water matters

"Have your say!"

shannon
river basin district

Invitation to comment

You are invited to give your views on the implementation of **the EU Water Framework Directive** in the **Shannon International River Basin District**. This booklet says what the Directive requires us to do and how we are working together 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 jointly by the responsible authorities for the Shannon International River Basin District; eighteen local authorities (led by Limerick County Council) in Ireland and Environment and Heritage Service in Northern Ireland. You can send comments to either or both of the following:

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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.shannonrbd.com**).

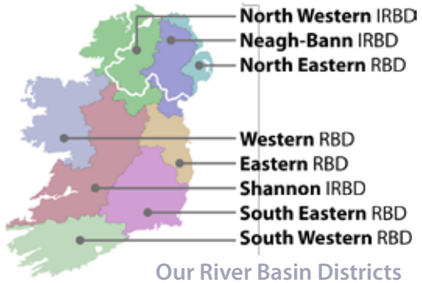
The next 11 pages provide some background information on water problems, the Water Framework Directive and the Shannon International River Basin District.

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.

Shannon International 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 **Shannon International River Basin District** encompasses large areas of counties Limerick, Clare, North Tipperary, Offaly, Westmeath, Longford and Roscommon as well as significant portions of counties Kerry, Galway, Leitrim and Cavan. Other counties that have smaller portions in the Shannon District include Sligo, South Tipperary, Mayo, Cork, Laois, Meath and Fermanagh. All of Limerick City is located within the District. The responsible authorities must coordinate their water management actions in relation to the district.



Our River Basin Districts

This booklet is issued jointly by the responsible authorities for the Shannon International River Basin District; eighteen local authorities (led by Limerick County Council) in Ireland and Environment and Heritage Service in 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 find a summary of relevant legislation at **www.shannonrbd.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 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.

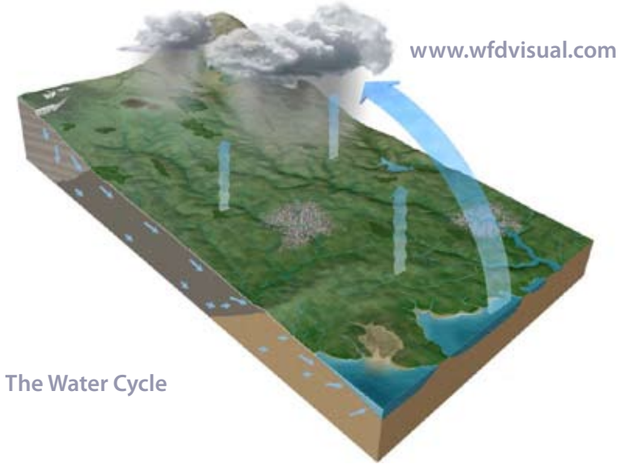
That is what this booklet is about. It is a preliminary overview of our main water related issues and the actions suggested to address these issues. You are being asked to help by checking this overview and making comments to correct or improve the listing of issues and suggested actions.

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.



The Water Cycle

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 cumulative effect of urban discharges in the Shannon District (for example as far inland as Athlone) can contribute to pollution problems in the Shannon estuary. **River Basin Districts,** containing adjacent basins, are the natural unit to manage our waters.


Fishing on Lough Ree

Water goals

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

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

Over 4.2 million people live in Ireland, 1.3 million of them in the greater Dublin area. Generally, the east of the island, with its urban areas and fertile soils, is more densely populated than the west. More than half a million people live in the Shannon District (670,000).

By 2021 there may be an additional one million people living in Ireland, partly because the strength of the economy has attracted inward migration. Large multi-national corporations have been attracted too: they have invested in Ireland because they value the island's competitive location, well managed and stable economies and highly educated workforces.

Ireland's economy has experienced unprecedented economic growth since the early 1990s. Traditionally based around agriculture, particularly livestock farming, it is now dominated by services and industry, with significant exports of electronics and pharmaceuticals. 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.

Recent monitoring of Ireland's waters has detected the first signs of a reversal of the downward trend in water quality: this improvement results from investment and improved working practices. 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 issue 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.

The Shannon District and its waters

The Shannon District is the largest in Ireland at more than 18,000 km^2 in area. It stretches from the source of the River Shannon in the Cuilcagh mountains in counties Cavan and Fermanagh to the tip of the Dingle peninsula in north Kerry. As well as the natural drainage basin of the Shannon river itself, which drains an extensive area of central Ireland, it also includes coastal parts of Kerry and Clare which drain to the sea. It drains eighteen local authority areas and is also an international RBD as a small portion of County Fermanagh in Northern Ireland drains underground to the Shannon Pot.

The Shannon District encompasses large areas of counties Limerick, Clare, North Tipperary, Offaly, Westmeath, Longford and Roscommon as well as significant portions of counties Kerry, Galway, Leitrim and Cavan. Other counties that have smaller portions in the Shannon District include Sligo, South Tipperary, Mayo, Cork, Laois, Meath and Fermanagh. All of Limerick City is located within the District.

The distribution of people and the types of activities that take place vary throughout the District. Although more than 670,000 people live in the Shannon District, the population density is lower than in eastern Ireland. The largest urban area is Limerick City (90,800, including its suburbs and environs) but other sizable towns include Athlone (17,500), Ennis (24,300), Mullingar (18,400), Tralee (22,700) and Tullamore (12,900). Urban areas have a lot of industries and most of them are centred on rivers or the coastline. Many people live in small villages or one-off houses in rural areas. The rich soils of the Shannon District mean that agriculture is widespread. Over 70% of the land area is farmed. Livestock grazing on pasture land is the most widespread type of farming. There is a healthy milk and meat processing industry in the District. There are also more intensive agricultural enterprises in several areas. Though much of the land area is agricultural, there are also areas of forestry and peatlands. Peat has been used since the 1940s as fuel in local power stations to generate electricity. The District boasts scenic landscapes and offers great opportunities for fishing and boating which attract many tourists. All of the activities in the District have the potential to impact on our waters.

Our special areas

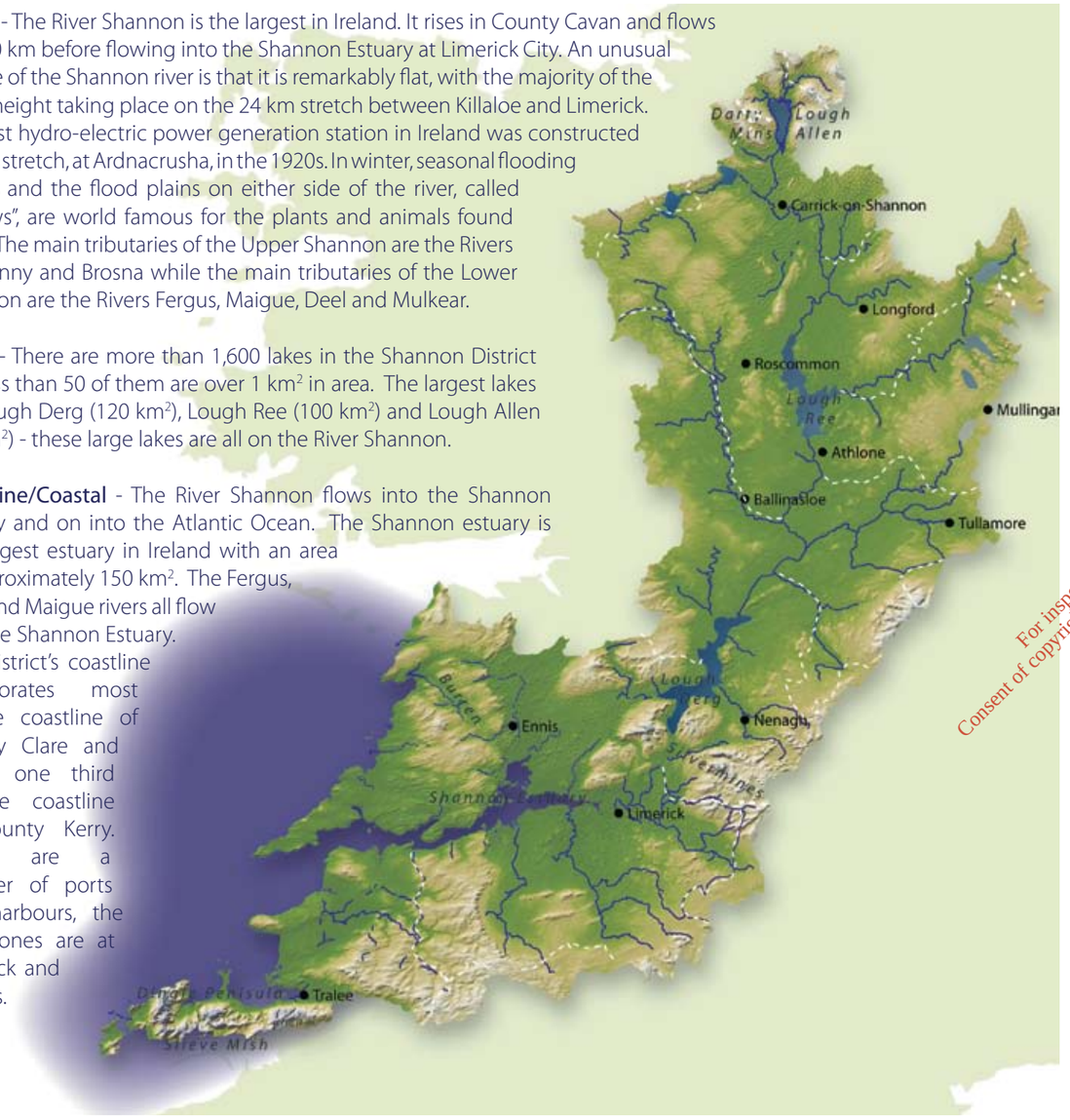
While all of our waters are important, some areas require greater protection because they contain rare and vulnerable habitats or wildlife. Research is being carried out to determine how best to protect these areas and their wildlife. Other areas are sensitive because of their beneficial uses or the 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 Shannon District have been identified, mapped and listed in a register (see **www.shannonrbd.com**). They include sections of rivers, lakes, coastal areas, bogs, turloughs, callows and fens. Parts of the lower River Shannon, Tralee Bay and Loop Head, the Burren and the Cliffs of Moher have been identified. The majority of the areas identified for special protection in the Shannon District are turloughs, bogs and the margins of lakes and rivers.

Rivers - The River Shannon is the largest in Ireland. It rises in County Cavan and flows for 260 km before flowing into the Shannon Estuary at Limerick City. An unusual feature of the Shannon river is that it is remarkably flat, with the majority of the fall in height taking place on the 24 km stretch between Killaloe and Limerick. The first hydro-electric power generation station in Ireland was constructed on this stretch, at Ardnacrusha, in the 1920s. In winter, seasonal flooding occurs and the flood plains on either side of the river, called "callows", are world famous for the plants and animals found there. The main tributaries of the Upper Shannon are the Rivers Suck, Inny and Brosna while the main tributaries of the Lower Shannon are the Rivers Fergus, Maigue, Deel and Mulkear.

Lakes - There are more than 1,600 lakes in the Shannon District but less than 50 of them are over 1 km^2 in area. The largest lakes are Lough Derg (120 km^2), Lough Ree (100 km^2) and Lough Allen (30 km^2) - these large lakes are all on the River Shannon.

Estuarine/Coastal - The River Shannon flows into the Shannon Estuary and on into the Atlantic Ocean. The Shannon estuary is the largest estuary in Ireland with an area of approximately 150 km^2. The Fergus, Deel and Maigue rivers all flow into the Shannon Estuary. The District's coastline incorporates most of the coastline of County Clare and about one third of the coastline of County Kerry. There are a number of ports and harbours, the main ones are at Limerick and Foynes.



Groundwaters - Limestone rocks dominate the geology of the Shannon District. The Burren in County Clare is probably one of the best known landscapes internationally. The karstified limestone creates unique groundwater features including seasonal lakes (turloughs) and disappearing rivers during prolonged dry spells. Swallow holes form where the limestone bedrock is dissolved along fissures and cracks allowing the surface streams to disappear into the ground to emerge, possibly miles away, as springs.

Canals – The Shannon navigation is the longest navigable network in Ireland and Britain. There are several major canal systems that connect in the Shannon District, the main canals being the Grand and Royal Canals and the cross-border Shannon-Erne Waterway.

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.shannonrbd.com**) identified these potential problems.

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**	**1**	**1**	**1**
Diffuse Source Pollution	**5**	**3**	**1**	**2**
Physical Modifications	**5**	**5**	**1**	**-**
Abstractions	**1**	**2**	**1**	**1**

Using local expertise

The Directive requires the involvement of a very wide range of public bodies, which are mentioned throughout this booklet. Eighteen local authorities, along with Environment and Heritage Service in Northern Ireland, are cooperating with other organisations through the Shannon International River Basin District Management Group, which is referred to as the **Management Group** throughout this booklet.

To encourage the public to participate in making and implementing action plans, a special stakeholder group called the River Basin District Advisory Council has been established in the Shannon District: its members are councillors, community representatives and stakeholders. This **participation group** has already contributed knowledge, expertise and views that have helped in preparing this booklet. A full list of participants is available on **www.shannonrbd.com.**

Local workshops and meetings were held with the District's participation and Management Groups to debate the main issues and help to shape this booklet. The main water problems identified in the Shannon 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
- cruising and boating
- peat extraction
- shared waters issues.


Advisory Council Workshop

Question 1
Do you agree that these are the key causes of water problems within the Shannon District?

Positive steps

As you read earlier, recent monitoring in Ireland has detected the first signs of a reversal of the downward trend: this improvement results from investment and improved working practices. It is vital for our water environment, and the economy that depends on it, that recovery continues.

The Public Participation and Management Groups highlighted some areas where significant progress has been made:

- the recent Nitrates Action Programmes will play a major role in addressing agricultural pollution
- county groundwater protection schemes, which serve as a planning control tool, particularly for unsewered areas
- use of new technologies in developments such as sustainable drainage schemes, constructed wetlands, silt ponds and riparian zone protection
- education campaigns like the Green Schools programme and local programmes with organisation like Save Our Lough Derg (SOLD) working with North Tipperary County Council at classroom level
- bye-laws such as those introduced in County Cavan will play a major role in addressing septic tank pollution
- bye-laws such as those introduced in North Tipperary, Cavan and Offaly have played a significant role in addressing agricultural pollution in these counties
- upgraded wastewater treatment facilities throughout the District and additional pump out facilities for cruisers will also play a positive role.

And there is more good news in that the responsible government authorities in 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. Heavier winter rainstorms may cause more flooding, raising demand for flood controls. Summer

droughts could increase abstractions and reduce the amount of water into which effluents discharge, making pollution more likely. Increased temperatures in waters may stimulate the spread of alien species. These impacts will have to be reviewed during preparation of the plan.

A series of special studies are being carried out to update information and improve the understanding of our water issues. Local information from catchment plans, assessments and sampling programmes is being used to focus on the main problems in the Shannon District. Study highlights are presented in this booklet, but the detailed findings of the in-depth studies are available on the District's website **www.shannonrbd.com.**


Lough Derg

Action themes

The Shannon public Participation and Management 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 Shannon 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, occasionally, to groundwater.

Ireland has 540 sewerage systems serving populations of between 500 and 1.7 million: 408 modern municipal treatment facilities and 132 smaller plants providing minimal or no treatment. Many of these smaller schemes are located on the coastline. In the Shannon District, 125 systems serve populations of greater than 500; there are also 22 smaller plants.

Between 2000 and 2006, authorities in Ireland invested almost €3 billion to upgrade 210 wastewater treatment plants. Local authorities have built over 90% of the infrastructure needed to comply with the Urban Wastewater Treatment Directive. Extra investment will be needed to keep pace with population and economic growth; urban drainage must also cope with increased surface water run-off. An additional €2.5 billion may be invested in wastewater treatment under the National Development Plan 2007–2013.

Major industrial activities are regulated by the Environmental Protection Agency (EPA), which has granted some 600 industrial licences. Local authorities have licensed 1,090 small-scale commercial and industrial discharges to the sewer system and 1,120 direct discharges to waters. In the Shannon District currently there are 112 licenced industries and 111 local authority licenced discharges to water.

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 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 Shannon District, estimates indicate that municipal and industrial discharges produce 20% of the yearly phosphorus load and just under 5% of the nitrogen load. The shortfall in infrastructure at major plants and the myriad of smaller settlements were highlighted during consultations. Particular concern was raised on the subjects of combined sewer overflow spillage and run-off from road networks into the District's rivers. Unauthorised or crossed connections between storm drainage and foul sewers were also raised as a problem. There are many places where waters have been polluted by this type of discharge and in response treatment facilities have been upgraded. For example Mullingar Wastewater Treatment Plant has been modernised to address pollution of Lough Ennell and the River Brosna. More investment is needed generally to make sure that treatment plants can cater for the unprecedented growth in demand in the District. This problem was emphasised by both the Shannon's Advisory Council and Management Group.

What existing controls are in place?

The Urban Wastewater Treatment Regulations require local authorities to provide appropriate wastewater treatment for urban areas. Local authorities must obtain planning approval from An Bord Pleanála under the Planning and Development Act for large **wastewater treatment** plants (exceeding 10,000 persons equivalent). Under the Foreshore Acts the Minister for the Marine may license local authorities to place sewage disposal pipes on or near the foreshore.

Local authorities are obliged to monitor inflowing wastewater and effluent at treatment plants. The Urban Wastewater Treatment Regulations' monitoring and sampling requirements are set out in the Environmental Protection Agency's Handbook for Local Authorities and reports on Urban Wastewater Discharges in Ireland.

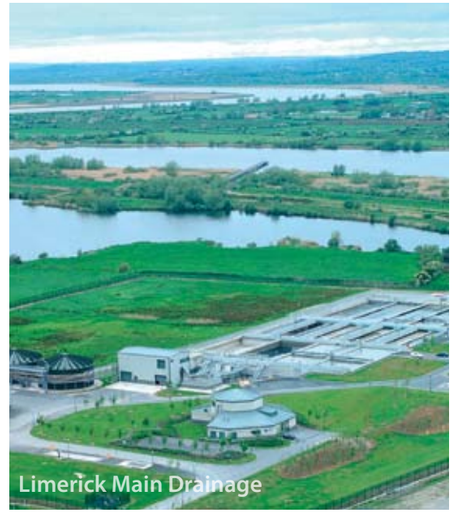
The Environmental Protection Agency (EPA) regulates major **industrial activities** under the Integrated Pollution Prevention and Control (IPPC) Regulations. Local authorities license small-scale commercial and industrial discharges to sewer systems and waters under the Water Pollution Acts. Industrial discharge controls lay down effluent quality and quantity conditions.

The EPA and local authorities are responsible for addressing water pollution from **spills or leakage** under the EPA and Water Pollution Acts. The **Phosphorus Regulations** and **Dangerous Substances Regulations** require local authorities to control activities that may cause pollution. Specific bye-laws have been made in priority areas to control **urban discharges**; for example Dublin City Council has recently banned the disposal of fats and grease and has introduced a collection system to produce biofuel. Many local authorities have adopted **Sustainable Drainage Systems** (SuDS), which 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. Other agencies have also introduced controls: for example the National Roads Authority, has a strategy for dealing with water quality considerations of **road development.**

Are these controls adequate to meet the new targets?

Controls focus on infrastructure provision but may not adequately control the operation of wastewater treatment plants and sewage facilities. Local authorities are currently exempted from licensing requirements under the Water Pollution Acts. There are very few controls on the pollutant loads from spills and leakage of drainage systems. To meet new and more demanding water quality standards, a system of authorisation or licensing is required.

Environmental Protection Agency reports on Urban Wastewater Discharges have consistently highlighted the need to improve monitoring at treatment plants. A recent study indicated that there is a shortfall of reliable monitoring data or results. This too needs to be addressed.



Limerick Main Drainage

What additional actions are proposed?

The Department of the Environment, Heritage and Local Government (DEHLG) is making new regulations to address the deficiencies in existing controls. The regulations will create a single national licensing system for the operation of local authority wastewater discharges and sewage facilities such as pumping stations and overflows. The system will be administered by the EPA. The licences will set mandatory emission limits for pollutants to achieve new water quality standards in receiving waters and will specify monitoring requirements.

Industrial licence 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 issued by the EPA and local authorities.

Detailed studies are underway 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 and best practice in spreading the sludge from treatment processes on agricultural land. A computerised web-based system will provide better access to monitoring information and improve the management of wastewater treatment plants. 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 local authorities, transport authorities and industries discharging wastewater effluent to sewers or directly to waters.

Question 3
What is your view about the suggested actions to control wastewater and industrial discharge problems within the Shannon District?
Are these actions appropriate?
Have we missed something important?

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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 may continue to threaten groundwater and surface waters around these sites.

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. The EPA lists 86 contaminated sites (including 25 illegal landfills); 500 quarries and 100 mines (both active and non-active) have been identified, most of them very small and unlikely to present a serious risk. In the Shannon District, 20 contaminated sites, 108 quarries and 32 mine sites have been identified.

An EPA report in 2005 provided the first comprehensive overview of the scale of unauthorised waste activity in Ireland. It concluded that large-scale illegal dumping (as in County Wicklow during 1997–2002) had ceased and that illegal cross-border movement of waste had reduced significantly as a result of increased vigilance and cross-border cooperation. To date there are 115 known landfills in the Shannon District.

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 landfills, quarries, mines and contaminated sites in the Shannon District. Old mines such as the Silvermines in North Tipperary have been identified as causing water quality problems. In response the recommendations of the "Report of Investigation into the Presence and Influence of Lead in the Silvermines Area of County Tipperary" are being implemented. These types of impacts were voiced by the Advisory Council and Management Group as water problems in the District.

What existing controls are in place?

There is 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 Silvermines

The Waste Management Act is the primary control for regulated **waste management**. Licensing of waste facilities is administered by the EPA. Facility monitoring programmes are also specified in the license conditions.

Quarries that are four years or older must register with local authorities under the Planning and Development Act. The DEHLG has prepared guidelines for local authorities on the registration requirements and process. Planning applications for new facilities of more than five hectares generally require an Environmental Impact Assessment.

Proposed new **mines** require three principal kinds of permits: a mining lease or licence from the Minister for Communications, Marine and Natural Resources, planning permission under the Planning and Development Act and an integrated pollution prevention and control licence from the EPA. The recent Energy Act allows for preparation and implementation of mine rehabilitation plans for the protection of the environment, and grants rights of access if necessary to do this. Applications for all new mines generally require an Environmental Impact Assessment.

The Environmental Protection Agency Act and the Water Pollution Acts identify responsibilities for addressing water pollution incidents and the requirement to license discharges to waters. The EPA and local authorities apply 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?

Using a Code of Practice developed by the EPA in 2006, local authorities are identifying relevant historic waste disposal sites, assessing the threat to waters and, where necessary, developing plans to address problem sites.

By the end of 2007, the EPA, Department of Communications, Marine and Natural Resources (DCMNR) and Geological Survey of Ireland (GSI) will have completed characterising historic mine sites in Ireland, gaining better information about the sites and their environmental impact. There are new powers to rehabilitate mines and manage waste from extractive industries.

The EPA has indicated that local authorities could apply its best practice guidance to identify and assess potentially contaminated lands.

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 local authorities and industries, commercial enterprises and owners of land on which such activities have taken place.

Quarry, Portroe

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

Agriculture

Agriculture and the agri-food sector account for 8% of total added value in the Irish economy and, in 2005, employed around 114,000 people, around 6% of the workforce. Farms cover about two thirds of the island's total land area, 90% as grassland and 10% for tillage (mostly in the south and east). Beef, milk and sheep account for over half of the value of agricultural produce; meat and milk products are major exports. Average stocking levels on farms are 1.3 animals per hectare.

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 Ulster: counties Cavan and Monaghan have the highest numbers of pigs and poultry respectively. However there are also large numbers of pig and poultry units in parts of mid Munster, in Limerick and North Cork.

The EPA's most recent National Water Quality report identified agricultural activities as the main problem in one third of Ireland's moderately polluted river channels.

Reform of the EU Common Agricultural Policy, and new opportunities (for example the increase in biofuel 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?

The EPA has 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. Ireland's latest drinking water report shows widespread contamination of smaller rural water supplies from agricultural sources.

Agriculture is a very important activity employing approximately 10% of the workforce in the Shannon District. About 70% of the land area is used for agriculture, mostly for livestock grazing on grassland. Estimates of nutrient input into waters in the Shannon District indicate that agriculture produces 55% of the yearly phosphorus load and 85% of the nitrogen load. The potential water problems linked with agricultural practices were voiced by the Advisory Council and the Management Group. One particular problem that was highlighted was insufficient slurry storage and the intensive farming practices in parts of the District. Bye-laws to control agricultural pollution have been put in place in priority areas including Cavan, Offaly and North Tipperary.

What existing controls are in place?

Ireland's Department of Agriculture and Food 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 the **Nitrates Action Programme** was introduced to provide statutory support 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; they also provide for monitoring and mini-catchment programmes to monitor the effectiveness of the national nitrates action programme.

Participation in **agri-environmental schemes**, such as the Rural Environment Protection Scheme (REPS), continues to increase. This scheme rewards 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 almost 60,000 Irish farmers (around 50% of farmland) were participating in REPS.

The Department of Agriculture and Food provides investment aid for improved storage for **farm manure** and funds equipment for application to land. The 2006 scheme (with grant rates of 60% to 75%), helping farmers to comply with the requirements of the nitrates action programmes, had 48,600 applicants in Ireland.

The DEHLG, the EPA, local authorities and fishery boards have powers of inspection and enforcement under **water pollution laws**, including the nitrates regulations. These bodies undertake routine inspections and enforcement actions in response to water quality incidents related to agriculture. The EPA licenses intensive agricultural enterprises under the **Integrated Pollution and Prevention Control** (IPPC) system and applies IPPC Directive thresholds.

Under the **phosphorus regulations,** local authorities must identify, address, monitor and report on activities (including agriculture) associated with phosphorus pollution. Some local authorities have made **bye-laws** to control agricultural activities in some priority areas. Local authorities also have responsibility for requiring agricultural **sludge** to be used in accordance with a Nutrient Management Plan to avoid contamination of soil and pollution of water.

Dairy Farming

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 programmes will be reviewed in 2009. Strengthened measures may be needed, for example in sensitive areas, if the action programme has not shown adequate water quality improvements.

Detailed studies will assess the effectiveness of the nitrates action programmes. Ongoing surveys and mini-catchment studies 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; there has been a marked decline in fertiliser sales and animal numbers in recent years. Agricultural survey findings and indicators will be tracked and reported in the District's action plans.

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 Shannon District?
Are these actions appropriate?
Have we missed something important?

Agriculture

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 400,000 properties (20–30% of the total) are currently without public sewerage provision: representing over 1.3 million people (30% of the population), generating over 230 million litres of wastewater a day. In the Shannon District, around half of the properties are dependant on individual septic tanks.

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.

The vast majority of on-site treatment facilities are septic tanks and single-house proprietary treatment systems. One in five of the 500,000 housing units built since 1991 were detached houses in rural areas with individual septic tanks. The counties with the highest percentage of one-off housing units built since 1991 were counties Galway (52%), Roscommon (43%), Donegal (41%) and Monaghan (40%).

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. Over half of County Cavan's population is served by on-site systems. Cavan County Council's 2002 pilot survey 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" are often raised at consultation events in the Shannon District and have been highlighted by the Advisory Council and Management Group as posing a potential problem to the waters in the District. The growing population is resulting in demand for individual houses and housing clusters throughout most of the District.

Cavan County Council, for example, has put bye-laws in place to address this problem. The coastal counties of Limerick, Clare and Kerry, have an ever increasing number of holiday homes. It is very difficult and often very costly to provide main sewer systems to dwellings in these areas and it is often not possible to achieve this ahead of new development.

Effective control through planning, construction and operation of on-site wastewater systems is required so that they do not cause 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 permission** from local authorities or, if appeals arise, from An Bord Pleanála, under the Planning and Development Act.

The DEHLG has issued guidance on **best practice** to local authorities about development plan policies, development control and enforcement standards and practices. The EPA has published guidance manuals explaining the investigation and design requirements for systems serving individual premises.

Small discharges of domestic sewage (from a typical septic tank serving a single dwelling) via a percolation area are exempted from **Water Pollution Acts** licensing. However, licences are required for larger discharges from septic tanks and other treatment facilities. Some local authorities have passed **specific bye-laws** covering priority areas where on-site system discharges have caused water quality problems.

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.

The EPA guidance manuals cover single houses and small commercial developments; new guidance is needed to cover clusters of houses or commercial developments discharging at a single location.

What additional actions are proposed?

Legislation is being amended to clarify and elaborate the statutory basis for the licensing of discharges to soil. The current guidance manuals will be changed to improve existing controls.


Construction of an On-site System

Detailed studies are progressing to support the guidance. 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. Local development plans and development control and enforcement practices will have to be modified to reflect these restrictions. The design of new facilities will have to consider soil, geology, surface water and groundwater, both at the site and around it. The guidance will also incorporate improved procedures for soil and hydrology investigation and rigorous controls for 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 will be investigated.

A monitoring system that can pinpoint sub-standard installation or performance is being developed. Study of Cavan County Council's bye-laws implementation and effectiveness will inform any future regulatory or enforcement changes. Education and awareness-raising programmes will highlight the issues.

These controls, combined with new water quality standards, will cover 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 Shannon District?
Are these actions appropriate?
Have we missed something important?

Forestry

Forest cover now accounts for just over 10% of Ireland's land area, up from about 1% in 1920. The objective is to expand cover to 17% in the next 30 years. This expansion may help to offset Ireland's 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.

Over 75% of forest cover on the island is coniferous; the rest is broadleaf, mixed or other wooded land. More recent, private plantations tend to have higher proportions of broadleaved species. About 57% of Ireland's forest cover is State-owned and managed by Coillte. 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 state or 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.

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.

Commercial forestry areas are localised in the Shannon District (covering less than 5% of the land area). However potential impacts were voiced, by the Advisory Council and Management Group, as water problems in the District. Many of the afforested areas are located in sensitive salmon and trout spawning catchments. This is a particular cause for concern and underpins the need for adequate control on forestry operations in sensitive areas.

What existing controls are in place?

To ensure that all timber produced is derived from sustainable managed forests, Ireland's Forest Service (part of the Department of Agriculture and Food) is implementing Sustainable Forest Management (SFM), with the Irish National Forest Standard as a framework for development and evaluation. A Code of Best Forest Practice covers all stages from seed selection through to the establishment and maintenance of timber harvesting.

Tree felling is subject to licence under the Forestry Act. Landowners are required to give notice of intention to fell trees, following which Prohibition Orders are normally served. These remain in force pending the issuing of a Limited Felling Licence, which can include environmental and replanting conditions. General Felling Licences are normally granted to large estates with management programmes, or for lands where scattered trees must be cleared in order to enable new planting.

The Minister for Agriculture and Food introduced licensing regulations in 2006 to control aerial fertilisation.

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.

The Forestry Act requires replanting of felled areas. It may need to be revised to allow certain previously-forested areas, particularly the more sensitive peatland sites, to be managed differently after clearfelling including the non-planting of these areas in the future.

What additional actions are proposed?

For existing forests and associated activities, the key actions are:

- to ensure implementation of current statutory regulations, guidelines and codes of practice. 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.

Detailed studies are currently underway to provide a better understanding of forests, forestry operations and water. Maps of areas sensitive to acidification, nutrient enrichment, sedimentation and flow change are being developed to improve the assessment of sites suitability for planting. The increased scientific knowledge will feed into any amendments to existing guidance and may result in revised guidance, if appropriate, to ensure proper assessment of sites suitable for forestry.


Forestry at Cam Lough

Recommendations for the monitoring and assessment of forest activity will also be included in any updated guidance. A register of chemical use will be established detailing the specific material used, the quantity used, the date of application and the location of application. Education and awareness-raising programmes will also be used to highlight these issues.

Codes of practice and guidelines must be applied rigorously to ensure compliance with water quality standards; modified or additional codes may be required, as well as some changes in the legislative framework governing forestry. 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 Shannon 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.

Contamination from dangerous substances can last for a long time in our environment requiring costly clean-up operations. A number of mines in the District, for example the Silvermines, are currently being assessed in terms of their remediation, rehabilitation and long term management needs. The threat from usage and release of dangerous substances from mines, and also from households, was voiced by the Shannon Advisory Council and Management Group as a potential water problem with particular concern for protection of our drinking water sources.

What existing controls are in place?

Ireland has **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 relevance to Ireland). Monitoring is undertaken by local authorities, the EPA and the Marine Institute.

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

- major industrial activities are regulated by the EPA under the **Integrated Pollution Prevention and Control** (IPPC) Regulations. Permits restrict the discharge of certain dangerous substances to waters
- the EPA 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
- under the **Water Pollution Acts,** local authorities license industrial and commercial premises that discharge to waters and have specific responsibilities under the **Dangerous Substances Regulations**. The EPA administer these controls. In 2006 the EPA reported on compliance: most of the exceedances were of heavy metals (zinc, copper, chromium and lead), caused either by historical mining activities or by local geology that raise the levels of heavy metals in water naturally. The local authorities have identified sources of pollution and the actions to address problems: for example North Tipperary County Council responded to high metal levels by establishing and implementing the recommendations of an inter-Agency group on Silvermines mining area
- the EPA and local authorities are involved in controlling discharges of dangerous substances to **groundwater**
- **aquaculture** and its associated activities (such as sea-lice treatments) are controlled by the DCMNR, supported by the Marine Institute and local authorities
- the Pesticides Control Service authorises **pesticides** and carries out surveys and on-farm inspections of their use. The Health and Safety Authority and Irish Medicines Board are involved in dangerous substances approval.

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 Ireland have identified further specific pollutants that threaten local waters.


Effluent Discharge

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 EPA and the Marine Institute. 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. Under new regulations being made by the DEHLG, licences for wastewater treatment plant discharges and storm overflows will set mandatory emission limits and specify monitoring requirements to achieve new quality standards in receiving waters. The system will be administered by the EPA. Other local authority discharges containing dangerous substances, which may require licensing, are being studied.

Industrial licence 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 EPA, local authority and Marine Institute licensing 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 Authority, supported by the EPA.

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.

The Pesticides Control Service will continue to review pesticide authorisation based on the current scientific advice. The cycle of pesticide surveys has been harmonised with Northern 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 nationally) 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. Stakeholders directly affected by these proposed measures include the public, local authorities and 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 Shannon 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: there are around 95,000 culverts and bridges on our rivers, almost 900 kilometres of river embankments, 19 large water reservoir or hydropower dams, 10 large ports and over 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 reach 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 of many changes can alter water quality and flooding behaviour in a District, resulting in increased risk of property flooding.

The most significant physical change in the Shannon District is the hydroelectric power scheme with Ardnacrusha dam, near Limerick, and weirs and sluices which aid both water storage and navigation at key locations along the system. Many of the District's waterways have also been physically altered to allow for navigation, agricultural drainage and flood protection. Stretches need to be cleaned out from time to time, removing silt build-up to reduce flooding risk and to ensure that the system is navigable. The Shannon District is home to other large schemes including ports at Limerick and Foynes, flood protection schemes at Ennis and around Listowel and coastal defence works in counties

Limerick, Clare and Kerry. There is also widespread concern about the amount of development that has happened on the floodplains in the District and the associated drainage or filling of wetlands. The potential effects on water quality and flooding behaviour as a result of physical changes were identified by the Advisory Council and Management Group as water problems in the Shannon District. The Office of Public Works are embarking on a comprehensive flood management plan for the Shannon District under the forthcoming Floods Directive.

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:

- the Office of Public Works and the DCMNR are the lead authorities for **river and coastal flood and erosion** management
- **private developments** must obtain planning permission via local authorities
- **fishing and aquaculture** activities are licensed by local authorities, regional fisheries boards, the DCMNR or the Loughs Agency
- works on the **foreshore** are authorised or licensed by the DCMNR
- for the disposal of **dredged material** at sea, permits are required from the Minister for Communications, Marine and Natural Resources
- **Environmental Impact Assessments** are required in support of planning applications and foreshore licence applications for certain large developments.

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.

The impact on Irish waters of physical change is not routinely recorded and so it is difficult to estimate the extent of impact. However, new monitoring programmes will, in time, establish the overall physical health of our waters. The limited evidence collected to date indicates that more than one third of physically modified water bodies show ecological impact. In such circumstances these rivers may have to be rehabilitated.

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. In Ireland, the Office of Public Works will lead the development of plans, which will address climate change effects, incorporating modern approaches of avoiding increased flood risk and non-structural solutions such as flood forecasting systems.

The government is currently considering the introduction of regulations to control physical modifications to surface waters. These controls may involve a licensing regime or registration based on general binding rules. It is likely that new regulations will be made to give effect to this new system of control. The system will probably be administered by a single statutory authority.

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.


Parteen Weir

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.

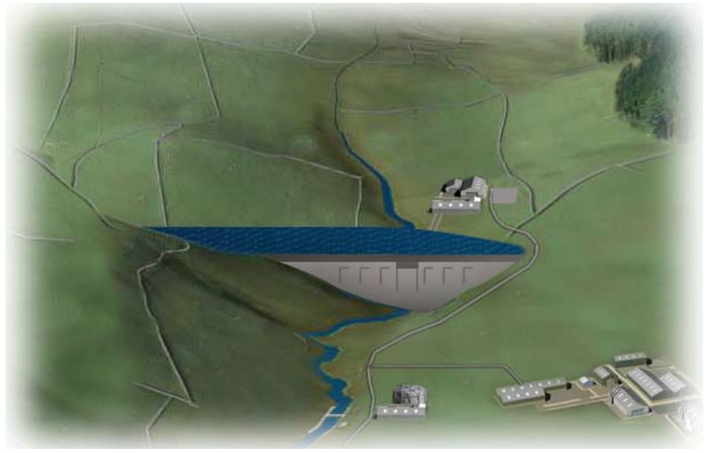
These proposed actions will result in stricter controls on existing and planned physical modifications to surface waters. Stakeholders directly affected by these proposed measures include developers and operators proposing engineered modifications to surface waters.

Question 9
What is your view about the suggested actions to control problems related to physical modifications within the Shannon 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 1.7 million cubic metres (m^3) of water every day, over half a billion cubic metres a year, in 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). Local authority water schemes supply 83% of the population; the rest use private schemes (7%) or individual wells (10%). Ireland has around 550 surface water schemes (about 375 being large supplies of over 100 m^3 a day), and there are almost 2,000 groundwater wells (over 600 being large supplies).

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.

A Spring, Tarbert

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.

Drinking water supplies are very important in the Shannon District particularly as there is pressure on supply in some areas with a risk of shortages in large urban areas such as Limerick City. The potential effects of climate change is also raising concern for the security of future water supplies in the District. The need to protect the sources of these supplies was voiced by the Advisory Council and Management Group as a particular concern. The Shannon system is also being considered as a potential source of water for the Greater Dublin Area which is facing water shortages in the near future. A detailed study is being prepared to determine any likely effects of this proposal.

What existing controls are in place?

Local authorities obtain approval to abstract water from surface water sources under the **Water Supplies Act** and must establish and maintain registers of abstractions under the **Water Pollution Act.** Currently, individual water supply schemes operate under historical water rights agreements and new schemes are assessed as part of local planning approval systems.

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?

Abstraction legislation is dated and needs to be updated and extended to protect waters adequately, with a modernised system of registration and prior authorisation for significant abstractions.

What additional actions are proposed?

The DEHLG will propose new regulations creating a single registration and licensing system for all significant abstractions from groundwaters and surface waters. The licence will set abstraction limits to preserve water resources and will also specify compulsory monitoring requirements. These proposed new controls will ensure appropriate supervision of all significant abstractions.

Detailed studies are underway to establish the amount of water abstracted today, with predictions for the year 2015. Methods are being developed to calculate minimum water resource requirements to protect waters. The following requirements are being considered:

- in rivers the flow necessary to protect fish populations, especially during summer's low-flow period, is the key abstraction control
- in lakes the acceptable water level fluctuation is the key abstraction control
- in groundwaters a better understanding of water balance has been developed to protect water resources so that the water table and dependant plants and animals are not adversely affected.

Unsustainable 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 will be promoted; guidance dealing with all these issues will be prepared; awareness-raising programmes will highlight these issues to domestic and industrial users.


Exposed Bed due to Abstraction

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 Shannon District?
Are these actions appropriate?
Have we missed something important?

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.

The EPA identified the eight species of main concern in Ireland in 2004, two of which were found in the Shannon District. For instance:

- **Dace** is an introduced freshwater or brackish fish which is exceedingly prolific, and poses a risk as a potential pest in some areas. Dace is present in the subcatchments of the Shannon estuary
- **Zebra Mussels** have spread throughout the River Shannon and its main lakes. They out-compete native mussels. They attach to firm surfaces, boat hulls, rock, gravel, other mussels and plants and spread easily into other systems.


Zebra Mussels

Since 2004, a third species of main concern has been identified in a study on alien species in Lough Derg in 2005-2006: **Nuttall's pondweed.** In addition, this study found **a parasite of the freshwater eel; water violet; duckweed**; and **Canadian pondweed**.

The National Parks and Wildlife Service is the primary authority for biodiversity protection in Ireland. It is 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. The Central Fisheries Board produced a ***Stop the spread of alien species*** 2007 calendar to draw this problem to the public's attention, while in the Shannon District a study of the presence and spread of invasive species on Lough Derg was carried out during 2005 and 2006, and highlights the need to put actions in place to address these issues in our plan. The report is available on the **www.shannonrbd.com** website.

Question 11 - What is your view on alien species problems within the Shannon 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.


Bottlenose dolphin

In addition, there are other designated special areas which are specifically protected under 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.

The National Parks and Wildlife Service (NPWS) is the lead conservation authority, coordinating specific actions to protect these sites. It is leading studies to harmonise conservation action throughout the island, creating joint 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. NPWS and its Northern Ireland counterpart are jointly considering dovetailed 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 Ireland.

Question 12 - What is your view about the suggested approach to address sensitive area problems within the Shannon District?

Cruising and boating

Cruising and boating are important recreational and tourism activities on the Shannon waterway and the Shannon-Erne navigation. However these can give rise to certain localised water problems including discharge from on-board toilets, physical disturbance by boat wakes and potential engine oil spillage.


Boating on the River Shannon

The operation of boat "pump-out" facilities to collect and treat the effluent from on-board toilets has been an on-going problem in the District. Waterways Ireland and the local authorities adjoining the navigation are working together to address these problems and ensure that there are enough facilities that are well maintained and easy to operate for boat-users. Bye-laws have been implemented which apply speed restrictions on boats along the Shannon navigation and the Shannon-Erne Waterway.

Question 13 – What do you think about cruising and boating problems within the Shannon District?


Boora Bog

Peat extraction

Peat extraction is an important industry in the Shannon District. Peat is harvested to fuel power stations and homes and for gardening products. However peat extraction can give rise to certain localised water problems including silt and nutrient release from milled areas. There are also many former sites in the District that have fallen or will fall out of production requiring rehabilitation plans in the coming decade.

Whilst Bord na Móna is the main commercial organisation there are also many private businesses involved in peat harvesting. The Bord na Móna sites operate under IPPC licenses. However, small private operators are currently not licensed. A targeted survey is being undertaken in the Shannon District to investigate peat extraction issues and identify actions. Water quality and flow data will be assessed to establish the scale and size of the problem. Suggestions will be made about appropriate regulation and rehabilitation actions.

Question 14 – What do you think about the suggested approach to address peat extraction problems within the Shannon District?

Shared waters issues

The Shannon is an International River Basin District. The Water Framework Directive promotes common approaches, standards and measures for water management and provides for the monitoring of water status on a systematic and comparable basis across the European Community. It also aims at ensuring that water management is coordinated on the basis of whole river Districts: that is, on the basis of the natural, environmental unit rather than administrative or legal boundaries.

Rivers and lakes throughout the island of Ireland are designated as a single region (Ecoregion 17) under the Directive. Likewise, all estuaries and coastal waters surrounding the island of Ireland are included in Ecoregion 1, which also includes marine waters in Scotland, England and Wales. Implementation of the Directive therefore creates the opportunity for all government authorities on the island of Ireland to cooperate on the sustainable management of our shared water environment.


The Shannon Pot

The environment can suffer if policies and controls aren't applied equally in both jurisdictions, as when waste from Ireland was illegally dumped in Northern Ireland after Ireland introduced waste charging. This problem is being addressed by authorities in both jurisdictions acting jointly on waste management enforcement.

Organisations throughout the island, working closely together, have successfully met all of the early milestones of the Water Framework Directive. Cooperation is underpinned by joint participation on Directive implementation and technical groups.

This joint booklet shows that the water problems faced in Ireland and Northern Ireland are very similar and that the actions taken to solve these problems in our shared waters are being coordinated. The boundaries of, and pressures on, our shared, or cross-border, waters have been mapped for the first time. A coordinated assessment of all our waters has been undertaken so that we have a full picture of the problems that need to be addressed in our action plans. Organisations in both jurisdictions are currently developing coordinated approaches to surveys, water status systems, assessments and actions plans, and are committed to ongoing collaboration to implement the Directive.

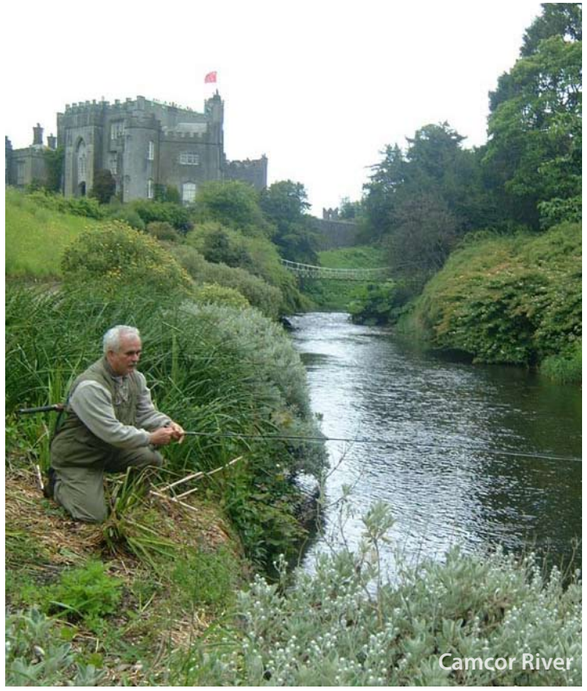
Question 15 - What is your view about the suggested approach to address the shared water issues within the Shannon District?

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 Shannon District, like other 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.


Camcor River

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 abstractions, 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.

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 Shannon 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.


Wild Orchid

Setting the environmental objectives for our waters

The authorities are developing guidelines 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 guidelines will address such questions as:

- 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
- Water Services investment programmes
- Nitrates Action Programme
- Strategic national development plans and related local plans
- Flood Management Plans.

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

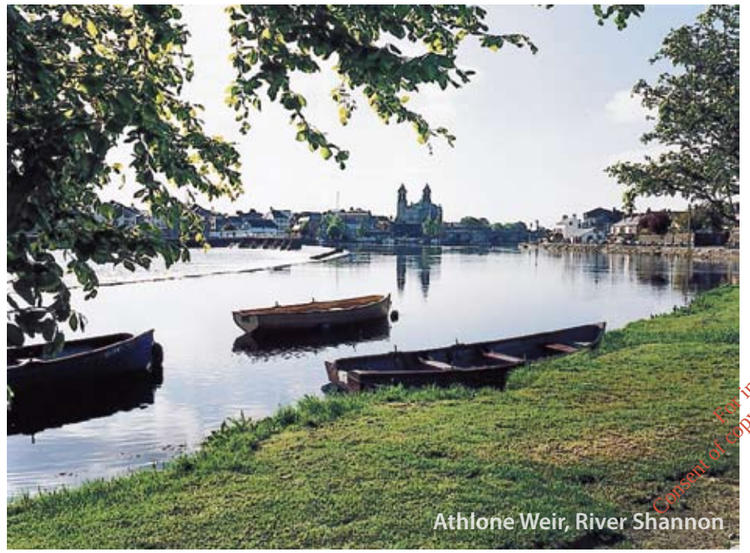
Assessing environmental impacts

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.

Assessing regulatory impacts

Achieving these new objectives may require the introduction of a range of new regulatory controls (for example licensing and registration of wastewater discharges, abstractions and physical modifications) to give legal effect to the actions. Regulatory Impact Assessments (RIAs) will be applied to regulatory proposals in both jurisdictions. 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.


Athlone Weir, River Shannon

Implementing the management plans

The task of implementing the action plans will fall, mainly, to the statutory authorities. Local authorities are being supported in preparing draft action plans by National Development Plan-funded projects. The draft action plans will be published in 2008. After further consultation, the final action plans will be adopted and published in 2009. In the case of the Shannon District, it is envisaged that a small unit will be set up by Limerick County Council's Environment Department to coordinate the ongoing work of the eighteen participating local authorities and Environment and Heritage Service in Northern Ireland. The resources to implement the action plans will come from national and local sources and from both private and public sectors.

Getting involved

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

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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. Ireland set up an Advisory Council for each River Basin District containing councillors, community representatives and stakeholders. This participation group has already contributed knowledge, expertise and views that have helped in preparing this booklet. A full list of participants in the Shannon District is available on **www.shannonrbd.com**.

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

Photographs kindly provided by: J. Caffrey - Central Fisheries Board, J. McCarthy - University of Limerick, M. Fitzsimons - Shannon Regional Fisheries Board, S. Berrow - Shannon Dolphin and Wildlife Foundation, M. Nolan - Shannon Regional Fisheries Board and Limerick City Council.
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shannon

NDP
National Development Plan 2007 - 2013

Limerick County Council | **Limerick** City Council | **Clare** County Council | **North Tipperary** County Council | **Offaly** County Council
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Leitrim County Council | **Cavan** County Council | **Sligo** County Council | **South Tipperary** County Council | **Mayo** County Council
Cork County Council | **Laois** County Council | **Meath** County Council

1.0 Introduction.

Environmental Protection Agency reports have clearly documented that surface water quality in Ireland has declined over the last 30 years, with a slight improvement in some water bodies in recent years. The agency has identified eutrophication (excessive plant and algal growth) as the major threat to water quality. The third report of the E.P.A. on the state of the Environment – Irelands Environment 2004 indicated that agriculture is responsible for a significant proportion of Irish water pollution in rivers, lakes, estuaries and groundwaters.

Agriculture is considered by the E.P.A to be a major cause of water pollution in Ireland. Agriculture is the largest source of inputs to Irish waters of phosphorus and nitrogen contributing an estimated 73% and 82%, respectively.

Interim water quality targets set by the E.P.A, for maintaining and improving the quality of water in Irish rivers and lakes have been given statutory recognition, by passing into law of the Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) regulations, 1988 (S.I. No. 258 of 1998). These interim quality standards are to be achieved over a 10 year period.

Westmeath County Council has a responsibility under the phosphorus regulations 1998 (S.I. No. 258 1998) to maintain and/or improve surface water quality in rivers and lakes in their functional area.

This report is the fourth implementation report setting out the overall management approach by Westmeath County Council to implement the 1988 Phosphorus Regulations.

The Regulations require that water quality be maintained or improved by reference to either biological quality ratings (Q-Values) or median Molybdate Reactive Phosphorus (M.R.P.) concentration for rivers and trophic status (annual maximum chlorophyll concentration) or average total phosphorus for lakes. Baseline levels were assigned by the Agency in a review carried out in the period 1995-1997.

As outlined in Tables 1.1 and 1.2, where water is deemed unpolluted (i.e. river with a Q rating of Q5, Q4-5, Q4 or an oligotrophic/mesotrophic status assigned to a lake by the E.P.A), the Regulations require that the existing water quality be maintained. Where quality has been found to be unsatisfactory (Q3-4, Q3, Q2-3, Q2, Q1 or eutrophic/ hyper – eutrophic) the Regulations require that the water quality be improved to set interim targets by 2007 at the latest.

These targets are proving difficult to achieve, particularly in urban areas and areas of intensive agricultural practices.

Table 1.1: Phosphorus Regulations Interim Target Values for Irish Rivers to be reached by 2007.

If	**Then**	
The existing Q – Value falls into the category below	Either the minimum Q-value to be achieved is	Or the median molybdate-reactive phosphate con (ug/l) to be achieved is
Unpolluted (Satisfactory water quality)		
5	5	15
4-5	4-5	20
4	4	30
Polluted (Unsatisfactory water quality)		
3-4	4	30
3	3-4	50
2-3	3	70
<2	3	70

The **median** value refers to the middle concentration recorded in a set of results.
Biological Water Quality: The quality classes Q values are characterised by the relative proportions of the five groups of organisms recorded in a sample river bed.
Slightly Polluted: Q3-4 organisms most sensitive to pollution are found in these groups and include stonefly, mayfly, caddis fly, freshwater shrimps and beetles. Their presence indicates good water quality.
Moderately Polluted: Q3, Q2-3: Organisms tolerant of pollution dominate and include freshwater snails, alder flies, leeches, midge larvae, sludge worms, rat tailed maggots, more tolerant species of snails. Sensitive species are absent.
Seriously Polluted: Q2, Q1-Q2: The dominant species and often the only group in Q1 rated sample are midge larvae, sludge worms, gnats, rat tailed maggots and bladder snails. These are tolerant of pollution.

Table 1.2: Phosphorus Regulations Interim Target Values for Lakes to be reached by 2007.

If	**Then**	
The existing Trophic Status is	Either the minimum Q-value to be achieved is	Or the median molybdate-reactive phosphate con (ug/l) to be achieved is
Unpolluted (Satisfactory water quality)		
Ultra-Oligotrophic	**Ultra-Oligotrophic**	**<5**
Oligotrophic	**Oligotrophic**	**<5<10**
Mesotrophic	**Mesotrophic**	**<10<20**
Polluted (Unsatisfactory water quality)		
Eutrophic (moderately, strongly, highly)	**Mesotrophic**	**<10<20**
Hypertrophic	**3-4Eutrophic**	**<20<50**

2.0 Background on County Westmeath.

Westmeath is a Midland County and is locally known as the “Lake County” with a population of approximately 80,000 with two main towns Mullingar and Athlone. The topography of the County is characterised by its eskers, drumlins and lakes.

The surface waters within the County are of immense importance in terms of drinking water, fisheries, ecological significance and amenity value. Lough Owel supplies a

third of the County with drinking water, Lough Lene supplies an area in the North of the County, the River Shannon supplies Athlone and surrounding environs and Moate obtains its supply from a groundwater source. In addition to these aforementioned abstractions there are currently nineteen groundwater group water schemes throughout the County.

3.0 Water Quality in the Functional Area.

3.1 Water Quality Monitoring

The Shannon River Basin district laboratory located in County Roscommon monitors the rivers sampling stations located in the Shannon catchment and Westmeath County Council monitor the river sampling stations located in the Boyne catchment. The lake water quality monitoring is conducted by an external laboratory on behalf of Westmeath County Council and the Environmental Protection Agency monitor the biological element of the rivers and lakes within the County and assign a biological Q–Index to each.

3.2 Explanation of Water Quality Results

The phosphate levels in the rivers sampled show no significant change in water quality since the last reporting period with the exception of the River Brosna at Butlers Bridge, Moate Stream and the River Monagh all showing increases in phosphate levels. Surface water quality data may be found in Appendix 2, Tables 1 and 3. Details in relation to principle pollution sources are included in Appendix 2, Table 2 and 4.

The phosphate levels in the lakes would indicate that the trophic status of all the lakes sampled fall into the mesotrophic category. The lake water quality result for Lough Owel, Lough Lene and Lough Ennell show a decline in water quality since the last reporting period.

4.0 General Implementation Measures.

A number of measures were detailed in the Westmeath County Council measures report (1999). These measures were proposed to address issues identified from an analysis of the lake and river water quality monitoring data. The general measures implemented by the Council to improve water quality are as follows:

4.1 Monitoring Programmes

The surface water monitoring program was reviewed to ensure that the majority of the sampling sites are directly comparable to those biologically monitored by the Environmental Protection Agency.

The lake water sampling program was extended to include Lough Glore and Lough Derravaragh.

4.2 Discharge Licences.

Westmeath County Council has issued 48 discharge licences to waters and 34 to sewer. The licences issued under Section 4 of the Local Government (Water Pollution) Act 1977 and Amendments are currently being reviewed. A monitoring program, site audits and Standard Operating Procedures are in place to ensure compliance with the discharge licences issued. A programme to licence all garages and petrol stations has been put in place.

4.3 Agriculture Bye Laws

Agricultural Bye Laws were introduced to specific areas of the County on the 1st of March 2001. The Council are continuing to actively enforce the Bye Laws.

4.4 The Farm Waste Management Scheme.

The introduction of the Farm Waste Management Scheme on the 23rd March 2006 provides grant aid for facilities for the collection and storage of animal excreta, soiled water and other farmyard manures together with new equipment for the application of same to farmland. There has been a significant increase in the number of farmers availing of the Farm Waste Management Scheme this is evident by the number of planning applications that have been received by the Council to upgrade their waste management storage facilities 150 applications have been assessed by the environment section in the period (January – July 2006).It is believed that this scheme will assist in the prevention of water pollution.

4.5 European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2006 (S.I. No. 378 of 2006)

The above Regulations give effect to Irelands National Nitrates Action Programme under the EU Nitrates Directive. The Regulations aim to protect waters against pollution from agricultural sources with the emphasis being on the better management of livestock manures and other fertilisers. It expects farmers to maintain records on size of holding, numbers of animals, quantities of organic manure and fertiliser applied to land, details of exporters and importers, nutrient management plans, soil tests, feedstuffs used location of abstraction points , water courses etc. As part of the Councils preparation for enforcement of the Nitrates Regulations it has prepared inspection books that shall be used by the Council environmental staff during farm inspections. Book (1) is a checklist of the document that should be retained by the farmer. Once the document check has been completed, the environmental officer shall give the original check sheet with comments to the farmer and retain the carbon copy for file. Book (2) is a checklist that includes details of number of animals on farm, volume of waste generated and stored on farm, nutrient management and comments on farm yard management.

4.6 Wastewater Treatment Plants.

Westmeath County Council are endeavouring to comply fully with the Urban Wastewater Regulations and to secure finance to upgrade the wastewater treatment plants within the County. Phosphate removal systems are also being installed in wastewater treatment plants, where deemed appropriate, in an effort to improve water quality downstream of the treatment plants.

4.7 Pollution Complaints Management System.

The Environment Section has established a free phone number to allow members of the public to phone and make a complaint in relation to environmental issues and if they so wish to make a complaint to Westmeath County Council through the internet The complaint is then recorded electronically in the IT System and an Environmental Officer shall then initiate an investigation and implement enforcement procedures were necessary. This is a very useful system which tracks the progress of a complaint from receipt to initiation of legal proceedings and also contains template, letters and reports. It tracks progress of an investigation and issues automatic reminders to the environmental officer.

4.8 Quarries

The Council have received a total of 43 applications for quarry registration and the Environment Section have inspected, reported and conditioned 14 of the applications. The conditions cover all aspects of the environment and ensure that unlicensed discharges from quarries to watercourses are managed. The Council are currently undertaking legal proceedings against two quarries in order to protect water quality and the environment.

4.9 Waste Enforcement Activities

The establishment of a Waste Enforcement Team in the Council to address illegal waste activities has also assisted in the protection of water quality through the extensive permitting of sites and subsequent routine inspection of the permitted sites to ensure compliance with permit condition. As part of the permitting process all emissions to the environment are considered and addressed prior to granting of the waste permit.

4.10 Educational Awareness.

It is recognised that improving and protecting water quality is not all about enforcement. It is also about awareness. The Council water quality educational program included the following:

- Working with Teagasc by giving regular presentations on the environment and water quality.
- Water Awareness Week: Involves activities aimed at increasing public awareness .

- School Visits: Regular school visits and tours of wastewater treatment plants are carried out by environmental staff in an effort to promote awareness of water quality and water quality issues.

5.0 Catchment Implementation Measures

Westmeath County Council are involved in two ongoing river basin management projects i.e. the Shannon River Basin Project and The Eastern River Basin Project. The aim of both projects is to identify the main sources of contamination and implement management strategies.

The Council have also adopted the strategy of examining mini-catchments. The catchments are prioritised by local importance and need to improve water quality. Hence Lough Owel was selected as high priority due to the several factors such as it recognition as the primary drinking water source for the County and a history of Cryptosporidium outbreak. The survey of the catchment encompassed the following:

- An aquifer vulnerability assessment,
- Survey of all farms, septic tanks and point discharges within the catchment,
- Intensive water quality monitoring program and
- Compilation of soil phosphorus maps.

Further catchment surveys have been carried out on Lough Lene and on the following rivers within the County Rivers Al, Breensford, Glasson and Moate Stream. All point sources identified have been followed up with enforcement Notices and legal action were appropriate.

6.0 Planning Control and Enforcement

The planning control and enforcement measures are being implemented through the following pieces of legislation:

- The Planning and Development Act 2000
- The Water Pollution Act 1977 and Amendments
- The Waste Management Act 1996

6.1 Planning Controls

The Environment Section meets regularly with the Planning Section of the Council to implement strategies to improve water quality and the environment in general. It is the council's policy to encourage industry to implement environmental management systems and invest in clean technology (County Development Plan 2002-2008).
The Council is encouraging the formation of groups for Water and Sewerage Schemes as a means of providing such services to towns and villages. All new septic tank percolation systems must comply with SR6: *Septic Tank Systems: Recommendations for Domestic Effluent Treatment and Disposal from Single Dwelling House.* If a septic tank is located in a designated sensitive area the owner

must ensure that they install a treatment system, have a maintenance contract and the effluent discharged from the treatment system must be of a quality not exceeding 20 mg/l BOD and 30 mg/l Suspended Solids. The Environment Section are also involved in the review of the current County Development Plan.

6.2 Enforcement.

The following table (6.2.1) is a summary of the enforcement actions undertaken by Westmeath County Council over the period 2004-2006 under the Local Government (Water Pollution) Act 1977 and Amendments

Year	Warning/advisory Letters Issued	Section 12 Notices Issued under the Local Government (Water Pollution) Act 1977 and Amendments.	Instigation of legal proceedings under Section 3 of the Local Government (Water Pollution) Act 1977 and Amendments
2004	376	31	2
2005	345	29	2

Table 6.2.1 Summary of Enforcement Actions undertaken by Westmeath County Council

7.0 Problems Encountered.

7.1 Organisational Problems.

The restructuring of the Council and its divisional nature has place constraints on effective communication and the development of work programmes on a cross sectoral basis. In addition there is a constraint on the employment of staff within the organisation.

7.2 Environment Section Constraints

The following is a list of the various constraints that affect the effectiveness of the Environment Section in the implementation of the Phosphate Regulations

- There is a need for full time dedicated G.I.S officer for the Environment Section to handle environmental data in order to assist the Environment Section identifying the risk factors influencing unsatisfactory water quality and potentially threatening satisfactory river sections.
- There is also the issue regarding obtaining accurate data from the Environmental Protection Agency in relation to I.P.P.C licensed facilities, effluent quality results, charges to sewer, spreadland reports and nutrient management plans. It is recommended that upon review of IPC' licences the EPA should insert condition that all monitoring returns etc should be copied to the relevant local authority.
- Information and understanding of the extent of forestry development within the County is limited. The Forestry Board should be required to notify the Council

of proposed developments, provide list and maps of current forests that they control and the environmental management of them.

- The programme to ensure that all facilities, which discharge to waters and sewers are identified and licensed is resource constrained. The programme to review licenses and take account of new regulations and to license garages , or identify those facilities requiring a licences is not progressing as scheduled

7.3 Water Services Constraints.

The following includes a list of the various constraints encountered by Water Services Section which ultimately impact on the Councils compliance with the Phosphate Regulations:

- The infra-structural Programmes being advanced by Water Services to upgrade municipal wastewater treatment plants can take up to 10 years to achieve, as they are dependant on various funding sources and priority requirements.
- A fast track system to secure funding from the DoELG for the provision of nutrient reduction in current municipal wastewater treatment plants would be beneficial as Phosphorous removal is mainly looked at when the plant is scheduled for upgrading.

8.0 Progress To Date

The water quality status within the County may be classified as “Satisfactory” with some sites being identified a seriously polluted. The achievement of satisfactory status in relation to water quality in one of the most rapidly growing counties in the country will be quite an achievement. The water Services proposals for Mullingar should impact favourably on water quality at Butler’s Bridge.

There has been no significant changes in the water quality status since the last report period and this may be attributed to the following factors that continue to inhibit our success i.e. finance, need for more environmental enforcement officers in the water quality section and a lack of communication and development of work programmes on a cross sectoral basis.

The enforcement of the Local Government (Water Pollution) Act 1977 and Amendments requires a significant financial and human resources.

9.0 Conclusion

The implementation of the measures notified to the Agency in July 1999 is continuous. The Environment Section is continuing to work towards the achievement of the targets in the Regulations but significant government funding is essential to achieve the required level of wastewater treatment and to continue to develop and implement effective pollution control strategies.

The greatest hinderance that the Environment Section of Westmeath County Council encounter in the protection of water quality is that human resources are constrained by the CAP in numbers determined by the Department of Finance and notified to the DoEHLG. The local authority has no access to additional funding and, until these two constraints are addressed, the capacity of the Environment Section will be constrained.

10.0 References

1. 0(DELG 1998) (Department of the Environment and Local Government), 1998. Local government (Water Pollution) Act 1977 (Water Quality Standards for Phosphorus) regulations, 1988. Statutory Instrument No. 258 of 1998.

2. Lucey et al 1999 Water Quality in Ireland 1995 – 1997. Environmental Protection Agency, Wexford, Ireland.

3. E.P.A. 2001. The Phosphorus Regulations National Implementation report, 2001. Environmental Protection Agency, Wexford, Ireland.

4. E.P.A. 2003. The Biological Survey of River Water Quality 2003. Environmental Protection Agency, Ireland.

5. E.P.A 2004. Irelands Environment 2004. Environmental Protection Agency, Ireland.

TABLE 1: RIVER WATER QUALITY STANDARDS TO BE ACHIEVED BY 2007											
Local Authority Name: Westmeath				Phosphorous Implementation Report Year 2006							
River Name	River Code	Biological Monitoring Station	Station Location Name	Grid Reference	Baseline Q-value	Baseline MRP Value ug/l P	Is Baseline Quality Satisfactory? Yes/No	Current Q-Value	Current MRP Value ug/l P	Standard to be Achieved by 2007 Q Value	Has Either Standard Been Achieved ?
Yellow	26/Y/02	60	BallyKnock Br (d/s Collinstown)	N425 688							
		100	Br N of Milltown	N425 688	4	30	Y	4	29	4	Y
		180	U/S Castepollard STW	N425 688							
		200	Third Br u/s Lderravaragh	N425 688							
		250	Second Br u/s L Derravaragh	N425 688	3_4	30	Y		31	4	