
water matters
" Have your say! "
eastern
river basin district

Foreword By Paschal Donohoe Chairman of the River Basin Advisory Council

As Chairman of the Advisory Council I am particularly encouraged by the progress that has been made in implementing the Water Framework Directive in the Eastern River Basin District. This Directive has far reaching environmental benefits for the future of the quality of the environment in our rivers, lakes and coastal waters and is an endeavour which is very rewarding to those involved.

I would like to thank my fellow Advisory Council members who, since the Council's inception in 2006, have offered focussed support and engagement in guiding the implementation of the Directive.

It is also important to recognise the essential contribution made by the local authorities within the District and especially that of Dublin City Council who are coordinating the work.

So far we have collated data and information on all of our waters in a way which has never been attempted before, gained a detailed understanding of the pressures currently facing our waters and in this document address the more significant issues and how they may be addressed. We will now be moving on to develop actions to deal with these problems and to achieve good ecological status as required by the Directive.

WATER MATTERS

Invitation to comment

You are invited to give your views on the implementation of the EU Water Framework Directive in the Eastern River Basin District. This booklet summarises the main issues identified to date and outlines proposals for dealing with them.

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. To achieve good status 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, feeding cattle with it, swimming in it, using it in manufacturing or even just walking the dog beside it. The users know their water and what condition it is in, so they can check what the scientists have found so far.

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 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 WFD process and some suggestions if you want more information. This is how the booklet is structured:

Background: the WFD story so far

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, all-encompassing view of the water environment
- its structured approach: find out the facts, decide which of them need action, make a management plan, carry out the plan.

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.erbd.ie. 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.

While the existing controls are being applied, 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 a booklet and ask the general public to comment on them.

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

The relevant authorities will have to produce a **River Basin Management Plan**. A draft will be issued in 2008, and you will have a further opportunity to comment. The final version 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 (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 the time to speak.

Your views

Have we identified the most important issues? Have we overlooked any significant issues? What do you think about the proposed actions?

For each of the most important water problems, 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.

Finally, you are asked for your opinion about the issues and the proposals to address them. We will be consulting for six months on the water problems 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.

You can send comments to:
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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 advise us if you wish your response to remain anonymous and not attributable in the digest. If you want to add new comments or information you can contact our website at any stage.

Eastern River Basin District

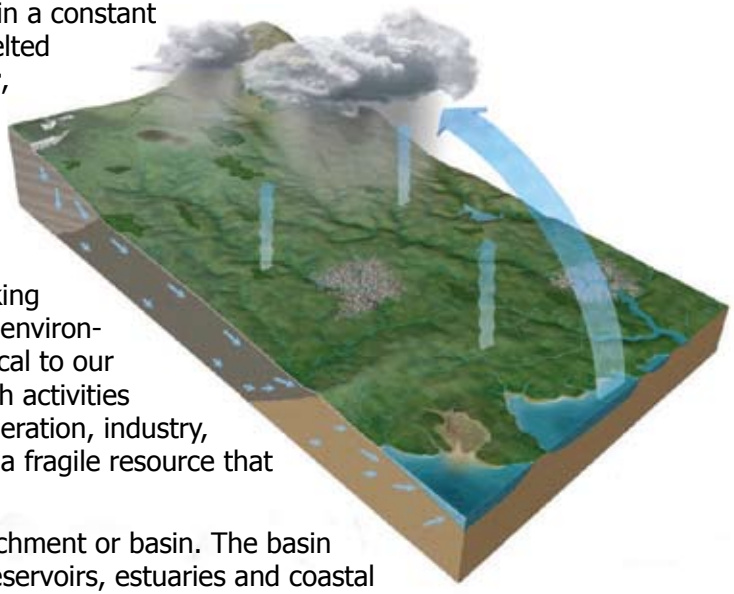
The Directive requires water to be managed on the basis of natural features, river basins, rather than national or county boundaries. If a basin district (containing neighbouring basins) is in one jurisdiction, it is a **River Basin District** (RBD); if it crosses a border, it is an **International River Basin District** (IRBD), and both jurisdictions must cooperate in managing it. This island has about 400 basins, which have been assigned to eight districts: four RBDs wholly within Ireland, one wholly within Northern Ireland and three cross-border IRBDs.

The Eastern Basin incorporates all or part of twelve counties; Westmeath, Meath, Cavan, Kildare, Offaly, Fingal, Dublin City, South Dublin, Dun Laoghaire-Rathdown, Wicklow and a small portion of Wexford and Louth. This booklet is issued jointly by the twelve local authorities involved.

The next 41 pages provide some further background information on water problems, the Water Framework Directive and the Eastern District.

Why water matters

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



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

The area of land that a river drains is called its catchment or basin. The basin contains all surface waters (rivers, canals, lakes, reservoirs, estuaries and coastal waters) and the underground waters (groundwaters), together with the lands that drain into them. Our environment is not bounded by political borders, although the responsibilities for managing waters are. **River basin districts**, containing adjacent basins, are the natural unit to manage our waters.

The cumulative effect of discharges in each of the Eastern River Basin catchments can contribute to pollution problems in each of the estuaries within the Eastern Basin.

Water goals

Waters must have sufficient quantity and be of 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 them.

Unfortunately, there are also cases of waters choked with weeds and algae, and more severe incidents of fish-kills or contaminated drinking waters. Taking 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, 1.0 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.

By 2021 there may be an additional one million people living in Ireland, partly because the strength of the economy has attracted people from less well-off countries. 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 economy and highly educated workforce.

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 our native aquatic plant and animal communities are protected
- 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 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 and urban runoff.

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 Eastern District and its waters

The Eastern Basin is home to rich agricultural land, holiday coastline, the city of Dublin and the towns which form Greater Dublin and its commuter belt. With land area of around 6,300 km^2 the Eastern River Basin covers about one tenth of the country with a further 350 km^2 of marine waters. Around one million, three hundred thousand people, (forty percent of Ireland's population) live in the Basin. The population is growing every year, partly due to the internal and external migration to live and work around Dublin.

The Eastern Basin incorporates all or part of twelve counties; Westmeath, Meath, Cavan, Kildare, Offaly, Fingal, Dublin City, South Dublin, Dun Laoghaire-Rathdown, Wicklow and a small portion of Wexford and Louth.

The main catchments are the Boyne, Nanny/Delvin, Liffey, and Avoca/Vartry **Rivers**. The Avoca/Vartry includes many smaller catchments along the coastline.

The Eastern Basin includes five hundred and twenty four natural **lakes**, but only twenty of these exceed 10 hectares, the biggest being Poulaphouca reservoir at around 1950 hectares in size.

Marine Waters – From Drogheda south to Arklow the river waters enter the Irish Sea along 130 km of coastline from the Boyne estuary, Malahide, Dublin, Killiney and Brittas bays in addition to eight smaller estuaries. The Eastern River Basin District contains all of Meath, Fingal, Dublin, Dublin City, Dun Laoghaire and Wicklows' coastlines.

Groundwaters – As with other basin districts, the water system below ground in the East is quite complex because of the wide range of rock types and soils within the district. The underground aquifers cross surface water catchment boundaries.

The distribution and activities of people in the Basin varies from rural agricultural communities to the city of Dublin and its expanding commuter belts. The population density is high compared to the rest of Ireland, and the region has seen over 10% population growth over the past ten years. Only 8% of the land area in the Basin is urban, 75% agricultural and the remainder natural. Within the last five years the population in Dublin has increased by 4% whilst Dublin commuter towns have expanded at rates as high as 51% in Balbriggan. The greatest population increases were in villages with a population of between 50 and 1,500 people in Dublin, Meath, Kildare and Wicklow which grew by over a third, twice as fast as villages elsewhere.

Dublin and Greater Dublin are home to 90% of the Basins' population; most of the urban population outside this area is centred round rivers or ports. 10% of the population in the District lives in small villages or one-off houses in rural areas. The growing population, especially in Dublin's commuter belt, is putting demand on the systems that deliver drinking water and treat wastewater and is also creating development demand throughout the Basin.

The high proportion of agricultural land has in turn given rise to a thriving food manufacturing industry. The Basin's rivers support fishing and boating activities and the coastline is popular as a holiday resorts.

All of the activities in the Basin have the potential to impact our waters and therefore must be managed sustainably.

Our special areas

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

All of the areas requiring special protection in the Eastern Basin have been identified and mapped (see www.erbd.ie). These include sections of rivers, lakes, coastal areas, bogs, fens, woodlands and grasslands. Parts of the Boyne, Liffey, Vartry rivers have been identified as have their estuaries. Many coastal sites have been identified to protect recreational bathing areas and habitats of importance.

The causes of our local 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.erbd.ie) identified these potential problems on our waters.

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

Lakes: diffuse pollution and physical modifications are key problems for lakes. Point pollution and abstraction affect only a small proportion of lakes.

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

Groundwaters: diffuse pollution is the key influence on our underground waters. Some localised areas are affected by point pollution sources. Relatively few areas suffer from over-abstraction.

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

	Rivers	Lakes	Marine Waters	Groundwaters
Point Pollution	3	1	1	1
Diffuse Pollution	5	3	1	2
Physical Modifications	5	3	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. Twelve local authorities and other statutory bodies are co-operating with other organisations through the Eastern River Basin District Technical Council, 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 Advisory Council has been established in the Eastern 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.erbd.ie.

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 Eastern District were:

Point Sources

- Wastewater and industrial discharges
- Other point sources: landfills, quarries, mines and contaminated lands

Diffuse Sources

- Agricultural activities
- Wastewater from unsewered properties
- Forestry activities
- Usage and discharge of dangerous substances
- Urban Runoff

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.

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

Not all bad news

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 Plans will play a major role in addressing agricultural pollution
- County groundwater protection schemes, which serve as a planning control tool, particularly for unsewered areas
- Current projects aimed at reducing pollution from the Avoca mines
- Increased groundwater monitoring to understand the nature and sources of pollution
- The extension to Osberstown and proposed extension to Ringsend wastewater treatment works to reduce pollution

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 leading Europe at the moment. 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 problems with second and third plans, for the periods 2015–2021 and 2021–2027, which will address any remaining problems or 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 problems. 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 growth of alien species. These impacts will have to be reviewed during preparation of the plan.

A series of special studies is being carried out to update information and improve the understanding of our water problems. Local information from catchment plans, assessments and sampling programmes is being used to focus on the main problems in the Eastern 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.erbd.ie.

Action themes

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

- Currently funding is insufficient to implement the actions necessary to achieve good status by 2015. More resources and funding are needed 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.
- Joined-up thinking: for instance, ensuring that development plans and upgrades are in place before new development is allowed
- Rainwater Harvesting
- Monitoring of and implementation of regulations for the many smaller polluters, e.g. illegal landfills, septic tanks, small businesses, unlicensed quarries

Question 2

What is your view about these suggested action themes?
Have we missed something that would be helpful within the Eastern District?

Wastewater and industrial discharges

In urban areas wastewater from homes and industrial or commercial sources is collected and carried in public sewers to treatment plants, where many of the pollutants are removed. The sewers a lso 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 offering minimal or no treatment. Many of these smaller schemes are located on the coastline.

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.

How can wastewater and industrial discharges cause water problems?

Inadequately treated effluents can lead to unacceptable levels of pollutants (nutrients, 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, 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.

Estimates of nutrient input into waters in the Eastern Basin indicate that municipal and industrial discharges produce around 60% of the yearly phosphorus load; the remainder comes from diffuse sources including agricultural production. The highest municipal contributions are derived in the Liffey catchment from Osberstown and Leixlip waste water treatment works.

Between them they discharge around 10% of the total phosphorus load to the entire Basin. The Advisory Council has shown concern over the capacity of existing wastewater treatment works and their ability to deal with expanding populations in smaller towns. Many treatment works, serving populations of less than 500, provide inadequate treatment before discharge to surface waters and the cumulative effect of these needs more monitoring and regulation.

Discharges from the many smaller businesses and industries in the Basin need to be monitored and regulations implemented to ensure that their multiple impacts do not affect the quality of water courses. Similarly, it may be that some works will need additional levels of treatment for nutrient removal.

In 2002, thirty three Irish urban areas had a population of over 10,000 people (the Eastern Basin contains Thirteen of these – Greater Dublin Area, Drogheda, Bray, Swords, Navan (An Uaimh), Naas, Droichead Nua (Newbridge), Celbridge, Leixlip, Malahide, Greystones, Balbriggan, Maynooth. Arklow and Wicklow town are likely to have grown to this size since the 2002 census. The Advisory Council showed concern that there is insufficient infrastructure to deal with this expansion.

The potential impacts of pollution from increased urbanisation areas was voiced by the Advisory Council as a particular problem in the Eastern Basin. The subject of combined sewer overflow spillage and run-off from road networks into the Basin's estuaries, rivers and canals was also of concern. In addition to this, questions were raised as to the basis of design of combined sewer overflows, in that examination of the receiving water body's ability to assimilate overflows should receive higher consideration. Increased urbanisation and impermeable areas allow storm water to reach drainage networks faster than before. The receiving sewer networks may be unable to cope with this influx and there is an increased potential for localised flooding. Increased storm flows, previously attenuated by undeveloped land can increase the occurrence of combined sewers overflowing to surface water.

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 major **road development**.

Are these controls adequate to meet the new targets?

Controls focus on infrastructure provision but do 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.

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 under way 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 proposed actions to control wastewater and industrial discharge problems within the Eastern District?
Are these actions appropriate?
Have we missed something important?

Landfills, quarries, mines and contaminated lands

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

Our knowledge of these sites is incomplete — we have good records of today's engineered landfills but not of the contents or locations of past landfills — and needs updating to assess the scale of this problem. 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.

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.

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 wet areas, and the transfer of groundwater to surface waters can change water chemistry.

There is concern about such sites in the Eastern Basin. One specific example is the pollution from the abandoned Avoca mines which has, and continues to pollute the Avoca river. Steps are being taken to monitor and control discharge from the mines to the Avoca river, a long term and difficult project.

The Advisory Council has voiced concern that continued effort is required to locate illegal landfill sites and monitor the effects of historical landfills. The same concerns were shown for identifying illegal or poorly operated quarry sites and implementing existing regulations for them.

The Advisory Council recommended that regulations regarding quarries and landfill sites should be separated, to reflect the differences in the actions required to mitigate pollution from these sites.

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 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 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.

Question 4

What is your view about the suggested actions to solve other point problems within the Eastern District?
Are these actions appropriate?
Have we missed something important?

Agriculture

Agriculture and the agri-food sector account for 8.2% of total added value in the Irish economy and, in 2005, employed around 114,000 people, around 6% of the workforce. Farms make up 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.

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 bio-fuel crops), mean that the agricultural sector will continue to change and farmers will have an important role in our action plans.

How can agriculture cause water problems?

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). This eutrophication is the most widespread threat to our water quality: the nutrients accelerate plant growth, which disturbs the balance of aquatic plants and animals and affects water quality. Dirty water running from farmyards, or washed from fields that have been treated with nutrient-rich organic and chemical fertilisers, can carry nutrients into waters
- 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 in the Eastern District, accounting for 75% of land use in the District. Estimates of nutrient input into waters in the Eastern Basin indicate that agriculture produces up to 40% of the yearly phosphorus load. The water problems linked with agriculture practices were voiced by the Advisory Council and Technical Council as water problems in the Basin. Particular concern was raised about the cumulative effect of this along the Boyne, Nanny and Delvin rivers.

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.

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.

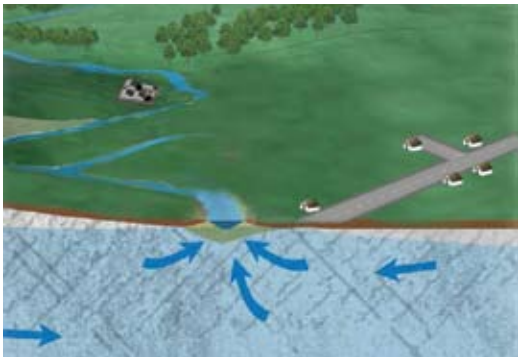
Specific agri-environmental technological solutions may be implemented in appropriate areas: for example, grant aid is available for digestor schemes that treat excess manure from intensive enterprises. Voluntary agri-environmental schemes such as riparian zone restoration in sensitive areas are being 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 solve agriculture problems within the Eastern District?
Are these actions appropriate?
Have we missed something important?

Wastewater from Unsewered Properties



In rural areas many houses and businesses are not connected to public systems that collect, treat and dispose of wastewater: they rely mainly on on-site systems (conventional septic tanks or proprietary systems), via soil percolation systems. More than 400,000 properties (20–30% of the total) are currently without public sewerage provision: over 1.3 million people (30% of the population), generating over 230 million litres of wastewater a day.

There is 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 County 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 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.

"Septic tanks" pose a problem to groundwater and particularly estuaries in the Eastern District. More effort is required to ensure that their design, operation and especially maintenance of septic tanks is adequate. Concerns have been raised about the difficulties in implementing regulations and enforcement of controls to existing unsewered systems, again with regard to licensing and monitoring the maintenance, such as regular "de-sludging", to allow these to provide effective treatment before discharge. In addition, the Advisory Council suggested that domestic users should receive advice concerning the discharge of substances which affect the performance of septic tanks e.g. household bleach.

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.

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 solve problems caused by unsewered properties within the Eastern 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 footprint 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 problems associated with afforestation are a legacy of old practices, 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. Inappropriate deforestation may be associated with soil erosion, slope instability, nutrient leaching and reduced water-holding capacity in floodplains, depending on the subsequent land use.

The main potential water problems that can result are:

- Acidification: forest canopies can capture sulphur and nitrogen compounds from the atmosphere. Rain becomes more acid 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: some targeted field applications of insecticides may be required to fight pest attacks.

Commercial forestry in the Eastern Basin only covers less than 5% of the land area and affects only a small proportion of the District's waters, mainly in Wicklow. The Advisory Council raised the concern that legislation and guidance on working practices are difficult to enforce and implement.

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 under way 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.

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 solve forestry problems within the Eastern District?
Are these actions appropriate?
Have we missed something important?

Usage and discharge of dangerous substances

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

How can dangerous substances cause water problems?

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 standardised testing of these effects on a variety of sensitive aquatic animals.

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. The threat from increased urbanisation, industry, pesticides and herbicides and the release of dangerous substances was voiced by the Eastern Advisory Council and management group as a potential water problem with particular concern for protection of our drinking water sources. The Council stressed the importance of the implementation of legislation to protect water sources from dangerous substances and the need for better data.

The Advisory Council has pointed out that facilities to dispose of herbicide and pesticide containers in a controlled manner would reduce the discharge of dangerous substances to the environment.

What existing controls are in place?

Ireland has **drinking water standards, water quality standards** and **emission control standards** for 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.

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 solve problems related to dangerous substances within the Eastern District?

Are these actions appropriate?

Have we missed something important?

Physical modifications

We have physically modified many of our waters for water supply, recreation, transport, flood protection, hydropower, aquaculture and land drainage. The extent of modification is being systematically assessed for the first time: 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, de-forestation 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.

There have been a number of large scale schemes in the Eastern Basin involving physical modifications. For example, Dublin Port, and canalisation of the Liffey and Tolka. In some agricultural areas, stretches of river systems are dredged from time to time removing silt build-up to reduce flooding risk and estuaries are dredged for navigation. These actions can damage aquatic life and the natural balance of plant and fish species if they are not carried out in a controlled manner. The Advisory Council suggested that current legislation should be modernised, updated and rationalised, to fall inline with other floods directives.

What existing controls are in place?

Planning and development processes and marine 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 and the DCMNR, the Loughs Agency or local authorities
- 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 under way, 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.

The feasibility of rehabilitating affected waters is being examined against social, technical and cost criteria; for instance rivers with important potential 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 problems caused by physical modifications within the Eastern District?

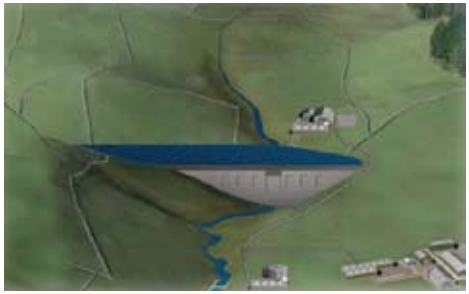
Are these actions appropriate?

Have we missed something important?

Abstractions

We use large amounts of water supply each day:

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



These uses add up to more than 1.7 million cubic metres (m3) 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 m3 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.

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.

Water supplies in the Eastern District are under increasing pressures from population growth and associated industrial/commercial activities. Several local authorities are presently engaged in source option reviews to address future demands of certain towns and planned development areas. Potential effects of climate change are raising increased concern for the security of future water supplies in the Basin. The need to protect drinking water sources from pollution has also been highlighted. The Advisory Council suggested that in addition to ongoing public education in water conservation metering of domestic supplies, direct charges for domestic use, stricter controls on abstraction licenses and a reduction in leakage may go some way into mitigating these pressures.

Currently the River Liffey is at its limit for safe abstraction, necessitating the search for a new source after 2016.

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 new the 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 groundwater. 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 under way 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 is 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.

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 solve abstraction problems within the Eastern District?
Are these actions appropriate?
Have we missed something important?

Local issues

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, some of which have now been found in the Eastern District. For instance:

- Japanese Weed, Giant Knotweed and Himalayan Balsam have all been identified in the Liffey. Japanese Weed out-competes local species, such as sea grasses and kelp, for space and light
- Potential threats, from Zebra Mussels, although not currently present in the Eastern District pose a potential threat to the area in that they could be transported from other basins and coastal waters via sea traffic or navigable inland waterways. They out-compete native mussels and attach to firm surfaces, boat hulls, rock, gravel, other mussels and plants and spread easily into other systems.

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. In 2007 the Central Fisheries Board produced a Stop the spread of alien species calendar to draw this problem to the public's attention.

Question 11

What is your view about the suggested actions to address alien species problems within the Eastern District?

Protecting High Quality Areas

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

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

The damage or loss of high quality and protected wetland areas is often due to their greater sensitivity to land use changes in surrounding catchments such as agriculture, forestry, peat harvesting and rural development activities. Our river basin management plans may include more stringent measures on activities in these sensitive catchments to protect the most sensitive user. The user might be the consumer of drinking water, bathers in designated bathing waters or the protected habitats and wildlife.

In relation to protected habitats and wildlife Natural Heritage in Northern Ireland and the National Parks and Wildlife Service in Ireland are the lead conservation authorities coordinating specific actions to protect these areas. They are leading studies to harmonise conservation action throughout the island, creating joint inventories of areas 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. The agencies are jointly considering dovetailed conservation monitoring programmes. These actions will be progressed by the agencies working together in relation to our shared waters.

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

Question 12

What is your view about the suggested actions to address sensitive area problems within the Eastern District?

What happens next?

Actions are our response to existing water problems and to growing threats. **Management plans** are to be prepared to respond to all the identified issues. Work on the preparation of plans for the Eastern District, like other districts, is currently under way by the relevant authorities, assisted by consultants:

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

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

Basic measures

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

However, our existing regulatory controls are not sufficient to deliver improved comprehensive protection for all waters, as envisaged by the Water Framework Directive. Consequently, the basic measures will 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 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 Eastern District. The change that just one person can make will help to improve our waters. It is really important that you consider the plans 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!

Before the draft is published

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

Setting the environmental objectives for our waters

The authorities are developing 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 groundwater 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 (e.g. ports) and Artificial Waters (e.g. 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?

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

- The 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 the wider environmental impacts.

Assessing regulatory impacts

Achieving these new objectives will 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 to evaluate their potential impacts and establish whether they would have the desired impact. For example, it is useful to identify potential side-effects or unforeseen extra costs associated with a new regulation. It also helps to clarify the cost of enforcement of the regulation. Future regulations for the implementation of the Water Framework Directive will generally be subject to RIA.

Implementing the management plans

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 Eastern District, it is envisaged that a small co-ordinating unit will be set up by Dublin City Council to coordinate the ongoing work of the twelve participating local authorities. The resources to implement the action plans will come from national and local sources and from both private and public sectors.

Getting involved

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 is hard 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 is available on www.erbd.ie.

However, there are other ways of participating: by making individual comments on the proposals, by contacting the Advisory Council member that 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.erbd.ie to send your comments and ideas or to be put in touch with contacts in the District.

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

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printed on **100%** recycled paper

CarbonNeutral® publication

NDP
National Development Plan 2007 - 2013

eastern
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