water matters

"Have your say!"

north eastern
river basin district

North South Shared Aquatic Resource (NS SHARE)

Invitation to comment

You are invited to give your views on the implementation of the EU Water Framework Directive in the North Eastern River Basin District. This booklet says what the Directive requires us to do and how we are working to implement it. It summarises the main issues identified to date and outlines proposals for dealing with them. Similar booklets have been produced for the seven other River Basin Districts in Ireland and Northern Ireland.

The Water Framework Directive (WFD) was adopted in 2000; it requires governments to take a new approach to managing all their waters: rivers, lakes, groundwater, estuaries and coastal waters. Member States must ensure that their waters achieve at least good status by 2015 and that status doesn't deteriorate in any waters. To achieve good status and preserve our best waters, it will be necessary to prepare and implement management plans for our waters.

While work on the Directive requires a considerable amount of technical expertise, it also requires the knowledge, understanding and views of people who use water in their everyday lives, whether they're drinking it, fishing in it, feeding cattle with it, swimming in it, using it in manufacturing or power generation or even just walking the dog beside it.

The Directive is not just about the environment: an economic analysis of water uses is an essential part of the process. This booklet lists the main uses and activities that may be affected by the management plans. Again, users' knowledge and understanding can help ensure that all the implications for people and the economy are considered.

That's why your views are being sought. You don't have to read the whole of this booklet (unless you want to) because, after a background section at the start, it is divided up into topics, and you can read just the topics you're interested in. At the end, there's a section about the next steps in the Water Framework Directive process, and some suggestions if you want more information

This is how the booklet is structured:

Your views

We would like you to read this booklet and let us have your comments.

For each of the most important water-related issues, the booklet sets out:

- background information showing the extent of each issue and the way that it can cause water problems
- a summary of existing controls and an assessment of their adequacy
- the proposed actions, the parties responsible for taking those actions and the users who would be affected.

We are interested in receiving your comments on whether we have identified the most important issues, whether we have overlooked any significant issues and what you think about the proposed actions.

We will be consulting for six months on the water-related issues and suggested actions contained in this booklet. We will gladly accept your comments up until 22 December 2007. Early responses would be appreciated to allow more time to clarify and resolve issues that may arise.

This booklet is issued by the responsible authority for the North Eastern River Basin District; Environment and Heritage Service (Northern Ireland). You can send comments to:

Ms Cate Murphy
Secretary
Implementation Working Group
Environment and Heritage Service
17 Antrim Road
Lisburn
BT28 3AL

Catriona.Murphy@doeni.gov.uk

We will comply with data protection requirements and will use information that you provide to compile a digest of responses. Please let us know if you wish your response to remain anonymous and we will include your comments in the digest without saying who made them. If you want to add new comments or information you can contact our website at any stage (www.nerbd.com).

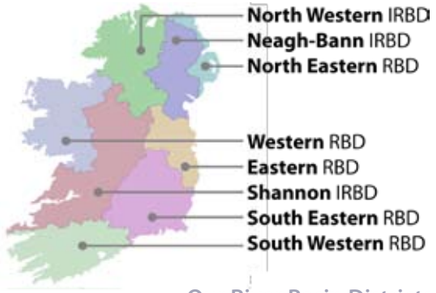
The next 11 pages provide some background information on water problems, the Water Framework Directive and the North Eastern district.

Background: the WFD story so far

All the Member States of the European Union are moving towards **River Basin Management Planning** in accordance with the Water Framework Directive. The Directive aims to provide a new, strengthened system for the protection and improvement of water resources and water-dependent ecosystems. It aims at preventing any deterioration in the existing status of waters, including the maintenance of "high status" where it exists, and at ensuring that all waters achieve at least "good status" by 2015.

North Eastern River Basin District

The Directive requires Member States to identify river basins (or catchments) within its territory and to assign these to **River Basin Districts** (RBDs), which will serve as the "administrative areas" for coordinated water management. A cross-border basin covering the territory of more than one Member State must be assigned to an **"International RBD".** Some 400 river basins on the whole island of Ireland have been grouped and assigned to a total of eight RBDs. One of these RBDs lies wholly in Northern Ireland, four lie wholly in Ireland and three are International RBDs. The responsible authorities must coordinate their water management actions in relation to the district.



Our River Basin Districts

The **North Eastern River Basin District** is the RBD that lies wholly within Northern Ireland. It encompasses the Bush and Glens, Lagan and Strangford catchment areas. This booklet is issued by the responsible authority for the North Eastern district; Environment and Heritage Service, Northern Ireland.

A new approach to managing our waters

The Water Framework Directive takes a new approach to managing waters. This approach is distinctive in several ways, but perhaps the most important are:

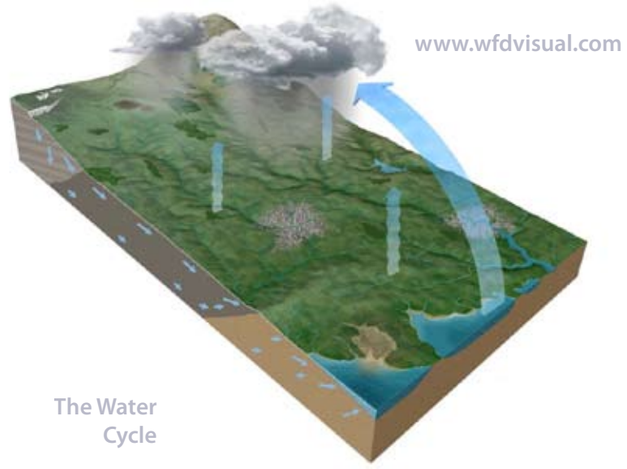
- its comprehensive approach to the water environment in the whole district
- its structured approach: find out the facts, decide which of them need action, make a management plan, carry out the plan
- its requirement on all responsible authorities to coordinate their actions for water management.

There is a wide range of existing legislation that contributes to the protection of our waters; we have not listed it all in this booklet but if you are interested you can access the relevant legislation on websites through the links at **www.nerbd.com**. It includes existing directives, daughter directives and measures to reduce pollution, for example the Urban Wastewater Treatment, Nitrates, Bathing Waters, Shellfish, Habitats and Dangerous Substances Directives. The Water Framework Directive encompasses all of this legislation. These controls are already being implemented in Northern Ireland; however, the challenge is to coordinate these controls for optimum effect.

The comprehensive view also applies to human activities: if they affect the water environment, they have to be taken into account.

The first phase of the Water Framework Directive is being implemented, up to 2015, and there will be further phases to follow.

Much work has gone into finding out the facts: identifying all the waters in each district, finding out their current status and condition, listing the uses made of the waters and the pressures on them. That work is continuing, but there is enough information at this stage to put the preliminary findings in this booklet and ask the general public to comment on them.



The Water Cycle

That is what this booklet is about. It is a preliminary overview of our main water related issues and the actions suggested to address these issues. You are being asked to help by checking this overview and making comments to correct or improve the listing of issues and suggested actions.

The relevant authorities are required to adopt a **River Basin Management Plan**. A draft plan will be issued in 2008, and you will have a further opportunity to comment at that stage. The final version of the plan is to be published by the end of 2009. The plan will identify the specific environmental objectives to be achieved by the end of 2015 and the programme of measures, that is the actions, that will be taken to achieve them.

In effect, this booklet is an outline of the proposed plan; if you're interested in or likely to be affected by the plan, now is an opportunity to speak - **have your say!**

Why water matters

Water sustains life. The water on our planet flows in a constant cycle, driven by heat from the sun. Rainfall and melted snow seep underground to become **groundwater**, which emerges as springs feeding rivers. Rivers drain land from mountainous uplands, passing through lakes on a meandering journey to estuaries and the sea. These waters provide the variety of habitats that aquatic plants and animals need.

Water is essential for life. Humans need it for drinking and food preparation. It is also vital to our natural environment, supporting plants and animals. Water is critical to our economy, generating and sustaining wealth through activities such as agriculture, commercial fishing, power generation, industry, services, transport and tourism. However, water is a fragile resource that needs to be protected.

The area of land that a river drains is called its catchment or **basin**. The basin contains all surface waters (rivers, canals, lakes, reservoirs, estuaries and coastal waters) and the underground waters (groundwaters), together with the lands that drain into them. Our environment is not bounded by political borders, although the responsibilities for managing waters are. The activities that take place anywhere in the basin, even in remote upland areas, can affect the waters downstream. For example, the health of Belfast Lough can be affected by activities as far upstream as the Mourne Mountains. **River basin districts**, containing adjacent basins, are the natural unit to manage our waters.

Water goals

Waters must be of sufficient quantity and satisfactory quality to protect our aquatic environment and beneficial uses.


Lough Cowey

Many of our waters are still healthy and the first challenge is to take action to preserve their status.

Unfortunately, there are also cases of waters choked with weeds and algae, and more severe incidents of fish-kills or contaminated drinking waters. Abstracting too much water can cause very low water levels in dry weather. Our challenge in these cases is to take action to restore such areas to their natural healthy state.

So there are two main tasks to be undertaken:

- where waters are **high or good status**, manage them so they stay that way
- where they are **less than good status**, manage them so that they improve to at least good status.

The quality of our waters will soon be classified against new water quality standards being developed by environmental agencies. Actions will be set out within the management plans to ensure that waters meet these new standards.

Human activity and impacts on water

The population of Northern Ireland is 1.7 million, 0.6 million of whom live in the Belfast metropolitan area. Generally, the east of the country, with its urban areas and fertile soils, is more densely populated than the west.

By 2027 there may be an additional 0.2 million people living in Northern Ireland, partly because the strength of the economy has attracted inward migration. Large multi-national corporations have been attracted too: they have invested in Northern Ireland because they value the competitive location, well managed and stable economy and highly educated workforce.


Giant's Causeway

Northern Ireland's economy should benefit from political agreement and devolved institutions and economic prospects are good. The economy was historically industrial, with engineering (aircraft and ship building) and textile manufacture, but in recent years general manufacturing has declined whilst the service sector has grown. There has also been expansion in other sectors: construction and consumer spending have increased and tourism, including recreational fishing and golf holidays, is a major growth industry.

Our waters have been affected by these changes:

- more people and increased household water usage require bigger water supply schemes and produce larger volumes of wastewater to treat and dispose of
- demand for more food and industrial goods leads to more intensive or expanded activities with higher water demand and pollution threats
- additional homes mean the spread of urban areas and an increase in rural housing, with the associated threat of more water pollution. Building developments may necessitate more flood control works
- ports handling more exports and imports mean busy shipping routes and demand for port expansion.

Water quality surveys in Northern Ireland have measured improvements in certain waters resulting from water management actions. It is vital for our water environment, and the economy that depends on it, that recovery continues. We must take practical action to balance our demands so that all our waters are in a healthy state:

- so that drinking water sources are sufficiently protected to guarantee quality of supply
- so that we have enough water to sustain commercial use
- so that our native aquatic plant and animal communities are protected
- so that our waters can be used for recreation and tourism.

Common water problems

Perhaps the most common environmental water problem is **pollution**, which can threaten all parts of the water cycle from groundwaters to rivers, lakes, estuaries and coastal waters. Pollution means that there is too much of a harmful substance in the water: for example a poisonous metal or pesticide, a nutrient that causes excessive growth of weeds, or even silt that can smother fish spawning beds.

Pollution can arise from two types of sources:

- local **point** sources, for example pipes discharging effluents from industries, wastewater treatment plants, urban areas or mines
- widespread **diffuse** pollution sources, such as land use activities like farming, forestry or septic tanks.

The effect of **physical modifications** on waterways is of growing concern. Waters are modified so we can make particular use of them. Examples include:

- drainage of lands for development, agriculture, forestry or peat extraction
- construction of flood defences or weirs to control river water levels
- damming of lakes to provide storage for power generation or water supply
- port developments or construction of coastal defences to prevent flooding or erosion.

These engineered modifications can either directly remove habitat or indirectly change the natural structure or flow of our waterways. This may mean a reduction in biodiversity, loss of rare or endangered habitats and species or depletion of valuable fish stocks.

Abstraction of unsustainable amounts of water is another potential problem for both underground and surface water resources. If we remove too much water for drinking or commercial purposes, we reduce an ecosystem's ability to function. In extreme cases we can dry up river beds or lake shores, or even cause salt water to be drawn into the water beneath our coastal rocks.

Our water environment is also facing other threats. One example of an emerging problem is the spread of **invasive alien species,** such as the Zebra Mussel. These are non-native aquatic plants or animals that can displace and upset the natural balance of our native species. Another example is **climate change**; its impact is difficult to predict, but heavier winter rainstorms may cause more flooding, raising demand for flood controls, whereas summer droughts could affect abstractions or water quality.

The North Eastern district and its waters

The North Eastern district is the smallest in the island of Ireland, lying entirely within Northern Ireland. It has a land area of just over 3,000 km^2 and a further 1,000 km^2 of marine waters. It takes in large parts of counties Antrim and Down and a small portion of County Londonderry.


Knockagh

The district is flanked by the Antrim Plateau and Glens of Antrim to the north and the Mourne Mountains, which includes Slieve Donard, the highest peak in Northern Ireland, to the south.

Over 0.7 million people live in the district which includes the most densely populated region of Northern Ireland, the Belfast Metropolitan Area and surrounding commuter areas including Lisburn, Newtownabbey, Carrickfergus, Bangor and Newtownards. Larne, Downpatrick and Newcastle are the main urban centres outside of the Belfast area. Most of the main urban areas are located beside rivers or on the coast. In rural areas, many people live in small villages or single dwellings. The growing population increases pressure on the systems that deliver drinking water and treat wastewater.

Industry is mainly concentrated around the urban areas with much of the rest of the district given over to farming. The most productive farmland is in the Lagan valley and other lowland areas. Fish farming is also a significant commercial activity in the district whilst boating is a popular recreational activity. There are many natural beauty spots that attract tourists: some areas within the district are popular holiday destinations, these include the Antrim Plateau and Glens of Antrim, the Giant's Causeway, Strangford Lough and the Mountains of Mourne. All of the activities in the district have the potential to impact our waters and therefore must be managed sustainably.

Our special areas

While all of our waters are important, some areas require greater protection because they contain rare and vulnerable habitats or wildlife. Research is being carried out to determine how best to protect these areas and their wildlife. Other areas are sensitive because of their beneficial uses or the need to protect human health. They include drinking water sources, shellfish growing areas and bathing areas, where we must guard against bacteria, viruses and parasites such as *Cryptosporidium* and *Salmonella*.

All of the areas and waters requiring special protection in the North Eastern district have been identified, mapped and listed in a register (see **www.nerbd.com**). They include parts of Strangford Lough, the Mournes, Belfast Lough, Silent Valley and Larne Lough.

The principal **river** systems are the Lagan (on which Belfast is situated), Bush and the Quoile. Smaller basins include those draining the Glens of Antrim and the County Down coastline, including the Ards peninsula.

The main **lakes** within the district are Lough Mourne and the Clea lakes as well as Silent Valley which is a major public water supply reservoir.

Marine waters account for just over 1,000 km^2 – the district contains most of Northern Ireland's coastline. Belfast Lough and Strangford Lough are the largest sea inlets in the district. Coastal waters of the North Channel include the surrounds of Rathlin Island, the Maidens and the Copelands.

Permeable rocks and soils within the Lagan and Enler Valleys and local sand and gravel deposits within river valleys support good quantities of **groundwater** and are used for water supply but most of the district has underlying rocks and mixed clays that hinder water seepage.

The causes of our local water problems

There is a wealth of knowledge available about our waters in national water quality reports, academic research and investigations. In 2004, all available information was investigated to identify the district's main problems: those that are widespread and those that pose the greatest threat of damage to our water environment. The analysis (see **www.nerbd.com**) identified these potential problems.


County Down Landscape

Rivers: many rivers are under threat from diffuse and point source pollution, as well as physical modifications. A smaller number of rivers suffer from over-abstraction.

Lakes: again diffuse and point source pollution and physical modifications are key problems for our lakes. Abstraction affects a small number of lakes.

Marine waters: physical changes and pollution coming from the district upstream threaten many of our estuarine and coastal waters.

Groundwaters: diffuse pollution is the key influence on our underground waters. A few localised areas are affected by point source pollution or over-abstraction.

This table ranks our water problems: 1 = least threat and 5 = greatest threat.

	Rivers	Lakes	Marine Waters	Groundwaters
Point Source Pollution	**3**	**5**	**5**	**1**
Diffuse Source Pollution	**5**	**5**	**5**	**4**
Physical Modifications	**5**	**5**	**5**	**-**
Abstractions	**1**	**1**	**1**	**2**

Using local expertise

The Directive requires the involvement of a very wide range of public bodies, which are mentioned throughout this booklet. A specific body has been set up to ensure the involvement of Northern Ireland's relevant authorities: the Implementation Working Group. This body is referred to as the **authorities group** throughout this booklet.

To encourage the public to participate in making and implementing action plans, special stakeholder groups have been established. Northern Ireland has established a national stakeholders forum and nine individual catchment stakeholder groups are being set up. These **participation groups** have already contributed knowledge, expertise and views that have helped in preparing this booklet. A full list of participants is available on **www.nerbd.com.**

Local workshops and meetings were held with the district's public participation and authorities groups to debate the main issues and help to shape this booklet. The main water problems identified in the North Eastern district were:

Point sources
- wastewater and industrial discharges
- other point sources: landfills quarries, mines and contaminated lands

Diffuse sources
- agricultural activities
- wastewater from unsewered properties
- forestry activities
- usage and discharge of dangerous substances

Physical modifications
- including channel dredging, culverts, weirs, boat movements and floodplain demand

Abstractions
- protection of sources and prevention of water shortages

Locally focussed and future issues
- alien species/biodiversity
- protecting high quality areas
- future pressure trends and climate change.


Stakeholder Consultations

Question 1 - Do you agree that these are the key causes of water problems within the North Eastern district?

Positive steps

As you read earlier, recent water quality surveys in Northern Ireland have measured improvements in certain waters resulting from water management actions. It is vital for our water environment, and the economy that depends on it, that recovery continues.


Belfast Lough

In the North Eastern area, the public participation and authorities groups highlighted some areas where significant progress has been made;
- the recent Nitrates Action Programme will play a major role in addressing agricultural pollution
- use of new technologies in developments such as sustainable drainage schemes, constructed wetlands, silt ponds and riparian zone protection (for example the A8 Belfast to Larne Road has a sustainable drainage system)
- education programmes like Environment and Heritage Service's curriculum educational packs for rivers, wetlands and the seashore are explaining the issues to school children at classroom level
- upgraded wastewater treatment works throughout the district, which are making a real difference and have helped address issues with the non-compliance with EU Directives and national environmental standards
- community partnership projects such as the Bog Meadow's Partnership Project adjacent to the M1 Motorway in Belfast, led by the Ulster Wildlife Trust.

And there is more good news in that the responsible government authorities in the UK, including Northern Ireland, have so far successfully met all the Water Framework Directive's early milestones and are among the EU Member States showing the highest level of compliance with the Directive to date. So progress is possible: we can tackle the issues and manage our waters.

Planning our actions

It is time to think, plan and act to protect our waters. We have a legal obligation to comply with the Water Framework Directive, but more importantly if we do not meet this challenge we will have failed ourselves and future generations.

Actions needed to protect waters will be prescribed in **river basin management plans**. The first plans, for the period 2009–2015, will address our main water issues with second and third plans, for the periods 2015–2021 and 2021–2027, which will address any remaining issues or any new issues that may arise.

Our activities must be sustainable, so that we protect our waters while continuing to enjoy economic development. The necessary changes will not just affect public authorities and industry; they will also apply to every individual. Everything that we do from washing dishes to fertilising gardens has a consequence for our waters.

Emerging and changing issues

The first management plans will address the district's main water issues. But what if we have missed something, or some new issue emerges before 2015?

New issues will emerge and the importance of existing issues will change along with economic and social changes driven by population growth, development demand and land use change. Climate change impacts may be complex and hard to predict, for example the spread of alien species may be stimulated by increased temperatures in waters, so these impacts will have to be reviewed during the plan.

A series of special studies are being carried out to update information and improve the understanding of our water issues. New areas, including the small coastal areas which were not fully covered in earlier investigations, are being assessed in greater detail this time around. Study highlights are presented in this booklet, but the detailed findings of the in-depth studies are available on the district's website **www.nerbd.com.**


Mount Stewart

Action themes

The North Eastern public participation and authorities groups recommended the following action themes to overcome shortcomings in current water management:

- joined-up thinking: for instance, ensuring that development plans and upgrades are in place before new development is allowed
- more resources to improve response to water problems
- use of economic tools such as water charging or grants as incentives
- education and awareness campaigns
- keeping water on the political agenda.

Question 2 - What is your view about these suggested action themes?
Have we missed something that would be helpful within the North Eastern district?

Wastewater and industrial discharges

In urban areas wastewater from homes and industrial or commercial sources is collected and carried in public sewers to treatment plants, where many of the pollutants are removed. The sewers also drain storm water from urban areas including roads, roofs and recreational areas. The level of treatment is determined by the size of the population being served and the sensitivity of the receiving waters. The treated wastewater, or **effluent**, is discharged through an outfall pipe to our rivers, lakes, marine waters or, very occasionally, to groundwater.

Northern Ireland has 279 plants serving populations of more than 250: 35 of them serve populations greater than 10,000 and 3 serve populations over 100,000. These plants represent 98% of public sewage treatment capacity. Approximately 800 wastewater plants serve populations of less than 250.

Between 2000 and 2006, authorities in Northern Ireland invested over £300 million to upgrade 100 wastewater treatment plants. Extra investment will be required to keep pace with population and economic growth; urban drainage must also cope with higher drainage demands. An additional £600 million may be invested in wastewater treatment by 2010.

Throughout Northern Ireland, there are some 100 major industries currently licensed to discharge to waters, 770 small-scale commercial and industrial activities discharge to sewer systems and a further 900 discharge direct to waters.

How can wastewater and industrial discharges cause water problems?

Inadequately treated effluents can lead to unacceptable levels of pollutants (nutrients, bacteria, organic materials or dangerous substances) in receiving waters. These pollutants can damage water quality and downstream uses (for example bathing waters, shellfish waters or waters supporting sensitive species). The amount of dilution available is an important factor: a discharge from a small village into a large river may pose no threat to water quality, whereas a discharge from a larger town may cause significant quality deterioration in the receiving waters if the level of treatment or available dilution isn't adequate.

Spills to surface waters from sewerage networks release untreated wastewater and storm water, which can have nutrients, bacteria, organic materials and dangerous substances from homes and industries, metals and hydrocarbons from vehicle exhausts and run-off from roads, pesticides from parks, golf-courses and gardens. Leaking of pollutants from underground sewers and tanks can threaten groundwaters and surface waters.

In the North Eastern district as a whole, estimates indicate that municipal and industrial discharges produce over 33% of the yearly phosphorus load and less than 10% of the nitrogen load. However in the densely populated Lagan and Belfast Lough catchment nutrient contributions from municipal and industrial discharges are much higher.

Most of the district's growing population lives near the coastline, relying on treatment plants around Belfast and North Down; tourist populations create extra seasonal treatment demand in some areas. The potential impacts of sewer spills and run-off from roads were also highlighted as water problems by the North Eastern participation and authorities groups. More investment is needed to make sure that treatment facilities can cater for the growing demands in the district.

In May 2002 'planning hotspots' (where existing sewage infrastructure was causing or contributing to prolonged non-compliance with water environmental standards) were identified throughout Northern Ireland. In the North Eastern district Portrush, Portaferry, Bangor and Carrickfergus are examples of areas requiring upgrade of sewage infrastructure. In response, facilities are being improved in many urban areas under Northern Ireland Water's (formerly Water Service) Capital Works Programme (CWP).

What existing controls are in place?

The Water and Sewerage Services Order was introduced in Northern Ireland in April 2007. It appointed a government-owned company (Northern Ireland Water) to deliver water and sewerage services. The order establishes a regulatory regime to ensure compliance with environmental, consumer protection and efficiency standards and sets out new rights for consumers.

The **Urban Wastewater Treatment** Directive requires Northern Ireland Water to provide appropriate wastewater treatment for urban areas. **Planning permission** must be obtained for wastewater treatment plants from the Planning Service. The **Water Order** requires consents to be issued for any trade, sewage effluent or other polluting matter from commercial, industrial, or domestic premises to waters. The **Food and Environmental Protection Act** applies controls on the construction of sewage disposal pipes on or near the foreshore.

Northern Ireland Water is obliged to **monitor** inflowing wastewater and effluent at treatment plants; their activities are assessed by Environment and Heritage Service.

Environment and Heritage Service regulates major industrial activities under the **Integrated Pollution Prevention and Control** (IPPC) Directive. Small-scale commercial and industrial discharges to sewer systems and waters are licensed or consented by Northern Ireland Water and Environment and Heritage Service respectively. **Industrial discharge controls** lay down effluent quality and quantity conditions.

Environment and Heritage Service is also responsible for addressing water pollution from **spills or leakage** under the Water Order.

Sustainable Drainage Systems (SuDS) control the quantity and quality of run-off waters by providing storage in tanks, swales or ponds. This delays or prevents discharge to streams or rivers until there is capacity to accommodate it or until it can be diverted to a treatment plant. Guidance is being progressed in Northern Ireland: Environment and Heritage Service works closely with Northern Ireland Water to identify and rectify unsatisfactory sewer spills, to rationalise sewer systems and to reduce their total number. Environment and Heritage Service issues performance standards that control spill frequency, volume of discharge and associated pollutant loads so that water quality objectives and desired amenity value of receiving waters are not compromised.

Northcoast Wastewater Treatment Plant

Are these controls adequate to meet the new targets?

Recent changes, arising from the establishment of Northern Ireland Water as a government-owned company, mean that wastewater discharges from public sewerage infrastructure in Northern Ireland are now subject to enforcement action if the conditions of consent are not met or pollution incidents are caused by a failure to properly maintain and operate the infrastructure.

What additional actions are proposed?

Environment and Heritage Service will review wastewater consent conditions during 2008 to take account of the new water quality targets.

Around 80% of Northern Ireland's river, lake and coastal catchments have been designated as sensitive to nutrient enrichment. That means that, within seven years of designation, wastewater treatment must include nutrient removal if the discharges go either directly or indirectly to these sensitive areas.

Wastewater and Industrial Discharges

Industrial licence or consent conditions will have to be reviewed and revised to ensure that adequate controls and emission limits are set to achieve new water quality standards in receiving waters. This will require minor changes to licences or consents issued by Environment and Heritage Service or Northern Ireland Water.

Detailed studies are being undertaken to support the review of the licensing system and address urban spills. These studies cover the identification of the pollutants discharged in effluent, the pollutant limits to be set in licence conditions. Education and awareness-raising programmes will also be provided.

These proposed actions will result in stricter controls on existing and planned wastewater and industrial discharges to waters. Stakeholders directly affected by these proposed measures include Northern Ireland Water, transport authorities as well as industries discharging wastewater effluent to sewers or directly to waters.

Belfast Lough, View from the Shipyard

Question 3 - What is your view about the suggested actions to control problems related to wastewater and industrial discharge within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

Landfills, quarries, mines and contaminated lands

Waste disposal sites (including old un-lined landfills), quarries, mines, gasworks sites and industrial lands produce lesser discharges to waters than wastewater plants and industries, but residues or waste products from previous activities may have seeped into the ground and continue to threaten groundwater and surface waters.

Our knowledge of these sites is incomplete and needs updating to assess the scale of this problem. We have good records of today's engineered landfills but not of the contents or locations of past landfills. Environment and Heritage Service have a database that lists hundreds of potential areas of land contaminated by previous use in Northern Ireland. Over 350 quarries and 6 mines, both active and inactive, have been identified in Northern Ireland, most of them very small and unlikely to present a serious risk.

There are at least 200 unregulated or illegal landfills throughout Northern Ireland. Environment and Heritage Service receive 1,000 to 1,200 reports of illegal dumping each year. Estimates suggest that in 2002–2004, up to 250,000 tonnes of household waste from Ireland were illegally dumped in Northern Ireland; the cost of removal is likely to exceed £28 million. The two jurisdictions have agreed joint enforcement operations to penalise and deter illegal activities. An Environmental Protection Agency report in 2005 provided the first comprehensive overview of the scale of unauthorised waste activity in Ireland. It concluded that illegal cross-border movement of waste had reduced significantly as a result of increased vigilance and cross-border cooperation.

How can these sites cause water problems?

The key threat to waters from these sites is potential contamination from pollutants (mainly dangerous substances, for example metals and fuel). These chemicals may travel through groundwaters and enter surface waters, affecting the quality of both, damaging aquatic plants and animals and impairing water uses.

There is a second possible threat. At some quarry sites, the water table is lowered to allow quarrying. This can affect nearby wetland areas, and the transfer of groundwater to surface waters can change water chemistry.

There is concern about the potential impacts of such sites in the North Eastern district. One example is the illegal dumping that occurs in the upland areas of the district, for example the Glens of Antrim where sand pits or uncultivated land have been used to dispose of waste. The North Eastern participation and authorities groups identified these as potential water problems in the district.

What existing controls are in place?
Northern Ireland has a range of legislation dealing with the establishment and operation of waste management, quarry and mine sites and contaminated lands; the legislation is supported by policies and guidance on best practice for addressing water pollution problems.

The Waste and Contaminated Land Order is the primary control for regulated **waste management.** Licensing of waste facilities is administered by Environment and Heritage Service.

The Geological Survey of Northern Ireland compiles and maintains a register of working **quarries** and pits. Planning applications for new facilities, above a size threshold, generally require an Environmental Impact Assessment.

The Department for Enterprise, Trade and Investment grants prospecting and mining licences for exploration and development of minerals. Planning permission for mineral development is also required under Northern Ireland's planning system. The Geological Survey of Northern Ireland maintains and updates registers of abandoned or working **mines.** Applications for all new mines generally require an Environmental Impact Assessment. Integrated Pollution prevention and control licences are required from Environment and Heritage Service in mining operations.

The Water Order identifies responsibilities for addressing water pollution incidents and the requirement to consent discharges to waters. The Environment and Heritage Service applies the principles of integrated pollution prevention, the polluter pays principle and the precautionary approach when dealing with historic, unregulated sites such as **contaminated lands.**

Are these controls adequate to meet the new targets?
The current regulatory controls assign the responsibilities for managing these sites. The challenge is to enforce these controls, particularly to deal with historic, unregulated sites.

What additional actions are proposed?
Northern Ireland's Waste and Contaminated Land Order will be amended to include new measures for the investigation, enforcement and prevention of waste offences, with increased penalties and new powers to stop, search and seize vehicles used in committing offences. Developers and contractors will be required to produce Site Waste Management Plans to ensure better management of waste from construction.

In Northern Ireland a Review of Old Mineral Permission (ROMP) for quarries and **mines** is providing better information about sites and their environmental impact. The Department of the Environment will have powers to review mineral permissions which may result in the setting of new environmental standards. ROMP can also require an environmental impact assessment to be carried out on mineral sites under the Environmental Impact Assessment Regulations.


Black Mountain Quarry

The Department of the Environment has proposed Contaminated Land regulations to cover the designation of special sites and their handling. Remediation notices could be served under the new controls listing the measures required to remove pollutants or return the land to an uncontaminated condition. A register detailing contaminated land sites, available for public inspection, would also be compiled.

These activities will confirm the locations and threats that these sites pose and support the control of discharges. Monitoring, extended where appropriate, will confirm the extent of the problem. In considering potential restoration measures, social and cost factors, as well as technical feasibility, will have to be evaluated. Education and awareness-raising programmes will also be provided.

These proposed actions will result in stricter controls on activities with the potential to discharge to waters. Stakeholders directly affected by these proposed measures include district councils and industries, commercial enterprises and owners of land on which such activities have taken place.

Question 4 - What is your view about the suggested actions to control problems related to landfills, quarries, mines and contaminated lands within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

Agriculture

Agriculture and the agri-food sector account for 3.5% of total added value in Northern Ireland's economy and, in 2005, employed around 51,000 people, just over 6.5% of the workforce, in full-time, part-time or casual employment. Farms cover about 70% of the total land area, around 80% as grassland, 15% hill/rough land and 5% for tillage. Beef, milk, sheep and poultry account for over half of the value of agricultural produce; meat and milk products are major exports. Average stocking levels on farms in Northern Ireland are 1.3 animals per hectare, (1.8 in lowland areas).

Former European aid schemes, production demands and economic influences encouraged intensification: fewer farms, lower employment, larger herds and farms becoming more grass-based. Intensive piggery, poultry and mushroom enterprises are concentrated in south and mid-Ulster.

Environment and Heritage Service's latest report on Water Pollution Incidents and Enforcement identified agricultural activities as one of the three most common types of pollution in waters, responsible for 24% of Northern Ireland's pollution incidents.

Reform of the EU Common Agricultural Policy, and new opportunities (for example the increase in bio-fuel crops), mean that the agricultural sector will continue to change and farmers will have an important role in our action plans.

How can agriculture cause water problems?

Environmental agencies have identified two main water quality problems relating to agriculture. A third, pesticides, is covered under Dangerous Substances. The two main problems are:

- enrichment of water by nutrients (phosphorus and nitrogen). Nutrients can be carried into waters from a range of activities on farms including contaminated water running from farmyards, or washed from fields that have been treated with nutrient-rich organic and chemical fertilisers or leaks from manure stores. The nutrients accelerate plant growth, which disturbs the balance of aquatic plants and animals and affects water quality. This eutrophication, as it is called, is the most widespread threat to our water quality
- organic pollution from animal slurry/manure and silage effluent. The breakdown of this organic material uses up oxygen that aquatic plants and animals need to survive, and suspended solids and ammonia can cause fish kills (although such kills have reduced in number). Slurry can also contaminate drinking water with bacteria, parasites and viruses.

In the North Eastern district, agriculture is an important activity, using about 55% of the land. Agricultural activities vary within the North Eastern district, with sheep farming focussed in the Glens of Antrim and grassland, tillage and horticulture in County Down.

Estimates of nutrient input into waters also vary, overall figures indicate that agriculture produces over 40% of the yearly phosphorus load and 75% of the nitrogen load, but in certain rural catchments, for example the Quoile and Strangford Lough system, nitrogen loading from agriculture is in excess of 90%.

Consultations raised significant local concern about the water problems that could result from agricultural intensification, inappropriate application of fertilisers and the disposal of spent sheep dip.

What existing controls are in place?

The Department of Agriculture and Rural Development operates within Europe's Common Agricultural Policy and environmental controls. In 2005, the department opted for full decoupling of agricultural support from production under Europe's Single Farm Payment scheme.

Under **cross-compliance**, all farmers are required to respect the various Statutory Management Requirements set down in European legislation on the environment and on public, animal and plant health and animal welfare; they are also required to maintain land in Good Agricultural and Environmental Condition. In 2006, Northern Ireland introduced **nitrates action programme** regulations to provide statutory requirements for good agricultural practice in protecting waters from nutrient inputs; implementation will be monitored under cross-compliance. These regulations include controls on minimum storage requirements for livestock manure, nutrient management and land management actions that prevent or reduce water pollution. Monitoring and mini-catchment programmes will monitor the effectiveness of this nitrates action programme.


Dairy Farming

Participation in **agri-environmental schemes,** such as the Environmentally Sensitive Area (ESA)

and Countryside Management Scheme (CMS) continues to increase. These schemes reward farmers for carrying out their activities in an environmentally friendly manner to bring about environmental improvement on farms; **organic** farming is also supported. At the end of 2006, over 13,000 farmers (almost 45% of farmland) were participating in these schemes.


Fertiliser Application

The Department of Agriculture and Rural Development provides investment aid for improved storage for **farm manure.** The 2005/06 schemes (with grant rates of 60% to 75%), helping farmers to comply with the requirements of the nitrates action programme, had 4,800 applicants.

There are around 11,000 beef and sheep farmers taking part in a **farm quality assurance scheme** involving audits and environmental care. The Department of Agriculture and Rural Development plays a strong advisory role, providing support on pollution control, and has recently issued a consultation on a **code of good agricultural practice** for the prevention of pollution of water, air and soil. Controls on agricultural water pollution are also contained in Northern Ireland's Biodiversity and River Conservation Strategies, available from **www.dardni.gov.uk** and **www.ehsni.gov.uk.**

The Department of the Environment, Environment and Heritage Service and fishery authorities, also have powers of inspection and enforcement under **water pollution laws,** including the nitrates action programme regulations. These bodies undertake routine inspections and enforcement actions in response to water quality incidents related to agriculture.

Environment and Heritage Service license intensive agricultural enterprises under the **Integrated Pollution and Prevention Control** (IPPC) system applying IPPC Directive thresholds.

The Department of the Environment introduced **groundwater regulations** governing the disposal of waste sheep dip in 1999, **construction standards** for the storage of silage, slurry and agricultural fuel oil in 2003 and **phosphorus regulations** which control the use of chemical phosphorus fertiliser to crop requirement in 2006. Environment and Heritage Service is responsible for the enforcement of these regulations along with other legislation restricting the application of sewage sludge and other organic wastes to crop requirement.

Are these controls adequate to meet the new targets?
The recent introduction of good agricultural practice regulations and cross-compliance are evidence of the agricultural sector's role in protecting the majority of waters. However, these measures will be kept under review to ensure that objectives are achieved.

What additional actions are proposed?
The nitrates action programme will be reviewed every 4 years. Strengthened measures may be needed, for example in sensitive areas, if the action programme has not shown adequate water quality improvements. There is also a commitment to review the need for further phosphorus controls.

Detailed studies will assess the effectiveness of the nitrates action programme. Ongoing surveys and mini-catchment studies, which are being progressed, will produce information to monitor trends in key agricultural and water quality indicators. One measure of effectiveness for agricultural practices is reduction in farm nutrient surplus which takes account of animal numbers, fertiliser sales and animal feeds; a marked decline in fertiliser sales in Northern Ireland has been recorded in recent years. Agricultural survey findings and indicators will be tracked and reported in the district's action plans.


Ards Farmland

Specific agri-environmental technological solutions may be implemented in appropriate areas: for example, grant aid is available for digestor schemes that treat excess manure from intensive enterprises. Voluntary agri-environmental schemes such as riparian zone restoration in sensitive areas are being encouraged. Education and awareness-raising programmes will also highlight these issues.

This series of recently reinforced actions will result in higher performance standards for agricultural activities. Stakeholders directly affected by these proposed measures include the agri-food sector: farmers and dependent industries.

Question 5 - What is your view about the suggested actions to control problems related to agriculture within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

?

Wastewater from Unsewered Properties

In rural areas, many houses and businesses are not connected to public systems that collect, treat and dispose of wastewater: they rely mainly on on-site systems (conventional septic tanks or proprietary systems), via soil percolation areas. More than 110,000 properties (20% of the total) are currently without public sewerage provision, representing around 0.3 million people (a fifth of Northern Ireland's population), and generating around 65 million litres of wastewater a day.

There has been a large increase in development in unsewered areas:

- single dwellings or holiday homes, often in ribbon developments alongside roads leading from towns and villages
- housing clusters of up to 100 homes served by shared treatment systems
- commercial premises such as hotels and guesthouses
- light industrial facilities.

How can unsewered properties cause water problems?

To minimise impacts on water quality, treatment facilities should be located in suitable areas and designed, constructed and maintained to appropriate standards. If these systems are not working properly, nutrients, organic material, chemicals and bacteria may seep from wastewater into groundwater, contaminating nearby drinking water wells or damaging the quality of receiving rivers, lakes or marine waters.

The very limited research to date suggests that many systems are not working properly. An initial survey of on-site systems in three small sub-catchments in Armagh, Monaghan and Tyrone, placed 35% of systems at high risk of impacting water quality. A pilot study carried out by Cavan County Council on septic tanks within the county found that more than one third of on-site systems were defective. Many tanks were poorly maintained (not desludged) or poorly designed; in extreme cases, wastewater was bypassing percolation systems, entering streams by channels, pipes or across the ground. In the same year septic tanks caused nearly 30% of water quality complaints investigated in the county. Cavan County Council introduced bye-laws dealing with this issue.

Septic tanks were highlighted at every consultation event in the North Eastern district as posing a potential problem to the district's waters. The growing demand for rural housing has sparked a debate about planning policy and water pollution. As many rural properties are spread over wide areas, provision of public sewerage systems, especially ahead of new development, is very difficult and often very costly. Effective controls on planning, design, construction and operation of on-site systems are required to avoid water quality problems.

What existing controls are in place?

The planning system is the key control, ensuring the protection of our waters by restricting the location of new developments.

Domestic, commercial and industrial developments must obtain **planning approval.** Planning Service has issued a **planning strategy for rural Northern Ireland**; **standards** and joint UK **guidance** for on-site systems are also available.

Environment and Heritage Service **consent** all discharges and undertake inspections and enforcement for water quality incidents related to septic tanks and proprietary on-site systems.

Are these controls adequate to meet the new targets?

These controls and guidance play a major role in protecting water quality in unsewered areas, but problems arise where tanks or systems are not properly planned, designed, managed and operated. Northern Ireland's on-site systems policy is being developed by Environment and Heritage Service to make practice more consistent and provide guidance for a wider range of situations.

Construction of an On-site System

What additional actions are proposed?

The current policy and guidance for septic tanks will be changed to improve existing controls. Detailed studies are progressing to support updated guidance for new systems and to prioritise actions in areas with high concentrations of existing on-site systems.

The aim is to ensure that new unsewered development is located in areas where adequate on-site wastewater treatment and soil percolation can be achieved, rather than in areas where groundwater or surface water is vulnerable to pollution

or where the risk of flooding is significant. Sensitive areas — used for shellfish growing or to supply drinking water — will receive particular attention. Development control and enforcement practices may have to be modified to reflect these restrictions. Guidance will address improved procedures for site selection, design, installation and construction supervision.

For existing systems, large unsewered populations are being mapped and methods are being developed to calculate the vulnerability of receiving waters to loading from on-site systems. In priority areas, where water quality is threatened, options such as providing main sewers or tank maintenance programmes may be investigated.


Rural Housing

Education and awareness-raising programmes will highlight the issues.

These controls, combined with new water quality standards, will address problems due to discharges from unsewered properties. These actions will result in the production of new guidance and stricter controls in unsewered areas; they will therefore affect developers in unsewered areas, owners of unsewered property and unsewered industrial and commercial enterprises.

Question 6 - What is your view about the suggested actions to control problems related to unsewered properties within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

Forestry

Forest and woodland cover now accounts for just over 6% of Northern Ireland's land area, up from about 1% in 1920. Forestry restoration was driven first by a need to develop a strategic reserve of timber for use in a national emergency, and then by a need to promote economic development through the supply of raw material to the timber processing industry. The objective in Northern Ireland is to steadily expand woodland over the next 50 years to achieve 12% forest cover. The expansion of forest area may help to offset carbon emissions as trees are net carbon users. Forests can also provide recreational locations and create habitats, enhancing biodiversity when replacing other more intensive land uses.

Public forests amount to 70% of Northern Ireland's woodland. Private forest owners have been planting in significant amounts since the 1980s: as their trees mature they will account for a greater proportion of forest cover and of timber harvesting (which now occurs mainly in public forests).

How can forests and forestry activity cause water problems?

Forests can have both positive and negative impacts on the environment. The negative impacts are largely related to poor management or to planting on unsuitable soils, and many of the current water problems associated with afforestation are a legacy of old practices, which have been subsequently amended.


www.wfdvisual.com

When a forest is established, site cultivation and drainage may give rise to nutrient or sediment loss. Forest canopies intercept rainfall, some of which is returned to the atmosphere; the remainder is stored or finds its way to soil, underlying rock or surface waters. Changing canopy cover can alter the quantity and quality of water flowing from forested areas. Forest canopies can absorb air pollutants that may affect water quality, depending on the geological setting. Road construction and harvesting may also result in sediment and nutrient loss. Depending on the subsequent land use, inappropriate deforestation may result in soil erosion, slope instability, nutrient leaching and reduced water-holding capacity in floodplains.

The main potential water problems that can result are:

- acidification: forest canopies can capture sulphur and nitrogen compounds from the atmosphere. Rain becomes more acidic as it passes through the canopies to the ground below, and may worsen the chemical balance of receiving waters

- nutrient enrichment: forestry activities can introduce extra nutrients which, in naturally nutrient-poor areas, can lead to problems such as algal growth
- sedimentation: road-making and stream-crossing can cause erosion and sedimentation on susceptible soils. Mobile sediments may reduce water quality or damage sensitive areas
- flow pattern changes: the amount of water reaching the soil surface is reduced by evaporation of water intercepted by the canopy. Clearfelling of forests may lead to a change in flow patterns
- pesticide contamination: incorrect application of pesticides may result in contamination of waters.

Public and private forestry areas cover less than 5% of the land area within the North Eastern district. However particular local concern was raised during consultations that some afforested areas are situated in sensitive salmon and trout spawning areas in upland headwaters. This underpins the need for adequate control on forestry operations in sensitive areas.

What existing controls are in place?

Legal responsibility for forestry lies with the Forest Service (Department of Agriculture and Rural Development). Northern Ireland Forestry – A Strategy for Sustainability and Growth confirms forest policy and implementation strategy.

The Forestry Act establishes statutory responsibility for promoting the interests of forestry, afforestation, production and supply of timber and the maintenance of adequate reserves of growing timber. Recent policy developments are anchored in the UK Government's international commitments on sustainable forest management, biodiversity and climate change. The UK Forestry Standard sets out criteria for sustainable forest management as the basis for forest monitoring; the Forest and Water Guidelines (substantially revised in 2003) set out the environmental principles and standards required.

The Forest Service and some private forestry interests are certified under the UK Woodland Assurance Standard, which is endorsed by the Forest Stewardship Council and assessed by third-party audit. Private woodlands are subject to the requirements of the UK Forestry Standard; about 3,500 ha of private woodland have also been certified under the UK Woodland Assurance Standard, bringing the total of woodland certified in Northern Ireland to 75%.

Forest Service implements Environmental Impact (Forestry) Regulations, carrying out environmental impact assessments of forest-related projects. Most forestry projects are eligible for grant aid, so Forest Service is notified that a development is intended.

Are these controls adequate to meet the new targets?

The existing legislation, binding environmental codes of practice and guidelines play a major role in protecting water quality in forested areas. However, as research increases knowledge of the interaction between forest and water, legislation and guidelines may have to be strengthened. For example, additional guidelines may be required on protection of highly sensitive catchments with species such as the freshwater pearl mussel, trout and salmon.

What additional actions are proposed?

The Strategy for Sustainability and Growth provides a road map for addressing potential difficulties, for example, current unregulated felling and regeneration of forests will be addressed through the introduction of new regulations compelling forest owners to manage their woods with greater consideration to sustainability, including the timing and extent of felling and the composition of regenerating woods. The lack of an indicative forestry expansion strategy will be addressed through the development of maps indicating the areas where Forest Service believes that forests should be developed. These maps will take account, amongst other matters, of the water environment in connection with increased afforestation, particularly in environmentally sensitive areas with regard to limiting nutrient and sediment losses and acidification.

For forests and associated activities, the key actions are:

- to ensure implementation of current statutory regulations, codes of practice and guidelines. Environmental protective measures for forestry in sensitive areas can include establishing riparian buffer zones in advance of harvesting, managing the size of coup (crop) area to be felled to limit nutrient input, managing drainage systems and establishing sediment control systems such as ponds or diffuse overland flow
- to introduce more stringent actions for the most sensitive areas, when scientific evaluation establishes a need. For example, nutrient loading could be reduced in sensitive areas by the phased felling of smaller harvesting coup rather than felling a large forest block all at once
- to ensure that future development is undertaken strictly within statutory regulations, water protection guidelines and codes of practice so that forests will have little or no impact on water quality. That applies especially in environmentally sensitive areas, with a need to limit nutrient and sediment losses and acidification.

Guidelines must be applied rigorously to ensure compliance with water quality standards; modified or additional codes may be required. These actions will therefore affect the forestry sector: both publicly and privately owned plantations as well as the associated saw-milling and processing industries.

Question 7 - What is your view about the suggested actions to control problems related to forestry within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

Usage and discharge of dangerous substances

The term **dangerous substances** describes a wide range of chemicals that may be toxic to people, plants and animals and are harmful to our water environment. They are contained in many everyday products used increasingly often in households (for example medicines and cleaning products), industry, forestry, agriculture, small businesses, mines, construction sites and water treatment works. Surface run-off from roads and urban areas can also contain dangerous substances from motor vehicle emissions.

How can dangerous substances cause water problems?

Some dangerous substances can be toxic to aquatic plants and animals at levels equivalent to a teaspoonful dissolved in an average swimming pool. They can persist in our waters and their sediments and slowly build up in the bodies of aquatic organisms, poisoning them and causing problems higher up the food chain or interfering with their natural breeding processes. Quality standards for dangerous substances are being determined by Europe-wide methods to protect the most sensitive of our species.

As there are many potential sources of dangerous substances, there are numerous ways that substances can enter our waters. These include regulated, unregulated or accidental releases such as:

- licensed industrial and municipal effluents
- authorised discharge from on-site wastewater systems
- contamination from applying pesticides to agricultural land, forestry, livestock, recreational areas, roads, paths, railways or gardens
- use of chemicals in aquaculture to control disease
- seepage from un-lined waste disposal sites or contaminated sites
- intermittent combined sewer overflow spills from urban systems
- accidental misuse or inappropriate disposal of products.

The threat from household usage and release of dangerous substances was voiced during consultations as a potential water problem. Dangerous substances spillages can be very damaging to our waters, requiring rapid response and costly clean-up operations, for example, diesel was spilled into the Inver River as a result of a road traffic accident on a new roundabout on the main Belfast to Larne Road. Consultation meetings also voiced concerns about potential problems due to inappropriate disposal of sheep dip in the district.

What existing controls are in place?

Northern Ireland has set **drinking water standards, water quality standards** and **emission control standards** for a range of dangerous substances (including chemicals prioritised across the European Union and further substances of local relevance). Environment and Heritage Service, the Food Standards Agency and Northern Ireland Water undertake various dangerous substances monitoring programmes, for example under the OSPAR convention.

Several agencies are responsible for enforcing various regulations aimed at controlling dangerous substances:

- major industrial activities are regulated by Environment and Heritage Service under the **Integrated Pollution Prevention and Control** (IPPC) Directive. Permits restrict the discharge of certain dangerous substances to waters
- Environment and Heritage Service reports the total discharges to water of key pollutants to the European Commission every three years under the **European Pollutant Emission Register** (EPER) initiative. Registers are important to verify that controls intended to reduce or phase out these discharges are working
- under regulations for the **Major Accidents** (Seveso II) Directive, industries that use dangerous substances above a threshold level must have procedures to prevent and control accidents
- Environment and Heritage Service and Northern Ireland Water consent trade or sewage effluent discharges to waters or sewers under Northern Ireland's **Water Order and Water** and **Sewerage Services Order**
- Environment and Heritage Service are all involved in controlling discharges of dangerous substances to **groundwater**
- **aquaculture** and its associated activities are controlled in Northern Ireland by Fisheries Division (Department of Agriculture and Rural Development), Loughs Agency and Environment and Heritage Service, supported by the Veterinary Medicines Directorate
- the Pesticide Safety Directorate authorise **pesticide substances**. The Health and Safety Executive and Veterinary Medicines Directorate are involved in dangerous substances approval in Northern Ireland.

Are these controls adequate to meet the new targets?

The current controls focus on a limited list of substances, but more substances now need to be controlled. The European Commission has proposed water quality standards for 33 priority substances and 8 other pollutants. Expert groups in Northern Ireland and the United Kingdom have identified further specific pollutants that threaten local waters.

What additional actions are proposed?

By 2008, new water quality standards will be set following consultation. This process will have to be repeated periodically as new concerns emerge about substances.

Dangerous substances at groundwater, river, lake and marine sites will be surveyed by the Environment and Heritage Service. Their status will be classified, monitored and reported upon.

The systems of licensing and authorisation also need to be updated and extended to cover the new range of substances and the activities discharging these substances. In April 2007, Environment and Heritage Service set new consent limits for dangerous substances discharges from wastewater treatment works and water treatment works.

Industrial discharge conditions will be revised to set controls and emission limits adequate to achieve the new quality standards in receiving waters. This will require minor changes to existing Environment and Heritage Service and Northern Ireland Water licensing/consenting systems.

In June 2007, a new European regulatory framework for the Registration, Evaluation and Authorisation of Chemicals (REACH) set up a registration system for chemical usage. Chemicals identified under REACH will be assessed for the risks they pose to human health and the environment. It will be administered by the Health and Safety Executive, supported by Environment and Heritage Service.

The current EPER scheme will be replaced by the European Pollutant Release and Transfer Register (PRTR) from 2007 onwards. PRTR will include more substances (91 rather than 50) and industry sectors than EPER. The first PRTR data will be published in 2009.


Effluent Discharge

The Pesticides Safety Directorate units will continue to review pesticide authorisation based on the current scientific advice. The cycle of pesticide surveys has been harmonised across the island of Ireland so that the same crops are surveyed in the same year throughout the island.

Inventories of emission, discharges and losses of substances (whether prioritised by the EU or locally) will be established so that the working of controls can be checked. These activities will all help to identify substances needing control through licensing, authorisation, water quality standards and monitoring. Education and awareness-raising programmes, and voluntary initiatives like the phosphorus-free detergents agreement, will also highlight these issues.

The new water quality standards and the extended monitoring, licensing and authorisation actions will address the major sources of dangerous substance discharges. Control, which will be coordinated between Irish and Northern Ireland authorities, will be stricter. Stakeholders directly affected by these proposed measures include the public as well as industrial and commercial activities involved in the production, use, handling, storage or discharge of dangerous substances.

Question 8 - What is your view about the suggested actions to control problems related to dangerous substances within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

Physical modifications

We have physically modified many of our waters for water supply, recreation, transport, flood protection, hydropower, aquaculture and land drainage. The extent of modification is being systematically assessed for the first time: in Northern Ireland there are over 185 kilometres of culverts and more than 5,500 bridges on our rivers, over 550 kilometres of river embankments, eleven large water reservoir or hydropower dams, five large ports and approximately 200 kilometres of coastal defences.

How can physical modifications cause water problems?

Physical modifications can directly affect habitats or indirectly change natural processes (for example flow or silt movement), altering plant and animal communities by reducing their variety or numbers. For example:

- rivers have a natural mix of pools and shallow riffles and variation of flow patterns, providing habitats for fish. Draining or maintaining rivers without recreating this natural mix can deprive trout and salmon of spawning habitats and thus reduce their numbers; protected areas fringing the waters can be damaged by reduced water levels or by flooding
- migratory fish need to access upstream spawning areas; bridges or weirs can restrict access and reduce spawning success and thus population numbers
- hard structures like ports and harbours can replace or reduce natural habitat
- land drainage, overgrazing, deforestation and cattle access can have an indirect effect on both surface and groundwaters, changing how much and how fast water drains off the land. The effect on one receiving stream may be small, but the combined effect can change water quality and flooding behaviour in a district, resulting in increased risk of property flooding.

Physical modifications in the North Eastern district include Belfast and Larne Ports, impoundments and weirs on the River Lagan, tidal control systems on the Quoile estuary and water supply reservoirs at Silent Valley in the Mourne Mountains. Consultations have raised concern about widespread development on floodplains, especially its potential effects on water quality and flooding behaviour. Weir construction with potential associated impacts on habitats was also regarded as an issue within the district

What existing controls are in place?

Planning and development processes and licensing systems provide a general level of control over physical modifications at the approval stage. But the existing controls are limited in scope and vary depending on the type of physical modification and its proposed location:

- Rivers Agency and Environment and Heritage Service are the lead authorities responsible for the management of **river and coastal flooding and erosion**
- **private developments** must obtain planning permission from the Planning Service in Northern Ireland. Planning guidance has been prepared for flood risk in Northern Ireland
- **fishing and aquaculture** activities are licensed by the Loughs Agency, Department of Culture, Arts and Leisure or Department of Agriculture and Rural Development
- works on the **foreshore** are authorised or licensed by Environment and Heritage Service
- for the disposal of **dredged material** at sea, permits are required from Environment and Heritage Service
- **Environmental Impact Assessments** are required in support of planning applications and foreshore licence applications for certain large developments
- A new licensing system to control the **extraction of aggregates** from the marine environment was introduced in May 2007.


Lagan Weir, Belfast

Are these controls adequate to meet the new targets?

There is no comprehensive system to control physical modifications and monitor and protect the physical conditions of surface waters. A comprehensive registration and authorisation system may be needed to control the impact of physical modifications.

What additional actions are proposed?

The European Commission is likely to adopt a Floods Directive in 2007. Flood risk assessments and mapping and the preparation of Flood Risk Management Plans will be required. Rivers Agency will lead the development of plans in Northern Ireland, which will address climate change effects, incorporating modern approaches of avoiding increased flood risk and non-structural solutions such as flood forecasting systems.

A review of existing legislative controls for physical modifications to surface waters will be conducted to decide whether new legislation is required.

Detailed studies of physical modifications and their effects are underway to support the development of controls on physical modifications. Progress so far indicates that the key sources of problems are:

- in fresh waters, river drainage works and land use changes. Monitoring methods that take account of the natural shape of the river and systematically record landscape changes within the surrounding area are currently being trialled
- in marine waters, coastal structures, land use change, ports and associated dredging. The sensitivities of habitats and of plant and animal communities to physical modifications are being explored.


Bangor Marina

The specific habitat requirements of salmonids and other fish are now well understood following research on the River Bush and elsewhere in Ireland. The feasibility of rehabilitating affected waters is being examined against social, technical and cost criteria; for instance, rivers with the potential to produce significant salmon and trout populations might be prioritised for remedial programmes. Measures might include channel narrowing, planting to stabilise river banks, introducing stone riffles or fish passes, replacing hard structures with soft elements (for example saltmarsh wetlands or beach nourishment) or compensatory habitat creation.

Guidance on best practice will cover construction techniques and timing of works, floodplain development control, good management and environmental initiatives such as Sustainable Drainage Systems (SuDS); it will ensure that proposed developments are consistent with flood and coastal management plans. A decision-making support tool will help regulators assess applications for new developments and maintenance works; the effects of physical modifications will be monitored. Education and awareness-raising programmes will be provided.

These proposed actions will result in stricter controls on existing and planned physical modifications to surface waters. Stakeholders directly affected by these proposed measures include developers and operators proposing engineered modifications to surface waters.

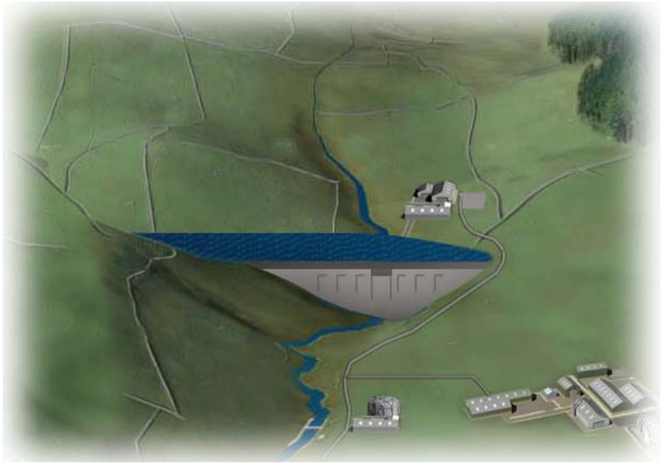
Question 9 - What is your view about the suggested actions to control problems related to physical modifications within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

?

Abstractions

We use large amounts of water supply each day:

- at home for drinking, cooking, cleaning, bathing and flushing the toilet
- in agriculture for animals to drink and for dairy washing and watering crops
- recreationally for watering golf courses, sports grounds, etc
- in many different industries as an ingredient or, in the production process, for washing or cooling, or for power generation.



These uses add up to more than one million cubic metres (m^3) of water every day, in Northern Ireland. All of that water has to be treated to a high standard to remove impurities and make it fit for consumption.

This water is abstracted either from surface waters or from groundwaters (wells and springs). Approximately 90% of water supply is provided by Northern Ireland Water (formerly Water Service). The main sources of this public water supply are reservoirs (47%) and loughs (39%); rivers and groundwaters each supply 6%. Groundwater abstractions for industry, agriculture and small wells account for the 10% of private supply.

The vast majority of these abstractions are currently sustainable. However, rising demand (due to population growth) and the impact of climate change may mean that some areas will experience a reduction in the available water resource in the future.

How can abstractions cause water problems?

If we abstract too much water from our underground and surface water resources, we reduce flow in springs and rivers and lower water levels in lakes, wetlands and wells. This can make water supplies unsustainable and can have a negative impact on aquatic plants and animals and wetland areas. In extreme cases river beds may dry up, lake shores can become exposed and, in coastal areas, salt water may seep into groundwater.

Consultations raised concerns about the sustainability of water supplies in light of development and growing demand in the North Eastern district.

What existing controls are in place?

In Northern Ireland, new regulations were introduced in February 2007 to deliver efficient and sustainable water usage and protect waters from inappropriate abstractions. Any abstraction of a large volume of water must now be **licensed** by Environment and Heritage Service, which will assess the application on the basis of sustainability of water resources. Public and private water schemes are covered, but there are some exemptions, including emergency fire services.

The level of approval will depend on the volume of water to be abstracted:

- Permitted Controlled Activities are small-scale activities presenting a minimal risk (under 20 m^3 per day)
- licences apply to abstractions that will pose a greater risk: **simple licences** for 20 m^3 to 100 m^3 per day; **complex licences**, supported by more detailed impact analyses, for larger abstractions.

The agriculture and agri-industries sectors will have the highest number of licences (about 2,000), mostly simple licences. The public water supply sector will require about 60 complex licences for large abstractions. Other licences will include commercial/industrial (225), hydropower (70), fisheries (400), quarries (170), golf courses (150) and the food and drink industry (110).

Silent Valley Reservoir

The quality of drinking water is stipulated in **drinking waters regulations.** The **nitrates** and **groundwater directives** also contain requirements to protect the source of water supplies.

Are these controls adequate to meet the new targets?

The new regulations will adequately control water abstractions with a modernised system of registration and prior authorisation for significant abstractions.

What additional actions are proposed?

Unsustainable existing abstractions are being identified: alternative sources of water may be required, with social factors, costs and technical feasibility to be evaluated. Proposed developments may be restricted if they are not consistent with development plans and supply scheme investment programmes. Leakage detection and reduction programmes are carried out by Northern Ireland Water with targets set out on an annual basis; awareness-raising programmes will highlight these issues to domestic and industrial users.

These proposed actions will result in stricter controls on existing and planned abstractions. Stakeholders to be directly affected include public authorities using water or proposing abstractions, industrial, commercial and agricultural operations currently using water and developers proposing abstractions.

Question 10 - What is your view about the suggested actions to control problems related to abstractions within the North Eastern district?
Are these actions appropriate?
Have we missed something important?

Abstractions

Invasive alien species

Invasive alien species are non-native plants or animals that successfully establish themselves in our aquatic and fringing habitats and damage our natural flora and fauna. There is growing evidence that they pose a major threat to our diversity of native plants and animals: for example by preying on them, out-competing for habitat or food, altering habitat or introducing pathogens or parasites.


Parrot's Feather

Environment and Heritage Service identified a list of alien species of main concern in Northern Ireland, six of which are present in the North Eastern district:

- **Australian Swamp Stonecrop** has been found on Strangford Lough, Crawfordsburn, Donaghadee, Castlewellan and Lady Dixon Park. It forms dense carpets, shading out other flora, and depletes oxygen resources, competing with native aquatic plants
- **Common Cord Grass** and **Japanese Weed** have been found in Strangford Lough. Common Cord Grass replaces native mudflat vegetation with a less diverse sward, reducing feeding resources for birds and altering the coastal landscape. Japanese Weed out-competes local species, such as seagrasses and kelp, for space and light
- **Water Fern** has been found in Lagan Valley Regional Park and Clandeboye Lake and **Floating Pennywort** in the Glastry Clay Pits near Ballyhalbert. These free-floating plants form thick layers, completely covering the surface of slow-moving water, reducing light levels so that submerged native plants die off causing serious oxygen loss. Invasive alien plants can also cause localized flooding by blocking channels and drainage ditches
- **Parrot's Feather** has been found in the Glastry Clay Pits. This vigorous plant can choke ponds and waterways and is now adapting to the UK winters by becoming more frost resistant. This will allow it to spread even more widely in the wild.

Natural Heritage (Environment and Heritage Service) is the primary authority for biodiversity protection. In association with their counterparts in Ireland they are leading studies of how aquatic alien species spread and how to exclude them, remove them or, where eradication is not feasible, manage them. Risk assessments have been carried out for over 560 potential and established invasive species. Management plans will be prepared for the 10 highest-risk alien species or groups of species already here, with exclusion strategies or contingency plans prepared for the 10 highest-risk potential invaders. The studies will also review monitoring programmes and raise public awareness of the threats.

Other scientific groups and fishery organisations are undertaking supporting studies and will recommend control measures. Awareness-raising campaigns will also play an important part in our action plans.

Question 11 - What is your view about the suggested actions to address alien species problems within the North Eastern district?

Protecting high quality areas

High quality areas include surface waters (rivers, lakes, estuarine and coastal areas), which have suffered only minor impact from human activity and as a result are still near natural or pristine conditions. They support a naturally diverse mix of aquatic wildlife. Such areas have gradually declined since the 1970s when water quality monitoring began. Our objective now is to prevent any further deterioration.


Grey Seal

In addition, there are other designated special areas which are specifically protected under various pieces of legislation. These areas are of particular importance because of their value as drinking waters, bathing waters, shellfish waters or habitats. They may be protected because they contain unique and sensitive wildlife (for example salmon and freshwater pearl mussel) and/or habitats (for example raised bogs and coastal lagoons). Some areas are extremely sensitive, tolerating only minimal human impacts, and in some cases may require more stringent actions to protect them: for example freshwater pearl mussels and naturally nutrient-poor lakes.

The damage or loss of high quality and protected areas is often due to their sensitivity to land use changes in surrounding catchments: agriculture, forestry, peat harvesting and rural development activities. Our management plans will include more stringent controls on such activities in these sensitive catchments to protect the most sensitive user, which could be humans, via drinking or bathing waters, or protected habitats, plants or animals.

Natural Heritage (Environment and Heritage Service) are the lead conservation authority coordinating specific actions to protect these sites. They are leading studies to harmonise conservation action, creating lists of sites protected under separate but complementary habitats and birds directives. A detailed study on the water quality and quantity requirements of priority habitats and species has identified field survey and monitoring needs. Natural Heritage and their counterparts in Ireland are jointly considering complementary conservation monitoring programmes.

Other organisations will have a role in these nature conservation actions. This includes all government organisations as signatories of biodiversity and sustainability policies in Northern Ireland.

Question 12 - What is your view about the suggested actions to address sensitive area problems within the North Eastern district?

Future pressure trends and climate change

The problems that our waters are facing today may worsen in the future. Many pressures, such as population growth, development demand and land use changes, will increase as our economy continues to grow.

The impact of climate change is difficult to predict, but heavier winter rainstorms may cause more flooding, raising demand for flood controls, whereas summer droughts could increase abstractions and reduce the amount of water available to dilute pollution. Temperature changes might give invasive alien species a competitive advantage in our waters.

Detailed studies are underway to help assess these future trends and changes in the North Eastern district and attempting to predict their potential affect on water status. The aspects being analysed include:

- **climate change,** which has the potential to affect water resources, agricultural practices, forestry management and biodiversity
- **agriculture,** which may change under European reforms, with more intensive farming patterns and practices in some areas of the district
- **population change,** identifying potential growth areas where facility upgrades will be needed
- changes in **land use policies**, in particular in the countryside.


Newcastle Flooding, 1997

Actions to address the consequences of these changes will be included in our management plans.

Question 13 - What is your view about our approach to assessing future risks within the North Eastern district?

What happens next?

Actions are our response to existing water problems and to growing threats. Management plans are to be prepared to respond to all the identified issues. Work on the preparation of plans for the North Eastern district, and other cross-border districts, is currently underway by the relevant authorities, assisted by consultants:

- the **draft management plans** will be published in 2008, and you will have an opportunity to comment on them
- after further consultation, the **final management plans** will be adopted and published in 2009
- those plans will run to 2015.

The plans will set out environmental objectives together with actions (known as a **programme of measures**) that will aim to ensure these objectives are achieved in practice. The programme will include both **basic** and **supplementary measures.**

Basic measures

The first (and minimum) element of the programme will be the **basic measures** to implement existing water protection directives in full, for example the Urban Wastewater Treatment, Nitrates, Bathing Waters, Shellfish, Habitats and Dangerous Substances Directives.

But our existing regulatory controls may not be sufficient to deliver improved comprehensive protection for all waters, as envisaged by the Water Framework Directive. Consequently, the basic measures may also include additional controls introduced for specified activities. Such actions include updated pollution controls (such as Codes of Good Agricultural Practice), new systems of authorisation (for physical modifications or dangerous substances) plus general binding rules related to on-site systems and forestry.

Supplementary measures

The programme of measures can also include **supplementary measures** that augment basic actions to achieve water objectives. These include codes of practice, voluntary agreements, demand reduction, education, rehabilitation or research programmes and legal, administrative and economic instruments. These actions will be considered (either nationally or locally) on the basis of current monitoring and detailed studies that will give a firm idea of the scale and nature of water problems.


Strangford Lough

Affecting people

The first action plans will be adopted and come into effect in 2009; a draft will be published in 2008 for comment. These plans will have an effect on every individual in the North Eastern district. The change that just one person can make will help to improve our waters. It is really important that you consider the issues raised in this booklet and how they will affect you. This booklet is intended to give you and all interested parties an overview of the main issues that have been identified, as well as possible actions to address them that might be included in a draft management plan. You may think that the actions are not practical, too strict or too lenient — or perhaps we have missed something that would be helpful. If so, this is your chance to tell us - **have your say!**

Before the draft is published

There is still important work to complete before the plans can be drafted.

Setting the environmental objectives for our waters

The authorities are developing handbooks to promote the coordinated implementation of river basin management plans across river basin districts. They will set out in practical terms the legal obligations for establishing environmental objectives for water. Under certain restricted circumstances there may be exemptions; direction will be provided on their application. The handbooks will address such questions as:


Glenarm Harbour

- what are the default objectives for groundwaters and surface waters?
- what objectives apply to protected areas (bathing waters, shellfish waters, nutrient sensitive areas, protected habitats and species)?
- what objectives apply to heavily modified waters (for example ports) and artificial waters (for example canals)?
- what if objectives cannot be met by 2015 in some cases?
- what if there is a temporary deterioration in the status of a water body?
- what if objectives cannot be met because of new physical modifications or sustainable developments?
- what if the cost of achieving the objectives by 2015 is disproportionately expensive?

Integrating plans and programmes

The water objectives can only be achieved if plans and programmes in other relevant policy areas are coordinated and integrated. The guidelines will set out how this can be done. These plans and programmes include:

- Habitat and Species Protection Plans under the Habitats Directive
- Northern Ireland Water investment programmes (Capital Works Programme)
- Nitrates Action Programme
- Strategic national development plans and related local plans
- Flood Management Plans.

For example, this coordinated approach could mean prioritising investment (under Northern Ireland Water's Capital Works Programme) to eliminate known impacts on protected habitats (for example a Special Area of Conservation) where wastewater discharges are inadequately treated.

Assessing environmental impacts

While River Basin Management Plans will have a positive effect on the water environment, their impact on other aspects of the environment, for example air quality or climate change, needs to be assessed. Therefore, they must be subject

to Strategic Environmental Assessment (SEA). SEA is a system of integrating wider environmental considerations into plans and programmes. Its purpose is to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of specified plans and programmes with a view to promoting sustainable development. SEA must be applied to plans and programmes which set the framework for future development consent for projects. This booklet is the starting point for the SEA of the river basin management plan. The problems and suggested actions in this booklet will assist the scoping of, and consultation about, the plan's wider environmental impacts.


Damselfly

Assessing regulatory impacts

Achieving these new objectives may require the introduction of a range of new regulatory controls (for example licensing or registration of physical modifications) to give legal effect to the actions. Regulatory Impact Assessments (RIAs) will be applied to regulatory proposals. The role of RIA is to evaluate the potential impacts of any new regulation and establish whether it would have the desired impact. For example, it is useful to identify potential side-effects or unforeseen extra costs associated with a new regulation. It also helps to clarify the cost of enforcement of the regulation. Future regulations for the implementation of the Water Framework Directive will generally be subject to RIA.

Implementing the management plans

Coordinated North–South implementation of the Directive has been facilitated to date, by the North–South SHARE Project, which is funded under INTERREG IIIA (total cost some £5.3 million) and which supports the development of technical tools appropriate to conditions on the island of Ireland.


Fishing Boats, Lough Cowey

The task of implementing the management plans will fall, mainly, to the statutory authorities. In Northern Ireland, work in the North Eastern district will be coordinated by the Department of the Environment and Environment and Heritage Service, through the Implementation Working Group, which includes the four main government departments responsible for implementing the river basin management plan.

Getting involved

Thank you for reading this booklet. Please send your comments and views to:

Ms Cate Murphy
Secretary
Implementation Working Group
Environment and Heritage Service
17 Antrim Road
Lisburn
BT28 3AL

Catriona.Murphy@doeni.gov.uk

Public participation

As well as giving your views on the proposals in this document, you might like to participate in other aspects of the implementation of the Water Framework Directive. Public participation is one of the Directive's requirements but, even if it wasn't, it would be sensible: local stakeholders often know local problems best and can suggest practical solutions. The management plan needs local support.

It can be difficult to get people interested in protecting waters unless it is part of their job or they are already involved, for example as anglers or environmentalists. However, a group of environmental organisations from Ireland and Northern Ireland, collectively known as **The Wetlanders,** carried out a roadshow and survey to provide a snapshot of public participation in early 2007. They talked to almost 1,000 school children and in detail to farmers, anglers and tourist industry focus groups, who identified agriculture, housing and development, industry, sewage, dumping, climate change and quarries as serious water problems. The Wetlanders concluded that:

- the interest is there
- engagement is difficult
- local action is better than national campaigns
- creative approaches are needed
- conviviality works.

To encourage the public to participate in making and implementing action plans, stakeholder groups have been established. Northern Ireland has established a national stakeholders forum, with nine individual catchment stakeholder groups. These participation groups have already contributed knowledge, expertise and views that have helped in preparing this booklet. A full list of participants is available on **www.nerbd.com**.

However, there are other ways of participating: by making individual comments on the proposals, by contacting the Stakeholder Forum or Catchment Stakeholder Group member who represents your sector or your local area, by attending public meetings or by participating in local voluntary groups like the parties within the Wetlanders. Log on to **www.nerbd.com** to send your comments and ideas or to be put in touch with contacts in the district.

Photographs kindly provided by: Environment and Heritage Service, Northern Ireland Water, Rivers Agency and J. Caffrey - Central Fisheries Board.
Images from the wfd visualisation tool (www.wfdvisual.com) - used with the permission of SNIFFER.

printed on **recycled** paper

CarbonNeutral® publication

Environment & Heritage Service
www.ehsni.gov.uk

Department of the Environment
www.doeni.gov.uk

INTERREG IIIA