitat diversity of rivers and lakes and adversely affect their appearance reducing their amenity value. Historic planting of forests up to the bank of rivers resulted in the river being densely shaded and resulted in the loss of natural bankside vegetation. Forests of conifers have shallow roots which destabilise banks and increase the run off. New plantations are planted with buffer zones to protect riparian and aquatic zones from disturbance.

Some of Northern Ireland's most productive agricultural land is located alongside rivers. However there are difficulties with farming land in the vicinity of rivers as rivers can erode into fields and floods can threaten livestock and damage crops. This has led to programmes to straighten and deepen rivers, reinforce banks and construct flood defences. The adverse impacts of such alterations, however, are often expressed at a local and catchment level affecting ecology and flood risk downstream.


Moorhen

- Straightening and deepening of rivers, draining of wetlands and lowering of lake water levels has been undertaken to allow for agricultural production on the flood plain. This results in a loss of habitat diversity, reduces fish breeding and growing areas and can result in the loss of riparian wetlands.
- Bank reinforcement to protect land from erosion reduces habitat diversity and adversely affects the appearance of rivers. The loss of habitat can result in a decline in fish populations unless measures are taken to enhance in stream features.
- Loss of natural bankside vegetation from ploughing up to the edge of rivers or allowing cattle and sheep to graze up to the water can lead to bank erosion, increased sedimentation and also loss of food and shelter for wildlife.

The effect of physical modifications on one receiving stream may be small, but the combined effect can change water quality and flooding behaviour in a district, which may result in increased risk of flooding. Types of morphological changes and their associated impacts are presented in table 7.8(a) below.

Table 7.8(a) Types of changes in morphology and their potential impact

Pressure	Waterbody type	Impact
Straightening and deepening of rivers	Rivers	• Direct loss of habitat for animals and plants especially fish together with loss of wetlands. • Reduction in biodiversity value. • Increased flood risk by reducing storage of flood water within the system. • Reduction in resilience of system to pollution.
Abstractions and operation of reservoirs	Lakes and reservoirs	• Large variation in water levels which leads to a wide scour zone around the edge. Prevents the establishment of macrophytes and spawning of some types of fish.
Barriers to fish migration	Rivers, lakes	• Long-distance migration stopped for salmon, sea trout, eels and lamprey. Reduction in fish stock and potential fishery. • Limits short distance migration by other fish. Creates isolated populations which are less resilient to environmental change.
Barriers to sediment movement	Rivers	• Dams prevent movement of gravels downstream. Spawning areas for salmonids may be lost. • Ports and breakwaters may divert sediment movement along the coast which increases vulnerability to erosion and potential flooding.
Engineering structures within water environment	Rivers, lakes	• Structures change flow patterns and can cause build up of silt or bank erosion. • Affects the amenity value of water bodies.
Development in flood plains	River flood plains	• Removes wetlands, fish nursery areas and natural buffers against diffuse pollution. • Potential for flood risk by removing flood plain storage.
Loss of natural bankside vegetation	Rivers	• Leads to increased erosion, loss of habitat and reduction of leaf input to rivers (important source of food for insects). • Removes wetlands and natural buffers against diffuse pollution.

What action are we already taking?

At present, there are a variety of existing mechanisms for controlling or regulating activities which can cause morphological changes to our waters, with several departments and agencies being involved.

Key legislation and policy

Planning (Northern Ireland) Order 1991

Under this legislation planning permission is required for carrying out development of land. Articles 11 and 12 of this Order define 'development' as "the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or other land." Any land covered by water is included in the definition of land. Guidance is also provided by the various Planning Policy Statements (PPS) e.g. PPS 15

The Planning (Environmental Impact Assessment) Regulations (NI) 1999

The Environmental Impact Assessment (EIA) process is derived from the Planning (EIA) Regulations which prescribe that the likely effects of a new development on the environment must be fully understood and taken into account before planning permission is given for the development to proceed.

EIA development is defined in the Planning (EIA) Regulations as development which falls within either Schedule 1 or Schedule 2 development as detailed in these Regulations.

Fisheries Act (Northern Ireland) 1966

The Fisheries Act (NI)1966 prevents the removal of any material from the bed of a river without the consent of the Department of Culture, Arts and Leisure (DCAL). Under this legislation DCAL may approve programmes and give grants for the development of waters for angling (i.e. river enhancement programmes). Part 4 of the Fisheries Act protects fisheries and their habitats making it an offence to obstruct the passage of fish and requires the construction of a fish pass where a weir is built or an existing weir is reinstated or altered. Section 54 of the Fisheries Act requires persons who wish to build dams and weirs or repair existing weirs in rivers to construct fish passes for the free passage of fish. All fish pass designs and specifications must be submitted to the DCAL for approval before a pass is constructed.

Foyle Fisheries Act (Northern Ireland) 1952 / Foyle and Carlingford Fisheries (NI) Order 2007

This legislation concerns the protection of the aquatic environment, specifically fisheries and is transboundary in nature. Under this legislation In the Foyle and Carlingford areas it is an offence to remove material from the bed of the freshwater portion of a river without the consent of the Foyle, Carlingford and Irish Lights Commission.

Drainage (Northern Ireland) Order 1973

Rivers Agency an agency within the Department of Agriculture and Rural Development (DARD) have a statutory obligation to maintain free flowing rivers under this legislation and have powers to carry out drainage schemes on any designated waterway. The Agency has general powers to undertake, construct and maintain drainage works (which includes defence) and also emergency works to both watercourses and sea defences.

Drainage schemes must now meet the requirements of the Drainage Environmental Impact Assessment regulations, by considering significant effects on the environment of the proposed works. Rivers Agency's remit is to undertake such maintenance works while minimising environmental damage and this is done through application of sensitive river maintenance guidelines as outlined in Rivers Agency's Watercourse Maintenance Manual. DCAL Inland Fisheries and the Northern Ireland Environment Agency (NIEA) are consulted on work programmes and mitigation measures before commencement of the works. Some river enhancement works are also made as the work proceeds, where appropriate, under the provisions of the Water Order (NI) 1999.

DCAL works closely with Rivers Agency to provide advice and guidance, under the terms of a Service Level Agreement, to mitigate the impacts of drainage maintenance works on habitat. This requires that all drainage works must include mitigation and, where funding permits, fishery rehabilitation measures under the direction of DCAL Fisheries Technical Officers.

Anyone wishing to carry out culverting must apply for consent or approval to Rivers Agency under Schedule 6 of the Drainage (Northern Ireland) Order 1973 as amended. Rivers Agency consult with DCAL Fisheries Officers where a culvert proposal might impede fish movements or otherwise impact a fishery. Under the Planning Policy Statement 15 (Planning and Flood

Risk) the Department of the Environment (DOE) will only permit the culverting or canalisation of a watercourse in exceptional circumstances. Examples of such circumstances include:

- where such works are necessary as part of a flood relief scheme;
- where the culverting of a short length of a watercourse is necessary to provide access to a development site or part thereof; or
- when it is demonstrated by the applicant that there is no practicable alternative to the culverting of the watercourse.

The Drainage (Environmental Impact Assessment) Regulations (Northern Ireland) 2006 No. 34

These Regulations amend the Water (NI) Order 1999 and the Drainage (NI) Order 1973. They require DCAL (in relation to proposed canal and marina works) and DARD (in relation to proposed drainage schemes) to give consideration to any significant effects on the environment by such works and schemes, and to make an environmental statement of its conclusions.

The Lough Neagh Drainage Acts (Northern Ireland) 1955 c. 15 and 1970 c. 7

Under these Acts, DARD may prepare and operate schemes to regulate and control water levels of Lough Neagh for various purposes e.g. to reduce flooding, to preserve fisheries and natural beauty, to conserve fauna & flora, to facilitate disposal of effluents from the Lough etc.

Functions under article 6(3) of the 1955 Act were transferred to DCAL from DARD in 1999. It deals with liability of DCAL to dredge channels, maintain navigational posts/marks etc. at the entrance of Lower Bann to the Lough and at Six Mile Water and the maintenance of inland navigation in the Lower Bann.

The Conservation (Natural Habitats etc.) Regulations (NI) 1995

These Regulations control any operations which are potentially damaging to designated areas, such as Special Areas of Conservation and Special Protection Areas. In Northern Ireland, there are 54 Special Areas of Conservation (of which 18 have been designated as such for reasons specifically related to a water body), and 14 Special Protection Areas (10 of which are "water related" designations).

The Environment (Northern Ireland) Order 2002

The Environment Order makes provision for the prevention and control of environmental pollution and prescribes measures to allow for the better protection and management of Areas of Special Scientific Interest, which underpin other designated areas. In Northern Ireland there are 280 Areas of Special Scientific Interest, of which 52 have been designated for reasons specifically related to a water body.

Water (NI) Order 1999

The transferred functions under this Order provide DCAL with the powers to carry out dredging works and canal schemes and to promote the recreational or navigational use of any waterway. DCAL also has powers of improvement and restoration for any waterway, and powers of maintenance for any waterway not designated for the purposes of the Drainage Order.

The Water Abstraction and Impoundment Licensing (NI) Regulations 2006

These Regulations relate to "controlled activity", that is the abstraction of water from any underground strata or waterway and the construction, alteration or operation of any impounding works.

Water Resources (Environmental Impact Assessment) Regulations (NI) 2005 No. 32

These Regulations provide for the assessment of environmental effects of water management projects for agriculture. This does not include development covered by Planning EIA, drainage works under Drainage EIA or abstraction, diversion or impoundment of less than 200 cubic metres in 24 hours.

Scarbo - farmland

The Water and Sewerage Service (NI) Order 2006

This Order gives certain powers to the Water and Sewerage Undertaker (NI Water Limited), including laying pipes and carrying out works and engineering or building operations.

Food & Environment Protection Act 1985 c. 48

Part II of this Act applies, in relation to controlling deposits in the sea, up to the High Water Mean Spring tide mark. Under Section 5, a licence is required for the deposit of substances in the sea or under the seabed, and NIEA (as part of DOE) acts as licensing authority. Section 9 creates an offence of not having a licence and Section 10 provides that the licensing authority may carry out remediation works and recover expenses for damaging activities carried out without a licence.

In practice, a licence is required for:

- disposal of dredged material;
- construction work which involves the deposit of material, such as building of harbours, jetties, reclamation of land, sea outfall pipes etc.

EIA & Natural Habitats (Extraction of Minerals by Marine Dredging) (E&NI) 2007 No. 1067

Under regulation 4, it is an offence to carry out dredging unless exempted or in accordance with permission granted by DOE under part IV of the Regulations. The Regulations do not cover dredging allowed by the Harbours Act (NI) 1970, dredging in any waters by a harbour authority or extraction covered by Planning EIA Regulations.

Inshore Fishing (Prohibition of Fishing and Fishing Methods) Regulations (NI) 1993 No. 155

An amendment of these Regulations in 2008 extended the ban on fishing by suction dredging to all Northern Ireland waters, and introduced a ban on dredging for sea fish.

The Harbours Act (NI) 1970

Under this legislation, a Harbour Order is made for each harbour, which, inter alia, allows for the maintenance of navigational channels of the harbour. Whilst this permits necessary dredging, Harbour Authorities must apply for a licence under FEPA to deposit dredged substances in the sea.

Marine Works (EIA) Regulations 2007 No. 1518

These Regulations apply the requirement to conduct an environmental impact assessment for certain marine works. They seem to go further than other EIA Regulations, by requiring an "EIA consent" to be given by the appropriate authority (DOE) before any other regulatory consent (i.e. FEPA licence) is given and before any works commence (Regulation 4).

Harbour Works (EIA) Regulations (NI) 2003 No. 136

These Regulations apply the requirement to conduct an environmental impact assessment for certain types of harbour works – those below the low water mark of medium tides which are not otherwise covered by planning control or a requirement for a fish culture licence. If harbour works are carried out without consent, or in contravention of conditions in a consent, the appropriate Department (DRD or DARD) can issue a notice for the works to be removed and the site reinstated, or can carry out this reinstatement and recover the costs


Dunseverick

Strategies, schemes and programmes

Northern Ireland Atlantic Salmon Management Strategy

Work by DCAL under the Northern Ireland Atlantic Salmon Management Strategy and associated management plans will deliver improvements in the physical condition of waters. In partnership with the Loughs Agency a package of funding was secured to facilitate an extensive enhancement and management programme for Atlantic Salmon on three river catchments in Northern Ireland and Donegal, the Clanrye and Deele River catchments in the Carlingford and Foyle region and the River Main (in the Neagh Bann District). The work involved a partnership approach between a range of government agencies, non-departmental public bodies and angling associations. The majority of enhancement works were conducted between 2005-2007 and included a range of hard and soft engineering solutions such as the use of vortex weirs and groynes and use of soft engineering solutions such as spawning gravel addition, stock proof fencing, installation of cattle drinkers and tree planting. Preliminary monitoring has indicated a significant increase in salmonid densities at many of the rehabilitation sites.

Angling Development Programme 2002-2006

DCAL also ran an Angling Development Programme funded under the European Union Peace and Reconciliation Programme from 2002-2006. The programme was designed to develop angling and water based recreation projects. Funds were awarded to enhance angling facilities, develop inland waterway networks and provide visitor amenities. Part of the works that have been undertaken include morphological restoration works such as habitat improvement and improvement of fish passage. For example, funds were used to enhance degraded salmonid habitat along a 1000 metre stretch of the River Blackwater in 2004. This work utilised 'soft engineering' solutions such as fencing off the banks and using logs to stabilise the banks. Surveys that were undertaken after the work was completed showed that there was a general increase in juvenile salmon and trout numbers after the enhancement work.

The Loughs Agency generally undertake a large range of ongoing instream enhancement programmes with a view to rehabilitation of the aquatic environment.

Agri-environment improvement schemes

Agricultural land alongside rivers has often been cultivated through centuries of investment to protect it from flooding and to improve drainage. Constraining the space available to a river can harm the physical habitat, create flooding and silt problems for downstream landowners, properties and communities. It is important to achieve the correct balance between the interests of individual landowners and the overall benefits to society. In many cases it is sufficient to give rivers more space by fencing or by the creation of buffer strips and then allowing natural processes to allow the water environment to recover its natural diversity and structure. Because this type of restoration work is so closely related to the way land is managed there is a close link between the measures and mechanisms required to address diffuse agricultural pollution and those required to address the morphological impacts from agricultural production. Indeed, addressing the morphological impacts of agricultural activities typically will also help to reduce diffuse pollution impacts.

Some of the measures carried out under agri-environment improvement schemes such as the Countryside Management Scheme contribute to improving morphology impacts for example, by fencing off river banks to prevent cattle trampling the river. Provision of good practice information to farmers by the DARD Countryside Management Branch will also ensure that morphological impacts from agricultural activities are reduced. Rivers Agency has agreed with the Countryside Management Branch to leave a strip less than 2 metres wide or a wider strip greater than 5 metres to act as a buffer strip between cultivated land and rivers. The narrow strip allows machines to reach over fences to work on the river and the wider strip allows a machine to get onto the river bank to work.

Guidance and advice

DARD Rivers Agency provide environmental support and advice on new flood defence schemes and maintenance works carried out by the Agency. This can involve the scoping of proposed works, completion of environmental surveys, consultation with conservation bodies and liaison with NIEA for all works.

What improvements will current measures achieve?

At present, there is a range of diverse legislation for controlling or regulating activities which can cause morphological changes to our waters. There is no streamlined comprehensive system to control physical modifications at present.

River restoration work carried out by Rivers Agency, DCAL, Loughs Agency and angling clubs has improved the physical habitat of a number of our rivers. However there is a need for the development of a prioritised restoration work programme for water bodies that are impacted by morphological alterations and for a competent authority to oversee the work carried out by all the departments.

Over the first basin plan period we will develop further measures to address morphological impacts as our confidence in the classification process for morphology improves.


Shimna River

Review of legislation

DOE PEPG has undertaken a review of existing legislative controls to control physical modifications to surface waters. The review identified the existing relevant legislation that provides control on such activities across six main areas: Fisheries, Drainage, Marine, Planning, Water Resources and Conservation. These controls include consents, licences, policies and the requirement for assessments. The relevant legislation rests with the Department of the Environment, Department of Agriculture and Rural Development, Department of Culture Arts and Leisure and Department for Regional Development. Each of these Departments, in line with the 2003 Water Framework Directive Regulations shall exercise its relevant functions in a manner which secures compliance with the requirements of the Directive.

An inter-departmental working group has been established to develop appropriate guidance to supplement legislation offering control over physical modifications, which will ensure compliance with WFD requirements.

The working group is a sub-group of the WFD Implementation Working Group and will be comprised of officials from DOE NIEA, Planning and Environmental Policy Group, Planning Service, DARD and DCAL with input from other departments/ agencies when necessary.

In addition, as there will soon be extensive new marine legislation, through the Marine Strategy Framework Directive and UK and NI Marine Bills, it is also proposed that there is continuing liaison between WFD and Marine Policy teams within DOE to ensure that the requirements of the Water Framework Directive are taken into account in the drafting of relevant marine legislation.

Physical alterations to water bodies have not been previously regulated for the purpose of protecting ecological status as required under the Water Framework Directive. The review therefore also recommended that further research and monitoring is carried out to assess the relationship between hydromorphology and ecology within the water environment. Ongoing results of such research should be taken into account in policy considerations.

Implementation of restoration measures

There are a wide range of restoration measures that can be employed to address morphological impacts. Examples include:

- Re-meandering of straightened channels
- Re-construction of pools
- Substrate enhancement work
- Incorporation of river restoration & fisheries enhancement projects
- Removal of hard bank reinforcement/revetment, or replacement with soft engineering solution
- Re-opening of existing culverts
- Removal of impoundment and de-silting of impounded reach
- Adoption of operational protocols for impoundments
- Stabilisation of river banks
- Fencing programmes to exclude livestock
- Countryside management schemes
- Application of best practice forestry guidelines
- De-silting of affected river reaches
- Removal of barriers to fish migration
- Updating of existing fish passes and construction of new fish passes using a fish friendly design for all species.

Over the first basin plan period we will assess whether measures are technically feasible and cost effective to implement. We will then further develop and implement restoration measures on prioritised water bodies as our confidence in the classification process for morphology improves. However, for example, if a river has a known morphological pressure on it but it is considerably polluted it is not beneficial to address the morphological pressure until the pollution issue has been resolved and thus the ecology improved. Therefore, in this first river basin management plan new measures will be considered for the river and lake water bodies that were downgraded from high to good status as a result of morphological impact.


Trassey River

Strategic appraisal of barriers to fish

NIEA and the Loughs Agency are involved in a SNIFFER steering group which is developing a tool for assessing the extent to which barriers impede migration of a wide range of species. This tool is expected to be available for use from 2010 and will progressively improve our understanding of the impacts of barriers upon fish movements and migration.

A strategic appraisal of any significant barriers to fish movement will be conducted to inform the development of a programme to address significant barriers. The programme should include, where appropriate, the installation of new fish passes or the upgrading of existing passes and the removal of blockages.

What further actions will deliver environmental improvements?

The following tables summarise the existing/ planned measures and supplementary measures for Freshwater Morphology.

The Water Environment(Water Framework Directive) Regulations(Northern Ireland) 2003 (No. 544)[1]

Key Sectors: **historical engineering, urban development, public water supply, hydropower, agriculture, forestry**
Pressure Type: Freshwater morphology

Summary of existing and planned measures

Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of mechanism (year end)
Control modifications to surface waters	Implement requirements for planning permission	Planning (Northern Ireland) Order 1991	DOE		In place
	Control modifications to designated sites	The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995	NIEA		In place
	Control culverting activities	Schedule 6 of the Drainage (Northern Ireland) Order 1973 as amended	Rivers Agency		In place
		Planning Policy Statement 15 (Planning and Flood Risk)	DOE		In place
	Control drainage schemes Consider significant effects on the environment of any proposed works River enhancement works where appropriate Provide advice and guidance	Drainage Environmental Impact Assessment Regulations	Rivers Agency		In place
		Watercourse Maintenance Manual	Rivers Agency		In place
		Water Order (NI) 1999	NIEA		In place
Control removal of substrate from rivers	Prevent the unauthorised removal of material from river beds	Fisheries Act (Northern Ireland)1966	DCAL		In place
		Foyle and Carlingford Fisheries (Northern Ireland) Order 2007 (applies to the Foyle and Carlingford areas)	Loughs Agency		In place

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Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of mechanism (year end)
Protection of fisheries and habitats	Construct fish passes where weirs are built or reinstated	Fisheries Act (Northern Ireland)1966	DCAL		In place
		Foyle and Carlingford Fisheries* (applies to the Foyle and Carlingford areas)	Loughs Agency		In place
	Habitat improvement for Atlantic Salmon	Atlantic Salmon Management Strategy for Northern Ireland	DCAL, LA		In place
		NASCO Resolutions and Agreements	DCAL		In place
	Alleviate the impacts of drainage maintenance works on habitat using mitigation measures (and where funding permits, fishery rehabilitation measures)	Rivers Agency's Service Level Agreement with DCAL Inland Fisheries and Loughs Agency Education and advice	RA/DCAL/ LA		In place
	Provide environmental support and advice on new flood defence schemes and maintenance work	Education and advice	Rivers Agency		In place
Rehabilitation of the aquatic environment & Establish riparian vegetation	Encourage / promote use of Buffer strips	Northern Ireland Rural Development Programme	DARD	NIEA	In place
		Northern Ireland Countryside Management Scheme (NICMS)	DARD	NIEA	In place
		Agri-environment improvement schemes	DARD	NIEA	In place
	Encourage in-stream enhancement programmes	Guidance and advice	Loughs Agency		In place
Protection of fisheries and habitats	Appraise barriers to fish movement	Research and Development	DCAL	NIEA	In place

* (Northern Ireland) Order 2007

Key Sectors: **Historical engineering, urban development, public water supply, hydropower, agriculture, forestry**
Pressure Type: Freshwater morphology

Summary of supplementary measures

Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of action (year end)
Control modifications to surface waters	Produce appropriate guidance to supplement legislation offering control over physical modifications	Interdepartmental Working Group	DOE PEPG	DCAL, NIEA, DARD Rivers Agency	2010
Implementation of restoration measures	Assess technical feasibility and cost effectiveness of restoration measures	Economic appraisal	DARD Rivers Agency	DCAL, NIEA	2012
	Develop and implement restoration measures on selected water bodies	Guidance on hydromorphology legislative controls	DARD Rivers Agency	NIEA DCAL	2012

Our aim is to protect, conserve and promote the natural environment and built heritage for the benefit of present and future generations.

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