

Eastern River Basin District

Draft River Basin Management Plan

22nd December 2008

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eastern
river basin district

Foreword by Cllr. J. J. Power Chairman of the Eastern River Basin District 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. The Directive has far reaching environmental benefits for the future of the quality of the environment in our rivers, lakes estuaries, groundwaters and coastal waters.

It is important to recognise the contribution made by the Local Authorities within the District, who acting jointly are the competent authority for making the River Basin Management Plan. I also wish to thank all the members of the Advisory and Technical Councils.

Previously we have collated information on all of our waters in a way which has never been attempted before and gained a detailed understanding of the pressures currently facing them. In this document we set out our strategy and plan of actions to achieve Good Status for all our waters.

Introduction by the Chairman of the Technical Council

I would like to thank all of the Agencies and members of both the Technical Council and the Advisory Council for their continued participation and wholehearted support of this process, since the councils were formed in 2005.

Public involvement in the Eastern River Basin District began in 2003. Publication of the "Water Matters" report for each of the eight river basin districts provided all interested parties with an overview of the water management issues affecting each District in Ireland. Comments were invited from all interested parties and the submissions received assisted greatly in the development of this draft River Basin Management Plan.

Water is a very precious resource and we must do everything in our power to protect and conserve it. A significant technical effort has gone into preparing this Draft Plan, which highlights the threats to our water quality and quantity and the actions that may need to be taken to provide better protection and enhancement for waters and aquatic ecosystems. It is important that the problems are addressed and that interested parties have a say in what needs to be done.

Water quality is a matter of concern to a very wide range of people. I look forward to the next phase of this process which is the participation of the public in a six month statutory consultation on this Draft Plan.

Working together we can realise the ambitious aims of the Water Framework Directive to restore all our waters to Good Status.

Tom Leahy, Dublin City, Executive Manager (Engineering)



Fingal County Council
Comhairle Contae Fhine Gall



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1 Introduction

1.1 Background

The **EU Water Framework Directive** 2000/60/EC is being implemented across Europe, signalling a change of thinking in the way that water issues are addressed. The Directive commits member states to achieving **Good Status** in our rivers, lakes, estuaries, coastal and ground waters by the year 2015. While it offers a certain amount of flexibility to each member state, the Directive attempts to take a unified approach around the concept of water as a precious natural commodity that must be preserved and regulated to a higher standard.

The Directive is a very ambitious piece of legislation which will gradually encompass all water related laws. It has a long timeframe that is necessary to achieve its ambitious goals. So far, Ireland has successfully kept to the programme defined by the EU. As with all our European neighbours, if we do not meet the challenges set out by the Directive, we will have failed ourselves and future generations. We may also incur penalties from the European Court of Justice for non-compliance with the Directive.

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

The area of land that a river drains is called its catchment or basin. The basin contains all surface waters (rivers, lakes, reservoirs, estuaries and coastal waters) and underground waters, together with the lands that drain into them. The activities that take place anywhere in the basin, even remote upland areas, can affect the waters downstream. River basins are natural hydrological units and provide a sensible framework to manage our waters.

The island of Ireland has been divided into eight **river basin districts** to help manage implementation of the Directive and a **River Basin Management Plan** (the "Plan") has been developed for each river basin district. This Draft Plan is the latest in a series of documents implementing the Directive in Ireland meeting deadlines identified in the Directive.

The Water Framework Directive was enacted in Ireland in 2003 through the European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003) which have since been amended in 2005 and 2008. This legislation is available at www.wfdireland.ie.

The first important background document, known as the "**Characterisation Report**" was prepared in **December 2004** by the relevant local authorities covering each river basin district, in accordance with Section 7(2 & 3) of the European Communities (Water Policy) Regulations 2003. It includes (a) an analysis of the river basin district's characteristics; (b) a review of the impact of human activity on the status of surface waters and of groundwater, and (c) an economic analysis of water use. A summary report, known as the Article V Characterisation Report was submitted to the European Commission.

A **network of monitoring sites** for the Directive was then established by the Environmental Protection Agency ("EPA") in **December 2006** covering rivers, lakes, coastal waters and estuaries as well as groundwater.

A second important background report, known as "**Water Matters**" was prepared in **December 2007** by the relevant local authorities covering each river basin district. It includes a preliminary overview of significant water management issues across each river basin district and actions suggested to solve these problems, in addition to inviting public comment.

This **Draft River Basin Management Plan** is being issued in **December 2008**. It uses the background documents to describe the actions that are proposed to ensure the necessary protection of our waters over the coming years. It represents a major milestone in the implementation of the Directive and follows on from the previous major elements of work described above. It sets out how the aims and objectives of improving and protecting water quality and ecology in the waters of each river basin district could be achieved, by means of a **Programme of Measures**.

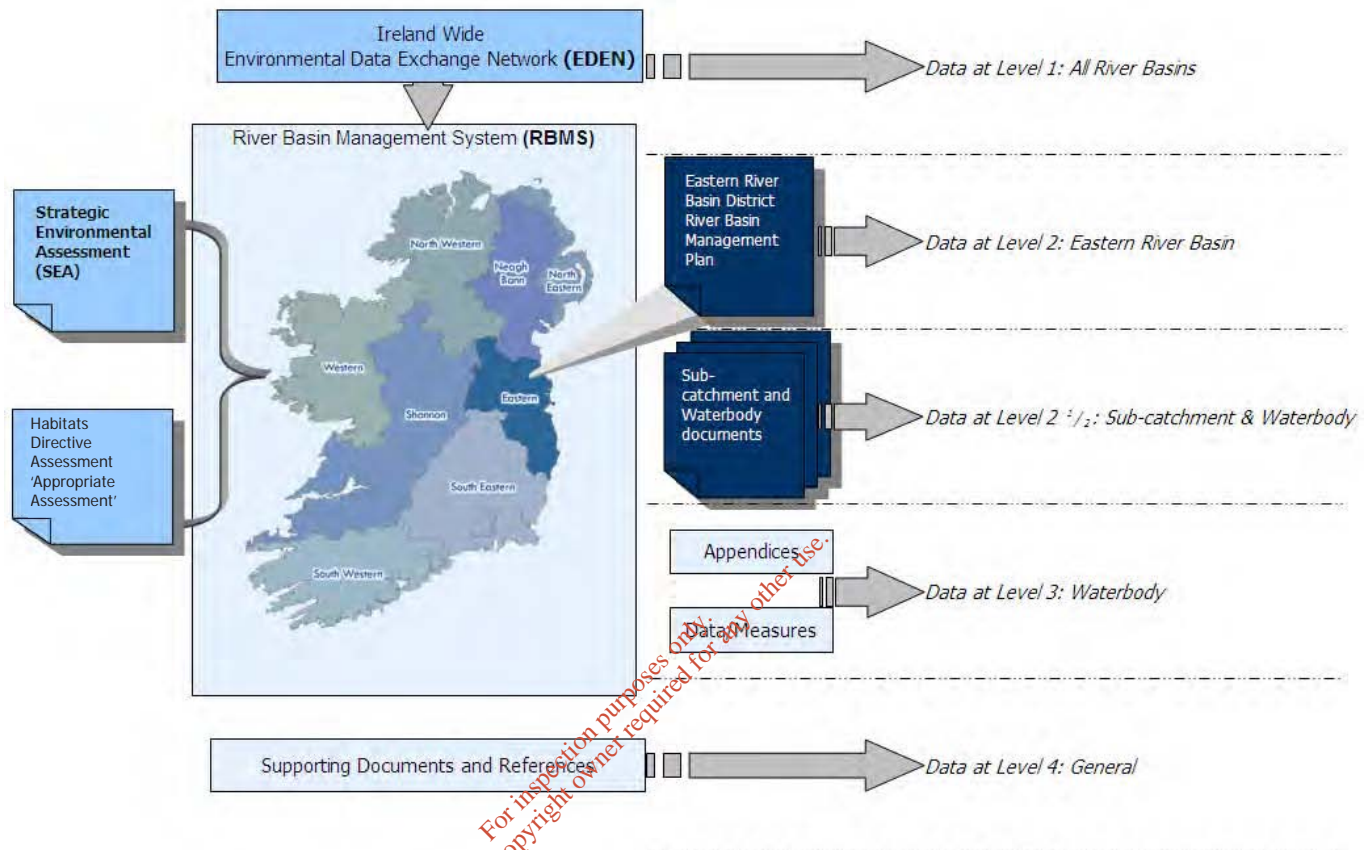
Table 1: Timetable of Directive Implementation

Deadline (December)	Action Required
2000	Directive enters into force.
2003	Directive to be transposed into national law. International River Basin Districts and River Basin Districts to be identified. Competent authorities to be identified.
2004	Characterisation of surface and groundwaters to be completed. Impacts of human activity (industry, farming etc) to be identified. Economic analysis of water use to be completed. Location and boundaries of water bodies to be identified. Reference conditions for water status to be defined. Register of protected areas to be established.
2006	Environmental monitoring to be established and operational to ensure comprehensive view of water quality in each River Basin District. Work programme for production of River Basin Management Plans for each River Basin District to be published.
2007	Interim overview of the significant water management issues for each River Basin District to be published.
2008	Draft River Basin Management Plans to be published for consultation. Draft programmes of measures to be established in each RBD.
2009	River Basin Management Plans to be finalised and published. Programmes of measures to be established in each RBD to meet environmental objectives.
2010	Water pricing policies to be in place.
2012	Programmes of measures to be fully operational. Interim progress reports to be prepared on implementation of planned programmes of measures.
2015	Main environmental objectives to be met. River Basin Management Plans to be reviewed and updated every six years thereafter.

This Draft Plan has been produced jointly by the local authorities and a project team for the **Eastern River Basin District**. There are twelve local authorities with lands in the Eastern River Basin District (shown on Map 1), and these will be the prime implementing agencies for the actions described in the Plan although actions will also require the involvement of other state and private organisations. Coordination of these efforts is being developed through an Eastern River Basin District Technical Council which includes all of the local authorities along with agencies responsible for implementing relevant legislation. The Legend in Map 1 also shows the topography of the Eastern River Basin District, which can be referenced for all other maps within this Draft Report.

National advice regarding the preparation of River Basin Management Plans is being provided by the Department of the Environment, Heritage & Local Government (DEHLG), who has indicated that there will be four levels of reporting:

Figure 1: Levels of Reporting



1. A high level report for the Island of Ireland produced by the two governments (Ireland and Northern Ireland) entitled “Managing Our Shared Waters – Working Together”;
2. A River Basin Management Plan for each District for Public consultation (this Plan);
3. Electronic submissions of data and measures to the EU; and
4. Supporting documents and research.

The four levels provide information to an increasing level of detail. The Eastern River Basin District has also produced an additional level of information which is intended to provide detailed supporting information for this Draft Plan. It presents a description of each water body and sub-catchment, explains the pressures affecting the waters and the measures needed to deal with these pressures. This is in electronic form and can be downloaded from the website www.erbd.ie.

In addition it should be emphasised that the River Basin Management System developed by the Eastern River Basin District contains all data sets describing the District, a detailed analysis of pressures, the recommended actions to address those pressures, and all of the reasoning for that selection, including the costs and effectiveness of each measure in each location.

This Draft Plan should be read in conjunction with other supplementary documentation, including background reports, which can be accessed at the Eastern River Basin District website at www.erbd.ie, and in particular should be read in conjunction with the Water Matters Report, also available at www.erbd.ie or it can be obtained from your local authority. A **Strategic Environmental Assessment** and Appropriate Habitats Assessment under the EU Habitats Directive, have also been prepared in draft, to accompany this Draft Plan.

It is vital that the public participate in the planning and implementation process. To encourage participation, an **Advisory Council** has been established for each river basin district. The Advisory Council for the Eastern River Basin District consists of elected representatives, community representatives and other stakeholders. The knowledge, expertise and views of the Advisory and Technical Councils have been integral contributions in the preparation of this Plan.

After consultation with the public, this Plan will be finalised in 2009 and formally adopted by each local authority. The agreed Programme of Measures, identified in the Plan as being required to rectify the problems identified over the planning process, will then start to be implemented. Implementation will happen from 2010, with the target of improving significant numbers of waters to Good Status by 2015. In addition to improving waters the Plan ensures that no waters will be allowed to **deteriorate**, including special protected areas such as bathing waters, drinking water sources and protected habitats.

In 2015 a second Plan will be prepared, learning from our experience and successes up to that point. This second Plan will identify and implement further measures up to 2021, when a third Plan will be developed.

1.2 Mobile Monitoring Unit

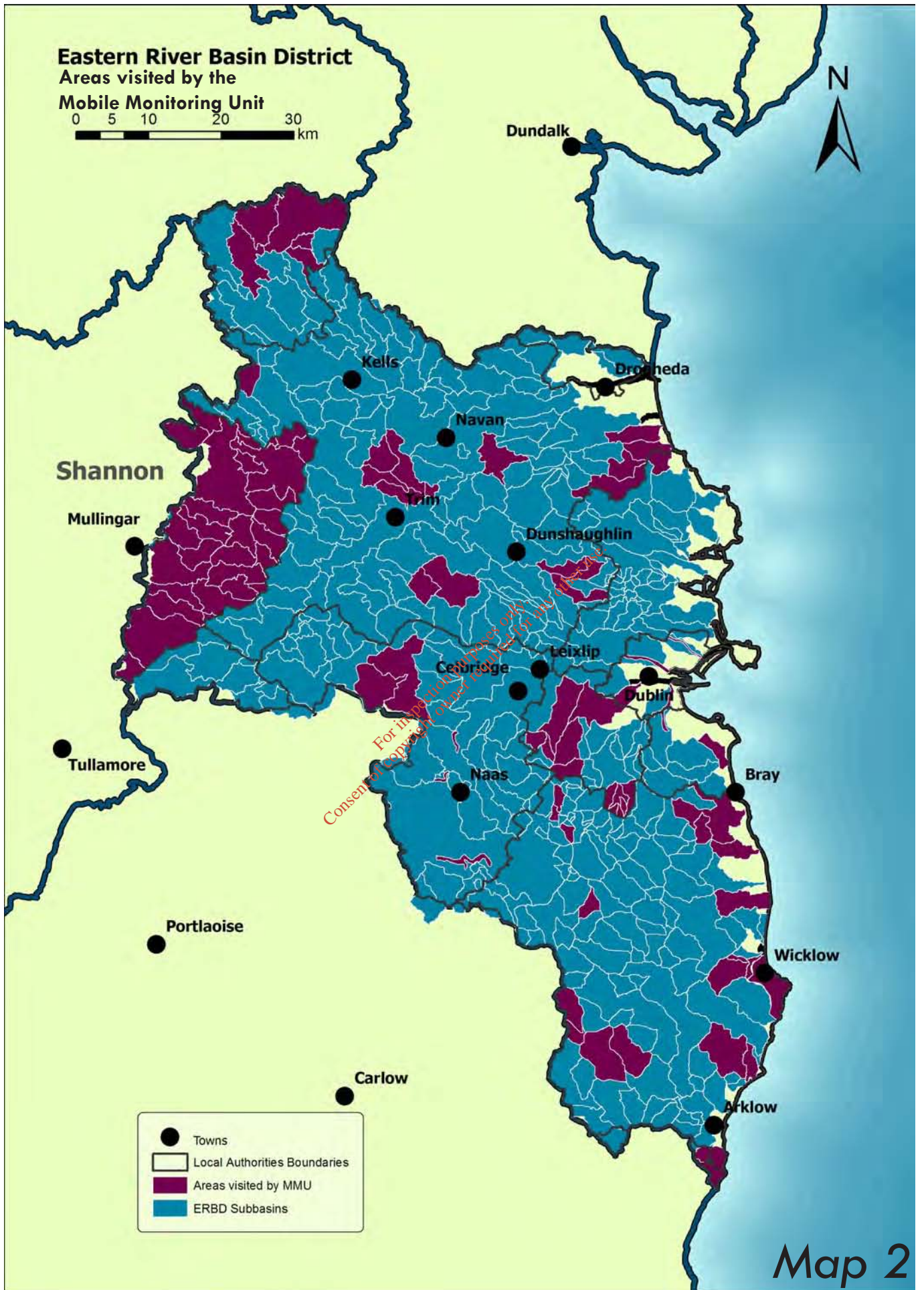
The Eastern District established a Mobile Monitoring Unit (MMU) to undertake investigate monitoring in sub-catchments across the District. The objective of this work was to help identify the causes of problems in our waters where the cause was unknown.

The watershed warden worked with specialist staff in the local authorities in the District to investigate causes of pollution and poor ecological status throughout the area. The work was undertaken across the Eastern River Basin District gaining a detailed knowledge of “on-the-ground” conditions and local water quality issues. This area specific data proved invaluable in assisting the process of selection of corrective actions to protect and enhance our waters.

Intensive investigations were undertaken in approximately 35 sub-catchments and in all of the estuaries and coastal waters (comprising 74 monitoring locations ranging from the Boyne to the Avoca Estuary). Map 2 shows the areas visited by the watershed warden.

This initiative also has a public participation element, and in tandem with the scientific work, an environmental awareness campaign was successfully implemented in 25 primary schools across the Eastern River Basin District. The programme was aimed at educating primary school children about water quality matters and increasing the visibility of the Eastern River Basin District project generally. This campaign engaged 25 primary schools and it is estimated that 1,000 children participated in the programme.







1.3 Your Comments

This Draft Plan will require actions from all individuals and industries, along with government bodies, that will affect our everyday lives. Everyone can make a difference, and the changes that we make will help to improve our waters. We should all be involved in making this Plan, and our actions will dictate if the Plan works.

You are invited to give your views on the implementation of the Directive in the Eastern River Basin District and especially of this Draft Plan. The work so far has required a considerable amount of technical expertise but has also benefited greatly from the views and knowledge of the public and interested parties. We have actively sought people's views at every stage of implementation of the Directive and we are now seeking them again in relation to this Draft Plan. This is perhaps the most important stage to date, as the Plan will eventually become law and the proposed actions will then be mandatory.

This document describes the overall objectives and approach to managing our waters. More detailed information at water body and sub-catchment level can be found in the Programmes of Measures digital presentation on the CD accompanying this report and on the Eastern River Basin District website www.erbd.ie.

The Plan is subject to a six month public consultation period (closing 22nd June 2009) and we hope that all stakeholders will consider what has been recommended and offer their views on the best way forward. We very much welcome ideas and comments on a broad level or for specific water bodies. We have asked questions throughout the document; you may use these as a prompt or simply give us your own thoughts.

These will be collated during the six month consultation period and taken into account when the final version of the Plan is produced in the autumn of 2009. The Plan will then be adopted by the 12 local authorities and will become law by the end of 2009.

How to Comment

You are invited to help protect our waters by having your say about this Plan at its earliest stage. This is an important stepping stone in the public participation process which is central to making a realistic and successful River Basin Management Plan. Throughout this Plan we have asked you key questions and we encourage you to make comment and tell us your views and opinions on these, or any other issues you may have concerning our waters. Your early response would be appreciated as it would allow us more time to clarify and resolve issues that may arise. A Comments Form is provided in the back of this Draft Plan.

You can comment in a number of ways:

1. Emailing your comments to **comments@erbd.ie** and include *River Basin Management Plan Comments* in the subject line

2. Writing to:

River Basin Management Plan Comments

Project Co-ordinator

Eastern River Basin District Project Office

Dublin City Council

68-70 Marrowbone Lane, 4th Floor

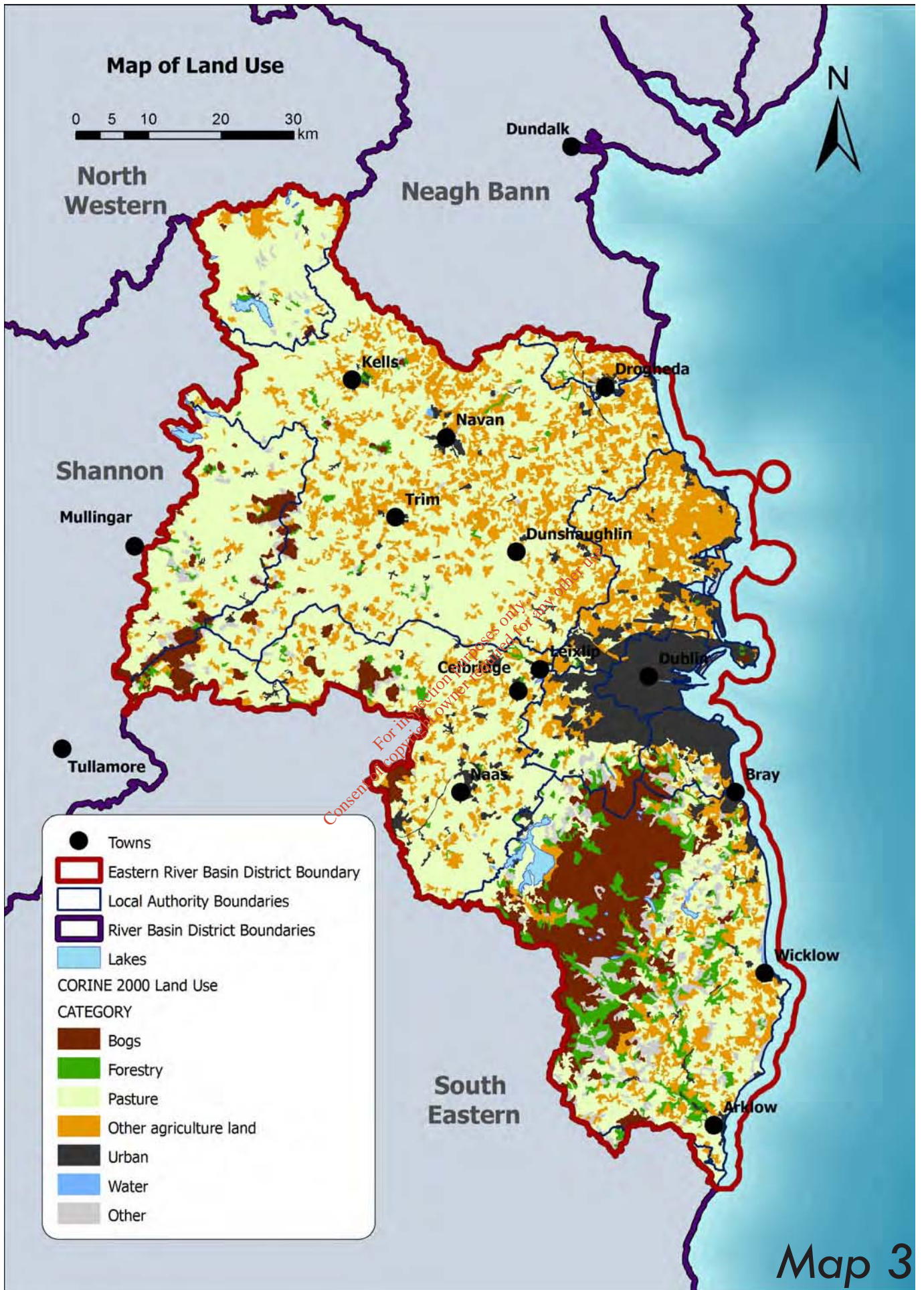
Dublin 8

We will comply with data protection requirements and use information that you provide to compile a digest of responses. Please note that submissions to Local Authorities are subject to the Freedom of Information Act.

Each official submission will be acknowledged and given a unique registration number. A report based on the official submissions will be issued at the end of the statutory consultation period.

Your view is important! It's up to you – please have your say...

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2 General description of the Eastern River Basin District

The Eastern River Basin District (shown on Map 3) is home to rich agricultural land, holiday coastline, the city of Dublin and the towns which form the Greater Dublin Area and its commuter belt. With land area of around 6,300 km² the Eastern River Basin District covers about one tenth of the entire country and has 350 km² of marine waters.

People

Around 1.6 million people, 40% of Ireland's population, live in the Eastern River Basin District. The population is growing every year, partly due to the internal and external migration to live and work around Dublin.

The distribution of people and their activities varies within the District, from rural agricultural communities to the city of Dublin and its commuter belts. The population density is high compared to the rest of Ireland, and the region has seen over 10% population growth in the past ten years.

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%. The greatest population increases have been in villages with a population of between 50 and 1,500 people in Dublin, Meath, Kildare and Wicklow.

Dublin and Greater Dublin are home to 90% of the Eastern River Basin District's population; most of the urban population outside this area is centred round rivers or ports; others live in smaller towns, 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 Eastern River Basin District incorporates all or part of twelve local authority areas: Dublin City, Meath, Kildare, Wicklow, Cavan, Dun Laoghaire-Rathdown, Fingal, Offaly, South Dublin, Westmeath and small portions of Wexford and Louth.

Waters

Rivers: The main catchments are the Boyne, the Nanny/Delvin, the Liffey, and the Avoca/Vartry. The Avoca/Vartry includes many smaller catchments along the coastline (shown in Map 4).

Lakes: The Eastern River Basin District includes 524 natural lakes. Six of these, and two reservoirs, exceed 50 hectares in size, the biggest being Poulaphuca reservoir at around 1,950 hectares. At this stage in the Directive we report on the lakes that exceed 50 hectares or those which contain protected areas – this is a total of 26 lakes in the Eastern River Basin District.

Seas: From Drogheda all the way south to Arklow, the river waters enter the Irish Sea along 130km of coastline from the Boyne estuary, Malahide, Dublin, Killiney and Brittas Bays. The Eastern River Basin District contains all the coastlines of Meath, Fingal, Dublin, Dublin City, Dun Laoghaire and Wicklow, as well as eleven estuaries and two lagoons.

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 Eastern River Basin District. The underground aquifers cross surface water catchment boundaries.

For the purposes of the Water Framework Directive our rivers, lakes, estuaries, coast and groundwater have been given administrative boundaries called water bodies. This will help us to organise our approach and focus measures to specific areas (water bodies).



Table 2: The number of water bodies (administrative boundaries) per water type

Water Type	Number of Water bodies
Rivers and Canals	362
Lakes and Reservoirs	30
Estuary	13
Coastal	8
Groundwater	75
Total	488

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

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3 How healthy are our waters?

3.1 Background

In 2004 a report was prepared which provided the first ever comprehensive analysis of data and information in the Eastern River Basin District. This was required by the Directive and was intended to provide a first assessment of the condition of our waters and to identify gaps in data and information to inform the design of the monitoring networks.

The assessment was based on the relatively limited data where it was available and on a wide range of risk assessments which evaluated the problems that could be expected based on a variety of factors including known discharges and land use. At that time the waters were assessed in terms of the risk in them not achieving the requirements of the Directive – the percentages are shown in the Table 3. At that time almost three quarters of our waters were thought to be at risk.

Table 3: Risk Assessment

Risk Category	Number of water bodies	% by Number	% by Area of RBD
At Risk	237	49.6	48.6
Probably At Risk	165	34.5	25.5
Probably Not At Risk	54	11.3	23.6
Not at Risk	22	4.6	2.3
Total	478	100	100

3.2 Monitoring Network

A network of monitoring sites (shown on Map 5) for the Directive was identified by the EPA in 2006 covering rivers, lakes, coastal waters and estuaries as well as groundwater. Several organisations, including local authorities, the EPA and fisheries boards are responsible for data collection.

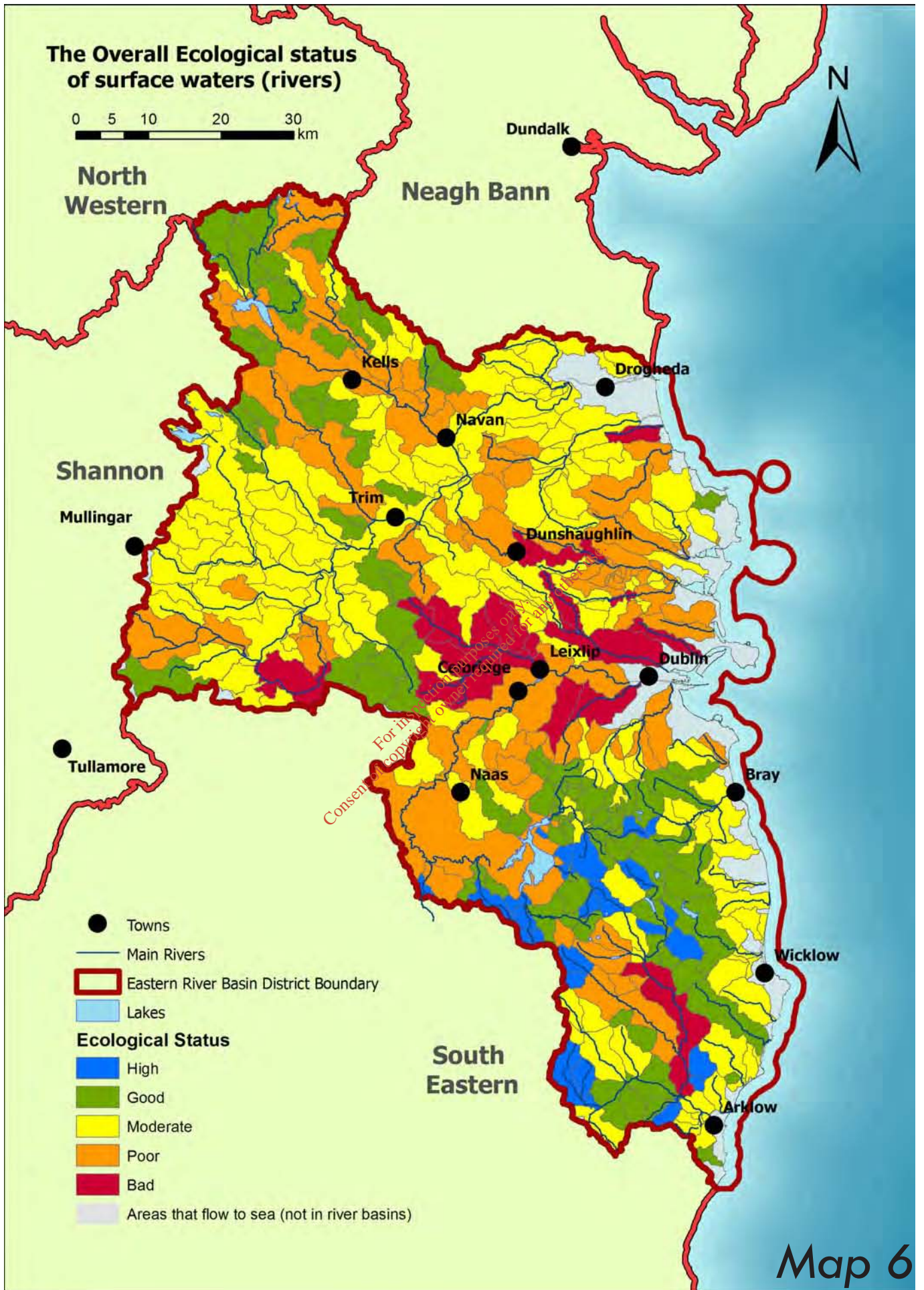
Three types of monitoring have been specified:

- **Surveillance Monitoring:** this is intended to be a permanent set of monitoring stations for an extensive list of parameters including ecology. It is required to be representative of all waters and is intended to show long term changes in water quality;
- **Operational Monitoring:** to collect data specific to the pressures being experienced in particular waters; and
- **Investigative Monitoring:** where the reason for a particular exceedance is unknown, or to ascertain the magnitude and impacts of accidental pollution.

Data is collected by a variety of means and reported to the EPA. Some of this data is stored in a central database (called Environmental Data Exchange Network (EDEN)). In the Eastern River Basin District a River Basin Management System has been created to assist in River Basin Management Planning (See Section 8). The monitoring data stored in EDEN is also directly accessible through the River Basin Management System thus allowing rapid access to these critical data sets.

In the future this data will allow local authorities and stakeholders to monitor progress in improving the status of waters, assess the impacts of measures that have been implemented and guide the next Plan when it is developed in 2015.

Question 1: How would you like to see the monitoring data being provided to a wider group of stakeholders?



3.3 How we determine the status of our waters

The Directive's classification process has helped us to improve our understanding of the health status of our waters. In 2007, we began more comprehensive monitoring of our waters to provide results for new classification schemes. Monitoring information is collected by the EPA, Central Fisheries Board, Marine Institute, Office of Public Works, National Parks and Wildlife Service, Waterways Ireland and local authorities. The EPA is responsible for assessing this monitoring data and assigning health status to Ireland's surface waters and groundwaters.

This Draft Plan presents the Eastern River Basin District's water status using our new systems and monitoring information for the first time. These early results are based on one year's data; they reflect our best current understanding of status. However, we expect this to improve over time as monitoring data, and the scientific tools used to interpret it, expand and improve. Over time, we can build a picture of changes in our waters: decline due to problems or improvement as a result of actions. The classification systems will help us to plan the actions needed to protect or improve waters and, in due course, to show how our waters have benefited.

As our new classification systems measures more parameters and the impacts of more human activities than previous schemes, their scores are different from those stated in any previous report. The new classification systems are more conservative than previous schemes as failure of a single biological or chemical standard or supporting element can downgrade the overall status of the waters. The EPA has compared the new status results to previous reported scores, and is confident that the new status assignment correctly reflects that condition of our waters.

The EPA will update status information as new monitoring information becomes available. The first update will be carried out in 2009 to improve confidence in classification for the final river basin management plan. Any differences in status will be taken into account by reconsidering measures and objectives for the final plan.

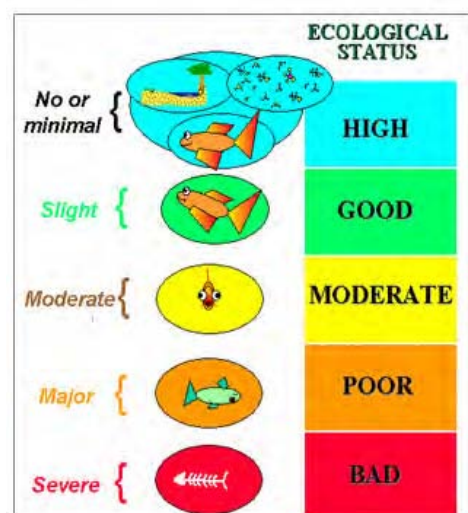
There may be occasions when a natural event such as a drought causes waters to drop temporarily below status standards. These cases will be taken into account by the EPA when undertaking future status reviews. Such temporary deteriorations will be investigated to assess their causes and to determine whether practical steps can be taken to mitigate their impacts.

Details of the monitoring programme, classification standards and status setting process for surface and groundwaters are available in our background documents, available through the Eastern River Basin District website www.erbd.ie. More information about the condition of the District's waters is available in our background documents and the detailed status of individual rivers, canals, lakes, reservoirs, marine waters or groundwaters can also be viewed there.

The monitoring programme started in 2007 has given us more comprehensive data and this has been used by the EPA as the basis for the new classification scheme. The classification system has been harmonized across Europe so that each country measures water status in a comparable way. There are five categories of River and Lake water status – High, Good, Moderate, Poor and Bad. Estuaries and Coastal waters are classified as High, Good or Moderate. Groundwater is categorized as either Good or Poor. A detailed description of the classification system, which is not yet finalized, can be found on the Eastern River Basin District web site, a summary is provided below.

In the past we have considered water quality predominantly by looking at water quality results (from samples taken from our waters). The Directive asks us to take a more

Figure 2: Status Levels in our Waters





comprehensive view of the condition of our waters considering not only water quality results but also biology, morphology (physical condition) and hydrology (quantity of water). This balance of interacting issues affecting our waters has been compiled for the first time by the EPA. A summary of these issues is given below as are the results for the Eastern District.

Surface Water Status

Surface waters must achieve at least Good Ecological Status and Good Chemical Status.

Surface water ecological status

The ecological status of natural surface waters falls into one of five classes: High, Good, Moderate, Poor or Bad.

Some surface waters identified as artificial or heavily modified are subject to a different set of standards, with the focus on ecological potential rather than ecological status. These waters are classified as either Good Ecological Potential (equivalent to Good Status) or less than Good Ecological Potential (equivalent to Moderate Ecological Status).

The surface water ecological classification combines three factors:

1. **Biology**

Surface water biology classification systems describe the extent to which human activity has altered the ecological communities present in our waters by comparing the condition of aquatic animals and plants with undisturbed or pristine conditions:

Table 4: Ecological communities in surface waters

	Rivers and lakes	Marine (estuaries and coastal waters)
Animals	Fish Aquatic invertebrates (for example insects, crustaceans, molluscs, worms)	Fish (in estuaries) Aquatic invertebrates living in soft sediments on the seabed and rocky shores
Plants	Diatoms (microscopic plant organisms) Macrophytes (large aquatic plants) Filamentous algae Phytoplankton (a microscopic plant containing the green pigment chlorophyll) in lakes and deep rivers	Seaweeds Seagrasses Marine phytoplankton

2. **Supporting water quality conditions (general conditions and specific pollutants)**

The classification system also includes supporting factors that affect ecological status, either by providing suitable water quality for aquatic plants and animals to thrive or by reducing that quality:

- General conditions are assessed by measuring oxygen, nutrients, transparency, (water clarity), temperature, acid status and salinity; together, they describe the general physico-chemical status of surface waters
- The levels of specific pollutants, chemical pollutants including metals, pesticides and hydrocarbon compounds of local relevance in Ireland.

The levels or concentrations of these physico-chemical parameters and specific pollutants are compared to environmental quality standards set to protect the health of our aquatic plants and animals.

3. **Supporting hydrology and morphology (physical condition).**

Hydrology conditions need to be adequate to support a healthy mix of plants and animals, and are measured by recording river flow, lake level and tidal patterns.

Morphology (or physical condition), which again must be able to support a healthy mix of plants and animals, is assessed by surveying channel, substrate and bed shape and physical conditions.

Surface water chemical status

There are two classes for the chemical status of surface waters: Good or Fail. A majority of waters have yet to have chemical status determined.

Priority substances are chemical pollutants (including metals, pesticides, hydrocarbons, volatiles and hormone-disrupting compounds) that are of widespread concern across Europe and are monitored to determine the chemical status of our surface waters. The levels or concentrations of these priority substances are compared to European environmental quality standards set to protect the health of our aquatic plants and animals in compliance with the proposed Priority Substances Directive.

3.5 Current Status

The Directive requires that all waters achieve High or Good Status by 2015. The EU can grant exemptions to this objective, on the basis of either technical difficulties, excessive cost to remediate the problem, the natural condition of the waters will not allow timely improvement or that a new physical modification may prevent restoration to Good Status in the first cycle. In the Eastern River Basin District our waters have been classified on the basis of the first year of monitored data. The Ecological Status of rivers, lakes, estuaries, and coastal waters can be seen on Maps 6 and 7. The analysis of status for rivers and lakes is shown in Figures 3 and 4 below:

Figure 3: Rivers and Canals Status

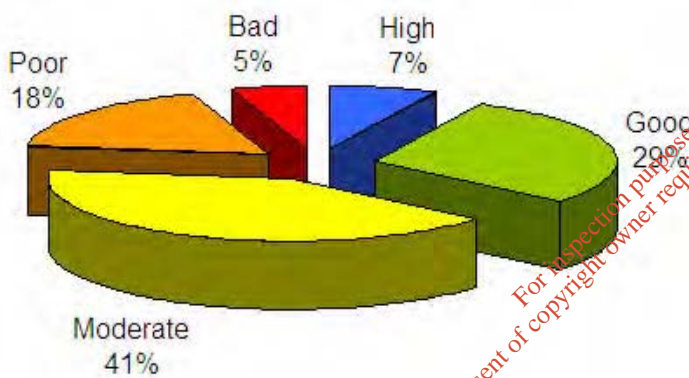
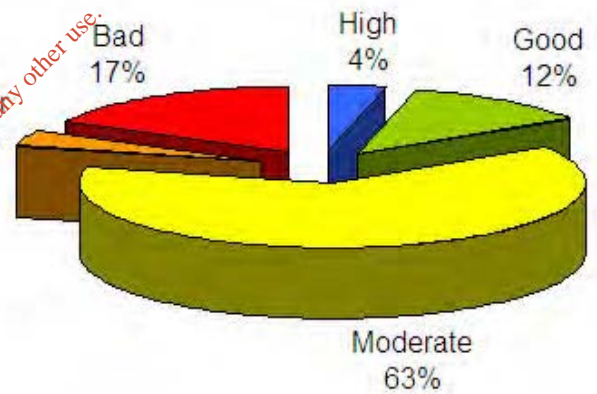


Figure 4: Lakes and Reservoirs Status



On a positive note, these charts show that 16% of our lakes already achieve either Good or High Ecological Status. 36% of our rivers achieve either High or Good Status. In spite of this good news, there is still much work needed to achieve Good Status, especially in our rivers. In general our canals are in good condition with all canals achieving good ecological potential except the grand canal basin classified as poor ecological potential. The Boyne Navigation artificial water body remains to be classified.

Table 5: Surface water ecological status/potential in the Eastern District

Surface Water Category	High	Good	Moderate	Poor	Bad	Yet to be Determined
River and canals (number)	26	104	148	65	18	1
% of total	7%	29%	41%	18%	5%	0%
Lakes and reservoirs (km ²)	2	5	26	2	7	0
% of total	4%	12%	63%	4%	17%	0%
Estuaries (km ²)	0	0	24		0	
% of total	0%	0%	100%		0%	
Coastal (km ²)	207	0	94		59	
% of total	58%	0%	26%		16%	

Figure 5: Estuaries Status

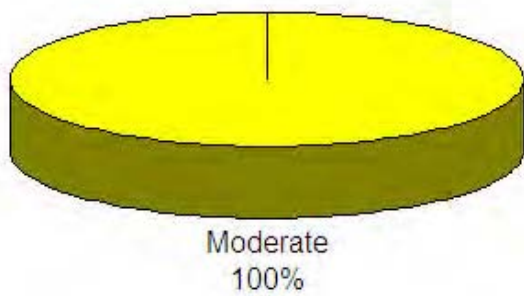
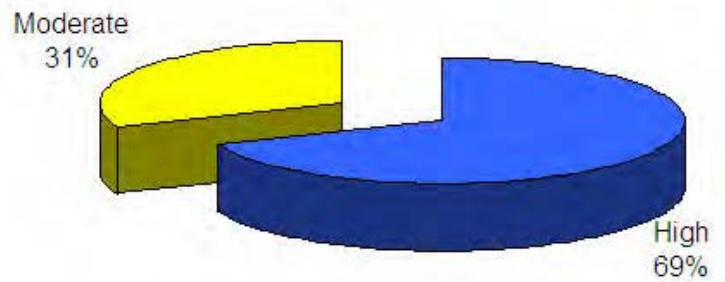


Figure 6: Coastal Status



Coastal waters are generally in good condition from Drogheda to Malahide and Dalkey to Brittas Bay. Only Dublin Bay, Malahide Bay and the coastal waters stretching between the two have been classified as Moderate; the other waters for which data was available are all classified as of High Status. Three coastal classifications are not yet available. None of our estuaries achieve Good or High Status reflecting the fact that they are largely in urban areas and are downstream of rivers which discharge pollutants and nutrients into them.

Table 6: Surface water chemical status in the Eastern District

Surface Water Category	High	Fail	Yet to be Determined
River and canals % of total	4 1%	0 0%	358 99%
Lakes and reservoirs (km ²) % of total	5 12%	0 0%	36 88%
Estuaries (km ²) % of total	0 0%	8 34%	16 66%
Coastal (km ²) % of total	0 0%	48 13%	371 87%

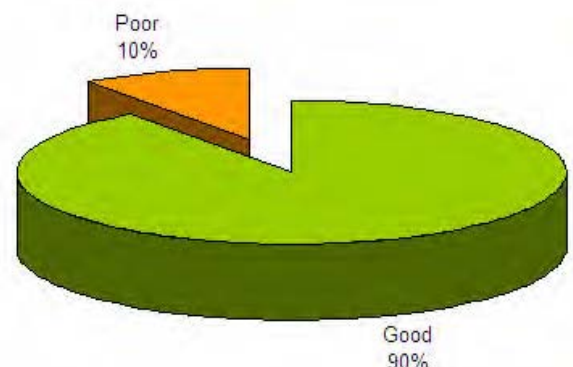
Groundwater

Groundwater bodies are classified by the EPA as either Good or Poor status, with qualifiers that describe the level of confidence in the assigned status (low or high). This data is still interim and may be updated.

Table 7: Groundwater status in the Eastern District

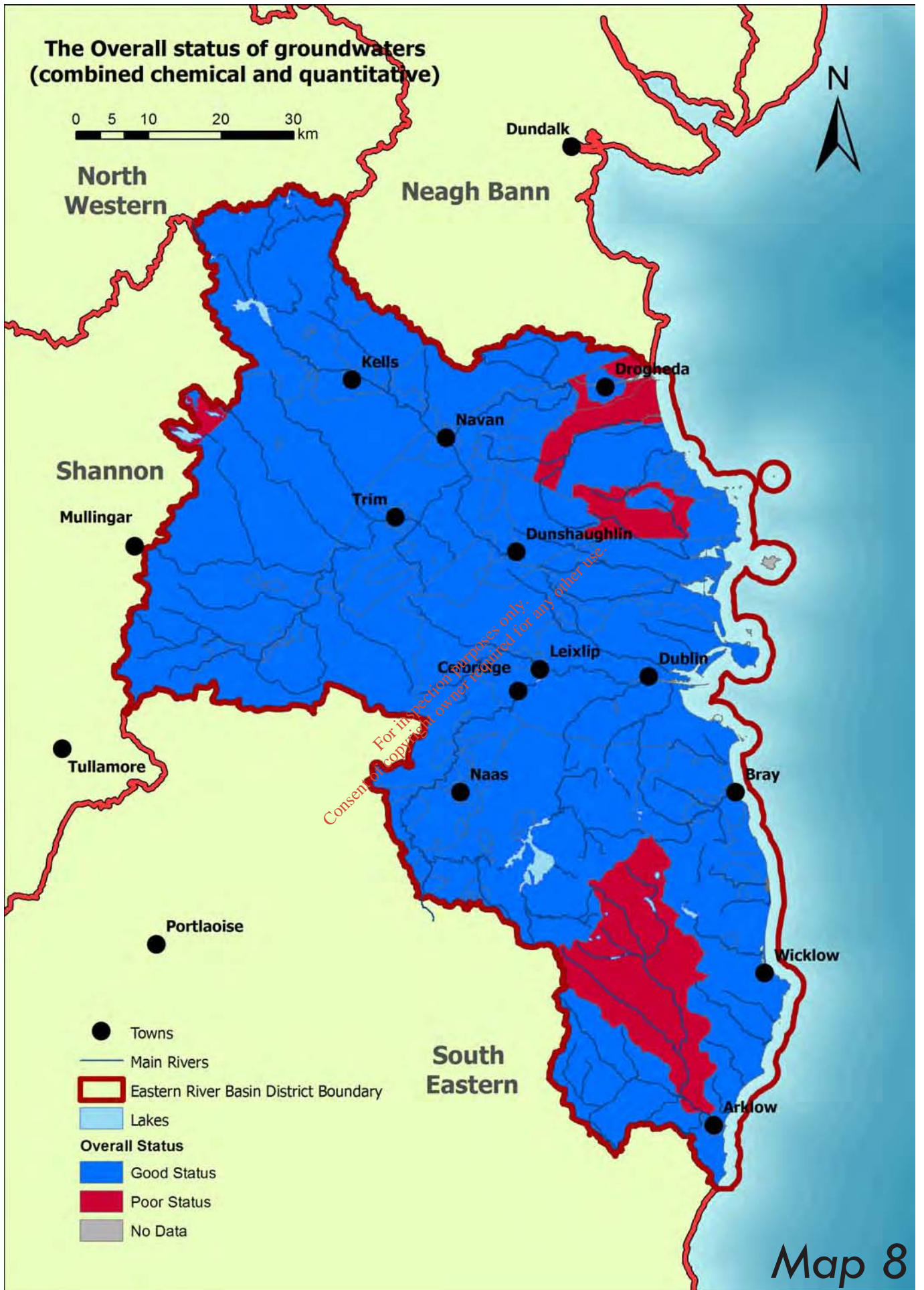
Groundwater Category	Good	Poor
Chemical Status (km ²) % of total	5,727 91%	540 9%
Quantitative Status (km ²) % of total	6,180 99%	86 1%
Combined Status (km ²) % of total	5,641 90%	626 10%

Figure 7: Overall Groundwater Status



In classifying groundwater bodies, certain tests have been carried out by the EPA against environmental standards or thresholds. Tests that relate to groundwater quantities examine:

- Water balances of groundwater bodies;
- Impacts to the natural flow conditions of rivers and streams;
- Impacts to groundwater flow, discharges and levels within the catchment boundaries of groundwater-dependent wetlands; and
- Saline intrusion in coastal settings.



Tests that relate to groundwater quality are similar to those for quantity, and examine:

- General water chemistry of the groundwater body;
- Impacts on water quality in drinking water protected areas;
- Impacts to the water quality of surface water bodies;
- Qualitative impacts to the environmental supporting conditions of groundwater-dependent wetlands; and
- Evidence of saline intrusion in coastal settings.

The thresholds set for quantity are intended to ensure the availability of groundwater resources to both humans and groundwater-dependent ecosystems. The thresholds set for quality relate to drinking water standards and trends in groundwater quality.

Groundwater in the ERBD is generally in good condition. 90% of the groundwater bodies are classified to be of Good Status. Only five cases were designated as being at Poor Status, as shown in Map 8. One was assigned Poor Status on the basis of overabstraction while four were assigned Poor status on the basis of exceedances of water quality thresholds.

The Poor status cases relating to groundwater quantity are:

- Abstractions from the Bog of the Ring wellfield – indications of overabstraction;

The Poor status cases relating to groundwater quality are related to groundwater discharges which affect the water quality of streams and rivers in the following areas:

- Avoca mine (Co. Wicklow);
- Lough Lene (Co. Westmeath mainly);
- Bettystown/Nanny (Co. Meath mainly); and
- Drogheda (co. Meath and Co. Louth).

In the case of Avoca, mine adits on either side of the river are discharging polluted groundwater which contributes to the water quality problems of the river. The Avoca River has been classified as Poor status partly on the basis of the mine discharges.

In the other three cases, orthophosphate exceeds its water quality threshold in a number of streams which flow over the Lough Lene, Bettystown and Drogheda groundwater bodies. These streams have been designated Poor status by the EPA. Orthophosphate also exceeds its threshold in groundwater, and groundwater provides significant baseflow to the affected streams. The water quality of the streams is therefore deemed to be impacted by groundwater.

Question 2: Do you think that the Classifications fairly reflect the status of waters in the Eastern River Basin District?

3.5 High Status Waters

There are a number of waters which the EPA considers to be of High Status. This represents conditions which are near pristine, typically occurring in the upper parts of catchments where human activity and development has been limited. In the East only 7% of our rivers are considered to be of High Status, whilst 4% of our lakes achieve this level. Three coastal water bodies are considered to be of High Status but none of our estuaries. Map 6 shows the High Status river water bodies in the Eastern River Basin District, and Map 7 shows the High Status lakes and coastal waters.

Protected Areas can have stricter status standards; they must, without exception achieve standards relevant to their designation which may be stricter than good or High Status. Measures are required for protected sites failing to achieve their standards which aim to improve environmental conditions sufficiently to support achieving their objectives. Protected Areas are discussed in more detail in Section 5.

In this Draft Plan it is proposed to define special measures to continue to protect these areas and to maintain their High Status. These measures have been developed by the EPA and are fully incorporated into the Draft Plan. They are listed in Table 13.

Question 3: Do you think that there are any common factors contributing to High Status waters?

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4 What are the problems?

In many waters there are several different pressures which detrimentally affect the quality of the water and the diversity of the ecology and so the measures (or actions) necessary to improve the situation have to address all of these pressures. This catchment-based process is an important advance in water management as it overrides the historical approach of single issues dominating the process. Rather than the various individuals and organisations who contribute to the problems pointing the blame elsewhere, this approach highlights all issues and encourages cooperation between all stakeholders in the catchment.

The Water Matters report published in 2007 provided an analysis of the main pressures affecting our waters. Eight major pressures with a widespread impact were identified in addition to specific local problems that exist from place to place.

Table 8: Main Pressures and Pressure Category

Pressure	Pressure Category
Wastewater and industrial discharges	Physiochemical
Landfills, quarries, mines and contaminated lands	Physiochemical
Agriculture	Physiochemical
Wastewater and unsewered properties	Physiochemical
Forestry	Physiochemical
Usage and discharge of dangerous substances	Physiochemical
Physical modifications	Morphology
Abstractions	Hydrology

These main water problems are discussed in detail in the Water Matters booklet, outlining for each problem:

- Why they are problems;
- How these problems affect the Eastern River Basin District in particular;
- What existing controls are in place;
- Whether these controls adequate to meet the Directive targets; and
- What additional actions are proposed.

Comments received on the Water Matters report are summarized in Appendix C.

The activities listed above all cause pressures to surface and ground waters, to different degrees from place to place and in different combinations. These pressures affect the water quality, the habitats in the waters and the ecology which the waters can sustain.

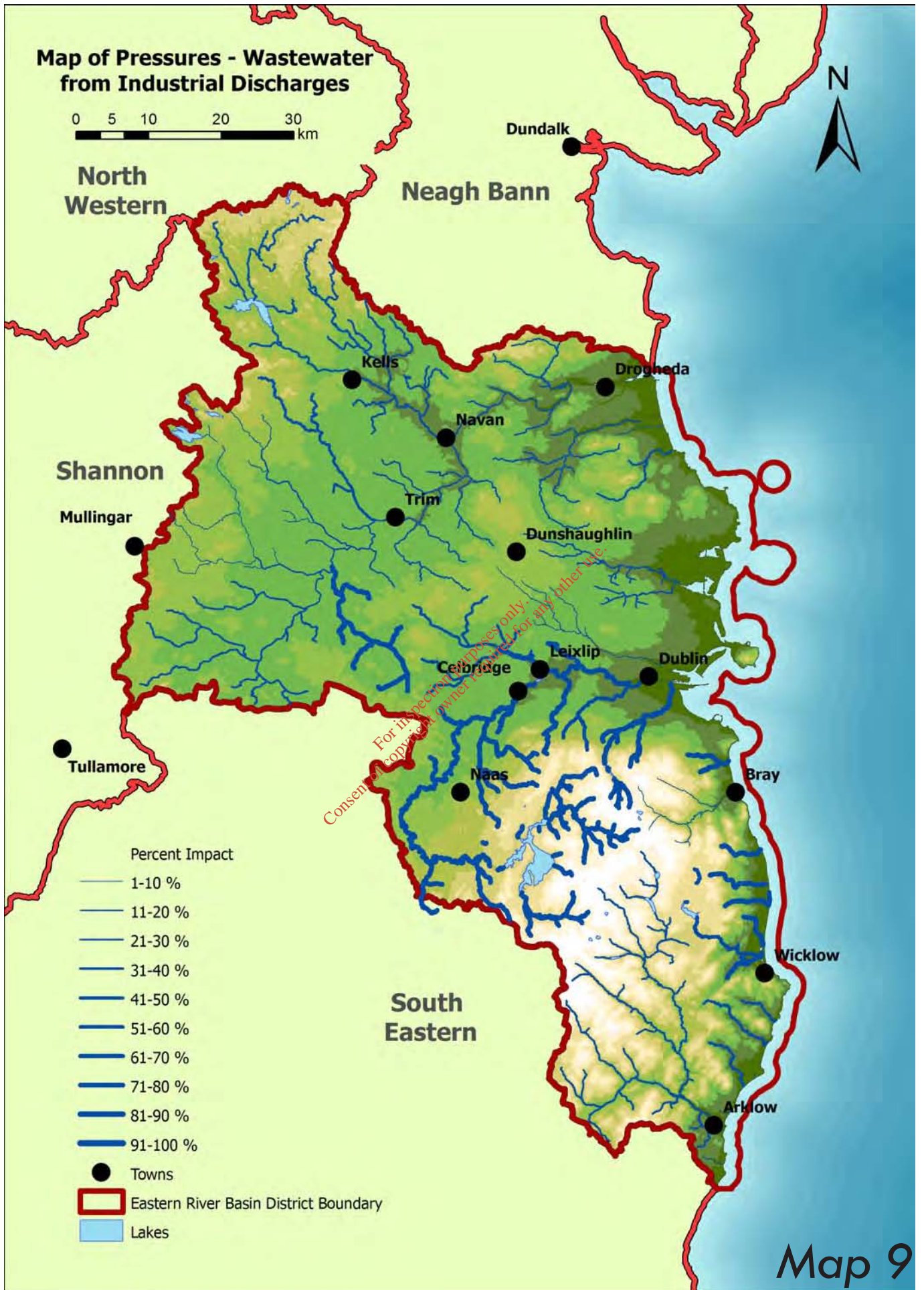
The impacts can be direct, such as physical changes to the river or over abstraction which can destroy natural habitats; or indirect, such as increased sediment run off which reduces light and causes oxygen deficiencies. In order to improve conditions and achieve Good Status all of the pressures will have to be addressed to a degree where none, or any combination, remain a problem.

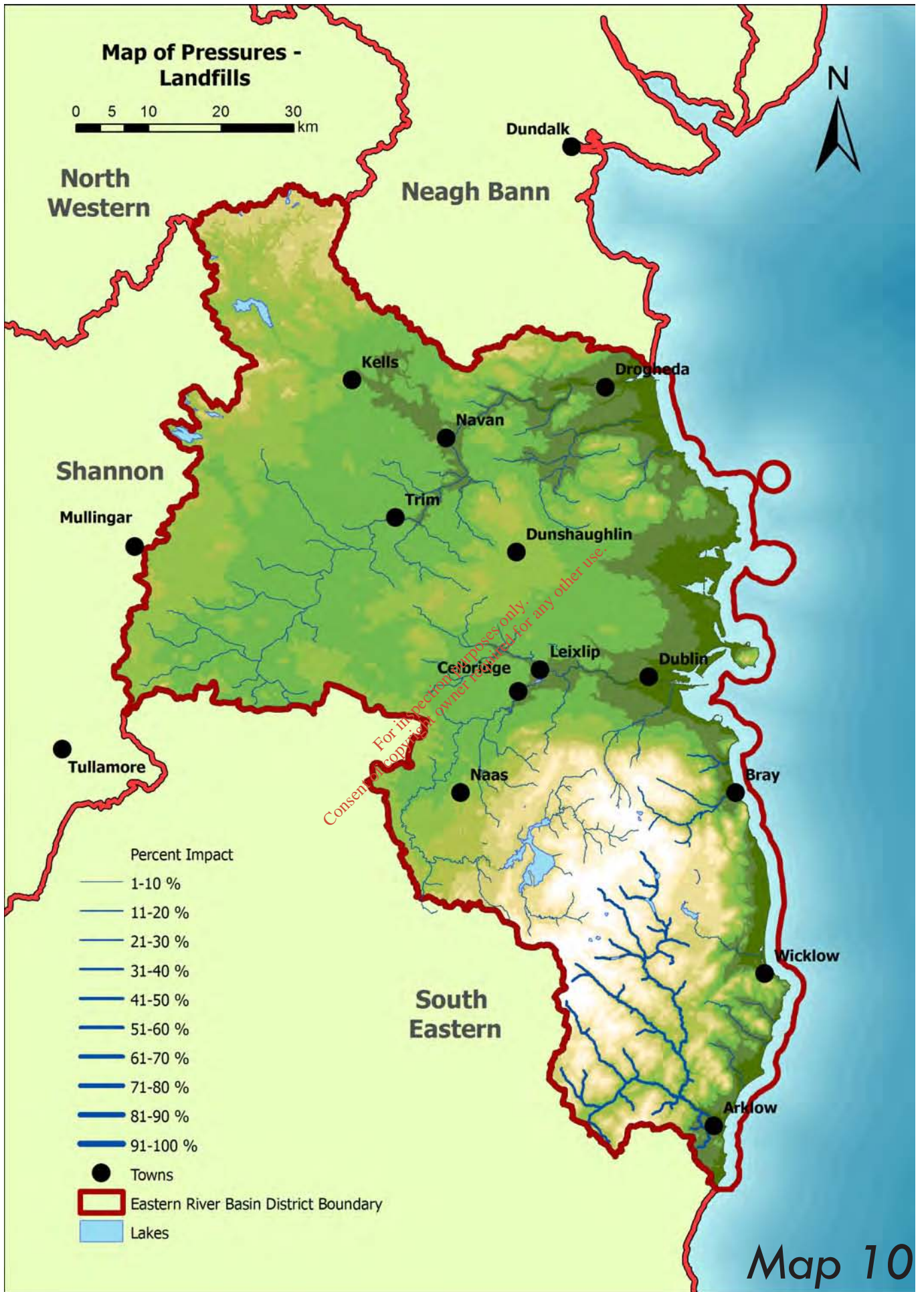
The Water Matters Report 2007 was the starting point for identifying the problems in our waters. Since 2007 the Local Authorities and the Eastern River Basin District Project Team have started to look at our waters on a sub-basin level using the River Basin Management System (as discussed in Section 8).

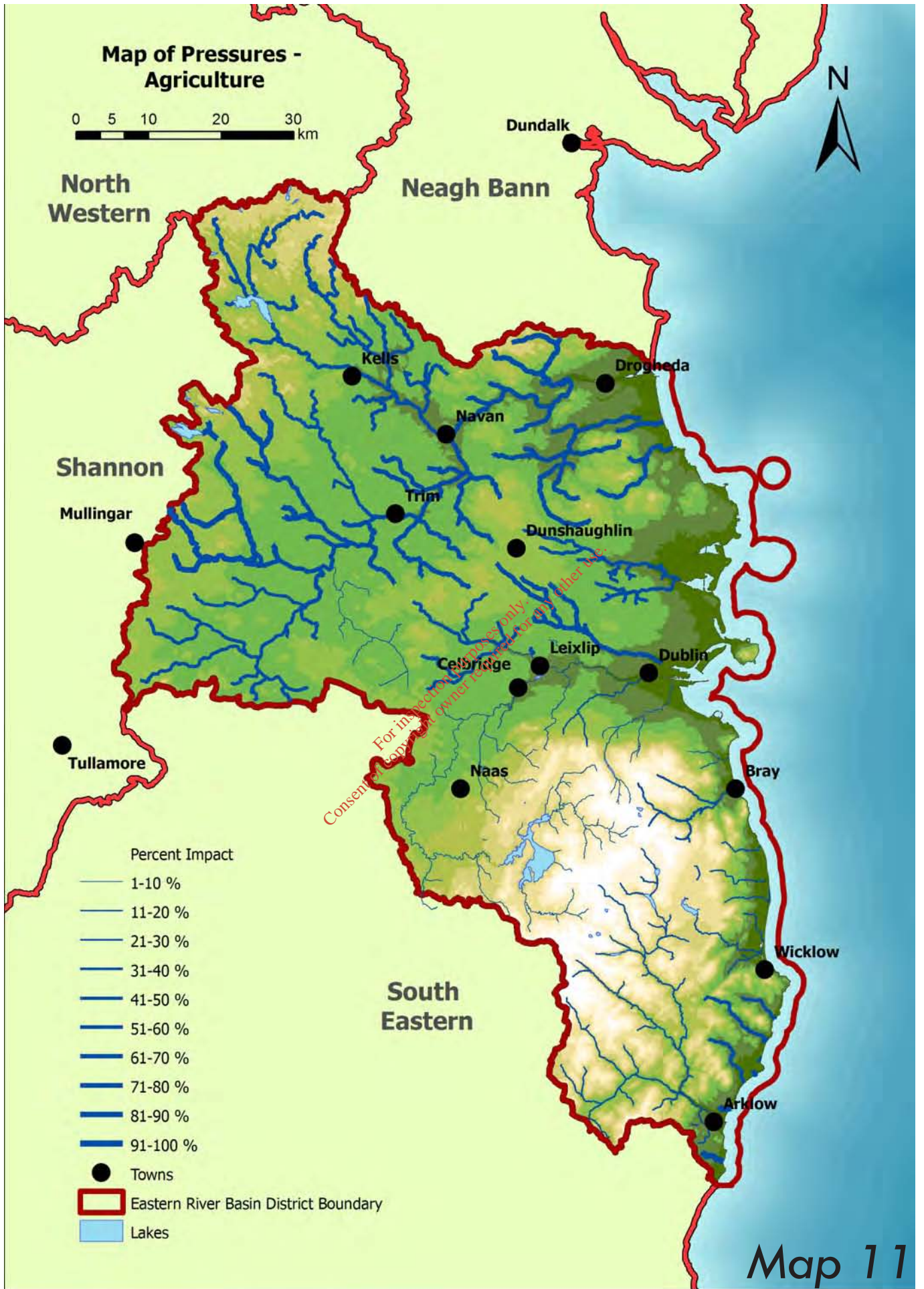
The River Basin Management System allows users to look at all the information we have collected to date from the Characterisation Report, the Monitoring Sites, Water Matters background report 2007 and the EPA classifications (See Sections 1 to 3 for more information on these reports). Using all this information, and local information and knowledge, we can compare monitoring results to upstream pressures and begin to identify the unique set of pressures causing the problems in a particular sub-basin.

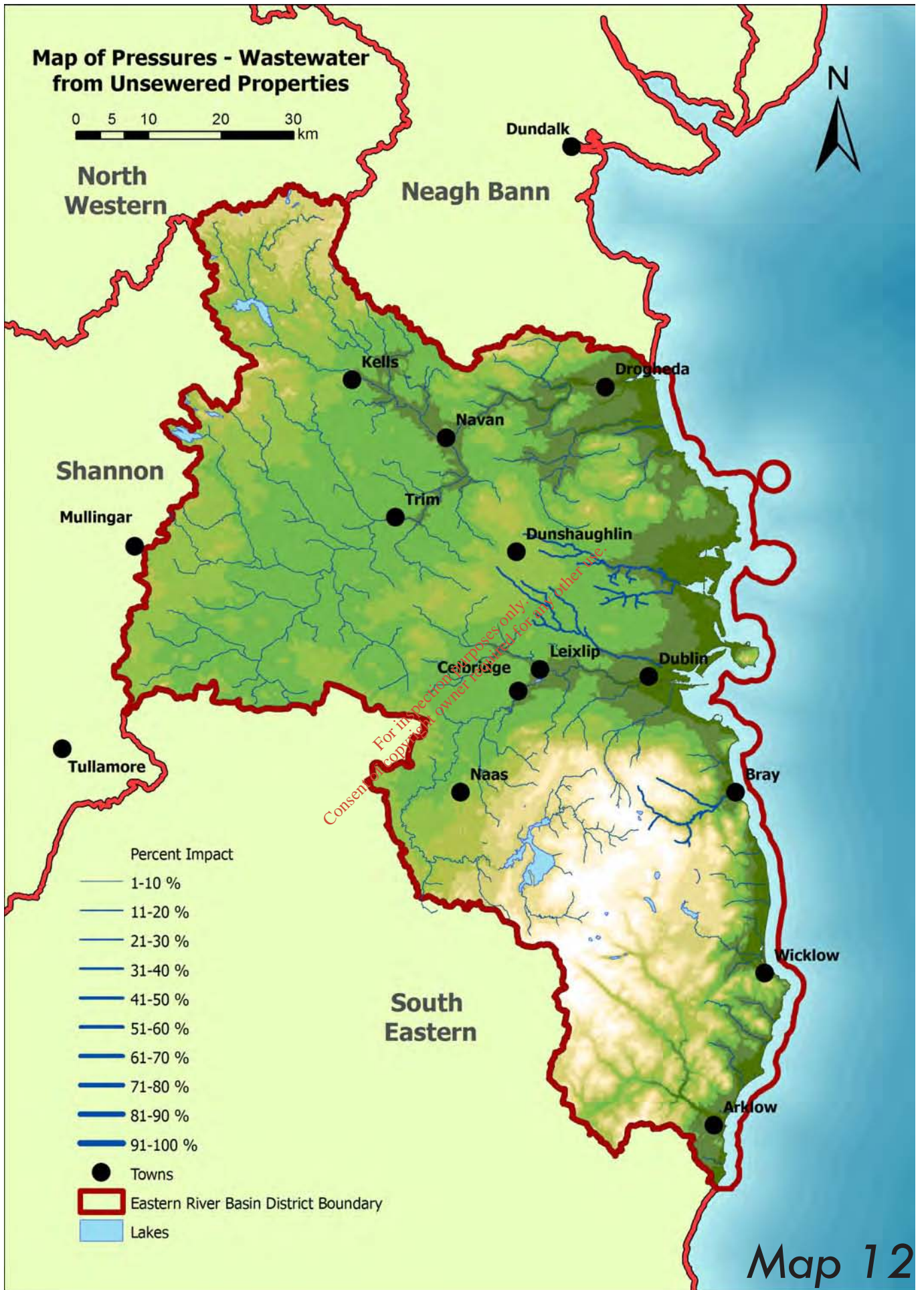
The following sequence of maps (Maps 9 to 14) shows the relative degree to which the six pressures within the physiochemical (water quality) pressure category affect the principal rivers in the Eastern River Basin District as identified in the River Basin Management System. It should be noted that in line with the requirements of the Directive, if part of a particular river has been identified as being affected by a given pressure then the entire river has been marked with the same percentage. The morphology pressures and hydrology pressures are either at risk or not at risk. These maps were compiled from the results of research projects commissioned by the DEHLG. The Abstractions map (Map 15) shows the rivers found to be at risk or probably at risk of abstractions. The Morphology map (Map 16) shows the rivers at risk or probably at risk of channelisation in addition to all designated heavily modified water bodies (discussed in section 11.1). For more information on the research projects please visit our website www.erbd.ie.

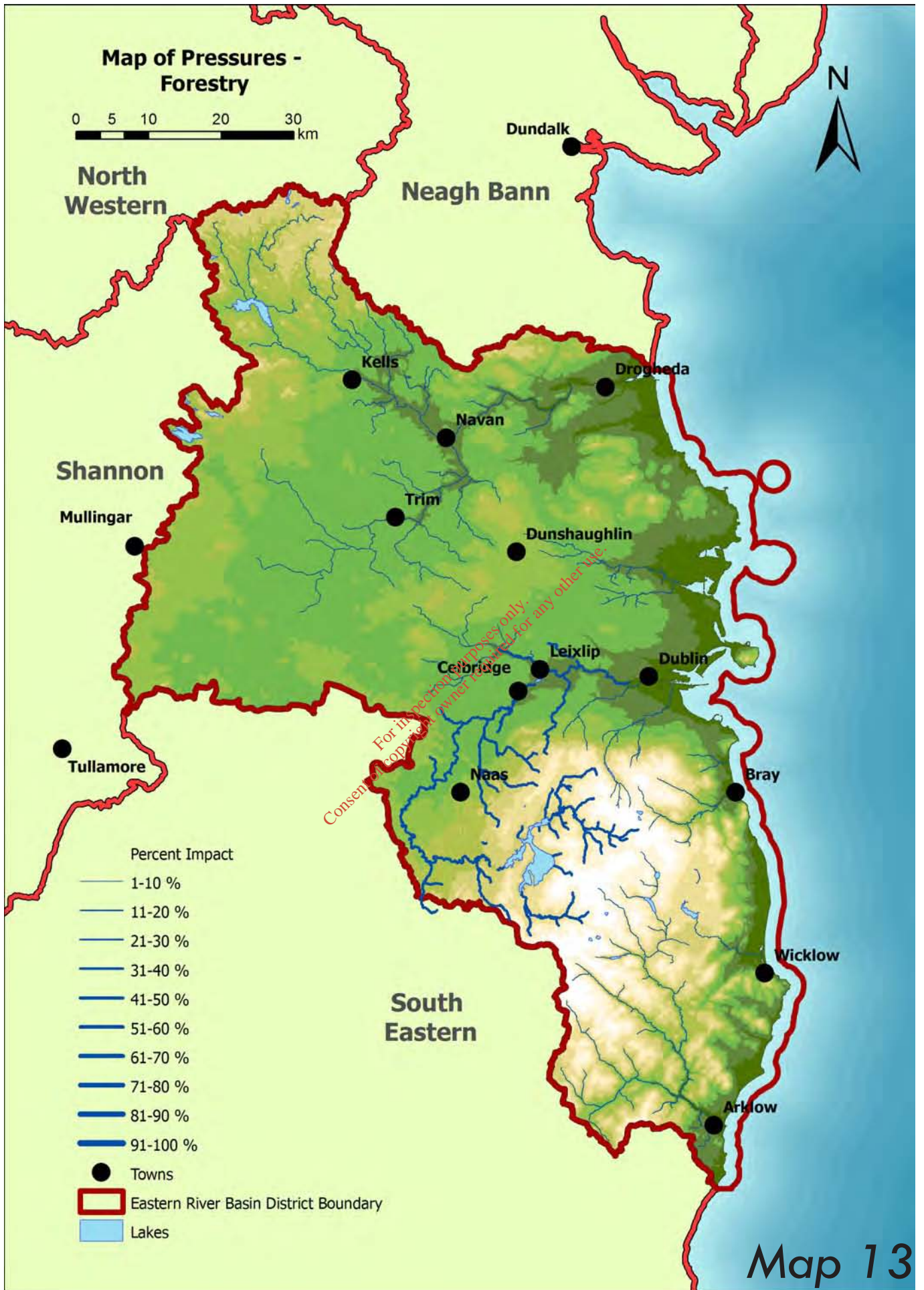
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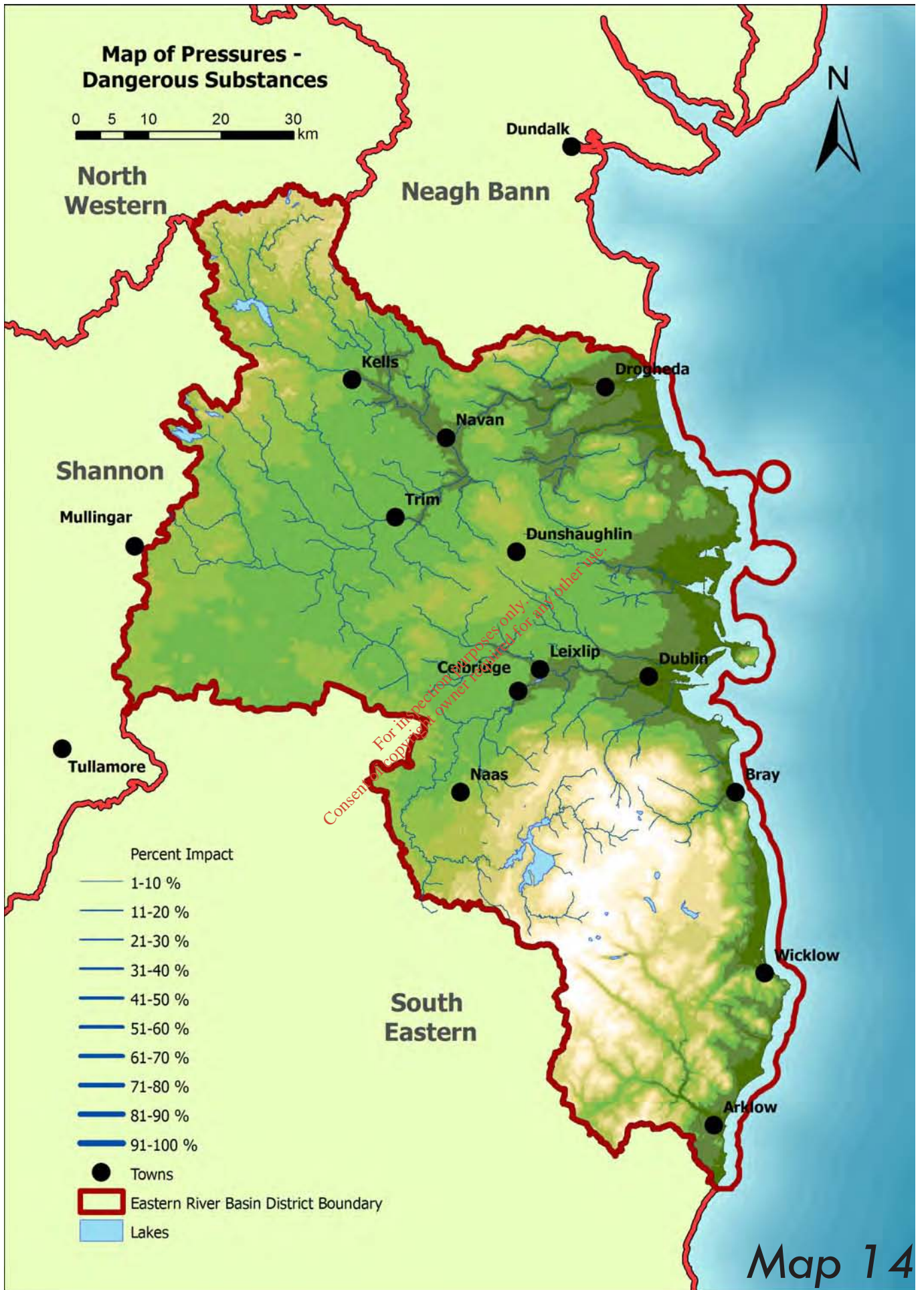








Map 13







5 Protected areas in the Eastern River Basin District

Within the Eastern River Basin District, there are a number of areas that have a special status for environmental reasons. Many of these areas are designated at European level (Special Protection Areas under the Birds Directive, Special Areas of Conservation under the Habitats Directive, Shellfish Waters, Bathing Waters, etc.). There are also nationally designated areas such as the National Heritage Areas for which come under the responsibility of the National Parks and Wildlife Service.

There are 148 protected areas in the Eastern River Basin District and these are shown in Map 17:

- 16 Special Protection Areas (SPAs);
- 33 Special Areas of Conservation (SACs); and
- 99 National Heritage Areas (NHAs) (9 designated as NHAs and 90 Proposed NHAs).
- 3 Salmonid rivers;

In addition, the Eastern River Basin District is also home to the following designated areas, shown in Map 18:

- 21 Bathing waters;
- 4 Nutrient sensitive waters; and
- 104 Protected drinking water areas.

These protected areas have a special status and have particular actions (or measures) to protect them. Their protection is mandatory under European and/or Irish law and the legislation to protect them forms an integral part of the draft River Basin Management Plan.

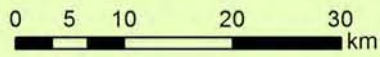
In addition to the designated areas two potential shellfish areas are designated.

The Eastern River Basin District is the only river basin district without any designated waters for *Margaritifera margaritifera* (freshwater pearl mussel) in Ireland. Fresh water pearl mussel will be protected by new regulations defining surface water objectives which will require measures to be implemented with the aim of ensuring that these designated areas achieve favorable conservation status.

Question 4: have we identified all the designated protected areas?



Map of Protected Areas No.2



Map 18

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6 What are the objectives?

As with all Plans, objectives need to be set to enable us to monitor progress and to determine success. The establishment of environmental objectives for each water body is the responsibility of the local authorities within the Eastern River Basin District. This Draft Plan indicates the objectives for our waters and proposes the actions that are needed to achieve these objectives while promoting sustainable use of our waters.

Waters must have sufficient quantity and be of satisfactory quality to protect the aquatic environment and beneficial uses. Many of our surface waters have healthy ecologies and **the first challenge is to take action to preserve these waters**. Similarly, many of our groundwaters have satisfactory quality and sustainable levels and these too must be protected.

The core objectives for surface waters are to:

- Prevent deterioration and in particular to maintain High or Good Status;
- Improve waters where appropriate to achieve at least Good Status;
- Progressively reduce chemical pollution; and
- Achieve our protected area objectives.

The core objectives for groundwater are to:

- Limit pollution inputs and prevent deterioration;
- Improve quality and balance quantity where appropriate to achieve Good Status;
- Reverse pollution trends; and
- Achieve our protected area objectives.

Both surface waters and groundwaters that support protected areas (e.g. bathing and shellfish waters, nutrient sensitive areas, protected habitats and species) must enable these protected areas to achieve their stricter status standards. These objectives are, in general, to be achieved by 2015.

Water quality objectives have been established for each water body, taking account of how the waters should naturally be, whether they have a special status (such as Special Protection Areas) and whether physical changes in some way which cannot realistically be reversed.

This is a key step in developing Programmes of Measures for each water body and developing the River Basin Management Plan. Interim Classifications (or status) for all waters developed by the EPA provide the baseline for setting of the environmental objectives for each water body.

6.1 Surface Waters

For High Status water bodies there is a **clear objective of maintaining their status** and special measures have been developed by the EPA to achieve this. In the Eastern River Basin District, 26 river water bodies (out of 356), four of our 26 lakes and three of our coastal water bodies are of High Status.

Waters of Good Status have an objective of non-deterioration, although some will improve to High Status. Some 19 of our lakes and 130 of our rivers currently achieve Good Status.

The majority of waters are of less than Good Status and the default objective of Good Ecological Status has been set for many of these water bodies. Map 19 and Map 20 show the water bodies that we will restore to Good Status and those that we must protect from deterioration.

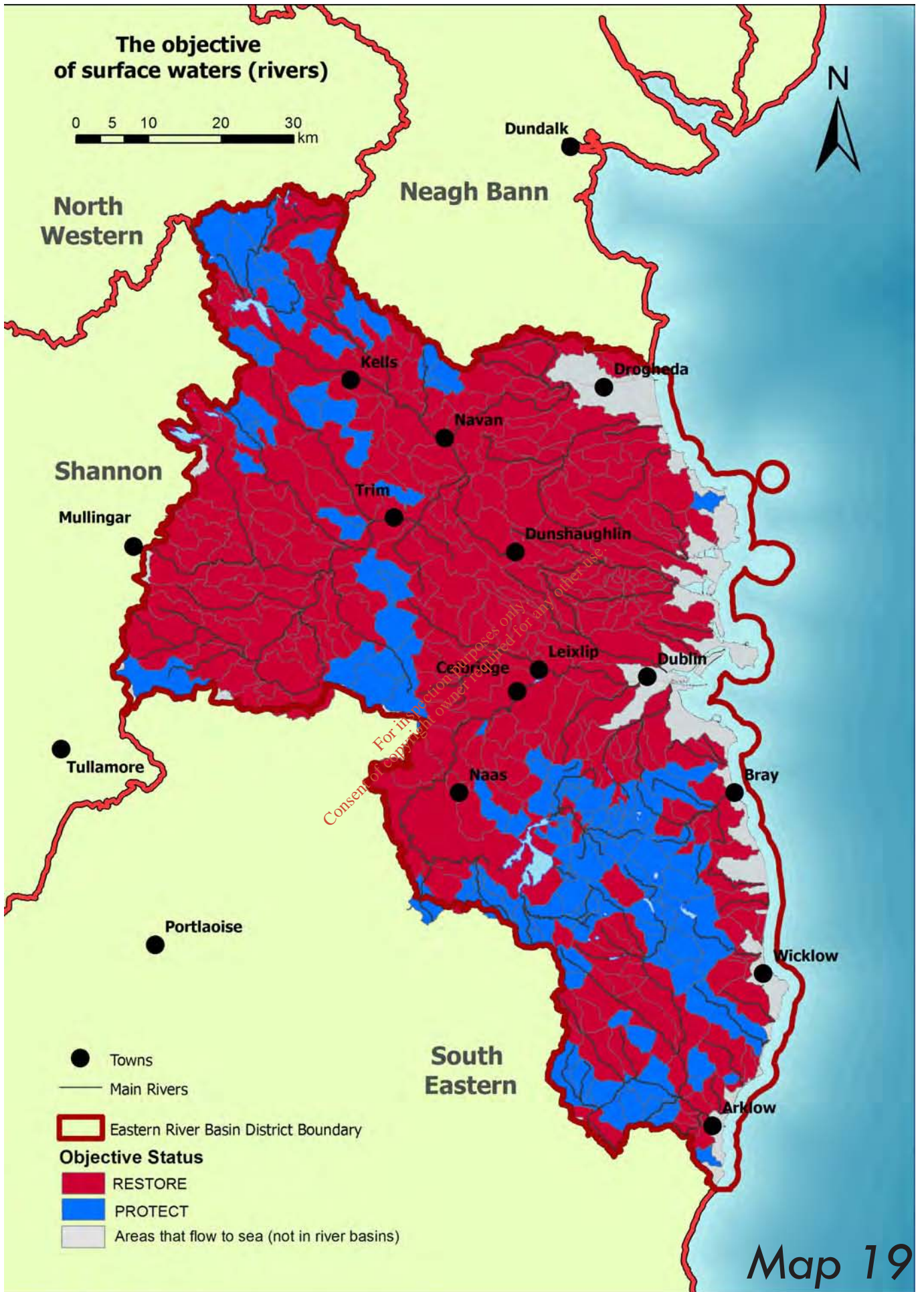
6.2 Groundwater

Groundwaters are classified as either Good or Poor status. As described in Section 3.4, only 10% of the groundwater bodies in the ERBD are classified as Poor status. Our objectives, as shown in Map 21, are therefore to:

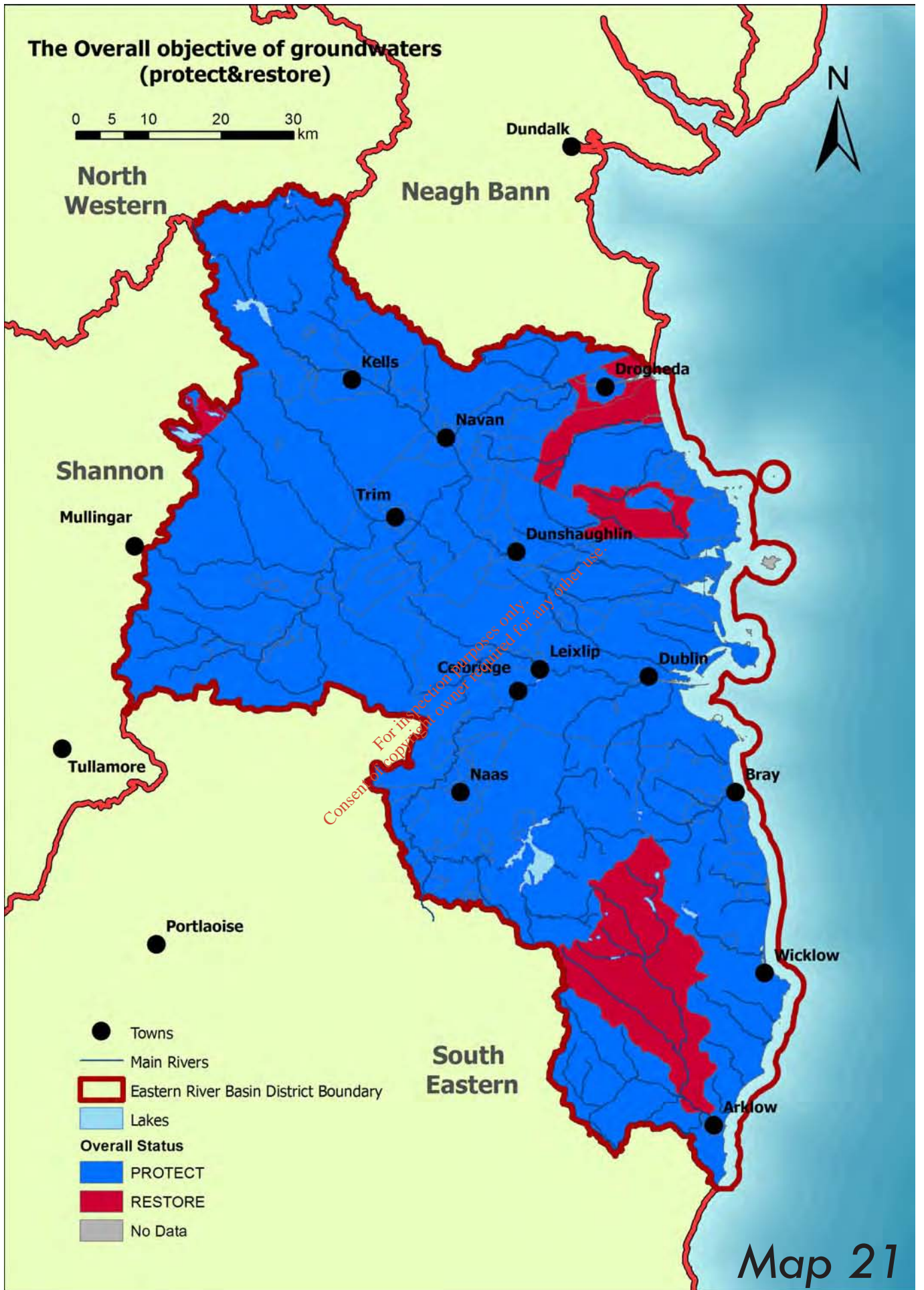
- Achieve Good status in those groundwater bodies which are presently classified as being at Poor Status;
- Protect those groundwater bodies that are currently at Good status (i.e., maintain their Good Status).

Relevant measures are highlighted in Section 9. Avoca represents a special case. A recently completed feasibility study of remediation options (CDM, 2008) suggest that it will be technically very difficult and costly to remediate the mine waste within the timeframes stipulated in the WFD for achieving Good status.

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7 Types of measures

The improvements to our waters required by the Directive will require specific actions (or measures). Measures are our response to restore waters where there are existing problems and to protect healthy waters from threat. The collection of necessary actions required for each water body is termed the Programme of Measures and these are to be implemented in a coordinated way in each catchment to provide comprehensive protection.

There are two types of measures, basic and supplementary:

7.1 Basic measures

Basic Measures are those required by various pieces of existing legislation, i.e. required by law and are not optional in any water body. These are detailed in the Water Framework Directive. There are eleven key European directives which must be implemented by all Member States and 11 other Basic Measures to be addressed. We have also identified seven other relevant European directive. The European Directives with their equivalent Irish legislation are listed in the Tables 9 and 10.

Table 9: Water Framework Directive

EU Directive	Irish Legislation	Purpose	Responsible Organisations
Water Framework Directive (2000/60/EC)	S.I. 722 European Communities (Water Policy) Regulations 2003	Water resource management	DEHLG, Local Authorities, Other Public Bodies

Table 10: 11 Basic Directives

EU Directive	Irish Legislation	Purpose	Responsible Organisations
The Bathing Water Directive (2006/7/EC) (76/160/EEC repealed)	S.I. 79 of 2008 Bathing Water Quality Regulations, 2008	Bathing waters for human health	Local Authorities, EPA, DEHLG
The Birds Directive (79/409/EEC)	S.I. 291 of 1985 EC (Conservation of Wild Birds) and amendments	Bird and habitat conservation	DEHLG, NPWS, Local Authorities, An Bord Pleanala, All Public Authorities
The Drinking Water Directive (98/83/EC) (80/778/EEC repealed 25/12/2003)	S.I. 278 of 2007 EC (Drinking water Regulations) (No 2)	Quality of drinking water for human health	EPA, HSE, Local Authorities, DEHLG
The Major Accidents (Seveso) Directive (96/82/EC) extended by Directive 2003/105/EC	S.I. 74 of 2006 EC (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2006	Major hazards and risks	Manufacturers, Local Authorities, DETE
The Environmental Impact Assessment Directive (85/337/EEC) as amended by Directive 97/11/EC	S.I. 349 of 1989 EC (Environmental Impact Assessment Regulations) 1989 and amendments	Environmental consequences of individual projects	EPA, Local Authorities
The Sewage Sludge Directive (86/278/EEC)	S.I. 148 of 1998 Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 – 2001	Human, animal, soil and vegetation protection	Local Authorities, DEHLG, DAFF
The Urban Wastewater Treatment Directive (91/271/EEC)	S.I. 254 of 2001 Urban Waste Water Treatment Regulations, 2001 and 2004	Collection, treatment and discharge of domestic and certain industrial waste waters	Local Authorities

Table 10: 11 Basic Directives (contd.)

EU Directive	Irish Legislation	Purpose	Responsible Organisations
The Plant Protection Products Directive (91/414/EEC)	S.I. 624 of 2001 EC (Classification Packaging and Labelling of Plant Protection Products and Biocide Products) Regulations, 2001. S.I. 83 of 2003 EC (Authorisation, Placing on the market, use and control of Plant Protection Products) Regulations, 2003 and amendments. S.I. 320 of 1981 EC (Prohibition of certain active substances in plant protection products).	Protection of human and animal health	Pesticide Control Service, DEHLG, Relevant persons
The Nitrates Directive (91/676/EEC)	S.I. 378 of 2006 EC Good Agricultural Practice for Protection of Waters Regulations, 2006 – 2007	Protect surface and groundwater from agricultural pollution	DEHLG, DAFF, EPA, Local Authorities
The Habitats Directive (92/43/EEC)	S.I. 94 of 1997 EC (Natural Habitats) Regulations, 1997 – 2005	Habitat conservation	DEHLG, NPWS, Local Authorities, An Bord Pleanála, All public authorities
The Integrated Pollution Prevention Control Directive (96/61/EC)	S.I. 85 of 1994 EPA (Licensing) Regulations, 1994 & 2004	Minimise pollution from industrial sources	EPA, DEHLG, Local Authorities

Table 11: Other Relevant Directives

EU Directive	Irish Legislation	Purpose	Responsible Organisations
The Groundwater Directive (80/68/EEC) (To be revoked 22/12/2013)	S.I. 684 of 2007 Waste Water Discharge (Authorisation) Regulations, 2007. S.I. 41 of 1999 Protection of Groundwater Regulations, 1999 (to be revoked 22/12/2013)	Protecting groundwater from discharges and unsuitable artificial recharge	DEHLG, EPA, Local Authorities
The Dangerous Substances Directive (2006/11/EC) (76/464/EEC Repealed) and Daughter Directives	S.I. 684 of 2007 Waste Water Discharge (Authorisation) Regulations, 2007. Water Services Act 2007. S.I. 12 of 2001 Water Quality Dangerous Substances Regulations, 2001. Local Government (Water Pollution) Act, 1977 and amendments (Section 4 and 16).	Human and ecological health	Health & Safety Authority, Operators, EPA, DEHLG, Local Authorities
Surface Water Abstraction Directive (75/440/EEC)	S.I. 294 of 1989 Quality of Surface Water intended for the Abstraction of Drinking Water	Human health	DEHLG, Local Authorities
The Shellfish Water Directive (79/923/EEC)	S.I. 268 of 2006 The Quality of Shellfish Waters Regulation Regulations, 1998	Human health	NPWS, DEHLG, Local Authorities
Strategic Environmental Assessment Directive (2001/42/EC)	Planning and Development Regulations 2001 - 2007 (S.I. 436 of 2004)	Environmental consequences of plans and programmes	EPA, Local Authorities
EU Directive on port reception facilities for ship-generated waste and cargo residues (2000/59/EC)	S.I. 117 of 2003 EC (Port Reception Facilities for Ship Generated Waste and Cargo Residues) Regulations, 2003	Environmental protection	Port Authorities, DETE
Dangerous Substances	EU Regulations Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH) (1907/2006/EC)	Human and ecological health	Health & Safety Authority, Operators, EPA, DEHLG, Local Authorities

Table 12 shows the Roles of the 11 Basic Directives in addressing our water issues.

Table 12: Roles of the 11 Basic Directives

Basic Measure	Wastewater, Industrial & Other Point Sources	Agriculture	Unsewered Properties	Forestry	Physical Modifications	Dangerous Substances	Abstractions	Landfills, Quarries & Mines
Bathing Waters	√	√	√	√				√
Birds	√	√	√	√	√		√	
Habitats	√	√	√	√	√		√	
Drinking Waters	√						√	√
Major Accidents	√					√		
Environmental Impact Assessment	√	√	√	√	√		√	√
Sewage Sludge		√						
Urban Wastewater Treatment	√							
Plant Protection Products		√		√		√		
Nitrates		√						
Integrated Pollution Prevention Control	√	√				√		√

Other Basic Measures

Whilst the European Directives listed above can be quite prescriptive in how they must be implemented, the 11 Other Basic Measures can be implemented by the Member States individually. In Ireland several of these measures are already addressed through existing legislation, some existing legislation may require amendment to incorporate the measures below or in some cases new legislation must be implemented.

- Cost Recovery for water use (DEHLG, Local Authorities);
- Measures to promote efficient and sustainable water use (DEHLG, Local Authorities, owners/occupiers);
- Protection of drinking water sources (DEHLG, EPA);
- Control of abstraction and impoundment (DEHLG, Local Authorities);
- Authorisation of discharges to groundwater (DEHLG, EPA);
- Control of point source discharges (Local Authorities, EPA, DETE, DCENR, Fisheries Board, NPWS, relevant persons);
- Control of diffuse point discharges (Local Authorities, EPA, DETE, DCENR, Fisheries Board, NPWS, relevant persons);
- Control of priority substances (Health & Safety Authority, Operators, EPA, DEHLG, Local Authorities);
- Controls on physical modifications of surface waters (DEHLG, Local Authorities, Port Authorities);
- Controls on other activities impacting on water status (relevant organisations and individuals); and
- Prevention or reduction of the impact of accidental pollution incidents (Local Authorities, An Garda Síochána, HSE, DEHLG, Department of Health and Children, Department of Justice, Equality and Law Reform).

In addition to the basic measures (existing legislation) listed above, the Irish government is scheduled to develop new legislation addressing several issues including implementing some of the 11 Other Basic Measures. When this new legislation is enacted, it will be included in the actions proposed for the Eastern River Basin District.

For a detailed description of all the basic measures please refer to Appendix D of this Draft Plan, prepared by the North South Share River Basin Management Project.

The implementation of existing and new basic measures will have a major beneficial impact on waters in the Eastern River Basin District. All relevant EU Directives have been transposed to Irish law in recent years and they are being progressively implemented.

7.2 Supplementary measures

Supplementary Measures are required in places where the basic measures alone are judged to be inadequate to achieve Good Status. These may be specific to particular locations and could be actions included in various good practice and guidance recommendations; alternatively they may be techniques commonly used in other countries to reduce the impacts of particular pressures.

Many of the supplementary measures identified reflect an absence of legislation in some areas of water protection. For example there are few measures in existence to address the problems created by morphological changes to our waters and so it has been necessary to address this gap.

Supplementary measures identified by the Eastern River Basin District as being necessary in our water bodies or sub-catchments are listed in Annex B. These have been based on detailed assessments of the pressures in each locality, the monitoring data available and local knowledge of the site.

The DEHLG has commissioned several research projects and their findings are still being produced. The latest information available is included in Appendix E and this will be updated when the information is released.

7.3 Measures for High Status and Protected Areas

In addition to the basic and supplementary measures the Western River Basin District Project has developed measures specifically to protect High Status and protected areas. As with the basic measures, these will be mandatory for all such waters.

Table 13: Measures for High Status Waters and Protected Areas developed by the EPA (courtesy of the Western River Basin District Project)

Action	Objective of measure	Responsible Agency	Type
Continued monitoring and survey by NPWS to confirm conservation status	Protect/Restore	NPWS	Monitoring
Clarification of location of the features at unfavourable conservation status	Restore	NPWS	Monitoring
Implementation of land management measures within protected areas	Restore	NPWS	Management
Notification of appropriate agencies if water status issues are found to arise	Restore	NPWS	Management
Update National Abstractions Register	Protect	EPA	Data
Identify alternative solutions where existing abstractions are implicated in causing unfavourable conservation status	Restore	Local Authorities/ Private	Management
Use existing analyses of risks and pressures in relevant catchments to identify the suite of WFD Measures that will contribute to resolving unfavourable conservation status for individual SACs. Include examination of ortho-photography in the review. LA Biodiversity Officers should be involved. Consult with NPWS	Restore	RBM Planners/Local Authorities/NPWS	Management
Consult with NPWS on identifying any additional risks and sensitivities, and any additional Measures relevant to individual sites/features at unfavourable conservation status, including investigative/operational monitoring needs	Restore	RBM Planners/Local Authorities/NPWS	Management
Document plans specific to each SAC unfavourable conservation status issue, (with reference to Sections 4 and 5 of the guidance, submit to and implement in consultation with NPWS	Restore	RBM Planners/Local Authorities/NPWS	Management
GIS mapping of the currently known extent of <i>Margaritifera margaritifera</i> populations onto the EPA river sections, including any distribution updates available from the rapid assessment survey during 2008, with annual updates in 2009 and 2010 with any additional distribution data .	Protect	NPWS	Data
Notification and distribution by NPWS of the FPM database to all relevant Local Authorities and other agencies including the EPA, Forest Service, Coillte, COFORD, Central Fisheries Board and Regional Fisheries Boards	Protect	NPWS	Management
Notification by NPWS of all <i>Margaritifera</i> monitoring transect locations to other monitoring agencies, to avoid any accidental damage by them	Protect	NPWS	Management
Review water status, risks and pressures in catchments associated with <i>M. margaritifera</i> populations, in order to assist NPWS in identifying the more readily recoverable populations, and in identifying potential translocation rivers for <i>M. durrovensis</i>	Protect/Restore	RBM Planners	Management
On-going identification by NPWS of <i>M. margaritifera</i> populations for which there is evidence that existing pressures are such that populations may be recoverable, with a view to applying appropriate conservation measures to them.	Protect/Restore	NPWS	Monitoring
Investigative monitoring of river water quality parameters in association with NPWS rapid assessment monitoring	Protect/Restore	EPA/Local Authorities	Monitoring
Review controls on use and disposal of pesticides including sheep-dip	Protect/Restore	EPA/DoAFF	Management
Assessment of known populations of <i>Vertigo</i> species by NPWS is on-going; it is recommended that assessments are updated annually to 2010 to inform Programmes of Measures for these species.	Protect/Restore	NPWS	Monitoring
Locational data for <i>Vertigo</i> species in GIS should be made available by NPWS to the relevant implementing agencies	Protect/Restore	NPWS	Data
Review controls on use and disposal of pesticides including sheep-dip	Protect/Restore	EPA/DoAFF	Management
Use guidance on Article 6 assessment for Plans and Projects (Section 6 of Guidance Document)	Protect	LA/Private	Management
Use sensitivities of water dependent habitats and species to water quality and hydrological pressures as set out in Sections 3 and 5 to guide decision making	Protect	LA/Private	Management
Consult with NPWS	Protect	All	Management
Develop a Code of Good Practice for construction activity in and adjoining watercourses.	Protect	EPA	Management
Update the Register of Protected Areas in respect of SACs designated under the Habitats Directive for Annex 1 listed water dependent habitats and Annex 2 species. (SAC Water Dependency database field WD H S)	Protect	EPA	Data
The SAC Water Dependency database must be included in the EPA ENVision Online Mapviewer WFD Protected Areas	Protect	EPA	Data
NPWS to maintain and update the SAC Water Dependency database and notify updates annually	Protect	NPWS	Data
Update Register of Protected Areas and EPA ENVision Online Mapviewer in respect of SPAs; additional sites have been designated since 2005	Protect	EPA	Data
Clarify which SPAs are designated for water dependent bird species	Protect	NPWS	Data

Table 13: Measures for High Status Waters and Protected Areas developed by the EPA (courtesy of the Western River Basin District Project) (contd.)

Action	Objective of measure	Responsible Agency	Type
NPWS habitat and species databases should include fields cross-referencing individual habitat features and species distribution to EPA water body codes for river sections, lakes, transitional waters, coastal waters, and ground waters	Protect/Restore	NPWS	Data
EPA databases on water body status should include fields cross-referencing individual features to SAC Site Code, SPA Site Code and NPWS Site Name, where the features occurs within the boundaries of an SAC or SPA. Fields should also be included to cross-reference lakes to Habitats Directive Annex 1 listed lake habitats and turloughs, and updated as more habitat information becomes available from NPWS	Protect/Restore	EPA	Data
The National Abstractions Register should include fields cross-referencing abstractions to the Site Code and Site Name of SACs and SPAs they are located in	Protect/Restore	EPA	Data
It is recommended that a central Register of relevant databases is established, to include reference to all Water Framework Directive – relevant databases developed and maintained by all relevant agencies including NPWS, EPA, GSI, Central and Regional Fisheries Boards, Marine Institute, Forest Service, Local Authorities	Protect/Restore	EPA	Data
All agencies holding relevant databases should establish procedures for regular update and notification of updates	Protect/Restore	All	Data
Agencies displaying information provided and up-dated by other agencies should establish procedures for updating this information, and a means of identifying which version is currently displayed	Protect/Restore	All	Data
A review of Notifiable Activities by NPWS is in progress. It is recommended that these include review of the findings of monitoring programmes carried out under Commonage Framework Plans.	Protect/Restore	NPWS	Management
Administrative measures relating to the implementation of approved farm plans are recommended	Protect/Restore	NPWS	Management
Supports for organic farming within Protected Areas are recommended	Protect/Restore	NPWS/DoAFF	Management
Nutrient and silt loading issues should be addressed with regard to the ecological requirements of individual Annex listed habitats and species present in individual Protected Areas, with provision for site-specific variation in soils and underlying geology, slope, livestock type, and seasonal restrictions on grazing and/or mowing regimes	Protect/Restore	NPWS	Management

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7.4 Measures for Heavily Modified and Artificial Water Bodies

Some surface waters have been substantially changed in character to allow uses such as navigation, water storage, public supply, flood defence and land drainage. These waters are called Heavily Modified or in the case of entirely new water bodies that would not otherwise have existed, Artificial. A description of these waters and their current status is given in Section 11.1.

Due to their modified or artificial condition these water bodies can require additional measures to improve their ecological potential. These measures recommended by Waterways Ireland, the South Eastern River Basin District Project Team (through their research project), and the Eastern River Basin District Team, can be seen in Table 14 and 15.

Table 14: Heavily Modified Water Bodies Measures

Water Body	Recommended Measure
River Camac	Increase in-channel morphological diversity, e.g., install instream features, 2 stage channels Protect and enhance ecological value of marginal aquatic habitat, banks and riparian zone Protect and restore historic aquatic habitats
River Dodder	Install Fish Passes Protect and enhance ecological value of marginal aquatic habitat, banks and riparian zone
River Liffey	No additional measures
River Santry	Examination of structures to assess opportunities for improvement Use of soft engineering techniques and sustainable drainage where possible
River Tolka	Increase in-channel morphological diversity, e.g., install instream features, 2 stage channels Protect and enhance ecological value of marginal aquatic habitat, banks and riparian zone
Glenasmole Reservoir Lower	None identified
Glenasmole Reservoir Upper	None identified
Golden Falls	None identified
Leixlip Reservoirs	Ecological potential study
Lough Nahanagan	None identified
Pollaphuca	None identified
Vartry Reservoir Lower	None identified
Varty Reservoir Upper	None identified
Boyne Estuary	Increase in-channel morphological diversity Restore / create / enhance aquatic and marginal habitats
Broadmeadow Estuary	None identified
Dargle Estuary	Restore / create / enhance aquatic and marginal habitats
Liffey Estuary Lower	None identified
North Bull Island Lagoon	No additional measures
Tolka Estuary	Increase in-channel morphological diversity Restore / create / enhance aquatic and marginal habitats
Upper Liffey Estuary	Increase in-channel morphological diversity Restore / create / enhance aquatic and marginal habitats
Dublin Bay	Restore / create / enhance aquatic and marginal habitats

Table 15: Artificial Water Bodies Measures

Water Body	Recommended Measure
Grand Canal Basic	Elimination of Surface Water Outfalls where possible Appropriate controls on diffuse pollution
Grand Canal Edenderry Branch	None identified
Royal Canal Main Line	None identified
Grand Canal Main Line W of Lowtown	None identified
Grand Canal Main Line E of Lowtown	None identified
Grand Canal Naas & Corbally Branch	None identified
Boyne Navigation	None identified
Turlough Hill Reservoir	None identified

Question 5: Have we identified all existing basic measures? are there any other supplementary measures that you think would be helpful? and cost effective?

The series of comprehensive research projects commissioned by the DEHLG were designed to advance knowledge in specific areas of each of the main pressures identified in the Water Matters report. Several of these projects will recommend additional legislation or improvements in best practice. The details of these research projects, and their subsequent recommendations on measures were not available during the preparation of this Draft Plan but the main elements of legislation that exists today in terms of the major pressures affecting waters in the Eastern River Basin District are presented in the following sections.

Wastewater and industrial discharges

Existing wastewater legislation requires treatment levels dictated by the EU’s urban wastewater treatment regulations (S.I. 254 of 2001) and, where appropriate, higher levels of treatment to achieve standards for protected areas (for example, bacteria standards in designated bathing areas).

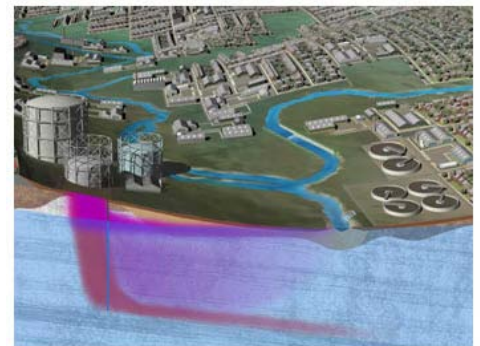
The recently introduced wastewater discharge licensing regulations will be supported by improved decision-support, management and monitoring systems to improve operational control of these municipal facilities (S.I. 684 of 2007).

Consent systems for industrial discharges are already in place under the IPPC and local authority industrial licensing systems. The Waste Management, Planning and Development, Minerals Licensing and Energy Acts all have systems which also provide for controls of other point discharges such as landfills, quarries, mines and contaminated lands.

New environmental objectives regulations which the DEHLG plans to introduce to support the Directive, will require review of all wastewater treatment and industrial discharge licenses to ensure compliance with Directive’s standards in receiving waters

Industrial and wastewater treatment upgrade works will generally be effective within the first two planning cycles (by 2021). However, where substantial impact has taken place, particularly if groundwaters have been polluted, recovery could take longer.

Urban pressures



Pressures from urban areas are generated from a combination of point discharges and diffused discharges into water bodies within the urban catchments. These generally add to any contaminants already discharged upstream.



Existing wastewater legislation dictates treatment levels and discharge levels. The recently introduced wastewater discharge licensing regulations (S.I. 684 of 2007) will improve operational control of both foul/combined sewer systems and wastewater treatment plants. These regulations will also result in the licensing/setting of discharge consents for every combined sewer system overflow (CSO) and Waste Water Treatment Plant discharge.

New DEHLG environmental objectives regulations will require a review of all existing or proposed wastewater treatment plant and CSO discharge licenses to ensure compliance with the Directive's standards in receiving waters.

In future higher levels of treatment may have to be put in place in key locations to achieve compliance with agreed national chemical water quality standards for key parameters other than nutrients (for example metals).

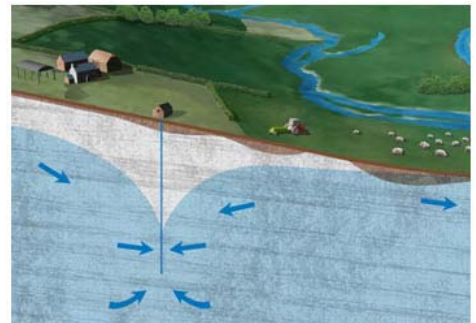
Stormwater collection system discharges are not currently regulated. There may be a future requirement for the introduction of measures to regulate these types of discharges.

Wastewater treatment and sewer collection system upgrade works will generally be effective within the first cycle after implementation. However, in the case of any capital works associated with improved wastewater catchment management, such as the introduction of screening units on storm sewers, the phasing of such works could take many years.

Abstractions

Regulatory and statutory controls address abstractions to a certain extent. This may be supplemented in future by a requirement for licensing.

The DEHLG is proposing new measures in the form of a new regulatory regime for abstractions, initially for groundwaters and supported by decision support tools and monitoring programmes.



In addition, a national water conservation programme is being implemented under the Water Service Investment Programme to reduce leakage and support sustainable water use. Further cost recovery mechanisms are also being considered.

It will take at least one cycle for ecology to recover once measures are applied and status objectives need to allow for the system to re-naturalise. In waters designated as Heavily Modified because abstractions have substantially altered the physical characteristics or the flow regime, the objectives that will be set by the EPA will take account of these changes.

Physical modifications

There are few existing regulations but the DEHLG is proposing new regulations for freshwater and marine morphology activities which will be supported by decision support tools, monitoring programmes and further research in this area. This will control all significant activities going forward. Some physical modifications protect communities through flood schemes.



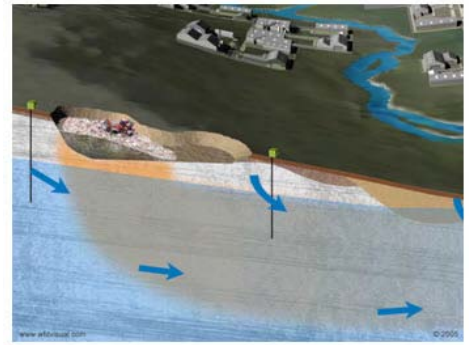
It will take at least one cycle for ecology to recover after remediation.

Dangerous substances

The key existing legislation for dangerous substances are plant protection product controls and improved monitoring data and information (which is being collected on the usage, loss and discharges of substances through compliance with European regulations such as Registration, Evaluation and Authorisation of Chemicals (REACH) and European Pollutant Release and Transfer Register (EPRT)).

These basic controls will have to be reviewed regularly as new concerns emerge about substances.

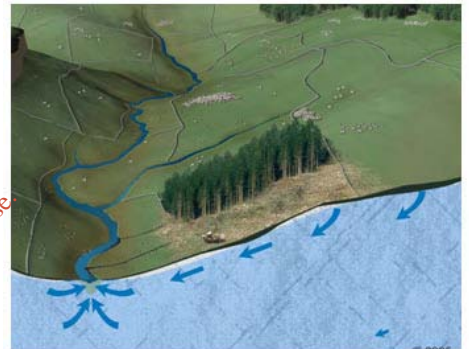
Pollution reduction programmes are to be put in place by 2012 and will be effective for point source within the first planning cycle. However, where severe point or diffuse pollution problems are identified it may take more than one cycle for ecology to recover.



Forestry

Existing forestry activities require it to operate under EU and National legislation as well as compliance with its codes of best practice. The requirements are regularly reviewed and updated and will be further strengthened by proposed new guidance on the management of sensitive areas, harvesting methods and restocking practices especially on peat lands. Revision of the Forestry Act is ongoing.

As the forest rotation is lengthy, the effect of the measures will not be immediate and it may also take up to a full cycle for ecological status to be restored.

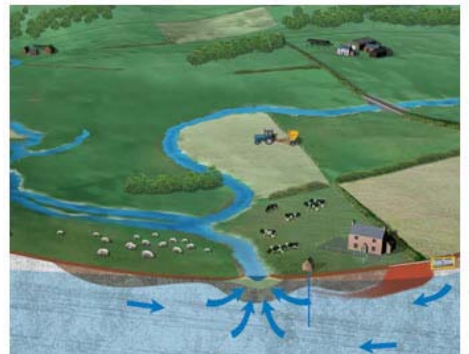


Agriculture

The existing measures in the Good Agricultural Practice regulations (S.I. 378 of 2006) are a legally binding code of practice detailing storage requirements and closed period manure spreading and other nutrient controls. This is supported by EPA in their water quality monitoring and sub-catchment studies which determine the degree to which the measures address the problem. It is further supported by DAFF and local authority farm inspections and cross compliance cross reporting arrangements.

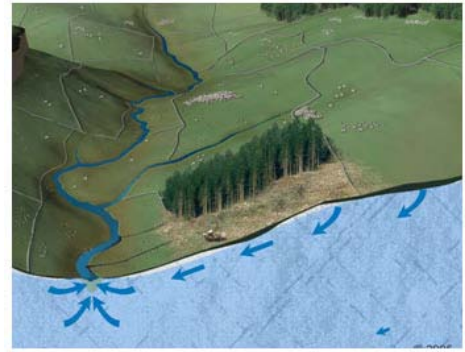
New measures under consideration include establishing source protection zones to protect drinking water supplies.

In terms of achieving Good Status objectives the response to agricultural measures will improve water quality. It takes time for soil nutrient levels to reduce after lowering stock levels or fertilizer application rates. This means that the timescale to achieve the objectives could be extended beyond one cycle. Note that earlier indicators of agricultural compliance with the Nitrates Action Plan are in built to the programme (e.g. nutrient excess reduction targets to show progress whilst the physical recovery of the system's water quality takes place).



Mobile organic compounds (pesticides) in groundwater

Pesticides are used in a wide array of settings, including agriculture, forestry, transportation, (urban) amenity (including golf courses), and industry. The largest quantities are used in the agricultural sector, primarily for pest control associated with grassland management, fodder crops (e.g., maize), and arable farming (cereals and root crops). Compared to agriculture and forestry, quantities used in other sectors are small.



Based on past and present usage data, the chemical characteristics of identified pesticides, and experiences from other countries (including the UK), a shortlist of active ingredients has been recommended for EPA's monitoring efforts for the Directive's purposes.

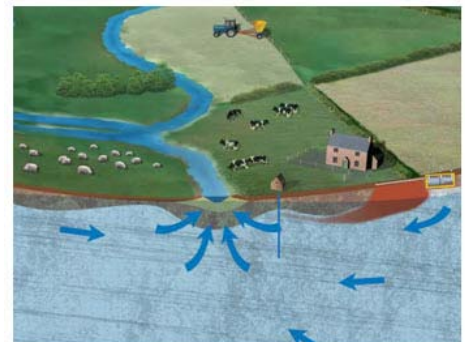
Overall, risk of groundwater pollution from diffuse pesticide applications in the Eastern River Basin District is considered to be limited. The highest risks are associated with applications in areas of extreme groundwater vulnerability.

EPA is presently undertaking a comprehensive sampling programme of more than 200 wells and springs around the country. The data generated from this programme will be analysed by the EPA in context of the Directive's water quality objectives and status classification for all groundwater bodies in Ireland. Programmes of measures will subsequently be developed pending EPA's status classification.

Existing Legislation exists to protect human and animal health, and the environment, from harmful effects of pesticides, and The Pesticide Control Service of the Department of Agriculture, Fisheries and Food is responsible for implementing regulations associated with plant protection products and biocides.

Wastewater from unsewered properties (including septic tanks)

Existing basic measures for on-site systems require prior authorisation of new installations through the Planning regulations. It is anticipated that these controls will be supported by improved information and guidance on the suitability of proposed sites and stricter enforcement regimes for the inspection of installations.



For existing installations, current controls allow for pollution enforcement actions; these powers are to be strengthened in new regulations under the Water Services Act which places a duty or care on owners of unsewered premises to ensure that their treatment systems do not cause a risk to human health or to the environment.

On-site system remediation works will generally be effective within the first cycle providing they are in place by 2012.

8 River basin management planning

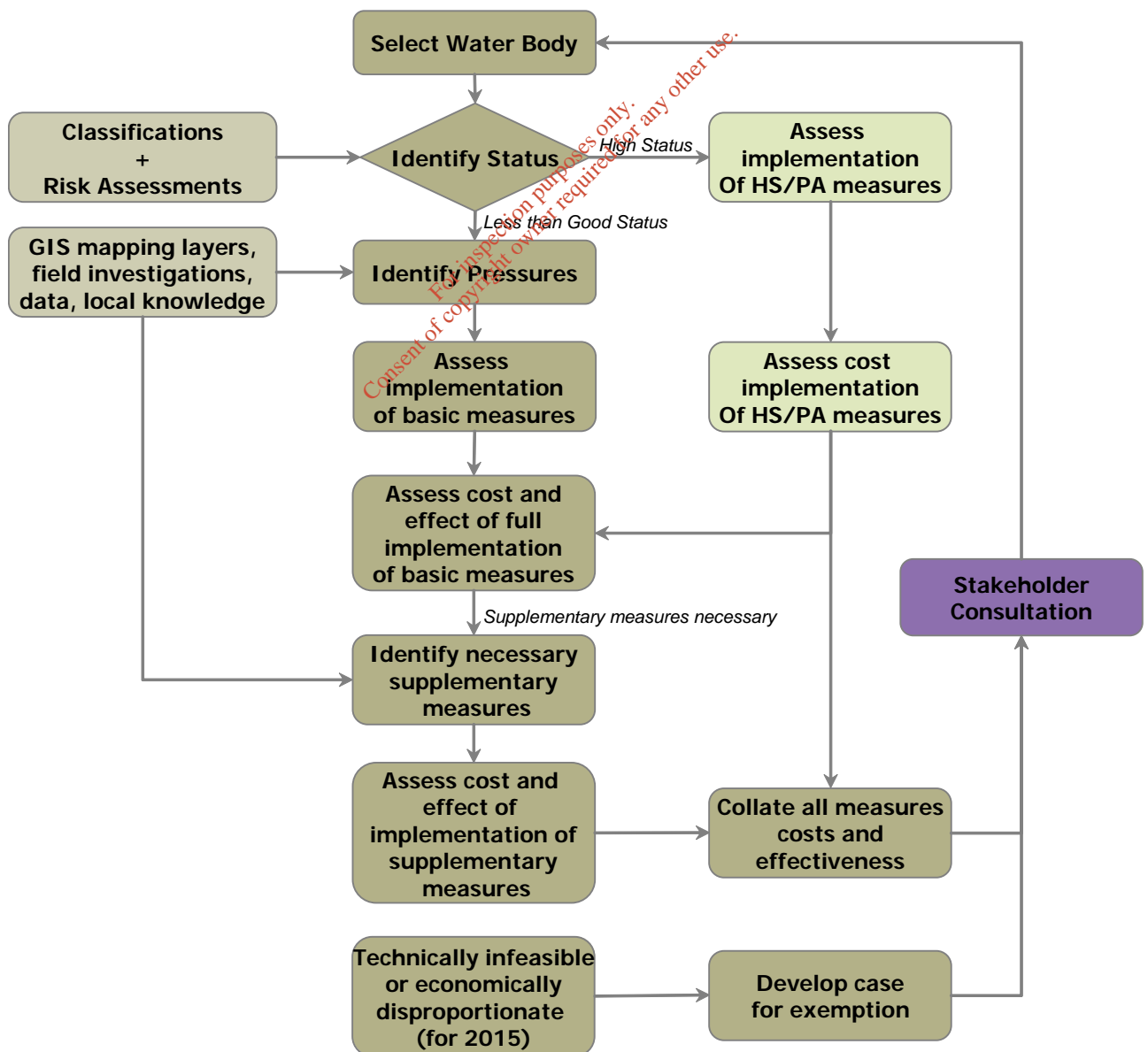
A specific programme of measures is required for each of the 488 water bodies in the Eastern River Basin District. This is an enormous task made more complex by the number of waters, the differences in the pressures affecting them and the interrelationships between waters throughout each catchment.

In the Eastern River Basin District the philosophy of basin management has been rigorously adopted. We have grouped surface waters into catchments and sub catchments where the waters have similar characteristics and pressures. Estuaries, coastal and groundwaters are treated as individual units as the interrelationships with other waters are not as strong.

For each sub-catchment or water body a comprehensive process has been followed which reflects the overall structure of the Directive; understanding the pressures affecting the waters, evaluating their relative importance, identifying the measures that will address the specific problems and assessing the cost and effectiveness of each measure. In this way a detailed profile and plan for each of our waters has been developed which we offer for detailed discussion and review.

The approach which is being used for measures selection is outlined in Figure 8

Figure 8: Approach for Measures Selection



The ecological objectives of waters that are artificial or which have been physically modified are different from the natural condition, but the process of measures selection outlined in the figure remains unchanged, so that all of our waters are treated in a coherent way.

It should be recognized that this approach to management of our waters has not been attempted before in Ireland and that the scale of the work is immense. In addition, there are important items of information and data that are not yet available and so this Draft Plan is necessarily based on the available information and, where needed, expert judgment.

The Eastern River Basin District has developed a River Basin Management System (RBMS) to help facilitate the process of selecting measures. The RBMS is an information management system which serves a variety of purposes including facilitating a structured approach to the selection of measures. It leads the user through a series of steps culminating in an implementation plan for the measures. All available data and information describing the waters and pressures in the District together with potential measures are available within the system. The user is required to undertake the sequence of tasks, shown in Table 16, for each sub-catchment or water body:

Table 16: River Basin Management System Tasks

Task	Purpose	Data Sets Available	Output
1. Monitoring Data	Import and analysis of monitoring data from local authorities and EPA	Surveillance, operational and investigative data sets	Up to date information available for view and analysis
2. Updated Risk Assessment	Examine available monitoring and survey data, compare them to allowable limits and ascertain what problems (risks) occur in each sub-catchment or water body	2004 Characterisation risk assessment. Monitoring data. GIS with all point and diffuse pollutant sources, land use, etc. EPA Status Classification. Local knowledge.	Location and extent of risks to meeting the requirements of the Water Framework Directive.
3. Pressure Identification	To identify which pressures are causing the risks and focus on the key pressures in each sub-catchment or water body	2004 Characterisation risk assessment. GIS data sets. Updated risk assessment. Local knowledge.	Identification and ranking of unique set of pressures affecting that sub-catchment or water body
4. Measures Selection	Selection of different potential sets of measures to address the pressures in each sub-catchment and water body	Updated risk assessment, GIS data sets, capital cost budgets, local knowledge; basic measures, possible supplementary measures.	Alternative sets of measures with full costs and effective estimates
5. Actions	Definition of an implementation plan for the selected programme of measures	The preferred programme of measures; resource availability.	WFD Implementation plan

The RBMS offers a number of key benefits:

- Imposing a consistent process for each water body;
- Providing a facility to record the assumptions and decisions that have been made for each water body;
- Transparency of the decision making process (which is important for stakeholder involvement);
- Providing a platform (and requirement) for estimates of costs and effectiveness of individual measures; and
- A mapping environment to enable users to readily examine pressures, land uses and monitoring data, all in any water body or catchment of the Eastern River Basin District.

The RBMS will also be used to report the measures for all River Basin Districts to Europe in 2009 when it has been integrated into the EPA's EDEN data suite.

Question 6: Do you agree that the catchment specific approach to measures is appropriate?

9 Proposed Measures

The measures that are proposed have been selected jointly by the Eastern River Basin District project and the constituent local authorities. Descriptions of each individual water body or sub-catchment, the pressures affecting it and the proposed measures are provided in a series of separate, more detailed, electronic documents on CD included with this Draft Plan, and can also be downloaded from the Eastern River Basin District website www.erbd.ie.

The initial selections were reviewed internally by different groups within the local authorities, and then by the Technical and Advisory Councils prior to the publication of the Draft Plan. The process of engagement has begun – now it is your turn to review our thoughts.

A greater level of detail together with the data and assumptions used, on a water body by water body basis, can be seen in the River Basin Management System. This can be viewed in each local authority by interested stakeholders. The RBMS will also be an integral part of the stakeholder consultation which will occur in the first half of 2009 so that interested parties can look in detail at individual water bodies and sub catchments and the process that was adopted.

The recommended programme of measures includes full implementation of Basic Measures and also implementation of specific supplementary measures where necessary. A full list of basic measures can be seen in Section 7 whilst the supplementary measures chosen for each sub-catchment or water body in the Eastern District can be read in Annex B.

The matrix below presents a summary of the measures that are recommended to be applied in each water body or sub catchment grouped by the source of pressure, for example wastewater treatment plants or abstractions. In this way we are presenting a unique combination of measures that address the unique set of pressures that affect each sub catchment or water body. The first four tables present the basic measures required under existing legislation, whilst the following four present the supplementary measures (see Section 7 for more information on measures). Maps 22 – 24 show the sub-catchments and water bodies labelled. Table 19 displays the groundwater bodies representing the number codes indicated on Map 24. The most frequently selected measures, by source, can be seen in Annex A.

Estimates of cost and effectiveness have been developed for the programme of measures for each sub-catchment or water body for the period 2009 – 2015 and these are available in the river basin management system. At this stage the costs are approximate, sometimes based on unit values or capital costs for works already planned. All of the assumptions that have been used in the process of measures selection have been recorded and are also available for review in the RBMS. If more accurate information is provided by external sources during the consultation process than this can readily be incorporated into the Final Plan, and the cost calculations revised accordingly.

Question 7: Do you think that the proposed measures will achieve good ecological status?

It is recommended that a precautionary approach is adopted whereby some of the measures selected are implemented by pilot studies accompanied by intensive monitoring and by modelling. It is sensible that measures are not widely imposed before full confidence in their effectiveness and appropriateness is gained through these preliminary activities.

If adopted, this approach would cause an element of delay in implementation of some measures and it is partially for this reason that the Draft Plan identifies some water bodies which are not expected to achieve Good Status by 2015. However, the vast majority are expected to attain Good Status in the subsequent planning cycles when the measures have been fully tested and evaluated.

Question 8: Do you agree that pilot studies and careful analysis are a necessary precursor to widespread implementation of measures?

Table 17: Recommended Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Forestry	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Rivers											
Athboy	*	*****	**	*		*	*		*	*****	*****
Avoca	*	*****	**	**		*	*		**	*****	*****
Ballyboghil	*	***	**	*	*	*	*		*	*****	*****
Baltray	*	***	**	***		*	*		*	**	***
Balytunny	*	**	*	*		*			*	*	**
Blackwater North	*	*****	***	*	*	**	*		**	*****	*****
Blackwater South	*	*****	**	*		*	*		*	*****	*****
Boyne Lower	*	*****	**	**		*	*		**	*****	*****
Boyne Upper	*	*****	**	*		*	*		*	*****	*****
Broadmeadow	*	*****	**	**	*	*	*		**	*****	*****
Cammock	*	**	***	**	*	*	*		***	*****	*****
Dargle	*	***	***	**	*	*	*		*	*****	*****
Deel	*	*****	**	*		*	*		*	***	*****
Delvin	*	***	**	*		*	*		*	*****	*****
Devlin (Mattock)	*	*****	**	*		*	*		*	**	****
Dodder	*	***	***	**	*	*	*		**	*****	*****
Donabate	*	**	**	*		*	*		*	*****	****
Kilmurry	*	**	**	**		*			*	**	***
Liffey	*	*****	***	**	*	**	*		***	*****	*****
Lusk	*	***	**	*		*			*	**	***
Mosney	*	***	**	*		*			*	**	***
Nanny	*	*****	**	*		*	*		**	*****	*****
Newcastle	*	***	**	*		*	*		*	*****	*****
Potters	*	***	**	*		*	*		*	**	***
Rathnew	*	***	**	*		*	*		*	*****	****
Ryewater	*	*****	**	*		*	***		*****	***	*****
Santry Mayne Sluice	*	**	***	**	*	*	*		*	*****	*****
Shanganagh	*	**	***	*	*	*	*		*	*****	*****
Stonyford	*	*****	**	*		*	*		*	*****	*****
Templeraíney	*	**	*	*		*	*		*	**	**
Tolka	*	*****	***	***	*	**	*		**	*****	*****
Vartry	*	***	**	*		*	*		*	*****	****
Rivers Total	**	*****	*****	*****	*	***	***		*****	*****	*****

Key
 * - Low Investment/Cost
 **

 ***** - High Investment/Cost

Table 17: Recommended Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Forestry	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Lakes											
Acurry (Lough)	**	**	**	**			**				***
Annagh Lough or White Lough	**		**	**	**		**				***
Bane (Lough)	**	***	**				**				***
Ben Lough	**	**	**				**				***
Bray Lower (Lough)	**		**								**
Bray Upper (Lough)	**		**								**
Dan (Lough)	**		**	*	**		**				***
Doo (Lough)	**	**	**				**				***
Drumkeery Lough	**	***	**				**				***
Glass (Lough)	**	***	**				**				***
Glenasmole Reservoirs (068)	*	**	**	**	**		**		*	*	***
Glenasmole Reservoirs (070)	*	**	**	**			**		*	*	***
Glendalough Lower Lake	**		**	**	**		*				***
Glendalough Upper Lake	**		**	**	**		*				***
Leixlip Liffey Reservoir	*	***	**				**			*	***
Lene (Lough)	**	**	**				**				***
Nadreegeal Loughs	***	**	**				**				***
Nahanagan (Lough)	**		**								**
Nahanagan Upper	**		**		**		*				**
Ouler (Lough)	**		**								**
Pollaphuca Reservoir	*	***	**	**	**	**	**		*	*****	*****
Ramor (Lough)	**	***	**	**		**	**		**	*****	*****
Redbog	***	**	**				**				***
Tay (Lough)	**		**	**	**		*				***
Upper Lough Skeagh	**	***	**	**			**				***
Varty Reservoir	*	**	**	**						*	***
Lakes Total	*****	*****	*****	***	***	**	***		**	*****	*****

Table 17: Recommended Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Forestry	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Estuaries											
Avoca Estuary	**		**	**				*	*	*****	*****
Boyne Estuary		**	*	**						****	****
Broad Lough	**	***	**	*				*			****
Broadmeadow Water		***	*	**					*	*****	*****
Dargle Estuary	**		*	*							***
Kilcoole Marsh	**	***	**	*				*			***
Liffey Estuary Lower				**					*	*****	*****
Liffey Estuary Upper	**		*	**		**			*		***
Mayne Estuary	**		**	*				*			***
Nanny Estuary	**	***	**	*		**		*			***
North Bull Island	***		*	**							***
Rogerstown Estuary	**	**	**	**		**		*		*	***
Tolka Estuary	**		*	**					*		***
Estuaries Total	****	****	**	***		*		*	**	*****	*****
Coastal											
Boyne Estuary Plume Zone			**	*				*			***
Dublin Bay			***	***					***	*****	*****
Irish Sea Dublin (HA 09)			**	*				*			***
Malahide Bay			**	**				*		***	***
Northwestern Irish Sea (HA 08)			**	**				*	*	*****	*****
Rockabill			**	*				*			***
Southwestern Irish Sea - Brittas Bay (HA 10)			**	*		**		*	*		***
Southwestern Irish Sea - Killiney Bay (HA10)			***	**		*		*	**	*****	*****
Coastal Total			***	****		**		*	***	*****	*****

Key
 * - Low Investment/Cost
 **

 **** - High Investment/Cost

Table 17: Recommended Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Forestry	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Groundwater											
Aleckafin (Contaminated Land)	*	*	*	*		*	*		*	*	*
Arklow Urban	*	*	*	*	*	*	*		*	*	*
Ashbourne Urban Nth	*	*	*	*	*	*	*		*	*	*
Ashbourne Urban Sth	*	*	*	*	*		*		*	*	*
Ashford Sand & Gravel	*	*	*	*			*		*	*	*
Athboy (001)	*	*	*	**	*	*	*		*	*	**
Bailieborough	*	*	*	**	*	*	*		*	*	**
Balbriggan	*	*	*	*	*		*		*	*	*
Balbriggan Urban	*	*	*	*	*		*		*	*	*
Ballany Sand & Gravel	*	*	*	*			*		*	*	*
Ballymore Eustace Sand & Gravel	*	*	*	*		*	*		*	*	*
Balrothery	*	*	*	*	*		*		*	*	*
Basketstown Landfill	*	*	*	*		*	*		*	*	*
Bettystown	*	*	*	*	*	*	*		*	*	*
Blessington Sand & Gravel	*	*	*	*		*	*		*	*	*
Boyle (Contaminated Land)	*		*	*		*	*		*	*	*
Bray Urban	*	*	*	*	*	*	*		*	*	*
Castlekeeran Sand & Gravel	*	*	*	*	*		*		*	*	*
Curragh Sand & Gravel	*	*	*	*	*	*	*		*	*	*
Donore	*	*	*	*	*	*	*		*	*	*
Drogheda	*	*	*	*	*		*		*	*	*
Drogheda Urban	*	*	*	*	*	*	*		*	*	*
Drogheda Landfill	*	*	*	*		*	*		*	*	*
Dublin	*	*	*	*	*	*	*		*	*	*
Dublin Urban	*	*	*	**	*	*	*		*	**	**
Duleek	*	*	*	*	*	*	*		*	*	*
Dunshaughlin	*	*	*	*	*		*		*	*	*
Enniskerry Sand & Gravel	*	*	*	*		*	*		*	*	*
Fassaroe Landfill	*	*	*	*		*	*		*	*	*
Gormanstown Sand & Gravel	*	*	*	*			*		*	*	*
Greystones Urban	*	*	*	*	*		*		*	*	*
Hill of Tara	*	*	*	*	*		*		*	*	*
Hynestown	*	*	*	*	*		*		*	*	*
Kilcoole Sand & Gravel	*	*	*	*			*		*	*	*
Kilcullen	*	*	*	*	*	*	*		*	*	*
Killyconny Bog (Cloghbally)	*	*	*	*	*	*	*		*	*	*
Kilrathmurry Sand & Gravel	*	*	*	*			*		*	*	*
Longwood	*	*	*	*	*		*		*	*	*
Lough Lene	*	*	*	*	*	*	*		*	*	*
Lusk-Bog of the Ring	*	*	*	*	*	*	*		*	*	*
Lusk-East	*	*	*	*	*		*		*	*	*
Lusk-West	*	*	*	*	*		*		*	*	*
Mount Hevey Bog	*	*	*	*	*		*		*	*	*

Table 17: Recommended Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Forestry	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Moynalty	*	*	*	*	*		*		*	*	*
Moynalvey	*	*	*	*	*		*		*	*	*
Naas	*	*	*	*	*		*		*	*	*
Naas Bedrock Nth Urban	*	*	*	*			*		*	*	*
Naas Bedrock Sth Urban	*	*	*	*	*	*	*		*	*	*
Naas (Contaminated Land)	*	*	*	*		*	*		*	*	*
Naas SG Urban	*	*	*	*			*		*	*	*
Navan Nth Urban	*	*	*	*	*		*		*	*	*
Navan Orebody	*	*	*	*	*	*	*		*	*	*
Navan Orebody 2	*	*	*	*			*		*	*	*
Navan Sth Urban	*	*	*	*	*	*	*		*	*	*
Navan Tailings	*	*	*	*	*		*		*	*	*
Newbridge Urban	*	*	*	*		*	*		*	*	*
Newtown Lough	*	*	*	*			*		*	*	*
Old Kilcullen Sand & Gravel	*	*	*	*			*		*	*	*
Raheenmore Bog	*	*	*	*			*		*	*	*
Realtage	*	*	*	*		*	*		*	*	*
Rush Urban	*	*	*	*	*		*		*	*	*
Rye Water Valley GWDTE	*	*	*	*	*	*	*		*	*	*
Skerries Nth Urban	*	*	*	*			*		*	*	*
Skerries Sth Urban	*	*	*	*	*		*		*	*	*
Swords	*	*	*	*	*		*		*	*	*
Swords Urban	*	*	*	*	*	*	*		*	*	*
Swords (Contaminated Land)	*		*	*		*	*		*	*	*
Tinnakilly (Contaminated Land)	*	*		*	*	*	*			*	*
Trim	*	*	*	**	*	*	*		*	*	**
Trim Urban	*	*	*	*	*	*	*		*	*	*
Walkinstown (Contaminated Land)	*		*	*		*	*		*	*	*
Wicklow Central (Avoca Mine)	*	*	*	*	*	*	*		*	*	*
Wicklow East	*	*	*	*	*	*	*		*	*	*
Wicklow South	*	*	*	*	*	*	*		*	*	*
Wilkinstown	*	*	*	*	*		*		*	*	*
Groundwater Total	*	*	*	***	*	*	*		*	**	***

Key

* - Low Investment/Cost

**

***** - High Investment/Cost

* This indicates the chosen measure benefits both surface and groundwater and the costs have only been applied to surface water (rivers, lakes, transitional and coastal) to avoid double counting.

Table 18: Recommended Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type

Water body	Abstractions	Agricultural Point and Diffuse Sources	Unlicensed Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Rivers																
Athboy	*		**	*	*					*	*		**		*****	*****
Avoca	**		**		*	**	*****	**			**		**	*	*****	*****
Ballyboghil	*				*											*
Baltray	*				*										**	**
Balytunny	*		*		*	*							*		**	**
Blackwater North	**		**	*	*	*				*	*		**	*****	*****	*****
Blackwater South	*		**	*	*	*				*	*		**		*****	*****
Boyne Lower	*	*	**	*	*					*			**		*****	*****
Boyne Upper	*		**	*	*	*	*			*	**		**		*****	*****
Broadmeadow	*	*	**	*	*					*	*		**	*****	*****	*****
Camnock	*				*	***					*			*****	*****	*****
Dargle	*		**		*	**	*	*	*		***		**	*	*****	*****
Deel	**		*		*					*			**		***	***
Delvin	*		*	*	*					*			**		*****	*****
Devlin (Mattock)	*		**		*					*	*		**		***	***
Dodder	***				**	***			**	*	***			*****	*****	*****
Donabate	*				*											*
Kilmurry	*		*		*	*							*		**	**
Liffey	***		**		*	***	*	*	*	*	**		**	*****	*****	*****
Lusk	*				*											*
Mosney	*		*	*	*					*			**		**	**
Nanny	*		**	*	*					*			***		*****	*****
Newcastle	*		*		*	*							*	*****	*****	*****
Potters	*		**		*	*	*						*	*	**	***
Rathnew	*		*		*	*							*		**	**
Ryewater	*		**		*					*	*		**	*****	*****	*****
Santry Mayne Sluice	*				*	**					*			***	*****	*****
Shanganagh	***				**	**					***				*****	*****
Stonyford	*		**		*					*			**		***	***
Templeraíney	*		*		*	*							*	*	**	**
Tolka	*		**		*	**				*	*		**		***	***
Vartry	**		*		*	*	*	*					*	*	*****	*****
Rivers Total	*****	*	*****	**	**	*****	*****	*****	**	**	*****		*****	*****	*****	*****

Table 18: Recommended Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Unlicensed Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Lakes																
Acurry Lough	**					*										**
Annagh Lough or White Lough	*							*		*						*
Bane Lough	**															**
Ben Lough	*					*										**
Bray Lower Lough	*					*			*	*						**
Bray Upper Lough	*									*						**
Dan Lough	*					*										**
Doo Lough	*															*
Drumkeery Lough	**					*			*				**			**
Glass Lough	*					**										**
Glenasmole Reservoirs (068)	**					*			*		*					**
Glenasmole Reservoirs (070)	**					*			*		*					**
Glendalough Lower Lake	*					*		*								**
Glendalough Upper Lake	*							*		*						*
Leixlip Liffey Reservoir	*					*			*		*					**
Lene Lough	**					*										**
Nadreegeal Loughs	**					*			*							**
Nahanagan Lough	*					*					*					*
Nahanagan Upper	*															*
Ouler Lough	*									*						**
Pollaphuca Reservoir	*					*			*		*					*
Ramor Lough	*					*			*				**			**
Tay Lough	*					**		*		*						**
Upper Lough Skeagh	**					*			*				**			**
Varty Reservoir	*					*			*		*					*
Lakes Total	***					***		*	**	**	*		***			***

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Key
 * - Low Investment/Cost
 **

 *****)
 *****)
 *****) - High Investment/Cost

Table 18: Recommended Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Unlicensed Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Estuaries																
Avoca Estuary					*	**			*		**		**	**		***
Boyne Estuary					*	**			*		*			*****	*****	*****
Broad Lough					*	*			*					**	**	***
Broadmeadow Water					*	*			*		*			**	***	***
Dargle Estuary					*						*					*
Liffey Estuary Lower						*			*		*	*		*****	*****	*****
Liffey Estuary Upper						*			*		*	*		*****	*****	*****
Mayne Estuary					*	*			*		**			**	**	***
Nanny Estuary					*										**	**
North Bull Island					*						*			***	**	***
Rogerstown Estuary					*	*					**		**	**	**	***
Tolka Estuary					*	*			*		*			*****	*****	*****
Estuaries Total					*	**			*		**	*	***	*****	*****	*****
Coastal																
Boyne Estuary Plume Zone					*											*
Dublin Bay					*	**	*		*		*	**		***	***	****
Irish Sea Dublin (HA 09)					*										**	**
Malahide Bay					*				*					**	***	***
Northwestern Irish Sea (HA 08)														****	****	****
Rockabill					*											*
Southwestern Irish Sea - Brittas Bay (HA 10)					*	*					**					**
Southwestern Irish Sea - Killiney Bay (HA10)					*	**	*		*		**			****	***	****
Coastal Total					*	**	*		*		**	**		****	****	****

Table 18: Recommended Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Unlicensed Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Groundwater																
Ashford Sand & Gravel													*			*
Athboy (001)													*			*
Ballany Sand & Gravel													*			*
Ballymore Eustace Sand & Gravel													*			*
Bettystown	**			*			*									**
Blessington Sand & Gravel				*			*									*
Drogheda				*			*						*			*
Drogheda Urban				*			*							**	**	**
Dublin Urban													*	*****	*****	*****
Duleek													*			*
Dunshaughlin													*			*
Enniskerry Sand & Gravel				*			*						*			*
Kilcoole Sand & Gravel				*			*									*
Lusk-Bog of the Ring	**			*			*						*			***
Lusk-West				*			*									**
Moynalty				*			*						*			*
Naas													*			*
Navan Orebody													*			*
Newtown Lough													*			*
Old Kilcullen Sand & Gravel													*			*
Rye Water Valley GWDTE				*			*						*			*
Trim				**			**						*			**
Wicklow Central (Avoca Mine)							*									*
Wicklow East													*			*
Wilkinstown				*			**						*			**
Groundwater Total	***			**			**						*		*****	*****

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- Key
 * - Low Investment/Cost
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 **** - High Investment/Cost

* This indicates the chosen measure benefits both surface and groundwater and the costs have only been applied to surface water (rivers, lakes, transitional and coastal) to avoid double counting.



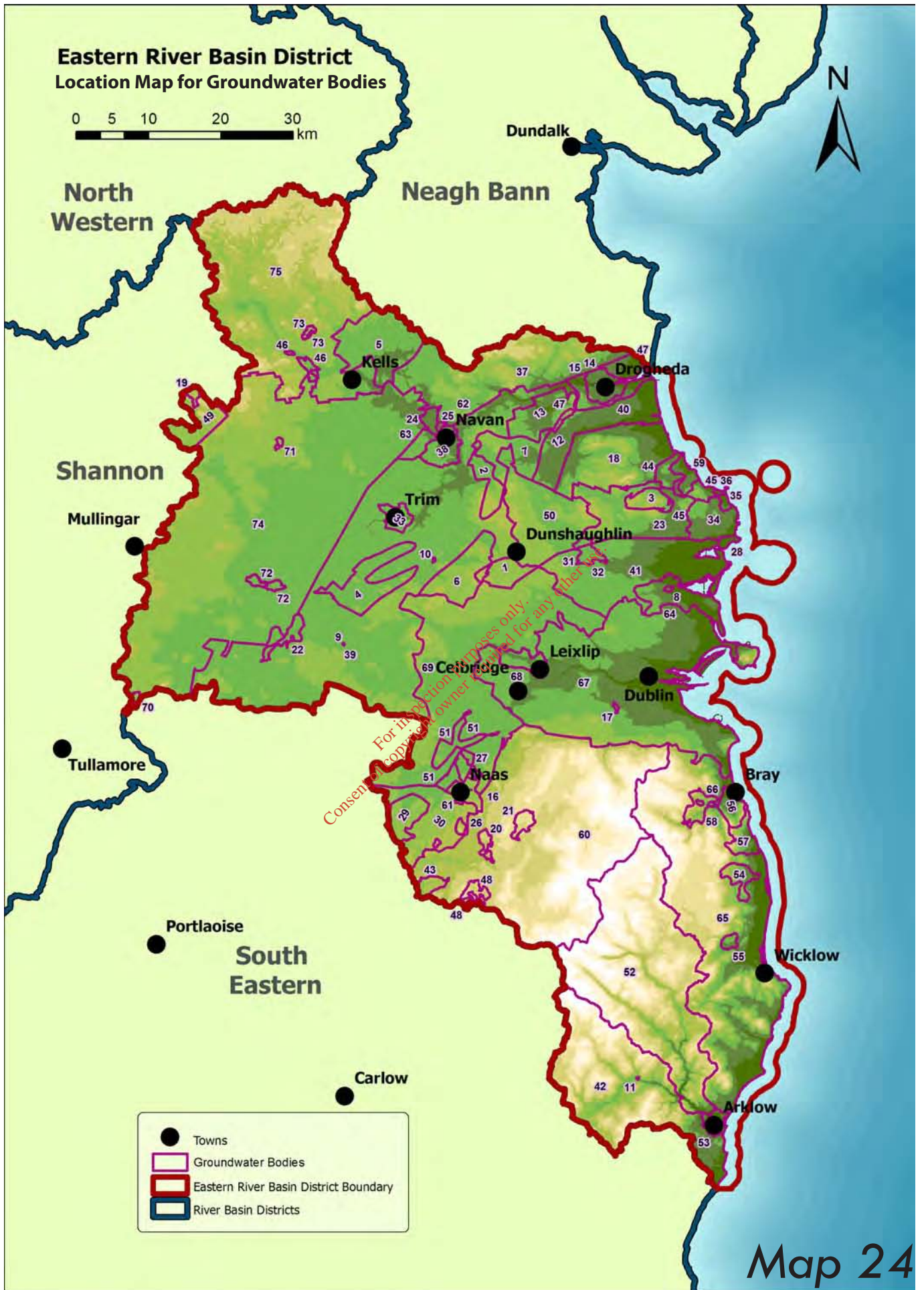


Table 19: Key to Groundwater Bodies Map

ID	Groundwater Body
1	Dunshaughlin
2	Hill of Tara
3	Hynestown
4	Longwood
5	Moynalty
6	Moynalty
7	Realtage
8	Swords_CL
9	Aleckafin_CL
10	Basketstown_LF
11	Tinnakilly_CL
12	Bettystown
13	Donore
14	Boyle_CL
15	Drogheda_LF
16	Naas_CL
17	Walkinstown_CL
18	Duleek
19	Ballany S&G
20	Ballymore Eustace S&G
21	Blessington S&G
22	Kilrathmurry S&G
23	Lusk-Bog of the Ring
24	Navan Orebody 2
25	Navan Tailings
26	Naas_SG Urban
27	Naas Bedrock Nth Urban
28	Rush Urban
29	Newbridge Urban
30	Curragh S&G
31	Ashbourne Urban Nth
32	Ashbourne Urban Sth
33	Trim Urban
34	Lusk-East
35	Skerries Sth Urban
36	Skerries Nth Urban
37	Wilkinstown
38	Navan Sth Urban
39	Trim
40	Drogheda Urban

ID	Groundwater Body
41	Swords
42	Wicklow South
43	Old Kilcullen S&G
44	Balbriggan
45	Balrothery
46	Castlekeeran S&G
47	Drogheda
48	Gormanstown S&G
49	Lough Lene
50	Lusk-West
51	Naas
52	Wicklow Central (Avoca Mine)
53	Arklow_Urban
54	Kilcoole S&G
55	Ashford S&G
56	Bray Urban
57	Greystones Urban
58	Enniskerry S&G
59	Balbriggan Urban
60	Kilcullen
61	Naas Bedrock Sth Urban
62	Navan Nth Urban
63	Navan Orebody
64	Swords Urban
65	Wicklow East
66	Fassaroe_LF
67	Dublin Urban
68	Rye Water Valley
69	Dublin
70	Raheenmore Bog
71	Newtown Lough
72	Mount Hevey Bog
73	Killyconny Bog (Cloghbally)
74	Athboy
75	Bailieborough
S&G	Sand & Gravel
CL	Contaminated Land
LF	Landfill

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10 Implementation of Measures

10.1 Introduction

The total cost of the proposed measures for the whole Eastern River Basin District will be very significant.

The issue of funding and budgets is a matter for government and a judgment about these issues is not within this Draft Plan. If Good Status is to be achieved in all waters by 2015 as soon as possible (shown in detail in Section 9), then the measures listed in Section 7 and Section 9 will have to be invested at the appropriate time in the initial cycle up to 2015.

Should budget constraints and available human resources dictate a slower release of funds, then the recommended strategy would be to focus on delivering the most cost effective approach to achieving Good Status in as many waters as possible. A possible alternative Programme of Measures is shown below (and described in more detail in the series of water body documents available from the Eastern River Basin District website www.erbd.ie), which is based on implementing the most effective measures first, in some cases with additional specific supplementary measures to enhance the benefits.

Under this programme, those measures not implemented in the first cycle will be addressed in subsequent cycles. In this alternative it is still anticipated that the vast majority of waters will achieve Good Status, albeit at a lower cost. This can be seen in the matrices below where some measures are identified as not being implemented before 2015. This approach reflects the difference in approach in EU Directives; some, such as the Nitrates and Urban Wastewater Treatment Directive are very detailed and prescriptive in their requirements; others, including the Water Framework Directive are goal orientated and do not define how the objective should be attained.

If funding arrangements make it necessary to implement the measures over an even more extended time period, then Good Status would inevitably be attained somewhat later. In these circumstances the order of implementation of measures will have a very significant effect on the short term success of the programme.

If upstream pressures are not addressed, then Good Status will not be achieved in the lower reaches of the rivers and estuaries. This would not provide an excuse to ignore pressures lower down the catchment, but such work would not necessarily result in satisfactory ecology. Good Status would only develop as the impacts from upstream sources are also reduced.

Similarly, if rural pressures are addressed without consideration of which areas they impact the most, then the best result will not be achieved in the short term. It would be more beneficial to address the various diffuse pressures (forestry, septic tanks, agriculture) in areas where their impact on waters is the most severe.

Table 20: Alternative Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Rivers										
Athboy		****						*	***	*****
Avoca		*****						**		*****
Ballyboghil		***						*	*****	*****
Baltray		***				*		*		***
Balytunny		**						*		**
Blackwater North		*****						*	***	*****
Blackwater South		***						*	**	***
Boyne Lower		*****						**	*****	*****
Boyne Upper		***	*					*		***
Broadmeadow		****						**	*****	*****
Cammock		**		**	**			****		****
Dargle		***						*	*	****
Deel		***	*					*	*	***
Delvin		***						*	*****	*****
Devlin (Mattock)		****		*		*		*		****
Dodder		***		**	**			***		****
Donabate		**						*	*****	*****
Kilmurry		**						*		**
Liffey		****		**	**			***	****	*****
Lusk		***						*	*****	*****
Mosney		***						*		***
Nanny		****						**	***	****
Newcastle		***						*		***
Potters		****						*		****
Rathnew		***						*		***
Ryewater		****						*	***	****
Santry Mayne Sluice		**						**	***	***
Shanganagh			**					*		***
Stonyford		***						*	*	***
Templrainey		***								***
Tolka		****						*	*****	*****
Vartry		***						*		***
Rivers Total		*****	***	***	***	*		*****	*****	*****

Key
 * - Low Investment/Cost
 **

 **** - High Investment/Cost

Table 20: Alternative Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Lakes										
Acurry (Lough)		*								*
Bane (Lough)	*									*
Bray Lower (Lough)										**
Drumkeery Lough	*	***								***
Glenasmole Reservoirs (068)		**						*		**
Glenasmole Reservoirs (070)		**						*		**
Glendalough Upper Lake										**
Leixlip Liffey Reservoir										**
Lene (Lough)	*									*
Nadreegeal Loughs	*	**								***
Nahanagan (Lough)										**
Pollaphuca Reservoir		***						*	*****	*****
Ramor (Lough)		***			**			**	*****	*****
Tay (Lough)										**
Upper Lough Skeagh		***								***
Varty Reservoir										**
Lakes Total	**	*****			**			**	*****	*****

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Table 20: Alternative Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Estuaries										
Avoca Estuary							*	*	*****	*****
Boyne Estuary									****	****
Broad Lough										**
Broadmeadow Water								*	*****	*****
Liffey Estuary Lower								*	*****	*****
Liffey Estuary Upper								*		**
Mayne Estuary										**
North Bull Island										**
Rogerstown Estuary										**
Tolka Estuary								*		**
Estuaries Total							*	**	*****	*****
Coastal										
Boyne Estuary Plume Zone										*
Dublin Bay			***	***				***	*****	*****
Malahide Bay									****	****
Northwestern Irish Sea (HA 08)								*	*****	*****
Southwestern Irish Sea - Brittas Bay (HA 10)			*				*	*		**
Southwestern Irish Sea - Killiney Bay (HA10)			**	*	*		*	**	*****	*****
Coastal Total			***	***	*		*	***	*****	*****

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Key
 * - Low Investment/Cost
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 **** - High Investment/Cost

Table 20: Alternative Programme of Measures: BASIC MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources	Planning, Development and other sources	Dangerous Substances	Industrial Sources	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Wastewater Treatment Plants	Indicative Total
Groundwater										
Ashford Sand & Gravel		*								*
Athboy (001)		*								*
Ballany Sand & Gravel		*								*
Ballymore Eustace Sand & Gravel		*								*
Drogheda		*								*
Drogheda Urban		*			*			*		*
Dublin Urban		*			*			**		**
Duleek		*								*
Dunshaughlin		*								*
Enniskerry Sand & Gravel		*								*
Lusk-Bog of the Ring		*								*
Lusk-West		*								*
Moynalty		*								*
Naas		*		*						*
Navan Orebody		*								*
NEWTOWN LOUGH		*								*
Old Kilcullen Sand & Gravel		*								*
Trim		*								*
Wicklow East		*								*
Wilkinstown		*								*
Groundwater Total		*		*	*			**		**

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* This indicates the chosen measure benefits both surface and groundwater and the costs have only been applied to surface water (rivers, lakes, transitional and coastal) to avoid double counting.

Table 21: Alternative Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources Unlicensed	Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Lakes																
Acurry Lough	**					*										**
Annagh Lough or White Lough	*							*		*						*
Bane Lough	**															**
Ben Lough	*					*										**
Bray Lower Lough	*					*			*							*
Bray Upper Lough	*															*
Dan Lough	*					*										**
Doo Lough	*															*
Drumkeery Lough	**								*				**			**
Glass Lough	*					**										**
Glenasmole Reservoirs (068)	**					*			*		*					**
Glenasmole Reservoirs (070)	**					*			*		*					**
Glendalough Lower Lake	*					*		*	*							**
Glendalough Upper Lake	*					*		*	*							*
Leixlip Liffey Reservoir	*					*		*	*		*					**
Lene Lough	**					*										**
Nadreegeal Loughs	**					*		*								**
Nahanagan Lough	*					*					*					*
Nahanagan Upper	*															*
Ouler Lough	*															*
Pollaphuca Reservoir	*					*			*		*					*
Ramor Lough	*								*				**			**
Tay Lough	*					**		*	*							**
Upper Lough Skeagh	**					*			*				**			**
Varty Reservoir	*					*			*		*					*
Lakes Total	***					***		*	**	*	*		***			****

* This indicates the chosen measure benefits both surface and groundwater and the costs have only been applied to surface water (rivers, lakes, transitional and coastal) to avoid double counting.

Table 21: Alternative Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources Unlicensed	Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Estuaries																
Avoca Estuary						**			*		**		**	**		***
Boyne Estuary						**			*		*			**	***	***
Broad Lough						*			*					**	**	***
Broadmeadow Water						*			*		*			**	***	***
Dargle Estuary											*					*
Liffey Estuary Lower						*			*		*	*		**	***	***
Liffey Estuary Upper					*	*			*		*	*		**	***	***
Mayne Estuary					*	*			*		**			**	**	***
Nanny Estuary					*										**	**
North Bull Island					*	*					*			***	**	***
Rogerstown Estuary					*	*					**		**	**	**	***
Tolka Estuary						*			*		*			**	**	**
Estuaries Total					*	**			*		***	*	***	***	***	***
Coastal																
Dublin Bay						**	*		*		*	**		***	***	***
Malahide Bay					*	*								**	***	***
Northwestern Irish Sea (HA 08)					*										*	*
Southwestern Irish Sea - Brittas Bay (HA 10)					*	*					**					**
Southwestern Irish Sea - Killiney Bay (HA10)						*	*		*		**			**	**	***
Coastal Total					*	**	*		*		**	**		***	***	***

Key
 * - Low Investment/Cost
 **

 **** - High Investment/Cost

Table 21: Alternative Programme of Measures: SUPPLEMENTARY MEASURES
Measures to Reduce Impact from Source Type (contd.)

Water body	Abstractions	Agricultural Point and Diffuse Sources Unlicensed	Agricultural Point Sources	Chemical Fertiliser	Planning, Development and other sources	Further Investigation Required	Dangerous Substances	Forestry	To Protect High Status Waters	Manure Fertilisers	Intensive Landuse	Local Authority Licenced Discharges	Onsite Wastewater Treatment Systems	Urban Diffuse Pollution	Wastewater Treatment Plants	Indicative Total
Groundwater																
Ashford Sand & Gravel													*			*
Athboy (001)													*			*
Ballany Sand & Gravel													*			*
Ballymore Eustace Sand & Gravel													*			*
Bettystown	**			*			*									**
Blessington Sand & Gravel				*			*									*
Drogheda				*			*						*			*
Drogheda Urban				*			*							**	**	**
Dublin Urban													*	*****	*****	*****
Duleek													*			*
Dunshaughlin													*			*
Enniskerry Sand & Gravel				*			*						*			*
Kilcoole Sand & Gravel				*			*									*
Lusk-Bog of the Ring	**			*			*						*			***
Lusk-West				*			*									**
Moynalty				*			*						*			*
Naas													*			*
Navan Orebody													*			*
Newtown Lough													*			*
Old Kilcullen Sand & Gravel													*			*
Rye Water Valley GWDE				*			*						*			*
Trim				**			**						*			**
Wicklow Central (Avoca Mine)							*									*
Wicklow East													*			*
Wilkinstown				*			**						*			**
Groundwater Total	***			**			**						*		*****	*****

* This indicates the chosen measure benefits both surface and groundwater and the costs have only been applied to surface water (rivers, lakes, transitional and coastal) to avoid double counting.

10.2 Economic Issues

The Directive requires that the Programmes of Measures selected are cost effective so that improvements are achieved in an economic way. The River Basin Management System has been developed to allow estimates of both cost and effectiveness of individual measures to be recorded and collated. The estimates themselves have evolved based on capital investment programmes already developed by the local authorities and the DEHLG (as part of the National Development Plan and Water Services Investment Programme), past experience of similar measures and expert judgment.

An economics study undertaken on behalf of the DEHLG (completed in November 2008) provides guidance on cost effective analysis. It requires that this analysis is only carried out on supplementary measures (since Basic measures are compulsory by law) and that the analysis is carried out for a 30 year period.

The Directive requires that a cost/benefit analysis evaluation is required to justify any application for an alternative objective for either a time delay or to achieve a lower ecological standard if it is based on economic considerations. The costs and benefits of measures are to be considered in terms of monetary value and social impact. The guidance from the DEHLG on cost benefit analysis is not yet available and so the necessary justification cannot be presented in this Draft Plan

A cost effectiveness analysis has been completed for supplementary measures. Following advice from DEHLG's economics specialists, the Eastern River Basin District undertook pilot studies to compare alternative supplementary measures. Four representative water management units were selected: the Blackwater North, Nanny, Shanganagh and Vartry.

10.3 Cost Effectiveness Analysis

The Blackwater North and Nanny catchments are examples of typical rural areas in the Eastern River Basin District, with agricultural production being the primary water pressure. The Blackwater North is located in the north of the Eastern River Basin District in counties Meath and Cavan; the Nanny catchment is located mainly in the southern part of County Meath. The Shanganagh catchment is a representative example of an urbanised environment in Dun Laoghaire - Rathdown County Council. The Vartry catchment is a rural mountainous region, within County Wicklow; agriculture dominates land use.

For each water management unit, two sets of supplementary measures were identified for comparative analysis. Each set consists of several measures that were selected to deal with the specific pressure in the catchment. Tables 22 and 23 below show the two alternatives and the cost effectiveness for each measure calculated over a 30 year period. This analysis takes account of the discounting of monetary value over time, but also costs associated with operations and maintenance, capital replacement and staff time over the full 30 year period.

The tables show how the cost effective ratios vary markedly for individual measures. This ratio is a measure of the cost (capital, operations, maintenance, staff) over 30 years compared with the benefit in terms of achieving improvements in water status. In terms of the values, a smaller ratio equates to a more cost effective measure. For example, in the first alternative in Table 22, the non capital measures for the Blackwater North, such as restricting cattle access, prove to be the most effective, but capital works for treatment plants less so (by more than one order of magnitude).

However, the measures should be viewed as a set and so the total cost effectiveness ratios should be compared. If all of the measures for the Blackwater North in the Table 22 are compared with Table 23 it can be seen that Alternative 1 offers slightly more cost effective measures, but the difference is small compared with the differences of the individual measures. This is true for three of the four pilot studies; the Nanny shows a difference of a factor of two lending some degree of certainty that Alternative 1 offers the more cost effective set of measures in this case.

However, the underlying fact is that the supplementary measures chosen for both alternatives already include a strong element of expert judgment and so they are generally less expensive than Basic measures. This also results in the variability in cost effectiveness being relatively small.

The information derived from this pilot study has informed the selection of measures in the Eastern River Basin District and allowed us to select both individual and sets of actions for the different types of catchments which offer a cost effective approach to water management. The more cost effective measures have been used widely in similar catchments throughout the Eastern River Basin District, whilst still taking account of pressures in each locality.

Table 22: Alternative 1 – Supplementary Measures

Sub-catchment	Supplementary Measure	Cost Effective Ratio
Blackwater North		
Meath	Enforce Regulations on Septic Systems	0.15
	Upgrade WWTW <2000 PE	0.27
	Upgrade WWTW and Collecting Systems <2000 PE	0.65
	Restrict Cattle Access to rivers - Create Cattle Drinking points	0.01
	Implement Upstream Programmes of Measures	0.00
	Tertiary Treatment	0.81
	TOTAL	1.89
Cavan	Enforce Regulations on Septic Systems	0.001
Shanganagh		
Dun Laoghaire Rathdown	GSDS Compliance - CSOs	5.47
	Investigate and eliminate misconnections	0.49
	Investigate Fats, Oils and Grease Issues	0.03
	River Polishing - Reed Bed	0.01
	TOTAL	5.99
Vartry		
Wicklow	Diffuse Runoff (Urban) - Implement SUDS	0.01
	Inspections and Upgrades	0.01
	Mitigate impact of quarry activities	0.00
	Upgrade WWTW and Collecting Systems <2000 PE	1.98
	TOTAL	2.00
Nanny		
Meath	Tertiary Treatment	1.80
	Enforce Regulations on Septic Systems	0.63
	Upgrade WWTW and Collecting Systems <2000 PE	0.26
	Restrict Cattle Access to rivers - Create Cattle Drinking points	0.03
	TOTAL	2.71

Table 23: Alternative 2 – Supplementary Measures

Sub-catchment	Supplementary Measure	Cost Effective Ratio
Blackwater North		
Meath	Install sewage systems in rural areas with ICW as tertiary treatment	0.53
	Introduce Integrated Constructed Wetlands where practical to treat polluted river discharges	0.11
	Introduce Agricultural Bye Laws though Water Pollution Act 1977 to eliminate animal access to water courses. Enforce new bye law.	0.05
	Farm-Specific Constructed Wetland (Requires Regulatory Site Assessment)	0.29
	Install additional WWTP <PE 2000	0.30
	Digesters for nutrient surplus	0.75
	TOTAL	2.03
Cavan	Provide a grant system for the maintenance and upgrading of septic tanks.	1.82
Shanganagh		
Dun Laoghaire Rathdown	GSDS Compliance & Storm Sewer Separation	6.03
	Site-Specific Riparian Buffer Requirement on Residential Developments	0.54
	Site-Specific Retention Pond for Residential Developments (Requires Regulatory Site Assessment) (per cubic metre capacity)	0.05
	Gullies Management	0.33
	TOTAL	6.96
Vartry		
Wicklow	Create buffer zones and collection systems	0.04
	Provide a grant system for the maintenance and upgrading of septic tanks.	0.19
	Mitigate impact of quarry activities	0.00
	Install 2 additional WWTP <2000 PE & Collecting system	2.37
	TOTAL	2.61
Nanny		
Meath	Introduce Agricultural Bye Laws though Water Pollution Act 1977 to ban animal access to water courses. Enforce new bye law.	0.08
	Install new sewage systems in rural areas with ICW as tertiary treatment	2.57
	Nutrient removal at WWTP >2000PE	1.80
	Install additional WWTP < 2000PE	1.03
	TOTAL	5.40

Question 9: How do you think economics should be taken on board in the Plan?

11 Achieving Good Water Status

The Programme of Measures for each water body or sub-catchment described above will achieve Good Status in the majority of waters in the Eastern River Basin District. However, some exceptions remain and these are described in this section of the Draft Plan. The Directive requires that all waters achieve their objectives (ecological, quantitative and chemical) by 2015. However it recognizes that this will not be possible in all cases.

11.1 Alternative objectives - heavily modified waters and artificial waters

Some surface waters have been substantially changed in character to allow uses such as navigation, water storage, public supply, flood defence and land drainage. To recognise that the benefits from such modifications often need to be retained, these waters are designated as heavily modified or artificial.

Heavily Modified Water Bodies (HMWB) are bodies of water which as a result of physical alterations by human activity are substantially changed in character and cannot, therefore, meet "Good Ecological Status" (GES). In this context physical alterations mean changes to e.g. the size, slope, discharge, form and shape of river bed of a water body.

Artificial Water Bodies (AWB) are surface water bodies which have been created in a location where no water body existed before and which have not been created by the direct physical alteration, movement or realignment of an existing water body.

Heavily modified and artificial waters (shown in Map 25) are expected to achieve "Good Ecological Potential". An interim status has been determined using a combination of water chemistry data, biological data and the UK Technical Advisory Group's (UKTAG) guidance on hydromorphological assessment. Heavily modified water bodies have been assigned a status of Good or Less than Good Potential. Artificial water bodies have been assigned a status of Good, Less than Good or Poor Ecological Potential. The current potential of our HMWB and AWB are shown in Tables 24 and 25.

Good Potential acknowledges that the use of the water has an important economic benefit but requires that whilst the use should be preserved, other conditions of the water must reach their full potential. A Programme of Measures to protect Good Potential and restore Less than Good and Poor Potential water bodies must be created. These can be seen in Section 9.1. Some Artificial and Heavily Modified water bodies may require extended timescales if for reasons on technical infeasibility, disproportionate cost, the natural condition of the water body or a new physical modification, Good Potential can not be achieved by 2015. These are discussed in the following sections for all water bodies.

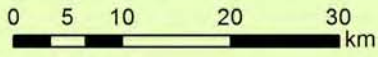
Table 24: Heavily Modified Waters

Water Body	Reason	Current Potential
River Camac	Flood Defences	Less than Good
River Dodder	Flood Defences, multiple weirs, reservoirs	Less than Good
River Liffey	Flood Defences	Good
River Santry	Flood Protection	Good
River Tolka	Flood Defences	Less than Good
Glenasmole Reservoir Lower	Impoundment for drinking water supply	Good
Glenasmole Reservoir Upper	Impoundment for drinking water supply	Good
Golden Falls	Impoundment for drinking water supply	Less than Good
Leixlip Reservoirs	Impoundment for drinking water supply	Less than Good
Lough Nahanagan	Pumped hydro-electric power system	Good
Pollaphuca	Impoundment for drinking water supply	Less than Good
Vartry Reservoir Lower	Impoundment for drinking water supply	Good
Varty Reservoir Upper	Impoundment for drinking water supply	Good
Boyne Estuary	Flood Defences, Navigation, Dredging	Less than Good
Broadmeadow Estuary	Causeway for Dublin-Belfast railway line	Good
Dargle Estuary	Flood Defences	Less than Good
Liffey Estuary Lower	Flood Defences, Port and navigation, Dredging	Good
North Bull Island Lagoon	Flood Defences, Navigation	Good
Tolka Estuary	Flood Defences	Less than Good
Upper Liffey Estuary	Flood Defences, Navigation, Dredging	Less than Good
Dublin Bay	Flood Defences, Navigation, Dredging	Less than Good

Table 25: Artificial Waters

Water Body	Reason	Current Potential
Boyne Navigation	Man-made canal	Good
Grand Canal Basin	Man-made canal	Poor
Grand Canal Edenderry Branch	Man-made canal	Good
Grand Canal Main Line E of Lowtown	Man-made canal	Good
Grand Canal Main Line W of Lowtown	Man-made canal	Good
Grand Canal Naas & Corbally Branch	Man-made canal	Good
Royal Canal Main Line	Man-made canal	Good
Turlough Hill Reservoir	Pumped hydro-electric power system	Good

Map of Heavily Modified and Artificial Water Bodies



Map 25

11.2 Alternative objectives – new modifications or development

Alternative objectives can also be set for waters where it is known that a new modification or development, requiring tailored objectives, will take place during the period of plan. Such development proposals must have over-riding social and economic benefits and new developments must still allow waters to achieve Good Status. Proposals have to be assessed on a case by case basis and have to satisfy a series of tests of sustainability. Options have to be examined, such as alternative locations and different scales or designs, to ensure that all practicable steps are taken to mitigate adverse impacts. In the Eastern River Basin District the following major proposed developments are known:

- Flood defences for Dublin (Dublin City Council);
- Beach Nourishment Project, Laytown (Meath County Council);
- Scotsman Bay (Dun Laoghaire Rathdown County Council);
- Transport 21 (Greater Dublin Area);
- Portmarnock Dune Stabilisation (Fingal County Council);
- Flood Defences for Rogerstown Estuary (Fingal County Council); and
- Bremore Port in coastal Fingal/Meath (Fingal & Meath County Councils).

11.3 Alternative objectives – timescales

We expect to achieve many of the objectives described in Section 6 in full by 2015. Consequently, alternative objectives are proposed only for waters where the combination of basic and supplementary measures will not fully achieve the other two objectives by 2015: mainly restoring Good Status and reducing chemical pollution (in cases where our key water issues are causing problems).

Where it is considered that the objectives can be achieved, but not by 2015, then an explanation and justification is also required. For example, the land acquisition, design, procurement and construction of new treatment works, or extensions to treatment works or collection systems can take many years. Similarly, diffuse pollutants and nutrients in agricultural and forestry lands can take several years to be purged from the soils and aquifers even if their use is eliminated or restricted to acceptable levels.

The overall timescale for waters to achieve Good Status will be dictated by the slowest response to basic and supplementary measures. For example, even if a treatment plant is installed in the first plan cycle, it may take a further cycle for the waters to show improvement in areas with particular types of soil that are also impacted by agricultural activities.

In these cases we have estimated when compliance will be achieved in the Table 26 and Figures 10 to 13. It should be emphasized that the Plan includes all necessary actions to achieve the objective of Good Status – it is just that the effects of these actions will only become evident after several years.

It is important that the Plan is realistic in its targets and so we have tried to identify all waters where recovery is likely to slow. The figures on the next pages show the expected status in 2015, 2021, and 2027.

One of the problems that we face is addressing the extensive diffused pollution in the rural areas in the upper parts of the catchments. There are very many farms and septic tanks which will need to achieve compliance of the various standards and this in turn will require an intensive enforcement effort. Realistically this process will take several years and until the water quality improves in the upstream parts of the catchments, those lower down are unlikely to achieve Good Status. This can be seen in Maps 26 to 33 and Figures 10 to 13 which tend to show improvements in the lower reaches of the rivers and in the estuaries over longer periods of time.

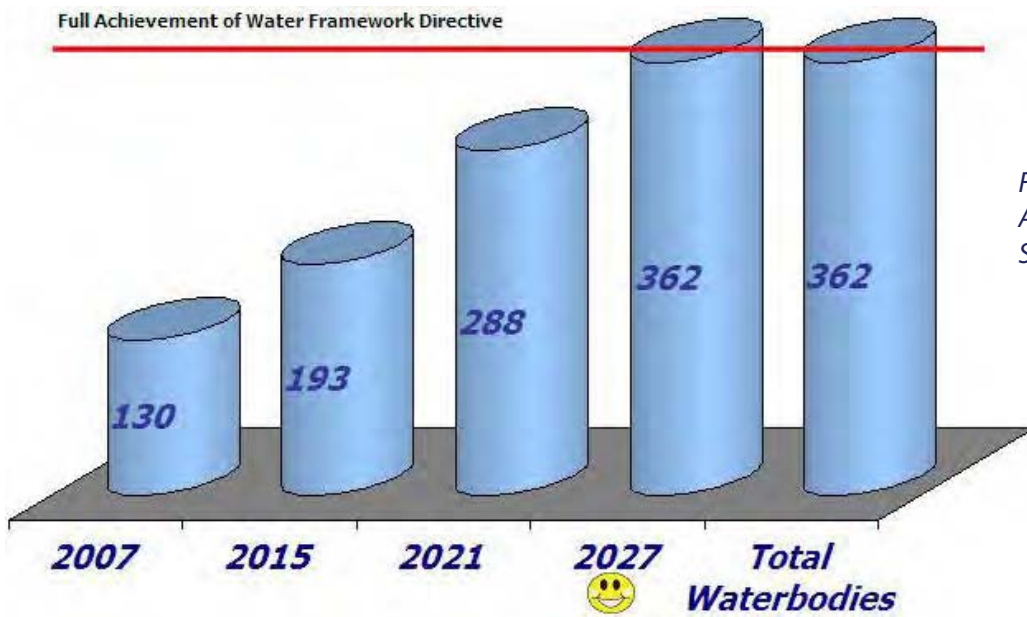


Figure 10: Year of Achievement of Good Status in Rivers and Canals



Figure 11: Year of Achievement of Good Status in Lakes and Reservoirs

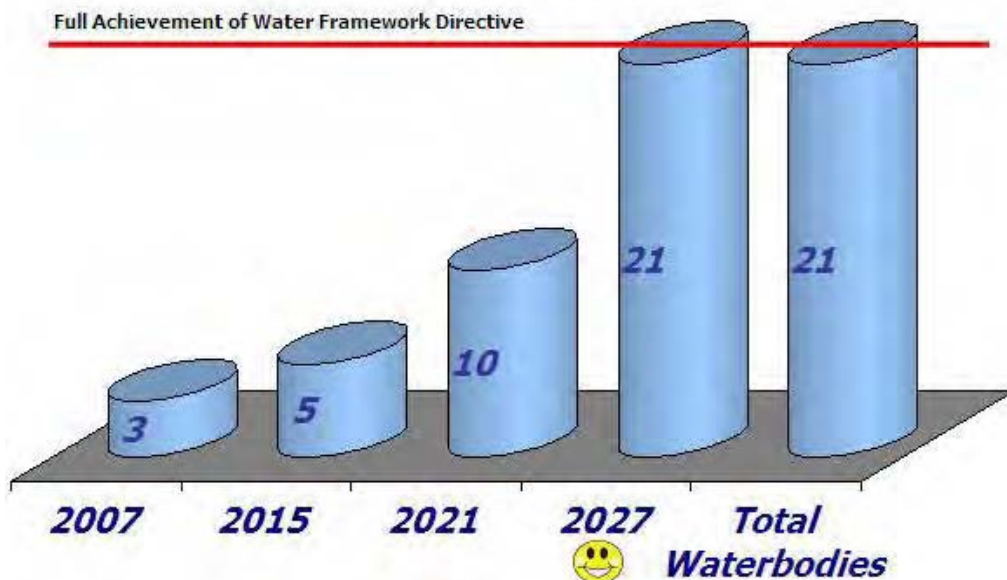


Figure 12: Year of Achievement of Good Status in Estuaries and Coastal

Full Achievement of Water Framework Directive



Figure 13: Year of Achievement of Good Status in Groundwater

Only one groundwater, associated with the Avoca Mine, will require an exemption. The extended timescale has been set to 2027. Avoca Mine represents a special case. A recently completed feasibility study of remediation options (CDM, 2008) suggest that it will be technically difficult and costly to remediate the mine waste within the timeframes stipulated in the Water Framework Directive for achieving Good Status. The Avoca Mine is therefore considered to be a candidate case for setting less stringent objectives, however the objective of Good Status has been set for 2027.

Based on experience and expert judgement and a review of research evidence, we have set out in Table 26 the general reasons for which the timescales for achieving objectives in some waters will have to be extended.

Table 26: Overview of Timescales

Key Issue	2015	2021	2027 or likely LSO cases
Wastewater	Waters where upgrades are in place by 2012	Waters where investigations are in place by 2015	
Industrial discharges	Majority of waters	Waters where investigations are in place by 2015	
Landfills, quarries, mines and contaminated lands	Majority of waters	Majority of waters	Waters at risk from landfill, quarry, mine or contaminated land impacts
Agriculture	water in upstream areas	Waters where investigations are in place by 2015	
Wastewater from unsewered properties	Waters where upgrades are in place by 2012	Waters where investigations are in place by 2015	
Forestry	Areas replanted in first cycle	Areas replanted in second cycle	Areas replanted in third cycle or post 2027
Dangerous substances & chemical pollution	Majority of waters	Waters where investigations are in place by 2015	
Physical modifications	Majority of waters	Waters where remediation schemes are in place by 2015	Waters where investigations are in place by 2015
Abstractions	Majority of waters	Waters where remediation schemes are in place by 2015	Waters where investigations are in place by 2015

The recommended exemptions are listed in Table 27 below. The Alternative Objective column in the table represents the date of achievement of Good Status. Our rivers have been grouped into river sub-catchments (as shown on Map 22). Dates within these groups vary and the latest date for the Alternative Objective for each group is given below.

Table 27: Overview of Exemptions

Waterbody	Waterbody Type	Reason	Alternative Objective	Reason
Dublin Bay (HMWB)	Coastal	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural, septic tank and urban diffuse pollution, upstream point source pollution, future modification - flood defence.
Irish Sea Dublin (HA09)	Coastal	New Physical Modification/ Alteration	2021	Future Modification - Dune Stabilisation
Malahide Bay	Coastal	Technically Infeasible	2021	Upstream diffuse agricultural and septic tank pollution
Northwestern Irish Sea (HA08)	Coastal	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural and septic tank pollution, future modification - port and beach nourishment
Wicklow Central (Avoca Mine)	Groundwater	Technically Infeasible, Disproportionate Cost	2027	Diffuse Mine Pollution
Lough Ramor	Lake	Technically Infeasible	2021	Point sources, diffuse agricultural pollution
Athboy	River	Technically Infeasible	2021	Point source, diffuse agricultural pollution
Avoca River	River	Technically Infeasible	2027	Diffuse Mine Pollution
Balytunny River	River	Technically Infeasible	2021	Diffuse agricultural pollution.
Blackwater North WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution, point source pollution.
Blackwater South WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution.
Boyne Lower WMU	River	Technically Infeasible	2021	Upstream diffuse agricultural, septic tank and landfill pollution.
Boyne Upper	River	Technically Infeasible	2021	Diffuse agricultural and wastewater point source pollution.
Broadmeadow WMU	River	Technically Infeasible and Natural Conditions	2027	Diffuse septic tank, diffuse urban pollution, naturally high level of nutrients in ground.
Cammock WMU (HMWB)	River	Technically Infeasible	2027	Urban Diffuse pollution
Dargle WMU	River	Technically Infeasible	2027	Point source pollution and urban diffuse pollution.
Deel	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution, wastewater point source pollution.
Delvin WMU	River	Technically Infeasible	2021	Septic tank pollution and vulnerable ground conditions
Dodder WMU (HMWB)	River	Technically Infeasible	2027	Urban Diffuse pollution.
Lusk WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution.
Mattock WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution.
Mosney WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution.
Nanny WMU	River	Technically Infeasible and Natural Conditions	2027	Wastewater point source pollution and naturally high level of nutrients in ground.
Newcastle WMU	River	Technically Infeasible	2021	Diffuse agricultural, septic tank pollution and wastewater point source pollution.
Potters WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution.
Rathnew WMU	River	Technically Infeasible	2021	Diffuse agricultural, septic tank pollution and wastewater point source pollution.
Ryewater	River	Technically Infeasible and Natural Conditions	2027	Diffuse agricultural, septic tank pollution and naturally high level of nutrients.
Santry Mayne Sluice WMU	River	Technically Infeasible	2027	Diffuse urban pollution
Shanganagh WMU	River	Technically Infeasible	2021	Wastewater point source pollution.
Stonyford WMU	River	Technically Infeasible	2021	Diffuse agricultural pollution and wastewater point source pollution.
Templerrainy WMU	River	Technically Infeasible	2021	Diffuse agricultural and septic tank pollution.
Tolka River (HMWB)	River	Technically Infeasible	2027	Diffuse agricultural, septic tank pollution and urban diffuse pollution.
Avoca Estuary	Transitional	Technically Infeasible	2027	Upstream diffuse mine pollution

Table 27: Overview of Exemptions (contd.)

Waterbody	Waterbody Type	Reason	Alternative Objective	Reason
Boyne Estuary (HMWB)	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural and septic tank pollution, Future modification - Rail Line
Broad Lough	Transitional	Technically Infeasible	2021	Upstream diffuse agricultural and septic tank pollution.
Broadmeadow Estuary (HMWB)	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural and septic tank pollution. Future Modifications - Flood Defences.
Kilcoole Marsh	Transitional	Technically Infeasible	2021	Upstream diffuse agricultural and septic tank pollution.
Liffey Estuary Lower (HMWB)	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural, septic tank and urban diffuse pollution. Future Modification - Flood Defences.
Liffey Estuary Upper (HMWB)	Transitional	Technically Infeasible	2027	Upstream diffuse agricultural, septic tank and urban diffuse pollution. Future Modification - Flood Defences.
Mayne Estuary	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural, septic tank and urban diffuse pollution. Future Modification - Coastal Protection.
Nanny Estuary	Transitional	Technically Infeasible	2027	Upstream diffuse agricultural, septic tank and urban diffuse pollution. Naturally high concentration of upstream nutrients.
North Bull Island (HMWB)	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream urban diffuse pollution, Future Modifications - Flood Defence.
Rogerstown Estuary	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2021	Upstream diffuse agricultural and septic tank pollution. Future Modification - Flood Defences.
Tolka Estuary (HMWB)	Transitional	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural and septic tank pollution.
Dublin Bay (HMWB)	Coastal	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural, septic tank and urban diffuse pollution, upstream point source pollution, future modification - flood defence.
Irish Sea Dublin (HA09)	Coastal	New Physical Modification/ Alteration	2021	Future Modification - Dune Stabilisation
Malahide Bay	Coastal	Technically Infeasible	2021	Upstream diffuse agricultural and septic tank pollution
Northwestern Irish Sea (HA08)	Coastal	Technically Infeasible, New Physical Modification/ Alteration	2027	Upstream diffuse agricultural and septic tank pollution, future modification - port and beach nourishment

Question 10: Do you think that the exemptions suggested are realistic?

11.4 Plans and Programmes

Article 13(4) of the Water Framework Directive requests a register of any more detailed programmes and management plans for the river basin district dealing with particular sub-basins, sectors, issues or water types, together with a summary of their content. Up to 300 plans and programmes were identified as listed in the tables in Appendix A of this report.

Flood Risk Management Plans

The Report of the Flood Policy Review Group, approved by Government in 2004, set out a new policy on the management of flood risks. This included the preparation of catchment-based Flood Risk Management Plans

(FRMPs) that will set out the long-term strategy and a prioritised set of measures for managing flood risks, both structural and non-structural. The development of such plans is also a requirement of the

'Floods' Directive (2007/60/EC), which came into force in November 2007, with transposition required by November 2009. The Directive requires that the implementation of the Water Framework Directive and the 'Floods' Directive are coordinated, and that certain aspects of their implementation are based on consistent information.

Climate Change

There is a need to take account of the effects of climate change when selecting and implementing measures. We highlight the need to integrate river basin management planning with land use planning, climate change and wider environmental issues – all of which key issues for overall implementation of the Directive.

The Advisory Council received a presentation from a climate change specialist at National University of Ireland in Maynooth and it is clear that the impacts on rainfall, rivers and lakes, due to climate change, could be profound.

In the Eastern River Basin District it is predicted that less rain will fall during the year, but that more intense storms will be experienced. Year on year the conditions will vary significantly and it is not yet clear what conditions should be accommodated.

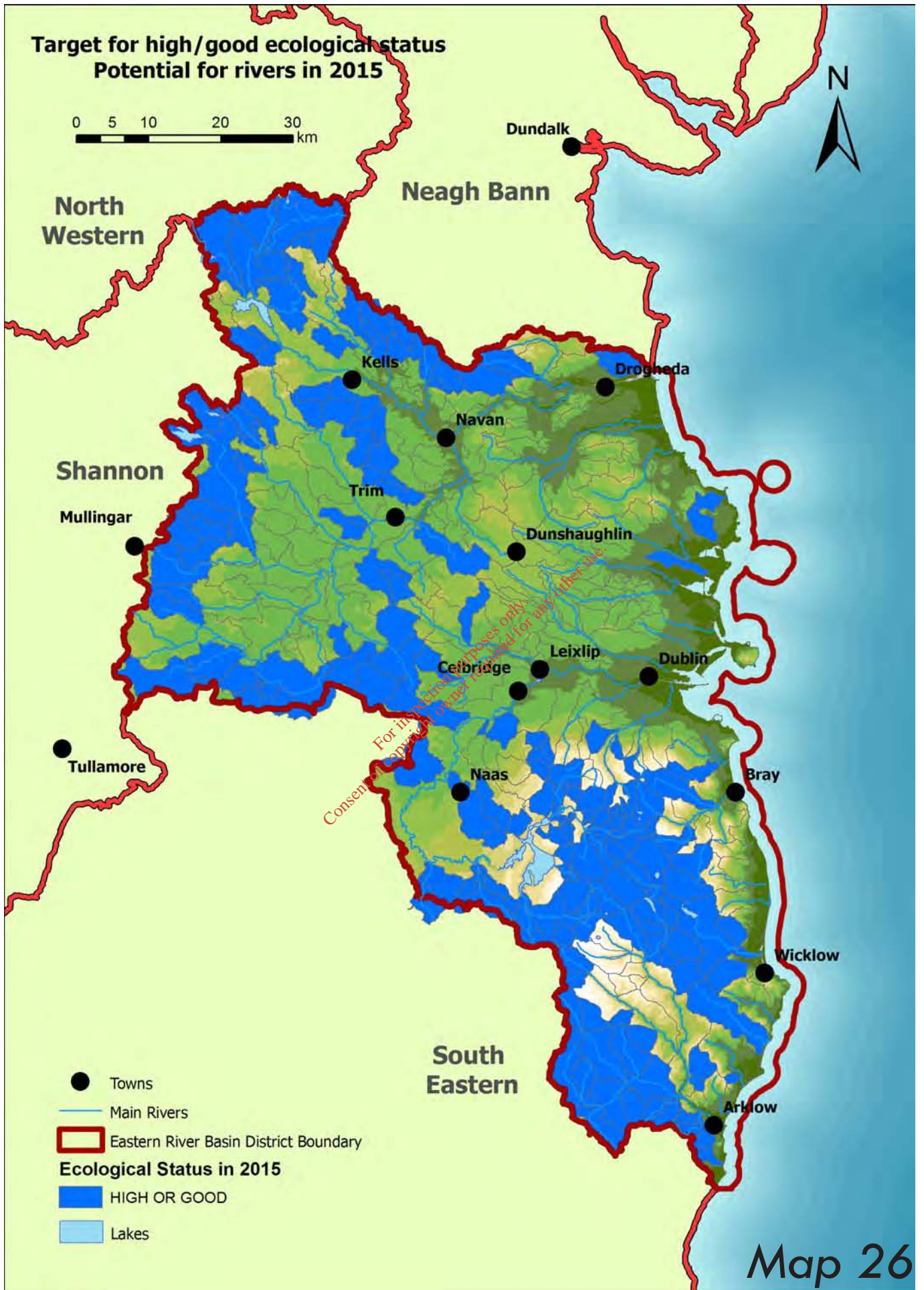
The strategy of this Plan is to deal with the major problems affecting water quality and ecology in the Eastern River Basin District through widespread implementation of existing legislation and supporting supplementary measures. The effect of these measures will be monitored over time so that they can be evaluated. At the same time more climatic data will become available and predictions of the future climate will become more reliable. As knowledge develops the measures can be refined if necessary (in 2015 and 2021) to accommodate the effects of climate change.

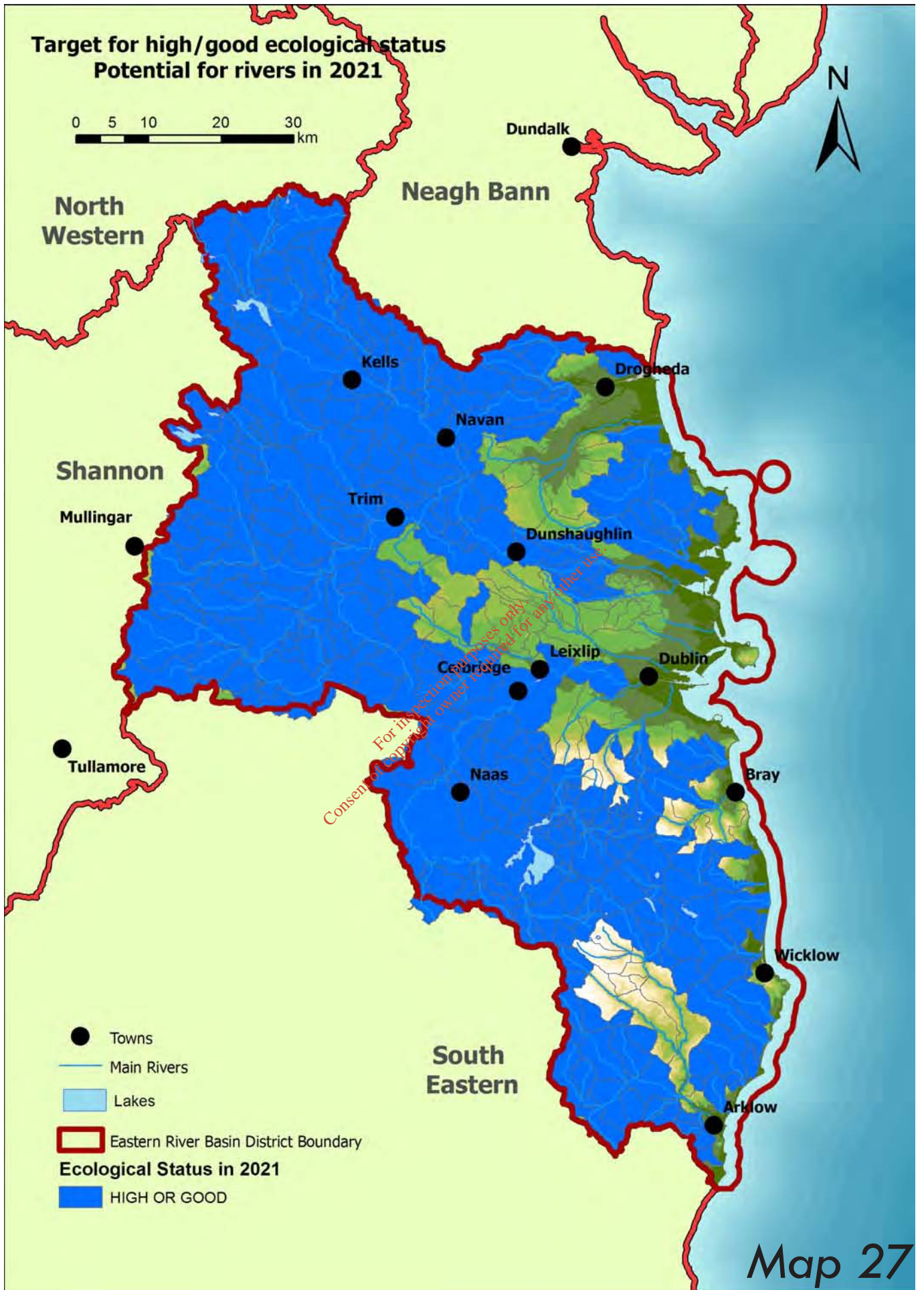
Perhaps the most widespread impacts of climate change will be the changes to habitats and the flow conditions in rivers and lakes. The Eastern River Basin District has been undertaking research work on the effects of abstractions on river and lake ecology by developing an understanding of the relationship between hydrology, flow, depth and habitats for key species. This technique could well provide a valuable basis for developing key measures in relation to climate change.

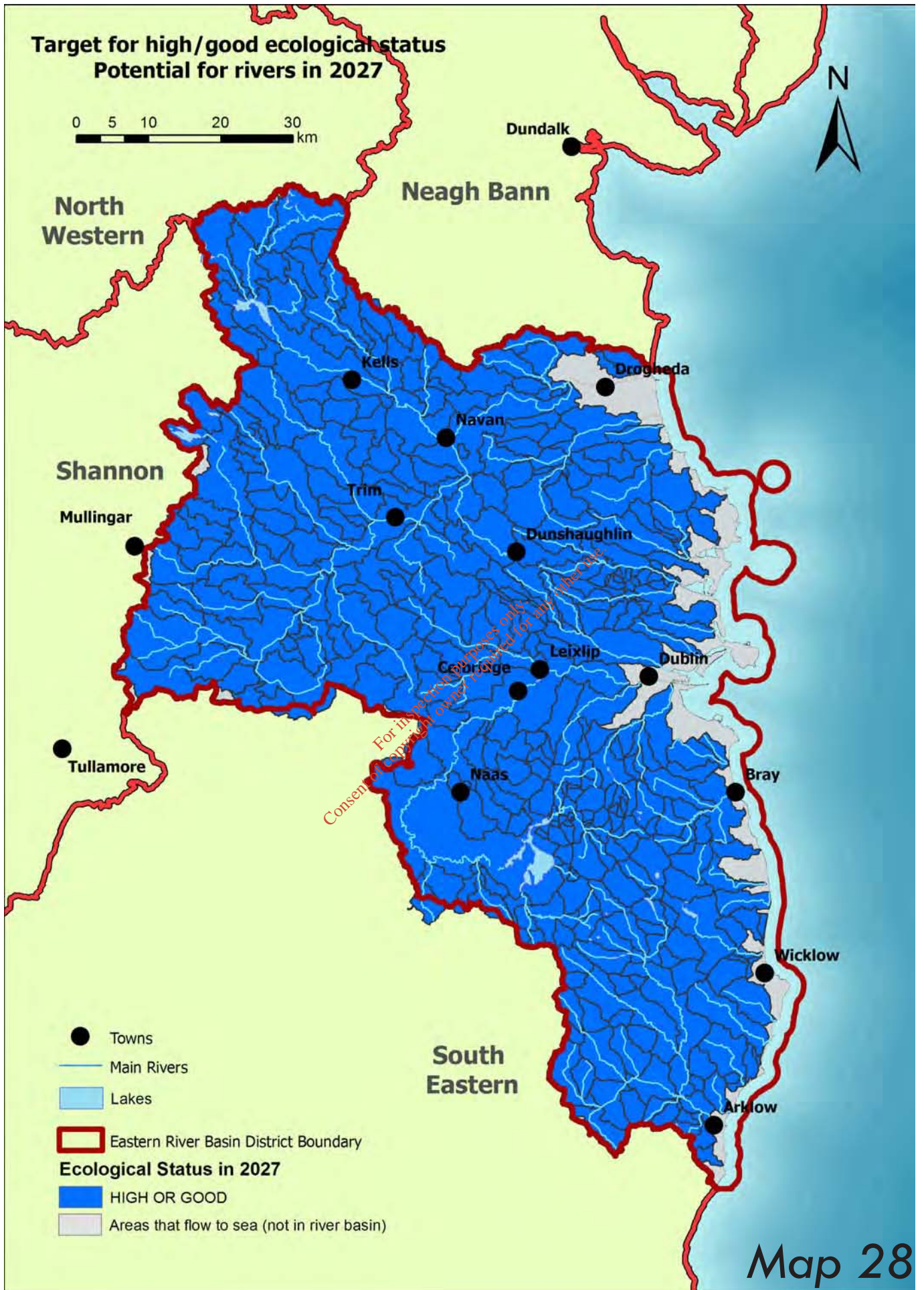
Heavier winter rainstorms may cause more flash flooding, causing an increase in diffuse pollution loads to our waters from soil run-off and raising demand for flood controls. Summer droughts are more likely and there may be a reduction in drinking water supplies. Temperature changes might give invasive alien species a competitive advantage in our waters, thus affecting biodiversity.

The Strategic Environmental Assessment being undertaken will also assess the impacts that the action plan could have on the wider environment including climate.

Question 11: What do you view to be the main issues caused by climate change?

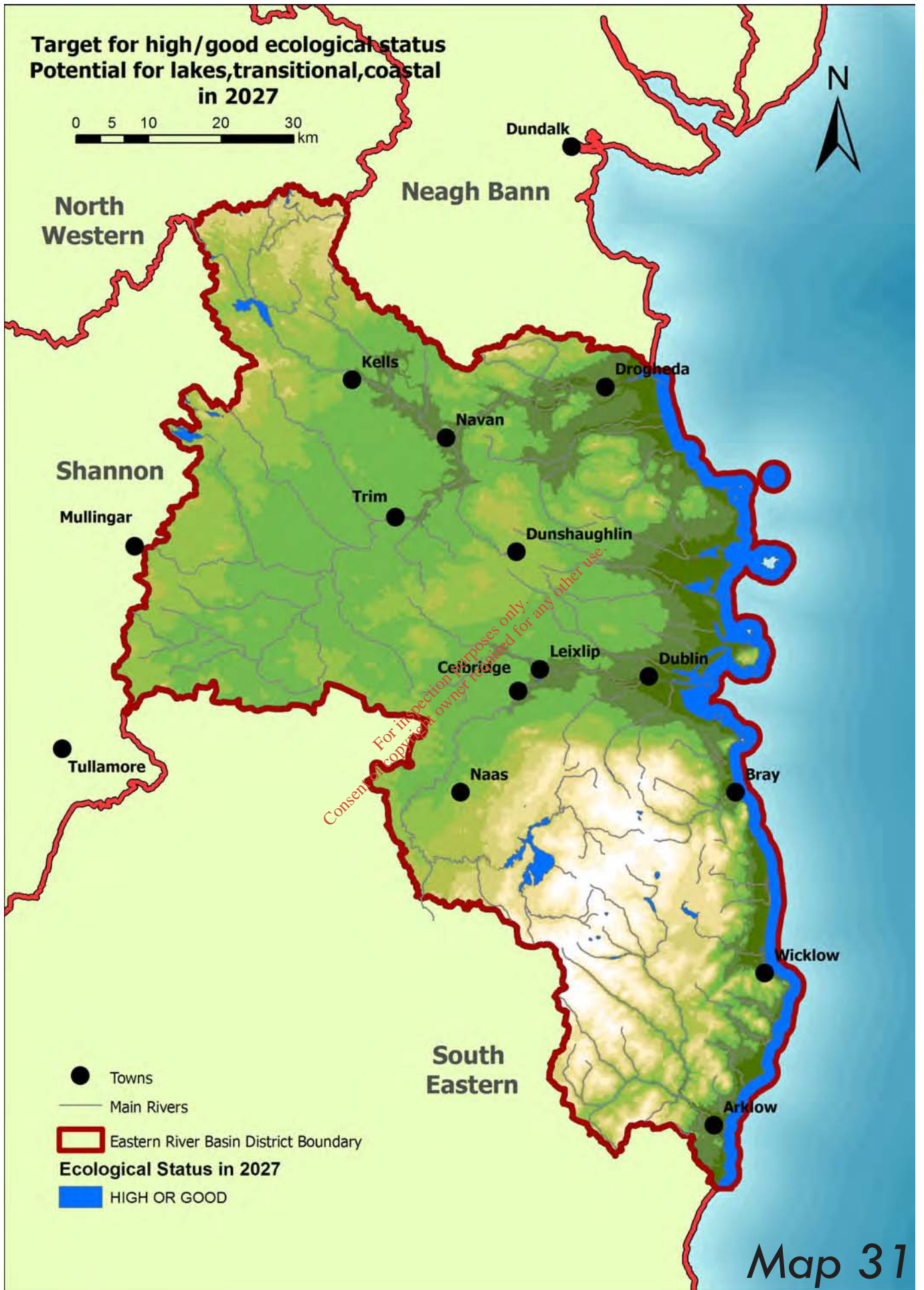


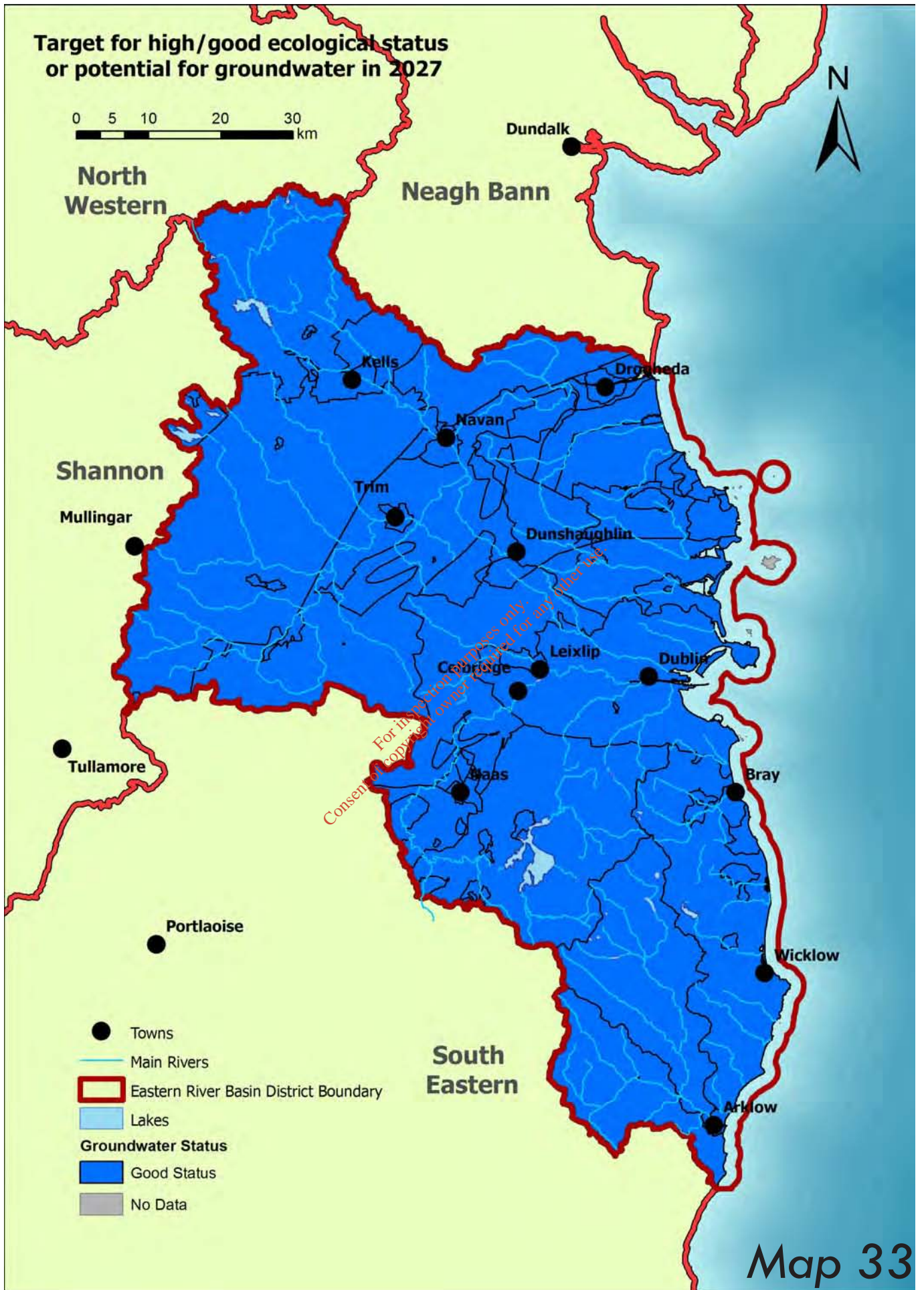












12 What happens next?

There is still important work to complete before we can finalise our Plan.

How to integrate plans and programmes? – the need for co-ordination

The water objectives can only be achieved if plans and programmes in other relevant policy areas are coordinated and integrated. These plans and programmes include:

- County Development Plans and related Local Area Plans;
- Habitat and Species Protection Plans under the Habitats Directive;
- Water Services Investment Programme;
- Nitrates Action Programme; and
- Flood Management Plans.

Question 12: Have we focused on the right solutions?

What is the overall environmental impact of the action plan?

River Basin Management Plans are expected to have a positive effect on the environment. Nevertheless, they still must be subject to Strategic Environmental Assessment (SEA). SEA is a system of incorporating 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 thus promoting sustainable development. SEA must be applied to plans and programmes which set the framework for future development consent for projects. An SEA for all of the plans within Ireland has been commissioned by the DEHLG and will be completed by December 2009.

What impact will new controls have on various sectors?

Achieving objectives of this Plan will require the introduction of a range of new regulatory controls to give legal effect to the actions. It is now government policy to apply Regulatory Impact Assessment (RIA) to regulatory proposals. The role of RIA is to evaluate the potential impacts of any new regulation and establish whether it would have the desired impact. For example, it is useful to identify potential side effects or unforeseen extra costs associated with a new regulation. It also helps to clarify the cost of enforcement of the regulation. Most future regulations for the implementation of the Directive will be subject to RIA.

Question 13: Do you think the actions suggested to solve the problems, are too strict? Or too lenient?

Who will implement this Plan?

The task of implementing the River Basin Management Plan will fall mainly on local authorities. In the case of the Eastern River Basin District, it is envisaged that a small unit will be set up by Dublin City Council to coordinate the ongoing work of the twelve participating local authorities and other bodies. The resources to implement the Plan will come from national and local sources and from both the private and public sectors.

List of Acronyms

AWB	Artificial Water Body
CAP	Common Agricultural Programme
CSO	Combined Sewer Overflow
DAFF	Department of Agriculture, Fisheries & Food
DEHLG	Department of the Environment, Heritage & Local Government
EDEN	Environmental Data Exchange Network
EPA	Environmental Protection Agency
EPRTTR	European Pollutant Release and Transfer Register
ESB	Electricity Supply Board
EU	European Union
GDSDS	Greater Dublin Strategic Drainage Study
GSI	Geological Survey of Ireland
GWTDE	Groundwater Dependent Terrestrial Ecosystem
HMWB	Heavily Modified Water Body
HSE	Health & Safety Executive
IBEC	Irish Business and Employers Confederation
ICZM	Integrated Coastal Zone Management
IDEA	Irish Doctor's Environmental Association
IPPC	Integrated Pollution Prevention Control
LA	Local Authority
NHA	National Heritage Area
NPWS	National Parks and Wildlife Service
NSS	National Spatial Strategy
OPW	Office of Public Works
OSWTS	On-site wastewater treatment systems
PE	Population Equivalent
PMS	Project Management System
PoM	Programme of Measures
PPP	plant protection products
RBD	River Basin District
RBMP	River Basin Management Plan
RBMS	River Basin Management System
REACH	Registration, Evaluation and Authorisation of Chemicals
S.I.	Statutory Instrument
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SUDS	Sustainable Urban Drainage Systems
WMU	Water Management Unit
WFD	Water Framework Directive
WWTW	Wastewater Treatment Works

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List of Questions

Question 1: How would you like to see the monitoring data being provided to a wider group of stakeholders?

Question 2: Do you think that the Classifications fairly reflect the status of waters in the Eastern River Basin District?

Question 3: Do you think that there are any common factors contributing to High Status waters?

Question 4: have we identified all the designated protected areas?

Question 5: Have we identified all existing basic measures? Are there any other Supplementary measures that you think would be helpful? And cost effective?

Question 6: Do you agree that the catchment specific approach to measures is appropriate?

Question 7: Do you think that the proposed measures will achieve good ecological status?

Question 8: Do you agree that pilot studies and careful analysis are a necessary precursor to widespread implementation of measures?

Question 9: How do you think economics should be taken on board in the Plan?

Question 10: Do you think that the exemptions suggested are realistic?

Question 11: What do you view to be the main issues caused by climate change?

Question 12: Have we focused on the right solutions?

Question 13: Do you think the actions suggested to solve the problems, are too strict? Or too lenient?

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Irish Hotels Federation	Daniel O'Connell
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Drogheda Port Company	Capt. Martin J. Donnelly
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Irish Federation of Sea Anglers	Brian Cooke
Bord Iascaigh Mhara	Fabrice Richez
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IDEA	Elizabeth Cullen
An Taisce	Anja Murray
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Local Government Computer Services Board	Tara Kerins
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Waterways Ireland	Paula Treacy

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Annex A - Programmes of Measures by Source

Table A1 and A2 below were created to accompany the Programme of Measures listed in Tables 17 and 18 of Section 9 and the Alternative Programme of Measures listed in Tables 20 and 21 of Section 10. The tables in Section 9 and 10 list the Programme of Measures proposed for each water body or sub-catchment by source of pressure.

Table A1 and A2 list the measures selected in the River Basin Management System (Section 8) by source of pressure and by frequency of selection and should therefore indicate the measures selected in the Eastern District.

A series of Local Area Programmes of Measures documents have been created. These can be found in on the accompanying Programme of Measures CD, or can be downloaded from the Eastern District website (www.erbd.ie).

Table A1: Measures selected in the Proposed Programme of Measures by Source of Pollution in the Eastern District

Measure Name	Source Name	Frequency of Use
National Water Pricing Policy Framework (1998)	Abstractions	211
Water Supplies Act 1942	Abstractions	190
Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	Abstractions	86
Modernise Abstraction Legislation, including a system for licensing surface water abstractions	Abstractions	85
Quality of Surface Water intended for the Abstraction of Drinking Water (S.I. 294 of 1989)	Abstractions	66
Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	Abstractions	16
Investigate implementing smaller water schemes to reduce demand on other resources	Abstractions	16
Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	Abstractions	16
Record daily abstraction rates	Abstractions	14
Collect daily water level	Abstractions	8
Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	Abstractions	8
Develop Habitat Suitability Curves for salmonids in Irish Rivers	Abstractions	8
Further Research on Abstraction Pressure effects on lake ecology (national)	Abstractions	8
In flow regulated rivers, establish guidance on flow variations to support ecology	Abstractions	8
Create a proposal for extending, or providing a supply of water.	Abstractions	6
Initiate field work needed to develop water budgets to determine groundwater-surface water contributions and develop water budgets	Abstractions	3
Licensing system for groundwater abstractions	Abstractions	3
Collect daily abstraction rates and compensation flow releases	Abstractions	2
Maintain good hydrological status	Abstractions	1
EC (Good Agricultural Practice for Protection of Waters) Regulations (S.I. 378 of 2006 and S.I. 526 of 2007)	Agricultural Point and Diffuse Sources	134
Conduct Farm Surveys	Agricultural Point and Diffuse Sources	52
Enforce National Action Programme (Good Agriculture Practice Regulations)	Agricultural Point and Diffuse Sources	7
Riparian Buffers	Agricultural Point and Diffuse Sources	2
Survey Banks/Coast	An Absence of sufficient data	38
Further Investigate cause of failure	An Absence of sufficient data	49
Survey Banks/Coast	An Absence of sufficient data	9
Further Investigate cause of failure	An Absence of sufficient data	4
Prohibit use of pesticides within groundwater Source Protection Zones	Chemical Fertiliser	32

Table A1: Measures selected in the Proposed Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
PCS Follow Principles for Good Plant Protection Practise (use of pesticides)	Chemical Fertiliser	9
Ensure appropriate distance from a water body when applying fertiliser	Chemical Fertiliser	4
EC (Authorisation, Placing on the Market, Use and Control of Plant Protection Products), 2003 and amendments	Dangerous Substances	181
EC (Classification Packaging and Labelling of Plant Protection Products and Biocide Products) Regulations, 2001	Dangerous Substances	181
EU Regulations Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH) (1907/2006/EC)	Dangerous Substances	145
EC (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 74 of 2006)	Dangerous Substances	134
EC (Prohibition of certain active substances in plant protection products) Regulations, 1981 and amendments	Dangerous Substances	134
Local Government (Water Pollution) Act 1977 (Water Quality Standards for Phosphorus) Regulations, 1998 (S.I. 258 of 1998)	Dangerous Substances	134
Water Quality Dangerous Substances Regulations, 2001	Dangerous Substances	132
Framework for Major Emergency Management, Office of Emergency Planning, 2006	Dangerous Substances	112
Protection of Groundwater Regulations (S.I. 41 of 1999)	Dangerous Substances	87
Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	Dangerous Substances	32
Pesticides - Reporting and auditing of sales and usage by sector	Dangerous Substances	32
Grant, refuse or review licences	Dangerous Substances	22
Test the discharge effect on groundwater /test groundwater compliance	Dangerous Substances	21
Dumping at Sea Act 1996 - 2004	Dangerous Substances	11
Mitigate impact of quarry activities	Dangerous Substances	7
Implement Measures in Dangerous Substances Reports	Dangerous Substances	4
Monitor Shipping Activities	Dangerous Substances	3
EC (Port Reception Facilities for Ship Generated Waste and Cargo Residues) Regulations (S.I. 117 of 2003)	Dangerous Substances	2
Implement Measures in Phosphorus Regulations Reports	Dangerous Substances	2
Treatment of Mine Discharge	Dangerous Substances	2
Improving the availability and use of port reception facilities for ship-generated waste and cargo residues	Dangerous Substances	1
Proper Disposals of Harbour Dredgings	Dangerous Substances	1
EC (Aerial Fertilisation) (Forestry) Regulations 2006 and amendment 2007	Forestry	91
Forest Service - Forestry and Water Quality Guidelines	Forestry	9
Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	Forestry	5
Forest Service - Protocall on acid sensitive areas	Forestry	2
Updated Protocol on Acid sensitive areas based on updated acid sensitive areas map and research	Forestry	2
EPA (Licensing) Regulations, 1994 & 2004	Industrial Sources	100
EPA Waste (Licensing) Regulations, 2004	Industrial Sources	32
Grant and refuse IPPC licences subject to set-limits to reduce pollution effects	Industrial Sources	8
Review IPPC licences	Industrial Sources	8
Upgrade IPPC licensed facilities waste management structures and practices to best available technology	Industrial Sources	3
Grant and refuse waste licences subject to set-limits to reduce pollution effects	Industrial Sources	1
Review waste licences	Industrial Sources	1
Upgrade waste licensed facilities management structures and practices to best available technology	Industrial Sources	1
Apply Heavily Modified Water body Measures (See External Document)	Intensive Landuse	30
Foreshore Act (1933)	Intensive Landuse	9
OPW - Environmental Drainage Maintenance Guidance Notes	Intensive Landuse	9

Table A1: Measures selected in the Proposed Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
Introduce Soft Edges to Inferior Habitats	Intensive Landuse	7
Licence needed for any works in the foreshore.	Intensive Landuse	7
Facilitate Fish Migration	Intensive Landuse	6
Preservation and/or restoration of the bank	Intensive Landuse	6
OPW - Environmental River Enhancement Programme 2008 -2012	Intensive Landuse	5
Address diffuse silt pollution from green field site development	Intensive Landuse	3
ICZM - Using the RBMP process, continue to include departmental co-operation for TraC water body management.	Intensive Landuse	3
Inclusion of morphology as a consideration within the current development (SEA, EIA, etc) appraisal process	Intensive Landuse	3
MImAS assessment on Channelisation & Flood Embankments	Intensive Landuse	3
New development affecting TraC water bodies will be assessed with MImAS as risk assessment tool for water body status deterioration.	Intensive Landuse	3
Assess need for Barrier Removal - based on risk and expert judgement	Intensive Landuse	2
Assess the effects of coastal defences	Intensive Landuse	2
Coastal Zone Management Schemes, e.g. Bantry Bay Charter	Intensive Landuse	2
Review Dredging Practice	Intensive Landuse	2
Assess effect of causeway	Intensive Landuse	1
DAFF restoration works on intensive landuse for Freshwater Morphology	Intensive Landuse	1
Freshwater Pearl Mussel Management Plans	Intensive Landuse	1
Morphology - Physical Modifications Campaign	Intensive Landuse	1
Review of marine departmental responsibilities - and legislative coverage of transitional and coastal water bodies.	Intensive Landuse	1
Local Government (Water Pollution) Act 1 of 1977 and amendments	Local Authority Licenced Discharges	162
Enforce Section 4s (discharges to water bodies)	Local Authority Licenced Discharges	18
Enforce Section 16s	Local Authority Licenced Discharges	3
LA to adopt a common approach to issuance of Section 4 and 16 licences	Local Authority Licenced Discharges	3
Enforce Section 12s	Local Authority Licenced Discharges	2
Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 - 2001	Manure Fertilisers	140
Forestry Act 1946 and 1988	Manure Fertilisers	123
Nutrient management	Manure Fertilisers	54
Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure Fertilisers	15
Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure Fertilisers	5
Ensure manner and condition of land spreading is respected	Manure Fertilisers	4
Evaluate Bog Impact	Manure Fertilisers	4
Locate Manure heaps at a specified distance from water bodies	Manure Fertilisers	4
Monitor storage capacity and nutrient management (follow the tables)	Manure Fertilisers	4
EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Onsite Wastewater Treatment Systems	45
LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Onsite Wastewater Treatment Systems	44
Enforce Regulations on Septic Systems	Onsite Wastewater Treatment Systems	23
Inspections and Upgrades	Onsite Wastewater Treatment Systems	11
Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Onsite Wastewater Treatment Systems	8

Table A1: Measures selected in the Proposed Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Onsite Wastewater Treatment Systems	6
Public awareness	Onsite Wastewater Treatment Systems	4
Septic system management programme	Onsite Wastewater Treatment Systems	3
Treatment Plant Tie-ins	Onsite Wastewater Treatment Systems	2
Planning Development Acts 2000 - 2006	Planning, Development and other sources	219
Planning and Development Regulations 2001 - 2007	Planning, Development and other sources	206
EC (Drinking Water) (No 2) Regulations (S.I. 278 of 2007)	Planning, Development and other sources	68
EC (Environmental Impact Assessment) Regulations and amendments (S.I. 349 of 1989 onwards)	Planning, Development and other sources	60
Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	Planning, Development and other sources	57
Implement Upstream Programmes of Measures	Planning, Development and other sources	29
Bathing Water Quality Regulations (S.I. 79 of 2008)	Planning, Development and other sources	17
EC (Quality of Salmonid Water) Regulations (S.I. 293 of 1988)	Planning, Development and other sources	16
Create an EIS prior to any development as specified in legislation	Planning, Development and other sources	4
If EIS is acceptable, deliver certification for proposed development.	Planning, Development and other sources	3
River Polishing - Reed Bed	Planning, Development and other sources	3
Classify Bathing Waters	Planning, Development and other sources	2
Facilitate public participation and provide public information	Planning, Development and other sources	2
Take measures to improve bathing water quality	Planning, Development and other sources	2
Test bathing water compliance	Planning, Development and other sources	2
Development plans shall include an environmental report	Planning, Development and other sources	1
Grant, refuse and review licence for developing land	Planning, Development and other sources	1
Preserve protected areas against pollution deterioration and disturbance	Poor Ecology	50
Prosecute those who do not protect wild birds, their nests or eggs	Poor Ecology	50
Designate protected areas	Poor Ecology	49
Manage, conserve, restore or protect sites	Poor Ecology	49
Select sites for identification as sites of community importance	Poor Ecology	49
Survey conservation status of the natural habitats and species	Poor Ecology	48
EC (Natural Habitats) Regulations 1997- 2005	Poor Ecology	23
EC (Conservation of Wild Birds) Regulations and amendments (S.I. 291 of 1985 onwards)	Poor Ecology	13
Determine causes of non compliance and determine corrective actions	Poor Ecology	6
Test Shellfish water compliance to standards set out in regulations	Poor Ecology	6
Fisheries Act 1959 - 1981	Poor Ecology	4
Assess effects of a proposed development on a protected site before granting planning permission	Poor Ecology	3

Table A1: Measures selected in the Proposed Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
Reintroduce native species; licence introduction of non native species	Poor Ecology	3
Determine priority species (Fauna and Flora) to protect	Poor Ecology	2
Fresh Water Pearl Regulations	Poor Ecology	2
Prohibit works in river channels during fisheries close season.	Poor Ecology	1
The Quality of Shellfish Waters Regulation Regulations, 2006 (S.I. 268 of 2006)	Poor Ecology	1
For sites not at Favourable conservation Status Set targets and timeframe for achieving status	To Protect High Status Waters	28
Develop Guidance on suite of measures for different habitats	To Protect High Status Waters	14
NPWS to develop and maintain a Webserver based register of designated sites accessible to LA, State Agencies, Stakeholders	To Protect High Status Waters	1
NPWS to develop Guidance documents for Article 6 Assessments	To Protect High Status Waters	1
Fertiliser/manure/soiled water/effluent/slurry/silage storage facilities to prevent seepage to ground or surface water	Unlicensed Agricultural Point Sources	54
Soiled water generation minimisation practises	Unlicensed Agricultural Point Sources	51
Improve farmyard structure/operations to divert rainwater runoff	Unlicensed Agricultural Point Sources	49
Restrict Cattle Access to rivers - Create Cattle Drinking points	Unlicensed Agricultural Point Sources	29
Diffuse Runoff (Urban) - Implement SUDS	Urban Diffuse Pollution	34
Diffuse Runoff (Urban) - Street Cleaning Programme	Urban Diffuse Pollution	29
Diffuse Runoff (Urban) - Gullies Management	Urban Diffuse Pollution	26
Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	Urban Diffuse Pollution	26
Water Services Act 2007	Wastewater Treatment Plants	169
Waste Water Discharge (Authorisation) Regulations (S.I. 684 of 2007)	Wastewater Treatment Plants	68
Urban Waste Water Treatment Regulations, 2001 - 2004	Wastewater Treatment Plants	43
Implement Community Digestors for Alternative Energy	Wastewater Treatment Plants	37
CSO - Upgrades and Rehabilitation	Wastewater Treatment Plants	34
Assess risk groundwater pollution when designing and constructing SUDS alternatives	Wastewater Treatment Plants	26
Avoid sewer systems in Inner Source Protection Zones	Wastewater Treatment Plants	26
Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	Wastewater Treatment Plants	26
CSO - Network Management & Operations Programme	Wastewater Treatment Plants	17
Develop and implement Urban Water Services Strategic Plans	Wastewater Treatment Plants	14
Investigate and eliminate misconnections	Wastewater Treatment Plants	14
CSO - Implement FOGG Regulations	Wastewater Treatment Plants	12
Upgrade WWTW and Collecting Systems <2000 PE	Wastewater Treatment Plants	12
Well construction practices/requirements	Wastewater Treatment Plants	11
Investigate Fats, Oils and Grease Issues	Wastewater Treatment Plants	9
Monitor the discharge from the Urban Waste water treatment plants and the water subject to a discharge from the UWW treatment check the quality compliance with this legislation	Wastewater Treatment Plants	9
Assess CSO and Water Quality Impact from Urban Pressures	Wastewater Treatment Plants	8
Ensure that a treatment plant provided in compliance with the requirements of these regulations is designed, constructed, operated and maintained to ensure sufficient performance under all normal local climatic conditions	Wastewater Treatment Plants	8
Improve Removal of certain parameters at WWTP	Wastewater Treatment Plants	8
Tertiary Treatment	Wastewater Treatment Plants	8
Upgrade domestic WWTWs to 2 mg/l or ≥ 80% Total Phosphorus reduction for p.e's >10,000 discharging to sensitive waters (unless no eutrophication potential)	Wastewater Treatment Plants	8
Upgrade domestic WWTWs to 1 mg/l or ≥ 80% Total Nitrogen reduction for p.e's >100,000 discharging to sensitive waters (unless no eutrophication potential)	Wastewater Treatment Plants	7
Choose the point of discharge to minimise the adverse effects on the environment	Wastewater Treatment Plants	5

Table A1: Measures selected in the Proposed Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
Greater Dublin Strategic Drainage Study compliance - Combined Sewer Overflows	Wastewater Treatment Plants	5
Upgrade domestic WWTWs to secondary treatment for p.e's >2,000 discharging to rivers, lakes, & estuaries	Wastewater Treatment Plants	5
Upgrade domestic WWTWs to secondary treatment for p.e's >10,000 discharging to coastal waters	Wastewater Treatment Plants	4
Upgrade WWTW <2000 PE	Wastewater Treatment Plants	4
Collecting systems for p.e's >2,000 (unless negligible benefits or excessive costs)	Wastewater Treatment Plants	3
Industrial waste water entering a collecting system and UWW treatment plants shall be pre-treated if necessary to avoid any damage to the process	Wastewater Treatment Plants	3
Implementation of Sustainable Urban Drainage Systems	Wastewater Treatment Plants	1
LA to adopt common approach for analysis and reporting of water/effluent samples at WWTP	Wastewater Treatment Plants	1
PMS should be implemented and audited at all WWTPs	Wastewater Treatment Plants	1
Upgrade domestic WWTWs to 10 mg/l or ≥ 80% TN reduction for p.e's >100,000 and discharging to sensitive waters (unless no eutrophication potential)	Wastewater Treatment Plants	1

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Table A2: Measures selected in the Alternative Programme of Measures by Source of Pollution in the Eastern District

Measure Name	Source Name	Frequency of Use
Modernise Abstraction Legislation, including a system for licensing surface water abstractions	Abstractions	84
Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	Abstractions	82
National Water Pricing Policy Framework (1998)	Abstractions	69
Quality of Surface Water intended for the Abstraction of Drinking Water (S.I. 294 of 1989)	Abstractions	65
Water Supplies Act 1942	Abstractions	64
Record daily abstraction rates	Abstractions	17
Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	Abstractions	16
Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	Abstractions	16
Investigate implementing smaller water schemes to reduce demand on other resources	Abstractions	15
Collect daily water level	Abstractions	9
Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	Abstractions	8
Develop Habitat Suitability Curves for salmonids in Irish Rivers	Abstractions	8
Further Research on Abstraction Pressure effects on lake ecology (national)	Abstractions	8
In flow regulated rivers, establish guidance on flow variations to support ecology	Abstractions	8
Collect daily abstraction rates and compensation flow releases	Abstractions	4
Create a proposal for extending, or providing a supply of water.	Abstractions	4
Initiate field work needed to develop water budgets to determine groundwater-surface water contributions and develop water budgets	Abstractions	3
Licensing system for groundwater abstractions	Abstractions	3
Maintain good hydrological status	Abstractions	3
Establish Minimum Instream Flow Conditions and requirements for compensation releases to allow flow variations	Abstractions	1
Conduct Farm Surveys	Agricultural Point and Diffuse Sources	84
EC (Good Agricultural Practice for Protection of Waters) Regulations (S.I. 378 of 2006 and S.I. 526 of 2007)	Agricultural Point and Diffuse Sources	13
Enforce National Action Programme (Good Agricultural Practices Regulations)	Agricultural Point and Diffuse Sources	8
Discontinue use of soiled water for application to or irrigation of land in certain conditions	Agricultural Point and Diffuse Sources	2
Riparian Buffers	Agricultural Point and Diffuse Sources	2
Survey Banks/Coast	An Absence of sufficient data	47
Further Investigate cause of failure	An Absence of sufficient data	53
Prohibit use of pesticides within groundwater Source Protection Zones	Chemical Fertiliser	22
PCS Follow Principles for Good Plant Protection Practise (use of pesticides)	Chemical Fertiliser	9
Ensure that distance from a water body when applying fertiliser is respected	Chemical Fertiliser	5
Prohibit application of fertiliser during specific periods	Chemical Fertiliser	2
Water Quality Dangerous Substances Regulations, 2001	Dangerous Substances	28
EC (Authorisation, Placing on the Market, Use and Control of Plant Protection Products), 2003 and amendments	Dangerous Substances	22
EC (Classification Packaging and Labelling of Plant Protection Products and Biocide Products) Regulations, 2001	Dangerous Substances	22
EC (Prohibition of certain active substances in plant protection products) Regulations, 1981 and amendments	Dangerous Substances	22

Table A2: Measures selected in the Alternative Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
EU Regulations Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH) (1907/2006/EC)	Dangerous Substances	22
Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	Dangerous Substances	22
Pesticides - Reporting and auditing of sales and usage by sector	Dangerous Substances	22
EC (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 74 of 2006)	Dangerous Substances	10
Local Government (Water Pollution) Act 1977 (Water Quality Standards for Phosphorus) Regulations, 1998 (S.I. 258 of 1998)	Dangerous Substances	8
Mitigate impact of quarry activities	Dangerous Substances	7
Framework for Major Emergency Management, Office of Emergency Planning, 2006	Dangerous Substances	6
Implement Measures in Dangerous Substances Reports	Dangerous Substances	4
After an accident, operator should take all necessary measures to clear up any pollution caused.	Dangerous Substances	3
Monitor Shipping Activities	Dangerous Substances	3
Dumping at Sea Act 1996 - 2004	Dangerous Substances	2
Implement Measures in Phosphorus Regulations Reports	Dangerous Substances	2
Treatment of Mine Discharge	Dangerous Substances	2
Improving the availability and use of port reception facilities for ship-generated waste and cargo residues	Dangerous Substances	1
Proper Disposals of Harbour Dredgings	Dangerous Substances	1
Forest Service - Forestry and Water Quality Guidelines	Forestry	9
EC (Aerial Fertilisation) (Forestry) Regulations 2006 and amendment 2007	Forestry	6
Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	Forestry	5
Forest Service - Protocall on acid sensitive areas	Forestry	2
Updated Protocol on Acid sensitive areas based on updated acid sensitive areas map and research	Forestry	2
EPA (Licensing) Regulations, 1994 & 2004	Industrial Sources	19
Grant and refuse IPPC licences subject to set-limits to reduce pollution effects	Industrial Sources	10
Review IPPC licences	Industrial Sources	7
EPA Waste (Licensing) Regulations, 2004	Industrial Sources	6
Upgrade IPPC licensed facilities waste management structures and practices to best available technology	Industrial Sources	5
Grant and refuse waste licences subject to set-limits to reduce pollution effects	Industrial Sources	2
Review waste licences	Industrial Sources	2
Upgrade waste licensed facilities management structures and practices to best available technology	Industrial Sources	2
Apply Heavily Modified Water body Measures (See External Document)	Intensive Landuse	29
OPW - Environmental Drainage Maintenance Guidance Notes	Intensive Landuse	9
Introduce Soft Edges to Inferior Habitats	Intensive Landuse	7
Facilitate Fish Migration	Intensive Landuse	6
Preservation and/or restoration of the bank	Intensive Landuse	6
Address diffuse silt pollution from green field site development	Intensive Landuse	3
Foreshore Act (1933)	Intensive Landuse	3
Inclusion of morphology as a consideration within the current development (SEA, EIA, etc) appraisal process	Intensive Landuse	3
Licence needed for any works in the foreshore.	Intensive Landuse	3
OPW - Environmental River Enhancement Programme 2008 -2012	Intensive Landuse	3
Assess need for Barrier Removal - based on risk and expert judgement	Intensive Landuse	2
Assess the effects of coastal defences	Intensive Landuse	2
Coastal Zone Management Schemes, e.g. Bantry Bay Charter	Intensive Landuse	2
ICZM - Using the RBMP process, continue to include departmental co-operation for TraC water body management.	Intensive Landuse	2
MImAS assessment on Channelisation & Flood Embankments	Intensive Landuse	2

Table A2: Measures selected in the Alternative Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
New development affecting TraC water bodies will be assessed with MImAS as risk assessment tool for water body status deterioration.	Intensive Landuse	2
Review Dredging Practice	Intensive Landuse	2
Assess effect of causeway	Intensive Landuse	1
DAFF restoration works on intensive landuse for Freshwater Morphology	Intensive Landuse	1
Freshwater Pearl Mussel Management Plans	Intensive Landuse	1
Morphology - Physical Modifications Campaign	Intensive Landuse	1
Review of marine departmental responsibilities - and legislative coverage of transitional and coastal water bodies.	Intensive Landuse	1
Enforce Section 4s (discharges to water bodies)	Local Authority Licenced Discharges	56
Enforce Section 16s	Local Authority Licenced Discharges	28
Local Government (Water Pollution) Act 1 of 1977 and amendments	Local Authority Licenced Discharges	11
Enforce Section 12s	Local Authority Licenced Discharges	10
LA to adopt a common approach to issuance of Section 4 and 16 licences	Local Authority Licenced Discharges	3
Nutrient management	Manure Fertilisers	77
Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure Fertilisers	14
Locate Manure heaps at a specified distance from water bodies	Manure Fertilisers	14
Ensure manner and condition of land spreading is respected	Manure Fertilisers	7
Forestry Act 1946 and 1988	Manure Fertilisers	6
Monitor storage capacity and nutrient management (follow the tables)	Manure Fertilisers	6
Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure Fertilisers	5
Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 - 2001	Manure Fertilisers	5
Analyse sludge (heavy metal,pH...)	Manure Fertilisers	2
Consider impact of sludge on plants, soil, surface water and groundwater quality	Manure Fertilisers	2
Local Authorities will maintain a sludge register	Manure Fertilisers	2
Restrict land where sludge can be used	Manure Fertilisers	2
Restrict the amount of Sludge applied to land at 2 tonnes of dry matter per hectare per year	Manure Fertilisers	2
Supervise the supply and use of sludge in agriculture	Manure Fertilisers	2
Evaluate Bog Impact	Manure Fertilisers	1
EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Onsite Wastewater Treatment Systems	40
LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Onsite Wastewater Treatment Systems	38
Enforce Regulations on Septic Systems	Onsite Wastewater Treatment Systems	23
Inspections and Upgrades	Onsite Wastewater Treatment Systems	12
Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Onsite Wastewater Treatment Systems	8
LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Onsite Wastewater Treatment Systems	6
Public awareness	Onsite Wastewater Treatment Systems	4
Septic system management programme	Onsite Wastewater Treatment Systems	3
Treatment Plant Tie-ins	Onsite Wastewater Treatment Systems	2

Table A2: Measures selected in the Alternative Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	Planning, Development and other sources	56
EC (Drinking Water) (No 2) Regulations (S.I. 278 of 2007)	Planning, Development and other sources	23
Implement Upstream Programmes of Measures	Planning, Development and other sources	18
Planning and Development Regulations 2001 - 2007	Planning, Development and other sources	13
Planning Development Acts 2000 - 2006	Planning, Development and other sources	10
EC (Environmental Impact Assessment) Regulations and amendments (S.I. 349 of 1989 onwards)	Planning, Development and other sources	9
Bathing Water Quality Regulations (S.I. 79 of 2008)	Planning, Development and other sources	5
Classify Bathing Waters	Planning, Development and other sources	3
Facilitate public participation and provide public information	Planning, Development and other sources	3
River Polishing - Reed Bed	Planning, Development and other sources	3
Test bathing water compliance	Planning, Development and other sources	3
Create an EIS prior to any development as specified in legislation	Planning, Development and other sources	2
Development plans shall include an environmental report	Planning, Development and other sources	2
Take measures to improve bathing water quality	Planning, Development and other sources	2
Grant, refuse and review licence for developing land	Planning, Development and other sources	1
If EIS is acceptable, deliver certification for proposed development.	Planning, Development and other sources	1
Manage, conserve, restore or protect sites	Poor Ecology	33
Preserve protected areas against pollution deterioration and disturbance	Poor Ecology	33
Prosecute those who do not protect wild birds, their nests or eggs	Poor Ecology	33
Select sites for identification as sites of community importance	Poor Ecology	33
Survey conservation status of the natural habitats and species	Poor Ecology	33
Designate protected areas	Poor Ecology	32
EC (Natural Habitats) Regulations 1997- 2005	Poor Ecology	10
Test Shellfish water compliance to standards set out in regulations	Poor Ecology	6
Determine causes of non compliance and determine corrective actions	Poor Ecology	4
Assess effects of a proposed development on a protected site before granting planning permission	Poor Ecology	3
Reintroduce native species; licence introduction of non native species	Poor Ecology	3
Determine priority species (Fauna and Flora) to protect	Poor Ecology	2
Fisheries Act 1959 - 1981	Poor Ecology	2
Fresh Water Pearl Regulations	Poor Ecology	2
EC (Conservation of Wild Birds) Regulations and amendments (S.I. 291 of 1985 onwards)	Poor Ecology	1
Prohibit works in river channels during fisheries close season.	Poor Ecology	1
The Quality of Shellfish Waters Regulation Regulations, 2006 (S.I. 268 of 2006)	Poor Ecology	1
For sites not at Favourable conservation Status Set targets and timeframe for achieving status	To Protect High Status Waters	28
Develop Guidance on suite of measures for different habitats	To Protect High Status Waters	14

Table A2: Measures selected in the Alternative Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
NPWS to develop and maintain a Webserver based register of designated sites accessible to LA, State Agencies, Stakeholders	To Protect High Status Waters	1
NPWS to develop Guidance documents for Article 6 Assessments	To Protect High Status Waters	1
Fertiliser/manure/soiled water/effluent/slurry/silage storage facilities to prevent seepage to ground or surface water	Unlicensed Agricultural Point Sources	82
Improve farmyard structure/operations to divert rainwater runoff	Unlicensed Agricultural Point Sources	76
Soiled water generation minimisation practises	Unlicensed Agricultural Point Sources	73
Restrict Cattle Access to rivers - Create Cattle Drinking points	Unlicensed Agricultural Point Sources	29
Diffuse Runoff (Urban) - Implement SUDS	Urban Diffuse Pollution	26
Diffuse Runoff (Urban) - Street Cleaning Programme	Urban Diffuse Pollution	22
Diffuse Runoff (Urban) - Gullies Management	Urban Diffuse Pollution	19
Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	Urban Diffuse Pollution	12
Implement Community Digestors for Alternative Energy	Wastewater Treatment Plants	33
CSO - Upgrades and Rehabilitation	Wastewater Treatment Plants	25
Waste Water Discharge (Authorisation) Regulations (S.I. 684 of 2007)	Wastewater Treatment Plants	20
Collecting systems for p.e.'s >2,000 (unless negligible benefits or excessive costs)	Wastewater Treatment Plants	18
CSO - Network Management & Operations Programme	Wastewater Treatment Plants	17
Ensure that a treatment plant provided in compliance with the requirements of these regulations is designed, constructed, operated and maintained to ensure sufficient performance under all normal local climatic conditions	Wastewater Treatment Plants	16
Water Services Act 2007	Wastewater Treatment Plants	15
Investigate and eliminate misconnections	Wastewater Treatment Plants	14
Upgrade WWTW and Collecting Systems <2000 PE	Wastewater Treatment Plants	13
CSO - Implement FOGG Regulations	Wastewater Treatment Plants	12
Develop and implement Urban Water Services Strategic Plans	Wastewater Treatment Plants	10
Investigate Fats, Oils and Grease Issues	Wastewater Treatment Plants	9
Monitor the discharge from the Urban Waste water treatment plants and the water subject to a discharge from the UWW treatment check the quality compliance with this legislation	Wastewater Treatment Plants	9
Assess risk groundwater pollution when designing and constructing SUDS alternatives	Wastewater Treatment Plants	8
Avoid sewer systems in Inner Source Protection Zones	Wastewater Treatment Plants	8
Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	Wastewater Treatment Plants	8
Certify all waste water discharges less than 500 PE.	Wastewater Treatment Plants	8
Tertiary Treatment	Wastewater Treatment Plants	8
Upgrade domestic WWTWs to 1 mg/l or ≥ 80% TN reduction for p.e.'s >100,000 discharging to sensitive waters (unless no eutrophication potential)	Wastewater Treatment Plants	8

Table A2: Measures selected in the Alternative Programme of Measures by Source of Pollution in the Eastern District (contd.)

Measure Name	Source Name	Frequency of Use
Upgrade domestic WWTWs to 2 mg/l or ≥ 80% TP reduction for p.e's >10,000 discharging to sensitive waters (unless no eutrophication potential)	Wastewater Treatment Plants	8
Urban Waste Water Treatment Regulations, 2001 - 2004	Wastewater Treatment Plants	8
Well construction practices/requirements	Wastewater Treatment Plants	8
Assess CSO and Water Quality Impact from Urban Pressures	Wastewater Treatment Plants	7
Choose the point of discharge to minimise the adverse effects on the environment	Wastewater Treatment Plants	6
Upgrade domestic WWTWs to secondary treatment for p.e's >2,000 discharging to rivers, lakes, & estuaries	Wastewater Treatment Plants	6
GSDSDS Compliance - CSOs	Wastewater Treatment Plants	5
Upgrade domestic WWTWs to secondary treatment for p.e's >10,000 discharging to coastal waters	Wastewater Treatment Plants	5
Industrial waste water entering a collecting system and UWW treatment plants shall be pre-treated if necessary to avoid any damage to the process	Wastewater Treatment Plants	4
Upgrade WWTW <2000 PE	Wastewater Treatment Plants	4
Licence all waste water discharges of greater than 500 PE	Wastewater Treatment Plants	2
Implementation of S.U.D.S	Wastewater Treatment Plants	1
LA to adopt common approach for analysis and reporting of water/effluent samples at WWTP	Wastewater Treatment Plants	1
PMS should be implemented and audited at all WWTPs	Wastewater Treatment Plants	1

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Annex B - The Supplementary Programme of Measures per Water Management Unit

The Proposed Programme of Measures includes full implementation of all basic measures. The Basic Measures can be viewed in Section 7 and Appendix D describes each in detail.

Supplementary Measures have been selected for each water body or sub-catchment and are presented in Table B1 below. These are organised by water body type (rivers, lakes, estuary, coastal and groundwaters) and also by Local Authority. Maps 22 – 24 show the location of all water bodies.

Each measure reduces the impact of pollution pressures on the water body or sub-catchment. The legend to the right shows the 17 pollution pressures that affect our waters with the source code used in Table B1.

Water Management Units are either water body boundaries or river sub-catchment boundaries used in the River Basin Management process to select measures.

Legend

Source Code	Description
ABS	Abstractions
AGR	Agricultural Point and Diffuse Sources
AGR-PS	Unlicensed Agricultural Point Sources
Chem	Chemical Fertiliser
CROSS	Planning, Development and other sources
DS	Dangerous Substances
ECO	Poor Ecology
FOR	Forestry
IPPC	Industrial Sources
Manure	Manure Fertilisers
MORP	Intensive Landuse
S4	Local Authority Licenced Discharges
WWTP	Wastewater Treatment Plants
DATA+	An Absence of sufficient data
HS	To Protect High Status Waters
Septic	Onsite Wastewater Treatment Systems
U-DIFF	Urban Diffuse Pollution
DLRCC	Dun Laoghaire Rathdown County Council

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Transitional	Avoca Estuary	Wicklow	Treatment Plant Tie-ins	Septic
Transitional	Avoca Estuary	Wicklow	Introduce soft Edges to Inferior Habitats	MORP
Transitional	Avoca Estuary	Wicklow	Review Dredging Practice	MORP
Transitional	Avoca Estuary	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Avoca Estuary	Wicklow	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Avoca Estuary	Wicklow	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Avoca Estuary	Wicklow	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Avoca Estuary	Wicklow	Survey Banks/Coast	DATA+
Transitional	Avoca Estuary	Wicklow	Implement Upstream Programmes of Measures	CROSS
Transitional	Avoca Estuary	Wicklow	Preservation and/or restoration of the bank	MORP
Transitional	Avoca Estuary	Wicklow	Survey Banks/Coast	DATA+
Transitional	Avoca Estuary	Wicklow	MImAS assessment on Channelisation & Flood Embankments	MORP
Transitional	Avoca Estuary	Wicklow	New development affecting TraC water bodies will be assessed with MImAS as risk assessment tool for water body status deterioration.	MORP
Transitional	Avoca Estuary	Wicklow	ICZM - Using the RBMP process, continue to include departmental co-operation for TraC water body management.	MORP
Transitional	Avoca Estuary	Wicklow	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Boyne Estuary	Louth	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Boyne Estuary	Louth	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Boyne Estuary	Louth	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Boyne Estuary	Louth	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Boyne Estuary	Louth	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Boyne Estuary	Louth	Implement Upstream Programmes of Measures	CROSS
Transitional	Boyne Estuary	Louth	Survey Banks/Coast	DATA+
Transitional	Boyne Estuary	Louth	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
Transitional	Boyne Estuary	Louth	Improve Removal of certain parameters at WWTP	WWTP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Transitional	Boyne Estuary	Louth	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Boyne Estuary	Louth	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Boyne Estuary	Meath	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Boyne Estuary	Meath	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Boyne Estuary	Meath	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Boyne Estuary	Meath	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Boyne Estuary	Meath	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Boyne Estuary	Meath	Implement Upstream Programmes of Measures	CROSS
Transitional	Boyne Estuary	Meath	Survey Banks/Coast	DATA+
Transitional	Boyne Estuary	Meath	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
Transitional	Boyne Estuary	Meath	Improve Removal of certain parameters at WWTP	WWTP
Transitional	Boyne Estuary	Meath	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Boyne Estuary	Meath	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Broad Lough	Wicklow	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Broad Lough	Wicklow	CSO - Implement FOGG Regulations	WWTP
Transitional	Broad Lough	Wicklow	CSO - Network Management & Operations Programme	WWTP
Transitional	Broad Lough	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Broad Lough	Wicklow	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Broad Lough	Wicklow	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Broad Lough	Wicklow	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Broad Lough	Wicklow	Implement Upstream Programmes of Measures	CROSS
Transitional	Broad Lough	Wicklow	Survey Banks/Coast	DATA+
Transitional	Broad Lough	Wicklow	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Broadmeadow Water	Fingal	Tertiary Treatment	WWTP
Transitional	Broadmeadow Water	Fingal	GDSOS Compliance - CSOs	WWTP
Transitional	Broadmeadow Water	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Broadmeadow Water	Fingal	CSO - Implement FOGG Regulations	WWTP
Transitional	Broadmeadow Water	Fingal	CSO - Network Management & Operations Programme	WWTP
Transitional	Broadmeadow Water	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Broadmeadow Water	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Broadmeadow Water	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Broadmeadow Water	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Broadmeadow Water	Fingal	Implement Upstream Programmes of Measures	CROSS
Transitional	Broadmeadow Water	Fingal	Survey Banks/Coast	DATA+
Transitional	Broadmeadow Water	Fingal	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Broadmeadow Water	Fingal	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Dargle Estuary	Wicklow	Implement Upstream Programmes of Measures	CROSS
Transitional	Dargle Estuary	Wicklow	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Kilcoole Marsh	Wicklow	No Measure Required	CROSS
Transitional	Liffey Estuary Lower	Dublin City	Tertiary Treatment	WWTP
Transitional	Liffey Estuary Lower	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Liffey Estuary Lower	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Liffey Estuary Lower	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Liffey Estuary Lower	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Liffey Estuary Lower	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Liffey Estuary Lower	Dublin City	Survey Banks/Coast	DATA+

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Transitional	Liffey Estuary Lower	Dublin City	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
Transitional	Liffey Estuary Lower	Dublin City	Improve Removal of certain parameters at WWTP	WWTP
Transitional	Liffey Estuary Lower	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Liffey Estuary Lower	Dublin City	LA to adopt a common approach to issuance of Section 4 and 16 licences	S4
Transitional	Liffey Estuary Lower	Dublin City	LA to adopt common approach for analysis and reporting of water/effluent samples at WWTP	WWTP
Transitional	Liffey Estuary Lower	Dublin City	PMS should be implemented and audited at all WWTPs	WWTP
Transitional	Liffey Estuary Lower	Dublin City	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Liffey Estuary Upper	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Liffey Estuary Upper	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Liffey Estuary Upper	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Liffey Estuary Upper	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Liffey Estuary Upper	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Liffey Estuary Upper	Dublin City	Survey Banks/Coast	DATA+
Transitional	Liffey Estuary Upper	Dublin City	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
Transitional	Liffey Estuary Upper	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Liffey Estuary Upper	Dublin City	LA to adopt a common approach to issuance of Section 4 and 16 licences	S4
Transitional	Liffey Estuary Upper	Dublin City	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Mayne Estuary	Fingal	Introduce Soft Edges to Inferior Habitats	MORP
Transitional	Mayne Estuary	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Mayne Estuary	Fingal	CSO - Implement FOGG Regulations	WWTP
Transitional	Mayne Estuary	Fingal	CSO - Network Management & Operations Programme	WWTP
Transitional	Mayne Estuary	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Mayne Estuary	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Mayne Estuary	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Mayne Estuary	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Mayne Estuary	Fingal	Survey Banks/Coast	DATA+
Transitional	Mayne Estuary	Fingal	Implement Upstream Programmes of Measures	CROSS
Transitional	Mayne Estuary	Fingal	Survey Banks/Coast	DATA+
Transitional	Mayne Estuary	Fingal	MlmAS assessment on Channelisation & Flood Embankments	MORP
Transitional	Mayne Estuary	Fingal	Inclusion of morphology as a consideration within the current development (SEA, EIA, etc) appraisal process	MORP
Transitional	Mayne Estuary	Fingal	New development affecting TraC water bodies will be assessed with MlmAS as risk assessment tool for water body status deterioration.	MORP
Transitional	Mayne Estuary	Fingal	ICZM - Using the RBMP process, continue to include departmental co-operation for TraC water body management.	MORP
Transitional	Mayne Estuary	Fingal	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Transitional	Nanny Estuary	Meath	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Nanny Estuary	Meath	CSO - Implement FOGG Regulations	WWTP
Transitional	Nanny Estuary	Meath	CSO - Network Management & Operations Programme	WWTP
Transitional	Nanny Estuary	Meath	Implement Upstream Programmes of Measures	CROSS
Transitional	North Bull Island	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
Transitional	North Bull Island	Dublin City	CSO - Implement FOGG Regulations	WWTP
Transitional	North Bull Island	Dublin City	CSO - Network Management & Operations Programme	WWTP
Transitional	North Bull Island	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	North Bull Island	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	North Bull Island	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	North Bull Island	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Transitional	North Bull Island	Dublin City	Implement Upstream Programmes of Measures	CROSS
Transitional	North Bull Island	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	North Bull Island	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Transitional	North Bull Island	Fingal	CSO - Implement FOGG Regulations	WWTP
Transitional	North Bull Island	Fingal	CSO - Network Management & Operations Programme	WWTP
Transitional	North Bull Island	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	North Bull Island	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	North Bull Island	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	North Bull Island	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	North Bull Island	Fingal	Implement Upstream Programmes of Measures	CROSS
Transitional	North Bull Island	Fingal	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Rogerstown Estuary	Fingal	Treatment Plant Tie-ins	Septic
Transitional	Rogerstown Estuary	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Rogerstown Estuary	Fingal	CSO - Implement FOGG Regulations	WWTP
Transitional	Rogerstown Estuary	Fingal	CSO - Network Management & Operations Programme	WWTP
Transitional	Rogerstown Estuary	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Rogerstown Estuary	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Rogerstown Estuary	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Rogerstown Estuary	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Rogerstown Estuary	Fingal	Survey Banks/Coast	DATA+
Transitional	Rogerstown Estuary	Fingal	Implement Upstream Programmes of Measures	CROSS
Transitional	Rogerstown Estuary	Fingal	Preservation and/or restoration of the bank	MORP
Transitional	Rogerstown Estuary	Fingal	Assess effect of causeway	MORP
Transitional	Tolka Estuary	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
Transitional	Tolka Estuary	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Transitional	Tolka Estuary	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Transitional	Tolka Estuary	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Transitional	Tolka Estuary	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Transitional	Tolka Estuary	Dublin City	Implement Upstream Programmes of Measures	CROSS
Transitional	Tolka Estuary	Dublin City	Survey Banks/Coast	DATA+
Transitional	Tolka Estuary	Dublin City	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
Transitional	Tolka Estuary	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Transitional	Tolka Estuary	Dublin City	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
River	Athboy	Meath	Tertiary Treatment	WWTP
River	Athboy	Meath	Enforce Regulations on Septic Systems	Septic
River	Athboy	Meath	Upgrade WWTW <2000 PE	WWTP
River	Athboy	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Athboy	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Athboy	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Athboy	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Athboy	Meath	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Athboy	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Athboy	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Athboy	Meath	LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Septic
River	Athboy	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Athboy	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Athboy	Westmeath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Athboy	Westmeath	Implement Community Digestors for Alternative Energy	WWTP
River	Athboy	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Athboy	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Avoca	Wexford	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Avoca	Wicklow	Inspections and Upgrades	Septic
River	Avoca	Wicklow	Introduce Soft Edges to Inferior Habitats	MORP
River	Avoca	Wicklow	Treatment of Mine Discharge	DS
River	Avoca	Wicklow	Facilitate Fish Migration	MORP
River	Avoca	Wicklow	Upgrade WWTW <2000 PE	WWTP
River	Avoca	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Avoca	Wicklow	CSO - Upgrades and Rehabilitation	WWTP
River	Avoca	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Avoca	Wicklow	Survey Banks/Coast	DATA+
River	Avoca	Wicklow	Further Investigate cause of failure	DATA+
River	Avoca	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Avoca	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Avoca	Wicklow	Forest Service - Forestry and Water Quality Guidelines	FOR
River	Avoca	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Avoca	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Avoca	Wicklow	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Avoca	Wicklow	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Avoca	Wicklow	Record daily abstraction rates	ABS
River	Avoca	Wicklow	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Avoca	Wicklow	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Avoca	Wicklow	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Avoca	Wicklow	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Ballyboghil	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Ballyboghil	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Ballyboghil	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Baltray	Louth	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Baltray	Louth	Implement Community Digestors for Alternative Energy	WWTP
River	Baltray	Louth	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Baltray	Louth	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Balytunny	Wicklow	Inspections and Upgrades	Septic
River	Balytunny	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Balytunny	Wicklow	Further Investigate cause of failure	DATA+
River	Balytunny	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Balytunny	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Balytunny	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Balytunny	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Blackwater North	Cavan	Enforce Regulations on Septic Systems	Septic
River	Blackwater North	Cavan	Further Investigate cause of failure	DATA+
River	Blackwater North	Cavan	Survey Banks/Coast	DATA+
River	Blackwater North	Cavan	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Blackwater North	Cavan	Implement Community Digestors for Alternative Energy	WWTP
River	Blackwater North	Cavan	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Blackwater North	Cavan	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Blackwater North	Cavan	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Blackwater North	Cavan	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Blackwater North	Cavan	Record daily abstraction rates	ABS
River	Blackwater North	Cavan	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Blackwater North	Cavan	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Blackwater North	Cavan	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Blackwater North	Cavan	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Blackwater North	Meath	Tertiary Treatment	WWTP
River	Blackwater North	Meath	Enforce Regulations on Septic Systems	Septic
River	Blackwater North	Meath	Upgrade WWTW <2000 PE	WWTP
River	Blackwater North	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Blackwater North	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Blackwater North	Meath	CSO - Upgrades and Rehabilitation	WWTP
River	Blackwater North	Meath	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Blackwater North	Meath	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Blackwater North	Meath	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Blackwater North	Meath	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Blackwater North	Meath	Implement Upstream Programmes of Measures	CROSS
River	Blackwater North	Meath	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
River	Blackwater North	Meath	Improve Removal of certain parameters at WWTP	WWTP
River	Blackwater North	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Blackwater North	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Blackwater North	Meath	OPW - Environmental Drainage Maintenance Guidance Notes	MORP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Blackwater North	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Blackwater North	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Blackwater North	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Blackwater North	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Blackwater South	Kildare	Enforce Regulations on Septic Systems	Septic
River	Blackwater South	Kildare	Further Investigate cause of failure	DATA+
River	Blackwater South	Kildare	Evaluate Bog Impact	Manure
River	Blackwater South	Kildare	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Blackwater South	Kildare	Implement Upstream Programmes of Measures	CROSS
River	Blackwater South	Kildare	No Measure Required	CROSS
River	Blackwater South	Kildare	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Blackwater South	Kildare	Implement Community Digestors for Alternative Energy	WWTP
River	Blackwater South	Kildare	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Blackwater South	Kildare	Public awareness	Septic
River	Blackwater South	Kildare	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Blackwater South	Kildare	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Blackwater South	Meath	Tertiary Treatment	WWTP
River	Blackwater South	Meath	Enforce Regulations on Septic Systems	Septic
River	Blackwater South	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Blackwater South	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Blackwater South	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Blackwater South	Meath	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Blackwater South	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Blackwater South	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Blackwater South	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Blackwater South	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Boyne Lower	Meath	Riparian Buffers	AGR
River	Boyne Lower	Meath	Enforce Regulations on Septic Systems	Septic
River	Boyne Lower	Meath	Upgrade WWTW <2000 PE	WWTP
River	Boyne Lower	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Boyne Lower	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Boyne Lower	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Boyne Lower	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Boyne Lower	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Boyne Lower	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Boyne Lower	Meath	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
River	Boyne Lower	Meath	LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Septic
River	Boyne Lower	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
River	Boyne Lower	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Boyne Lower	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Boyne Upper	Kildare	Enforce Regulations on Septic Systems	Septic
River	Boyne Upper	Kildare	Further Investigate cause of failure	DATA+
River	Boyne Upper	Kildare	Mitigate impact of quarry activities	DS
River	Boyne Upper	Kildare	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Boyne Upper	Kildare	Implement Upstream Programmes of Measures	CROSS
River	Boyne Upper	Kildare	Further Investigate cause of failure	DATA+
River	Boyne Upper	Kildare	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Boyne Upper	Kildare	Implement Community Digestors for Alternative Energy	WWTP
River	Boyne Upper	Kildare	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Boyne Upper	Kildare	OPW - Environmental River Enhancement Programme 2008 -2012	MORP
River	Boyne Upper	Kildare	Public awareness	Septic
River	Boyne Upper	Kildare	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Boyne Upper	Kildare	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Boyne Upper	Meath	Enforce Regulations on Septic Systems	Septic
River	Boyne Upper	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Boyne Upper	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Boyne Upper	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Boyne Upper	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Boyne Upper	Meath	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Boyne Upper	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Boyne Upper	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Boyne Upper	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Boyne Upper	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Boyne Upper	Offaly	Further Investigate cause of failure	DATA+
River	Boyne Upper	Offaly	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Boyne Upper	Offaly	Implement Community Digestors for Alternative Energy	WWTP
River	Boyne Upper	Offaly	OPW - Environmental River Enhancement Programme 2008 -2012	MORP
River	Boyne Upper	Offaly	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Boyne Upper	Offaly	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Boyne Upper	Westmeath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Boyne Upper	Westmeath	Implement Community Digestors for Alternative Energy	WWTP
River	Boyne Upper	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Boyne Upper	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Broadmeadow	Fingal	CSO - Upgrades and Rehabilitation	WWTP
River	Broadmeadow	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Broadmeadow	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Broadmeadow	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Broadmeadow	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Broadmeadow	Fingal	Improve Removal of certain parameters at WWTP	WWTP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Broadmeadow	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Broadmeadow	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Broadmeadow	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Broadmeadow	Meath	Riparian Buffers	AGR
River	Broadmeadow	Meath	Enforce Regulations on Septic Systems	Septic
River	Broadmeadow	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Broadmeadow	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Broadmeadow	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Broadmeadow	Meath	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Broadmeadow	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Broadmeadow	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Broadmeadow	Meath	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
River	Broadmeadow	Meath	LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Septic
River	Broadmeadow	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Broadmeadow	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Cammock	Dublin City	Further Investigate cause of failure	DATA+
River	Cammock	Dublin City	Investigate and eliminate misconnections	WWTP
River	Cammock	Dublin City	Investigate Fats, Oils and Grease Issues	WWTP
River	Cammock	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
River	Cammock	Dublin City	CSO - Network Management & Operations Programme	WWTP
River	Cammock	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Cammock	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Cammock	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Cammock	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Cammock	Dublin City	Implement Upstream Programmes of Measures	CROSS
River	Cammock	Dublin City	Further Investigate cause of failure	DATA+
River	Cammock	Dublin City	Survey Banks/Coast	DATA+
River	Cammock	Dublin City	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Cammock	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Cammock	Dublin City	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Cammock	Dublin City	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Cammock	South Dublin	Further Investigate cause of failure	DATA+
River	Cammock	South Dublin	Investigate and eliminate misconnections	WWTP
River	Cammock	South Dublin	CSO - Upgrades and Rehabilitation	WWTP
River	Cammock	South Dublin	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Cammock	South Dublin	Further Investigate cause of failure	DATA+
River	Cammock	South Dublin	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Cammock	South Dublin	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Cammock	South Dublin	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Cammock	South Dublin	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Dargle	DLRCC	Inspections and Upgrades	Septic
River	Dargle	DLRCC	Introduce Soft Edges to Inferior Habitats	MORP
River	Dargle	DLRCC	Enforce Regulations on Septic Systems	Septic
River	Dargle	DLRCC	Further Investigate cause of failure	DATA+
River	Dargle	DLRCC	Mitigate impact of quarry activities	DS
River	Dargle	DLRCC	GSDS Compliance - CSOs	WWTP
River	Dargle	DLRCC	Facilitate Fish Migration	MORP
River	Dargle	DLRCC	Investigate and eliminate misconnections	WWTP
River	Dargle	DLRCC	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Dargle	DLRCC	CSO - Upgrades and Rehabilitation	WWTP
River	Dargle	DLRCC	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Dargle	DLRCC	River Polishing - Reed Bed	CROSS
River	Dargle	DLRCC	Survey Banks/Coast	DATA+
River	Dargle	DLRCC	Preservation and/or restoration of the bank	MORP
River	Dargle	DLRCC	Further Investigate cause of failure	DATA+
River	Dargle	DLRCC	Address diffuse silt pollution from green field site development	MORP
River	Dargle	DLRCC	Survey Banks/Coast	DATA+
River	Dargle	DLRCC	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Dargle	DLRCC	Forest Service - Forestry and Water Quality Guidelines	FOR
River	Dargle	DLRCC	OPW - Environmental River Enhancement Programme 2008 -2012	MORP
River	Dargle	DLRCC	DAFF restoration works on intensive landuse for Freshwater Morphology	MORP
River	Dargle	DLRCC	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
River	Dargle	DLRCC	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Dargle	DLRCC	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Dargle	Wicklow	Inspections and Upgrades	Septic
River	Dargle	Wicklow	Mitigate impact of quarry activities	DS
River	Dargle	Wicklow	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Dargle	Wicklow	Investigate and eliminate misconnections	WWTP
River	Dargle	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Dargle	Wicklow	CSO - Upgrades and Rehabilitation	WWTP
River	Dargle	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Dargle	Wicklow	Further Investigate cause of failure	DATA+
River	Dargle	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Dargle	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Dargle	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Dargle	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Deel	Meath	Enforce Regulations on Septic Systems	Septic
River	Deel	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Deel	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Deel	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Deel	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Deel	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Deel	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Deel	Westmeath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Deel	Westmeath	Implement Community Digestors for Alternative Energy	WWTP
River	Deel	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Deel	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Deel	Westmeath	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Deel	Westmeath	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Deel	Westmeath	Record daily abstraction rates	ABS
River	Deel	Westmeath	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Deel	Westmeath	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Deel	Westmeath	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Deel	Westmeath	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Delvin	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Delvin	Fingal	Implement Community Digestors for Alternative Energy	WWTP
River	Delvin	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Delvin	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Delvin	Meath	Tertiary Treatment	WWTP
River	Delvin	Meath	Enforce Regulations on Septic Systems	Septic
River	Delvin	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Delvin	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Delvin	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Delvin	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Delvin	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Delvin	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Delvin	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Delvin	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Devlin (Mattock)	Louth	Inspections and Upgrades	Septic
River	Devlin (Mattock)	Louth	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Devlin (Mattock)	Louth	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Devlin (Mattock)	Louth	Implement Community Digestors for Alternative Energy	WWTP
River	Devlin (Mattock)	Louth	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Devlin (Mattock)	Louth	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Devlin (Mattock)	Louth	Collect daily water level	ABS
River	Devlin (Mattock)	Louth	Record daily abstraction rates	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Devlin (Mattock)	Meath	Enforce Regulations on Septic Systems	Septic
River	Devlin (Mattock)	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Devlin (Mattock)	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Devlin (Mattock)	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Devlin (Mattock)	Meath	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Devlin (Mattock)	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Devlin (Mattock)	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Devlin (Mattock)	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Dodder	DLRCC	Introduce Soft Edges to Inferior Habitats	MORP
River	Dodder	DLRCC	GSDSDS Compliance - CSOs	WWTP
River	Dodder	DLRCC	Facilitate Fish Migration	MORP
River	Dodder	DLRCC	Investigate and eliminate misconnections	WWTP
River	Dodder	DLRCC	Investigate Fats, Oils and Grease Issues	WWTP
River	Dodder	DLRCC	River Polishing - Reed Bed	CROSS
River	Dodder	DLRCC	Survey Banks/Coast	DATA+
River	Dodder	DLRCC	Preservation and/or restoration of the bank	MORP
River	Dodder	DLRCC	Address diffuse silt pollution from green field site development	MORP
River	Dodder	DLRCC	Survey Banks/Coast	DATA+
River	Dodder	DLRCC	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Dodder	Dublin City	Introduce Soft Edges to Inferior Habitats	MORP
River	Dodder	Dublin City	Further Investigate cause of failure	DATA+
River	Dodder	Dublin City	Investigate and eliminate misconnections	WWTP
River	Dodder	Dublin City	Investigate Fats, Oils and Grease Issues	WWTP
River	Dodder	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
River	Dodder	Dublin City	CSO - Network Management & Operations Programme	WWTP
River	Dodder	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Dodder	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Dodder	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Dodder	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Dodder	Dublin City	Implement Upstream Programmes of Measures	CROSS
River	Dodder	Dublin City	Preservation and/or restoration of the bank	MORP
River	Dodder	Dublin City	Further Investigate cause of failure	DATA+
River	Dodder	Dublin City	Survey Banks/Coast	DATA+
River	Dodder	Dublin City	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Dodder	Dublin City	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Dodder	Dublin City	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Dodder	DLRCC	Morphology - Physical Modifications Campaign	MORP
River	Dodder	DLRCC	NPWS to develop and maintain a Webserver based register of designated sites accessible to LA, State Agencies, Stakeholders	HS
River	Dodder	DLRCC	NPWS to develop Guidance documents for Article 6 Assessments	HS
River	Dodder	DLRCC	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
River	Dodder	DLRCC	Develop Guidance on suite of measures for different habitats	HS
River	Dodder	DLRCC	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Dodder	DLRCC	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Dodder	South Dublin	Facilitate Fish Migration	MORP
River	Dodder	South Dublin	Investigate and eliminate misconnections	WWTP
River	Dodder	South Dublin	CSO - Upgrades and Rehabilitation	WWTP
River	Dodder	South Dublin	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Dodder	South Dublin	Further Investigate cause of failure	DATA+
River	Dodder	South Dublin	Further Investigate cause of failure	DATA+
River	Dodder	South Dublin	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Dodder	South Dublin	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Dodder	South Dublin	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Dodder	South Dublin	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Dodder	South Dublin	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Dodder	South Dublin	Record daily abstraction rates	ABS
River	Dodder	South Dublin	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Dodder	South Dublin	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Dodder	South Dublin	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Dodder	South Dublin	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Dodder	Wicklow	Survey Banks/Coast	DATA+
River	Dodder	Wicklow	Further Investigate cause of failure	DATA+
River	Donabate	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Donabate	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Donabate	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Kilmurry	Wexford	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Kilmurry	Wicklow	Inspections and Upgrades	Septic
River	Kilmurry	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Kilmurry	Wicklow	Further Investigate cause of failure	DATA+
River	Kilmurry	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Kilmurry	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Kilmurry	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Kilmurry	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Liffey	Dublin City	Investigate and eliminate misconnections	WWTP
River	Liffey	Dublin City	Investigate Fats, Oils and Grease Issues	WWTP
River	Liffey	Dublin City	CSO - Network Management & Operations Programme	WWTP
River	Liffey	Dublin City	Implement Upstream Programmes of Measures	CROSS
River	Liffey	Dublin City	Further Investigate cause of failure	DATA+
River	Liffey	Dublin City	Survey Banks/Coast	DATA+

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Liffey	Dublin City	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Liffey	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Liffey	Dublin City	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Liffey	Dublin City	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Liffey	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Liffey	Fingal	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Liffey	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Liffey	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Liffey	Kildare	Enforce Regulations on Septic Systems	Septic
River	Liffey	Kildare	Mitigate impact of quarry activities	DS
River	Liffey	Kildare	Investigate and eliminate misconnections	WWTP
River	Liffey	Kildare	Investigate Fats, Oils and Grease Issues	WWTP
River	Liffey	Kildare	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Liffey	Kildare	CSO - Upgrades and Rehabilitation	WWTP
River	Liffey	Kildare	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Liffey	Kildare	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Liffey	Kildare	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Liffey	Kildare	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Liffey	Kildare	Implement Upstream Programmes of Measures	CROSS
River	Liffey	Kildare	Further Investigate cause of failure	DATA+
River	Liffey	Kildare	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
River	Liffey	Kildare	Improve Removal of certain parameters at WWTP	WWTP
River	Liffey	Kildare	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Liffey	Kildare	Implement Community Digestors for Alternative Energy	WWTP
River	Liffey	Kildare	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Liffey	Kildare	Public awareness	Septic
River	Liffey	Kildare	Develop Guidance on suite of measures for different habitats	HS
River	Liffey	Kildare	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Liffey	Kildare	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Liffey	Kildare	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Liffey	Kildare	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Liffey	Kildare	Record daily abstraction rates	ABS
River	Liffey	Kildare	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Liffey	Kildare	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Liffey	Kildare	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Liffey	Kildare	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Liffey	South Dublin	Investigate and eliminate misconnections	WWTP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Liffey	South Dublin	CSO - Upgrades and Rehabilitation	WWTP
River	Liffey	South Dublin	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Liffey	South Dublin	Further Investigate cause of failure	DATA+
River	Liffey	South Dublin	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Liffey	South Dublin	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Liffey	South Dublin	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Liffey	South Dublin	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Liffey	Wicklow	Mitigate impact of quarry activities	DS
River	Liffey	Wicklow	Facilitate Fish Migration	MORP
River	Liffey	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Liffey	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Liffey	Wicklow	Further Investigate cause of failure	DATA+
River	Liffey	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Liffey	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Liffey	Wicklow	Forest Service - Forestry and Water Quality Guidelines	FOR
River	Liffey	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Liffey	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Liffey	Wicklow	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Liffey	Wicklow	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Liffey	Wicklow	Record daily abstraction rates	ABS
River	Liffey	Wicklow	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Liffey	Wicklow	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Liffey	Wicklow	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Liffey	Wicklow	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Lusk	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Lusk	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Lusk	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Mosney	Meath	Enforce Regulations on Septic Systems	Septic
River	Mosney	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Mosney	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Mosney	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Mosney	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Mosney	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Mosney	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Mosney	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Nanny	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Nanny	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Nanny	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Nanny	Meath	Tertiary Treatment	WWTP
River	Nanny	Meath	Enforce Regulations on Septic Systems	Septic
River	Nanny	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Nanny	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Nanny	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Nanny	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Nanny	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Nanny	Meath	PCS - Principles for Good Plant Protection Practise	Chem
River	Nanny	Meath	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
River	Nanny	Meath	LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Septic
River	Nanny	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
River	Nanny	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Nanny	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Newcastle	Wicklow	Inspections and Upgrades	Septic
River	Newcastle	Wicklow	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Newcastle	Wicklow	Investigate and eliminate misconnections	WWTP
River	Newcastle	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Newcastle	Wicklow	CSO Upgrades and Rehabilitation	WWTP
River	Newcastle	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Newcastle	Wicklow	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Newcastle	Wicklow	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Newcastle	Wicklow	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Newcastle	Wicklow	Further Investigate cause of failure	DATA+
River	Newcastle	Wicklow	Assess CSO and Water Quality Impact from Urban Pressures	WWTP
River	Newcastle	Wicklow	Improve Removal of certain parameters at WWTP	WWTP
River	Newcastle	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Newcastle	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Newcastle	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Newcastle	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Potters	Wicklow	Inspections and Upgrades	Septic
River	Potters	Wicklow	Mitigate impact of quarry activities	DS
River	Potters	Wicklow	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Potters	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Potters	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Potters	Wicklow	Further Investigate cause of failure	DATA+
River	Potters	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Potters	Wicklow	Implement Community Digestors for Alternative Energy	WWTP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Potters	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Potters	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Rathnew	Wicklow	Inspections and Upgrades	Septic
River	Rathnew	Wicklow	Implementation of S.U.D.S	WWTP
River	Rathnew	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Rathnew	Wicklow	Further Investigate cause of failure	DATA+
River	Rathnew	Wicklow	Further Investigate cause of failure	DATA+
River	Rathnew	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Rathnew	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Rathnew	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Rathnew	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Ryewater	Kildare	Enforce Regulations on Septic Systems	Septic
River	Ryewater	Kildare	Further Investigate cause of failure	DATA+
River	Ryewater	Kildare	Investigate Fats, Oils and Grease Issues	WWTP
River	Ryewater	Kildare	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Ryewater	Kildare	CSO - Upgrades and Rehabilitation	WWTP
River	Ryewater	Kildare	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Ryewater	Kildare	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Ryewater	Kildare	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Ryewater	Kildare	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Ryewater	Kildare	Further Investigate cause of failure	DATA+
River	Ryewater	Kildare	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Ryewater	Kildare	Implement Community Digestors for Alternative Energy	WWTP
River	Ryewater	Kildare	OPW - Environmental Drainage Maintenance Guidance Notes	MORP
River	Ryewater	Kildare	Public awareness	Septic
River	Ryewater	Kildare	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Ryewater	Kildare	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Ryewater	Meath	Enforce Regulations on Septic Systems	Septic
River	Ryewater	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Ryewater	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Ryewater	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Ryewater	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Ryewater	Meath	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
River	Ryewater	Meath	LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Septic
River	Ryewater	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
River	Ryewater	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Ryewater	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Santry Mayne Sluice	Dublin City	Investigate and eliminate misconnections	WWTP
River	Santry Mayne Sluice	Dublin City	Investigate Fats, Oils and Grease Issues	WWTP
River	Santry Mayne Sluice	Dublin City	CSO - Upgrades and Rehabilitation	WWTP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Santry Mayne Sluice	Dublin City	CSO - Network Management & Operations Programme	WWTP
River	Santry Mayne Sluice	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Santry Mayne Sluice	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
River	Santry Mayne Sluice	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
River	Santry Mayne Sluice	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
River	Santry Mayne Sluice	Dublin City	Implement Upstream Programmes of Measures	CROSS
River	Santry Mayne Sluice	Dublin City	Further Investigate cause of failure	DATA+
River	Santry Mayne Sluice	Dublin City	Survey Banks/Coast	DATA+
River	Santry Mayne Sluice	Dublin City	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Santry Mayne Sluice	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Santry Mayne Sluice	Dublin City	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Santry Mayne Sluice	Dublin City	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Santry Mayne Sluice	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Santry Mayne Sluice	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Santry Mayne Sluice	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Shanganagh	DLRCC	Introduce Soft Edges to Inferior Habitats	MORP
River	Shanganagh	DLRCC	GSDS Compliance - CSOs	WWTP
River	Shanganagh	DLRCC	Facilitate Fish Migration	MORP
River	Shanganagh	DLRCC	Investigate and eliminate misconnections	WWTP
River	Shanganagh	DLRCC	Investigate Fats, Oils and Grease Issues	WWTP
River	Shanganagh	DLRCC	River Polishing - Reed Bed	CROSS
River	Shanganagh	DLRCC	Survey Banks/Coast	DATA+
River	Shanganagh	DLRCC	Preservation and/or restoration of the bank	MORP
River	Shanganagh	DLRCC	Address diffuse silt pollution from green field site development	MORP
River	Shanganagh	DLRCC	Survey Banks/Coast	DATA+
River	Shanganagh	DLRCC	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Shanganagh	DLRCC	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Shanganagh	DLRCC	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Shanganagh	DLRCC	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Shanganagh	DLRCC	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Shanganagh	DLRCC	Record daily abstraction rates	ABS
River	Shanganagh	DLRCC	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Shanganagh	DLRCC	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Shanganagh	DLRCC	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Shanganagh	DLRCC	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
River	Stonyford	Meath	Enforce Regulations on Septic Systems	Septic
River	Stonyford	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Stonyford	Meath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Stonyford	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Stonyford	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Stonyford	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Stonyford	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Stonyford	Westmeath	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Stonyford	Westmeath	Implement Community Digestors for Alternative Energy	WWTP
River	Stonyford	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Stonyford	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Templeraíneay	Wicklow	Inspections and Upgrades	Septic
River	Templeraíneay	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Templeraíneay	Wicklow	CSO - Upgrades and Rehabilitation	WWTP
River	Templeraíneay	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Templeraíneay	Wicklow	Further Investigate cause of failure	DATA+
River	Templeraíneay	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Templeraíneay	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Templeraíneay	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Templeraíneay	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Tolka	Dublin City	Investigate and eliminate misconnections	WWTP
River	Tolka	Dublin City	Investigate Fats, Oils and Grease Issues	WWTP
River	Tolka	Dublin City	CSO - Network Management & Operations Programme	WWTP
River	Tolka	Dublin City	Implement Upstream Programmes of Measures	CROSS
River	Tolka	Dublin City	Further Investigate cause of failure	DATA+
River	Tolka	Dublin City	Survey Banks/Coast	DATA+
River	Tolka	Dublin City	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Tolka	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Tolka	Dublin City	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Tolka	Dublin City	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Tolka	Fingal	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Tolka	Fingal	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
River	Tolka	Fingal	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Tolka	Fingal	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Tolka	Meath	Enforce Regulations on Septic Systems	Septic
River	Tolka	Meath	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Tolka	Meath	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Tolka	Meath	Implement Community Digestors for Alternative Energy	WWTP
River	Tolka	Meath	Apply Heavily Modified Water Body Measures (See Table 14)	MORP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
River	Tolka	Meath	Department of Agriculture - Code of Good Practice and Guidelines on the use of biosolids in Agriculture, 1999	Manure
River	Tolka	Meath	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
River	Tolka	Meath	LAs to adopt a common Register of approved Site Assessors and common Code of Practice for maintaining register	Septic
River	Tolka	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
River	Tolka	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Tolka	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Vartry	Wicklow	Inspections and Upgrades	Septic
River	Vartry	Wicklow	Mitigate impact of quarry activities	DS
River	Vartry	Wicklow	Upgrade WWTW and Collecting Systems <2000 PE	WWTP
River	Vartry	Wicklow	Restrict Cattle Access to rivers - Create Cattle Drinking points	AGR-PS
River	Vartry	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
River	Vartry	Wicklow	Further Investigate cause of failure	DATA+
River	Vartry	Wicklow	Emphasise linkage between Planning, Water Services, and Environmental Sections within Local Authorities for Planning Purposes	CROSS
River	Vartry	Wicklow	Implement Community Digestors for Alternative Energy	WWTP
River	Vartry	Wicklow	Forest Service - Forestry and Water Quality Guidelines	FOR
River	Vartry	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
River	Vartry	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
River	Vartry	Wicklow	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
River	Vartry	Wicklow	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
River	Vartry	Wicklow	Record daily abstraction rates	ABS
River	Vartry	Wicklow	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
River	Vartry	Wicklow	Establish Minimum Instream Flow Conditions and requirements for compensation releases to allow flow variations	ABS
River	Vartry	Wicklow	In flow regulated rivers, establish guidance on flow variations to support ecology	ABS
River	Vartry	Wicklow	Develop Habitat Suitability Curves for coarse fish and other important aquatic organisms	ABS
River	Vartry	Wicklow	Develop Habitat Suitability Curves for salmonids in Irish Rivers	ABS
Lake	Acurry (Lough)	Cavan	Further Investigate cause of failure	DATA+
Lake	Acurry (Lough)	Cavan	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Acurry (Lough)	Cavan	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Acurry (Lough)	Cavan	Collect daily water level	ABS
Lake	Acurry (Lough)	Cavan	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Acurry (Lough)	Cavan	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Acurry (Lough)	Cavan	Record daily abstraction rates	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Lake	Acurry (Lough)	Cavan	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Acurry (Lough)	Cavan	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Annagh Lough or White Lough	Meath	Forest Service - Forestry and Water Quality Guidelines	FOR
Lake	Annagh Lough or White Lough	Meath	Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure
Lake	Annagh Lough or White Lough	Meath	Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	FOR
Lake	Annagh Lough or White Lough	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Annagh Lough or White Lough	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Annagh Lough or White Lough	Westmeath	Forest Service - Forestry and Water Quality Guidelines	FOR
Lake	Annagh Lough or White Lough	Westmeath	Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure
Lake	Annagh Lough or White Lough	Westmeath	Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	FOR
Lake	Annagh Lough or White Lough	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Annagh Lough or White Lough	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Bane (Lough)	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Bane (Lough)	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Bane (Lough)	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Bane (Lough)	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Bane (Lough)	Westmeath	Collect daily water level	ABS
Lake	Bane (Lough)	Westmeath	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Bane (Lough)	Westmeath	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Bane (Lough)	Westmeath	Record daily abstraction rates	ABS
Lake	Bane (Lough)	Westmeath	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Bane (Lough)	Westmeath	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Bane (Lough)	Westmeath	Initiate field work needed to develop water budgets to determine groundwater-surface water contributions and develop water budgets	ABS
Lake	Ben Lough	Westmeath	Further Investigate cause of failure	DATA+
Lake	Ben Lough	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Ben Lough	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Bray Lower (Lough)	Wicklow	Evaluate Bog Impact	Manure
Lake	Bray Lower (Lough)	Wicklow	Survey Banks/Coast	DATA+
Lake	Bray Lower (Lough)	Wicklow	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Bray Lower (Lough)	Wicklow	Develop Guidance on suite of measures for different habitats	HS
Lake	Bray Lower (Lough)	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Lake	Bray Lower (Lough)	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Bray Upper (Lough)	Wicklow	Evaluate Bog Impact	Manure
Lake	Bray Upper (Lough)	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Bray Upper (Lough)	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Dan (Lough)	Wicklow	Further Investigate cause of failure	DATA+
Lake	Dan (Lough)	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Dan (Lough)	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Doo (Lough)	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Doo (Lough)	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Drumkeery Lough	Cavan	Enforce Regulations on Septic Systems	Septic
Lake	Drumkeery Lough	Cavan	Septic system management programme	Septic
Lake	Drumkeery Lough	Cavan	Survey Banks/Coast	DATA+
Lake	Drumkeery Lough	Cavan	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Lake	Drumkeery Lough	Cavan	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Drumkeery Lough	Cavan	Develop Guidance on suite of measures for different habitats	HS
Lake	Drumkeery Lough	Cavan	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Drumkeery Lough	Cavan	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Drumkeery Lough	Cavan	Collect daily water level	ABS
Lake	Drumkeery Lough	Cavan	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Drumkeery Lough	Cavan	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Drumkeery Lough	Cavan	Record daily abstraction rates	ABS
Lake	Drumkeery Lough	Cavan	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Drumkeery Lough	Cavan	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Glass (Lough)	Meath	Further Investigate cause of failure	DATA+
Lake	Glass (Lough)	Meath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Glass (Lough)	Meath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Glass (Lough)	Westmeath	Further Investigate cause of failure	DATA+
Lake	Glass (Lough)	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Glass (Lough)	Westmeath	Collect daily abstraction rates and compensation flow releases	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Survey Banks/Coast	DATA+
Lake	Glenasmole Reservoirs (068)	South Dublin	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Glenasmole Reservoirs (068)	South Dublin	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Glenasmole Reservoirs (068)	South Dublin	Develop Guidance on suite of measures for different habitats	HS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Lake	Glenasmole Reservoirs (068)	South Dublin	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Collect daily abstraction rates and compensation flow releases	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Collect daily water level	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Record daily abstraction rates	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Glenasmole Reservoirs (068)	South Dublin	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Survey Banks/Coast	DATA+
Lake	Glenasmole Reservoirs (070)	South Dublin	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Glenasmole Reservoirs (070)	South Dublin	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Glenasmole Reservoirs (070)	South Dublin	Develop Guidance on suite of measures for different habitats	HS
Lake	Glenasmole Reservoirs (070)	South Dublin	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Collect daily abstraction rates and compensation flow releases	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Collect daily water level	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Record daily abstraction rates	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Glenasmole Reservoirs (070)	South Dublin	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Glendalough Lower Lake	Wicklow	Further Investigate cause of failure	DATA+
Lake	Glendalough Lower Lake	Wicklow	Forest Service - Forestry and Water Quality Guidelines	FOR
Lake	Glendalough Lower Lake	Wicklow	Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure
Lake	Glendalough Lower Lake	Wicklow	Forest Service - Protocol on acid sensitive areas	FOR

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Lake	Glendalough Lower Lake	Wicklow	Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	FOR
Lake	Glendalough Lower Lake	Wicklow	Updated Protocol on Acid sensitive areas based on updated acid sensitive areas map and research	FOR
Lake	Glendalough Lower Lake	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Glendalough Lower Lake	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Glendalough Upper Lake	Wicklow	Forest Service - Forestry and Water Quality Guidelines	FOR
Lake	Glendalough Upper Lake	Wicklow	Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure
Lake	Glendalough Upper Lake	Wicklow	Forest Service - Protocol on acid sensitive areas	FOR
Lake	Glendalough Upper Lake	Wicklow	Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	FOR
Lake	Glendalough Upper Lake	Wicklow	Updated Protocol on Acid sensitive areas based on updated acid sensitive areas map and research	FOR
Lake	Glendalough Upper Lake	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Glendalough Upper Lake	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Leixlip Liffey Reservoir	Kildare	Survey Banks/Coast	DATA+
Lake	Leixlip Liffey Reservoir	Kildare	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Leixlip Liffey Reservoir	Kildare	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Leixlip Liffey Reservoir	Kildare	Develop Guidance on suite of measures for different habitats	HS
Lake	Leixlip Liffey Reservoir	South Dublin	Survey Banks/Coast	DATA+
Lake	Leixlip Liffey Reservoir	South Dublin	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Leixlip Liffey Reservoir	South Dublin	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Leixlip Liffey Reservoir	South Dublin	Develop Guidance on suite of measures for different habitats	HS
Lake	Leixlip Liffey Reservoir	South Dublin	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Leixlip Liffey Reservoir	South Dublin	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Lene (Lough)	Westmeath	Further Investigate cause of failure	DATA+
Lake	Lene (Lough)	Westmeath	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Lene (Lough)	Westmeath	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Lene (Lough)	Westmeath	Collect daily water level	ABS
Lake	Lene (Lough)	Westmeath	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Lene (Lough)	Westmeath	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Lene (Lough)	Westmeath	Record daily abstraction rates	ABS
Lake	Lene (Lough)	Westmeath	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Lene (Lough)	Westmeath	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Lene (Lough)	Westmeath	Initiate field work needed to develop water budgets to determine groundwater-surface water contributions and develop water budgets	ABS
Lake	Nadreegeal Loughs	Cavan	Maintain good hydrological status	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Lake	Nadreegeal Loughs	Cavan	Survey Banks/Coast	DATA+
Lake	Nadreegeal Loughs	Cavan	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Nadreegeal Loughs	Cavan	Develop Guidance on suite of measures for different habitats	HS
Lake	Nadreegeal Loughs	Cavan	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Nadreegeal Loughs	Cavan	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Nadreegeal Loughs	Cavan	Collect daily water level	ABS
Lake	Nadreegeal Loughs	Cavan	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Nadreegeal Loughs	Cavan	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Nadreegeal Loughs	Cavan	Record daily abstraction rates	ABS
Lake	Nadreegeal Loughs	Cavan	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Nahanagan (Lough)	Wicklow	Survey Banks/Coast	DATA+
Lake	Nahanagan (Lough)	Wicklow	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Nahanagan (Lough)	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Nahanagan (Lough)	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Nahanagan Upper	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Nahanagan Upper	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Ouler (Lough)	Wicklow	Evaluate Bog Impact	Manure
Lake	Ouler (Lough)	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Ouler (Lough)	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Pollaphuca Reservoir	Kildare	Survey Banks/Coast	DATA+
Lake	Pollaphuca Reservoir	Kildare	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Pollaphuca Reservoir	Kildare	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Pollaphuca Reservoir	Kildare	Develop Guidance on suite of measures for different habitats	HS
Lake	Pollaphuca Reservoir	Wicklow	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Pollaphuca Reservoir	Wicklow	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Pollaphuca Reservoir	Wicklow	Develop Guidance on suite of measures for different habitats	HS
Lake	Pollaphuca Reservoir	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Pollaphuca Reservoir	Wicklow	Collect daily abstraction rates and compensation flow releases	ABS
Lake	Ramor (Lough)	Cavan	Enforce Regulations on Septic Systems	Septic
Lake	Ramor (Lough)	Cavan	Septic system management programme	Septic
Lake	Ramor (Lough)	Cavan	Survey Banks/Coast	DATA+
Lake	Ramor (Lough)	Cavan	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Lake	Ramor (Lough)	Cavan	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Ramor (Lough)	Cavan	Develop Guidance on suite of measures for different habitats	HS
Lake	Ramor (Lough)	Cavan	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Lake	Ramor (Lough)	Cavan	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Redbog	Kildare	No Measure Needed	CROSS
Lake	Tay (Lough)	Wicklow	Further Investigate cause of failure	DATA+
Lake	Tay (Lough)	Wicklow	Survey Banks/Coast	DATA+
Lake	Tay (Lough)	Wicklow	Forest Service - Forestry and Water Quality Guidelines	FOR
Lake	Tay (Lough)	Wicklow	Forest Service - Forestry and Aerial Fertilisation Guidelines	Manure
Lake	Tay (Lough)	Wicklow	Update Forest Service Guidance document on new EQS standards, Aerial Fertilisation Regulations, Updated Acidification protocol.	FOR
Lake	Tay (Lough)	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Tay (Lough)	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Upper Lough Skeagh	Cavan	Enforce Regulations on Septic Systems	Septic
Lake	Upper Lough Skeagh	Cavan	Septic system management programme	Septic
Lake	Upper Lough Skeagh	Cavan	Survey Banks/Coast	DATA+
Lake	Upper Lough Skeagh	Cavan	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Lake	Upper Lough Skeagh	Cavan	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Upper Lough Skeagh	Cavan	Develop Guidance on suite of measures for different habitats	HS
Lake	Upper Lough Skeagh	Cavan	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Upper Lough Skeagh	Cavan	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Lake	Upper Lough Skeagh	Cavan	Collect daily water level	ABS
Lake	Upper Lough Skeagh	Cavan	Reduce water demand through improved conservation, plumbing code changes, reduce unaccounted for water, rainwater harvesting, domestic water metering, universal water charging, or restricting development where water resources are over-subscribed	ABS
Lake	Upper Lough Skeagh	Cavan	Alter the availability of supply through conjunctive use or integrated water resources management, water reuse, implementing S.U.D schemes in developed areas, implementation of abstraction controls, use of additional storage or alternative water source	ABS
Lake	Upper Lough Skeagh	Cavan	Record daily abstraction rates	ABS
Lake	Upper Lough Skeagh	Cavan	Further Research on Abstraction Pressure effects on lake ecology (national)	ABS
Lake	Upper Lough Skeagh	Cavan	Investigate implementing smaller water schemes to reduce demand on other resources	ABS
Lake	Upper Lough Skeagh	Cavan	Initiate field work needed to develop water budgets to determine groundwater-surface water contributions and develop water budgets	ABS
Lake	Varty Reservoir	Wicklow	Survey Banks/Coast	DATA+
Lake	Varty Reservoir	Wicklow	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Lake	Varty Reservoir	Wicklow	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Lake	Varty Reservoir	Wicklow	Develop Guidance on suite of measures for different habitats	HS
Lake	Varty Reservoir	Wicklow	Modernise Abstraction Legislation, including a system for licensing surface water abstractions	ABS
Lake	Varty Reservoir	Wicklow	Conduct awareness campaign for sustainable domestic water use, including rainwater harvesting and domestic soakaways for stormwater	ABS
Groundwater	Aleckafin Contaminated Land	Kildare	No Measure Needed	CROSS
Groundwater	Arklow Urban	Wicklow	No Measure Required	CROSS
Groundwater	Ashbourne Urban Nth	Fingal	No Measure Needed	CROSS
Groundwater	Ashbourne Urban Nth	Meath	No Measure Needed	CROSS
Groundwater	Ashbourne Urban Sth	Meath	No Measure Needed	CROSS
Groundwater	Ashford Sand & Gravel	Wicklow	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Ashford Sand & Gravel	Wicklow	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Athboy (001)	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Athboy (001)	Kildare	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Athboy (001)	Meath	No Measure Needed	CROSS
Groundwater	Athboy (001)	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Athboy (001)	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Athboy (001)	Offaly	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Athboy (001)	Offaly	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Athboy (001)	Westmeath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Athboy (001)	Westmeath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Bailieborough	Cavan	No Measure Needed	CROSS
Groundwater	Bailieborough	Meath	No Measure Needed	CROSS
Groundwater	Balbriggan	Fingal	No Measure Needed	CROSS
Groundwater	Balbriggan Urban	Fingal	No Measure Needed	CROSS
Groundwater	Ballany Sand & Gravel	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Ballany Sand & Gravel	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Ballany Sand & Gravel	Westmeath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Ballany Sand & Gravel	Westmeath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Ballymore Eustace Sand & Gravel	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Ballymore Eustace Sand & Gravel	Kildare	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Balrothery	Fingal	No Measure Needed	CROSS
Groundwater	Basketstown LF	Meath	No Measure Needed	CROSS
Groundwater	Bettystown	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Bettystown	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Bettystown	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Bettystown	Meath	Licensing system for groundwater abstractions	ABS
Groundwater	Blessington Sand & Gravel	Kildare	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Blessington Sand & Gravel	Kildare	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Blessington Sand & Gravel	Kildare	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Blessington Sand & Gravel	Wicklow	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Blessington Sand & Gravel	Wicklow	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Blessington Sand & Gravel	Wicklow	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Boyle Contaminated Land	Louth	No Measure Needed	CROSS
Groundwater	Bray Urban	DLRCC	No Measure Needed	CROSS
Groundwater	Bray Urban	Wicklow	No Measure Needed	CROSS
Groundwater	Castlekeeran Sand & Gravel	Meath	No Measure Needed	CROSS
Groundwater	Curragh Sand & Gravel	Kildare	No Measure Needed	CROSS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Donore	Meath	No Measure Needed	CROSS
Groundwater	Drogheda	Louth	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Drogheda	Louth	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Drogheda	Louth	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Drogheda	Louth	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Drogheda	Louth	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Drogheda	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Drogheda	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Drogheda	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Drogheda	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Drogheda	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Drogheda Urban	Louth	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Drogheda Urban	Louth	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Drogheda Urban	Louth	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Drogheda Urban	Louth	Well construction practices/requirements	WWTP
Groundwater	Drogheda Urban	Louth	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Drogheda Urban	Louth	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Drogheda Urban	Louth	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Drogheda Urban	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Drogheda Urban	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Drogheda Urban	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Drogheda Urban	Meath	Well construction practices/requirements	WWTP
Groundwater	Drogheda Urban	Meath	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Drogheda Urban	Meath	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Drogheda Urban	Meath	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Drogheda LF	Louth	No Measure Needed	CROSS
Groundwater	Dublin	Fingal	No Measure Needed	CROSS
Groundwater	Dublin	Kildare	No Measure Needed	CROSS
Groundwater	Dublin	Meath	No Measure Needed	CROSS
Groundwater	Dublin Urban	DLRCC	No Measure Needed	CROSS
Groundwater	Dublin Urban	Dublin City	No Measure Needed	CROSS
Groundwater	Dublin Urban	Dublin City	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Dublin Urban	Dublin City	Well construction practices/requirements	WWTP
Groundwater	Dublin Urban	Dublin City	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Dublin Urban	Dublin City	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Dublin Urban	Dublin City	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dublin Urban	Dublin City	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Dublin Urban	DLRCC	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Dublin Urban	DLRCC	Well construction practices/requirements	WWTP
Groundwater	Dublin Urban	DLRCC	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Dublin Urban	DLRCC	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Dublin Urban	DLRCC	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dublin Urban	DLRCC	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Dublin Urban	Fingal	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Dublin Urban	Fingal	Well construction practices/requirements	WWTP
Groundwater	Dublin Urban	Fingal	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Dublin Urban	Fingal	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Dublin Urban	Fingal	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dublin Urban	Fingal	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Dublin Urban	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Dublin Urban	Kildare	Well construction practices/requirements	WWTP
Groundwater	Dublin Urban	Kildare	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Dublin Urban	Kildare	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Dublin Urban	Kildare	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dublin Urban	Kildare	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Dublin Urban	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Dublin Urban	Meath	Well construction practices/requirements	WWTP
Groundwater	Dublin Urban	Meath	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Dublin Urban	Meath	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Dublin Urban	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dublin Urban	Meath	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Dublin Urban	South Dublin	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Dublin Urban	South Dublin	Well construction practices/requirements	WWTP
Groundwater	Dublin Urban	South Dublin	Carry out groundwater vulnerability mapping during geotechnical investigations of new infrastructure, including sewer pipeline routes; submit information to local authorities and GSI.	WWTP
Groundwater	Dublin Urban	South Dublin	Assess risk groundwater pollution when designing and constructing SUDS alternatives	WWTP
Groundwater	Dublin Urban	South Dublin	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dublin Urban	South Dublin	Avoid sewer systems in Inner Source Protection Zones	WWTP
Groundwater	Duleek	Fingal	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Duleek	Fingal	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Duleek	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Duleek	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Dunshaughlin	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Dunshaughlin	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Enniskerry Sand & Gravel	Wicklow	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Enniskerry Sand & Gravel	Wicklow	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Enniskerry Sand & Gravel	Wicklow	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Enniskerry Sand & Gravel	Wicklow	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Enniskerry Sand & Gravel	Wicklow	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Fassaroe LF	Wicklow	No Measure Needed	CROSS
Groundwater	Gormanstown Sand & Gravel	Kildare	No Measure Needed	CROSS
Groundwater	Gormanstown Sand & Gravel	Wicklow	No Measure Needed	CROSS
Groundwater	Greystones Urban	Wicklow	No Measure Needed	CROSS
Groundwater	Hill of Tara	Meath	No Measure Needed	CROSS
Groundwater	Hynestown	Fingal	No Measure Needed	CROSS
Groundwater	Kilcoole Sand & Gravel	Wicklow	No Measure Needed	CROSS
Groundwater	Kilcoole Sand & Gravel	Wicklow	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Kilcoole Sand & Gravel	Wicklow	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Kilcoole Sand & Gravel	Wicklow	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Kilcullen	DLRCC	No Measure Needed	CROSS
Groundwater	Kilcullen	Kildare	No Measure Needed	CROSS
Groundwater	Kilcullen	South Dublin	No Measure Needed	CROSS
Groundwater	Kilcullen	Wicklow	No Measure Needed	CROSS
Groundwater	Killyconny Bog (Cloghbally)	Cavan	No Measure Needed	CROSS
Groundwater	Killyconny Bog (Cloghbally)	Meath	No Measure Needed	CROSS
Groundwater	Kilrathmurry Sand & Gravel	Kildare	No Measure Needed	CROSS
Groundwater	Longwood	Meath	No Measure Needed	CROSS
Groundwater	Lough Lene	Meath	No Measure Needed	CROSS
Groundwater	Lough Lene	Westmeath	No Measure Needed	CROSS
Groundwater	Lusk-Bog of the Ring	Fingal	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Lusk-Bog of the Ring	Fingal	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Lusk-Bog of the Ring	Fingal	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Lusk-Bog of the Ring	Fingal	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Lusk-Bog of the Ring	Fingal	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Lusk-Bog of the Ring	Fingal	Licensing system for groundwater abstractions	ABS
Groundwater	Lusk-Bog of the Ring	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Lusk-Bog of the Ring	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Lusk-Bog of the Ring	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Lusk-Bog of the Ring	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Lusk-Bog of the Ring	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Lusk-Bog of the Ring	Meath	Licensing system for groundwater abstractions	ABS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Lusk-East	Fingal	No Measure Needed	CROSS
Groundwater	Lusk-West	Fingal	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Lusk-West	Fingal	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Lusk-West	Fingal	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Lusk-West	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Lusk-West	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Lusk-West	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Mount Hevey Bog	Meath	No Measure Required	CROSS
Groundwater	Mount Hevey Bog	Westmeath	No Measure Required	CROSS
Groundwater	Moynalty	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Moynalty	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Moynalty	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Moynalty	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Moynalty	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Naas	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Naas	Kildare	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Naas Bedrock Nth Urban	Kildare	No Measure Needed	CROSS
Groundwater	Naas Bedrock Sth Urban	Kildare	No Measure Needed	CROSS
Groundwater	Naas Contaminated Land	Kildare	No Measure Needed	CROSS
Groundwater	Naas SG Urban	Kildare	No Measure Needed	CROSS
Groundwater	Navan Nth Urban	Meath	No Measure Needed	CROSS
Groundwater	Navan Orebody	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Navan Orebody	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Navan Orebody 2	Meath	No Measure Required	CROSS
Groundwater	Navan Sth Urban	Meath	No Measure Needed	CROSS
Groundwater	Navan Tailings	Meath	No Measure Needed	CROSS
Groundwater	Newbridge Urban	Kildare	No Measure Needed	CROSS
Groundwater	Newtown Lough	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Newtown Lough	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Newtown Lough	Westmeath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Newtown Lough	Westmeath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Old Kilcullen Sand & Gravel	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Old Kilcullen Sand & Gravel	Kildare	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	RAHEENMORE BOG	Offaly	No Measure Needed	CROSS
Groundwater	Realtage	Meath	No Measure Required	CROSS
Groundwater	Rush Urban	Fingal	No Measure Needed	CROSS
Groundwater	Rye Water Valley GWDTE	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Rye Water Valley GWDTE	Kildare	Use of pesticides within groundwater Source Protection Zones	Chem

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Rye Water Valley GWDTE	Kildare	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Rye Water Valley GWDTE	Kildare	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Rye Water Valley GWDTE	Kildare	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Rye Water Valley GWDTE	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Rye Water Valley GWDTE	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Rye Water Valley GWDTE	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Rye Water Valley GWDTE	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Rye Water Valley GWDTE	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Skerries Nth Urban	Fingal	No Measure Needed	CROSS
Groundwater	Swords	Fingal	No Measure Required	CROSS
Groundwater	Swords	Meath	No Measure Needed	CROSS
Groundwater	Swords Urban	Fingal	No Measure Required	CROSS
Groundwater	Swords Contaminated Land	Fingal	No Measure Needed	CROSS
Groundwater	Tinnakilly Contaminated Land	Wicklow	No Measure Needed	CROSS
Groundwater	Trim	Kildare	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Trim	Kildare	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Trim	Kildare	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Trim	Kildare	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Trim	Kildare	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
Groundwater	Trim	Louth	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Trim	Louth	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Trim	Louth	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Trim	Louth	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Trim	Louth	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
Groundwater	Trim	Meath	No Measure Needed	CROSS
Groundwater	Trim	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Trim	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Trim	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Trim	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Trim	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Trim	Offaly	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Trim	Offaly	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Trim	Offaly	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Trim	Offaly	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Trim	Offaly	Development Plans/Local Area Plans - Plans should integrate OSWTS Risk matrices	Septic
Groundwater	Trim Urban	Meath	No Measure Needed	CROSS
Groundwater	Walkinstown Contaminated Land	Dublin City	No Measure Required	CROSS

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Groundwater	Walkinstown Contaminated Land	South Dublin	No Measure Needed	CROSS
Groundwater	Wicklow Central (Avoca Mine)	Wicklow	Treatment of Mine Discharge	DS
Groundwater	Wicklow East	DLRCC	No Measure Needed	CROSS
Groundwater	Wicklow East	Wicklow	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Wicklow East	Wicklow	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Wicklow South	Wexford	No Measure Needed	CROSS
Groundwater	Wicklow South	Wicklow	No Measure Required	CROSS
Groundwater	Wilkinstown	Louth	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Wilkinstown	Louth	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Wilkinstown	Louth	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Wilkinstown	Louth	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Wilkinstown	Louth	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Groundwater	Wilkinstown	Meath	EPA - Code of Practice Wastewater Treatment Systems for Single Houses	Septic
Groundwater	Wilkinstown	Meath	Use of pesticides within groundwater Source Protection Zones	Chem
Groundwater	Wilkinstown	Meath	Pesticides - Reporting and auditing of sales and usage by sector	DS
Groundwater	Wilkinstown	Meath	Pesticides - Licensing and distribution of DAFF's GIS mapping of cropping patterns to EPA and local authorities	DS
Groundwater	Wilkinstown	Meath	LAs to utilise risk maps of OSWTS to inform decision making and target areas for inspections	Septic
Coastal	Boyne Estuary Plume Zone	Louth	Implement Upstream Programmes of Measures	CROSS
Coastal	Dublin Bay	DLRCC	Proper Disposals of Harbour Dredgings	DS
Coastal	Dublin Bay	DLRCC	Monitor Shipping Activities	DS
Coastal	Dublin Bay	DLRCC	GDSDS Compliance - CSOs	WWTP
Coastal	Dublin Bay	DLRCC	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Dublin Bay	DLRCC	CSO - Implement FOGG Regulations	WWTP
Coastal	Dublin Bay	DLRCC	CSO - Network Management & Operations Programme	WWTP
Coastal	Dublin Bay	DLRCC	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Dublin Bay	DLRCC	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Coastal	Dublin Bay	DLRCC	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Coastal	Dublin Bay	DLRCC	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Coastal	Dublin Bay	DLRCC	Survey Banks/Coast	DATA+
Coastal	Dublin Bay	DLRCC	Survey Banks/Coast	DATA+
Coastal	Dublin Bay	DLRCC	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Coastal	Dublin Bay	Dublin City	Monitor Shipping Activities	DS
Coastal	Dublin Bay	Dublin City	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Dublin Bay	Dublin City	CSO - Implement FOGG Regulations	WWTP
Coastal	Dublin Bay	Dublin City	CSO - Network Management & Operations Programme	WWTP
Coastal	Dublin Bay	Dublin City	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Dublin Bay	Dublin City	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Coastal	Dublin Bay	Dublin City	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Coastal	Dublin Bay	Dublin City	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Coastal	Dublin Bay	Dublin City	Survey Banks/Coast	DATA+
Coastal	Dublin Bay	Dublin City	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Coastal	Dublin Bay	Dublin City	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Coastal	Dublin Bay	DLRCC	LA to adopt a common approach to issuance of Section 4 and 16 licences	S4

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Coastal	Dublin Bay	DLRCC	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Coastal	Dublin Bay	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Dublin Bay	Fingal	CSO - Implement FOGG Regulations	WWTP
Coastal	Dublin Bay	Fingal	CSO - Network Management & Operations Programme	WWTP
Coastal	Dublin Bay	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Dublin Bay	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Coastal	Dublin Bay	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Coastal	Dublin Bay	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Coastal	Dublin Bay	Fingal	Implement Upstream Programmes of Measures	CROSS
Coastal	Dublin Bay	Fingal	No Measure Required	CROSS
Coastal	Dublin Bay	Fingal	Survey Banks/Coast	DATA+
Coastal	Dublin Bay	Fingal	Apply Heavily Modified Water Body Measures (See Table 14)	MORP
Coastal	Irish Sea Dublin (HA 09)	DLRCC	No Measure Required	CROSS
Coastal	Irish Sea Dublin (HA 09)	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Irish Sea Dublin (HA 09)	Fingal	CSO - Implement FOGG Regulations	WWTP
Coastal	Irish Sea Dublin (HA 09)	Fingal	CSO - Network Management & Operations Programme	WWTP
Coastal	Irish Sea Dublin (HA 09)	Fingal	Implement Upstream Programmes of Measures	CROSS
Coastal	Malahide Bay	Fingal	Tertiary Treatment	WWTP
Coastal	Malahide Bay	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Malahide Bay	Fingal	CSO - Implement FOGG Regulations	WWTP
Coastal	Malahide Bay	Fingal	CSO - Network Management & Operations Programme	WWTP
Coastal	Malahide Bay	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Malahide Bay	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Coastal	Malahide Bay	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Coastal	Malahide Bay	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Coastal	Malahide Bay	Fingal	Implement Upstream Programmes of Measures	CROSS
Coastal	Malahide Bay	Fingal	No Measure Required	CROSS
Coastal	Malahide Bay	Fingal	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS
Coastal	Northwestern Irish Sea (HA 08)	Fingal	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Northwestern Irish Sea (HA 08)	Fingal	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Northwestern Irish Sea (HA 08)	Fingal	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Coastal	Northwestern Irish Sea (HA 08)	Fingal	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Coastal	Northwestern Irish Sea (HA 08)	Fingal	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Coastal	Northwestern Irish Sea (HA 08)	Fingal	Improve Removal of certain parameters at WWTP	WWTP
Coastal	Northwestern Irish Sea (HA 08)	Meath	No Measure Required	CROSS
Coastal	Rockabill	Fingal	Implement Upstream Programmes of Measures	CROSS
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wexford	Implement Upstream Programmes of Measures	CROSS
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Assess the effects of coastal defences	MORP

Table B1: The Supplementary Programme of Measures per Water Management Unit in the Eastern District (contd.)

Water Body Type	Water Management Unit	Local Authority	Measure Name	Source Code
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Survey Banks/Coast	DATA+
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Implement Upstream Programmes of Measures	CROSS
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Assess need for Barrier Removal - based on risk and expert judgement	MORP
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Review of marine departmental responsibilities - and legislative coverage of transitional and coastal water bodies.	MORP
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Inclusion of morphology as a consideration within the current development (SEA, EIA, etc) appraisal process	MORP
Coastal	Southwestern Irish Sea - Brittas Bay (HA 10)	Wicklow	Coastal Zone Management Schemes, e.g. Bantry Bay Charter	MORP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Assess the effects of coastal defences	MORP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Review Dredging Practice	MORP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Survey Banks/Coast	DATA+
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Survey Banks/Coast	DATA+
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Assess need for Barrier Removal - based on risk and expert judgement	MORP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Inclusion of morphology as a consideration within the current development (SEA, EIA, etc) appraisal process	MORP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	Coastal Zone Management Schemes, e.g. Bantry Bay Charter	MORP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	DLRCC	For sites not at favourable conservation Status Set targets and timeframe for achieving status	HS
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Monitor Shipping Activities	DS
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	CSO - Upgrades and Rehabilitation	WWTP
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Diffuse Runoff (Urban) - Implement SUDS	U-DIFF
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Diffuse Runoff (Urban) - Gullies Management	U-DIFF
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Diffuse Runoff (Urban) - Street Cleaning Programme	U-DIFF
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Diffuse Runoff (Urban) - Storm Sewers Separation (Screening & Treatment)	U-DIFF
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Implement Upstream Programmes of Measures	CROSS
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	Survey Banks/Coast	DATA+
Coastal	Southwestern Irish Sea - Killiney Bay (HA10)	Wicklow	For sites not at Favourable conservation Status Set targets and timeframe for achieving status	HS

Appendix A - Plans and Programmes

Article 13(4) of the Water Framework Directive requests a register of any more detailed programmes and management plans for the river basin district dealing with particular sub-basins, sectors, issues or water types, together with a summary of their content. Up to 300 plans and programmes were identified as listed in the table below. This Appendix has been provided by the Shannon River Basin District Project.

Table A1: Eastern River Basin District – Land Use and Spatial Planning Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
National				
National Spatial Strategy for Ireland, 2002 to 2020	2020	The Planning and Development Act, 2000 (S.I. No. 30 of 2000) – not sure about this	DEHLG – lead Regional & Local Authorities - support	20 year strategy Strategy to achieve a better balance of social, economic and physical development across Ireland
National Development Plan, 2007 to 2013	2010	EC Structural Funds Regulation, 1994 (3193 of 1994)	Department of Finance, other government departments and agencies	6 year plan Plan to improve the quality of life for everybody by investing in infrastructure, people, industry and enterprise and regional development
Regional				
Greater Dublin Regional Planning Guidelines, 2004 to 2016	2010	The Planning and Development Act, 2000 (S.I. No. 30 of 2000)	West Regional Planning Authority	12 years with review every 6 years Strategic planning framework for the development of the region and for inter-regional cooperation. Implements the NSS.
Border Regional Planning Guidelines, 2004 to 2020	2010	The Planning and Development Act, 2000 (S.I. No. 30 of 2000)	Border Regional Planning Authority	16 years with review every 6 years Strategic planning framework for the development of the region and for inter-regional cooperation. Implements the NSS.
Midlands Regional Planning Guidelines, 2004 to 2020	2010	The Planning and Development Act, 2000 (S.I. No. 30 of 2000)	Midlands Regional Authority	16 years with review every 6 years Strategic planning framework for the development of the region and for inter-regional cooperation. Implements the NSS.

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Table A1: Eastern River Basin District – Land Use and Spatial Planning Plans (contd.)

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
Local				
Cavan County Development Plan, 2003 to 2009	2007	The Planning and Development Acts, 1963 to 2000 (S.I. No. 30 of 2000)	Cavan County Council	All Local Development Plans are 6 years with review after 4 years Overall strategy for the proper planning and sustainable development of the area
Dun Laoghaire/Rathdown County Development Plan, 2004 to 2010	2008		Dun Laoghaire/ Rathdown County Council	
Fingal County Development Plan, 2005 to 2011	2009		Fingal County Council	
Kildare County Development Plan, 2005 to 2011	2009		Kildare County Council	
Louth County Development Plan, 2003 to 2009	2007		Louth County Council	
Meath County Development Plan, 2007 to 2013	2011		Meath County Council	
Offaly County Development Plan, 2003 to 2009	2007		Offaly County Council	
South Dublin County Development Plan, 2004 to 2010	2008		South Dublin County Council	
Westmeath County Development Plan, 2002 to 2008	2006		Westmeath County Council	
Wexford County Development Plan, 2007 to 2013	2011		Wexford County Council	
Wicklow County Development Plan, 2004 to 2010	2008		Wicklow County Council	
Dublin City Development Plan, 2005 to 2011	2009		Dublin City Council	
Drogheda Development Plan, 2005 to 2011	2009		Louth County Council	
Arklow Environs Local Area Plan, 2005 to 2011	2009		Wicklow County Council	
Bray Development Plan, 2005 to 2011	2009		Wicklow County Council	
Kells Local Area Plan, 2007 to 2013	2011		Meath County Council	
Naas Town Development Plan, 2005 to 2011	2009		Kildare County Council	
Navan Local Area Plan, 2004 to 2010	2008		Meath County Council	
Trim Development Plan, 2002 to 2008	2008		Meath County Council	
Wicklow Town Development Plan, 2007 to 2013	2011		Wicklow County Council	
Mullagh Local Area Plan, 2006 to 2009	2011		Cavan County Council	
Woodbrook/Shanganagh Local Area Plan, 2006 to 2010	2008		Dunlaoghaire Rathdown County Council	
Kiltiernan/Glenamuck Local Area Plan, 2007 to 2010	2008		Dunlaoghaire Rathdown County Council	
Stillorgan Local Area Plan, 2007 to 2010	2008		Dunlaoghaire Rathdown County Council	
Dublin Airport Local Area Plan, 2006 to 2012	2010		Fingal County Council	
North West Balbriggan Local Area Plan, 2005 to 2011	2009		Fingal County Council	
South East Balbriggan Local Area Plan, 2006 to 2012	2010		Fingal County Council	
North Ballymun Local Area Plan, 2005 to 2011	2009		Fingal County Council	
Cappagh Road Local Area Plan, 2005 to 2011	2009		Fingal County Council	
Donabate Local Area Plan, 2006 to 2012	2010		Fingal County Council	
Hacketstown Local Area Plan, 2002 to 2010	2008		Fingal County Council	
Hollywoodrath Local Area Plan, 2006 to 2012	2010		Fingal County Council	
Kinsealy Local Area Plan, 2006 to 2012	2010		Fingal County Council	
Portmarnock Local Area Plan, 2006 to 2012	2010		Fingal County Council	
Stephenstown, Cloghder & Clonard Local Area Plan, 2007 to 2013	2011		Fingal County Council	
Athgarvan Local Area Plan, 2007 to 2013	2011		Kildare County Council	
Newbridge Local Area Plan, 2003 to 2009	2007		Kildare County Council	
Celbridge Local Area Plan, 2002 to 2008	2006		Kildare County Council	
Kilcullen Local Area Plan, 2001 to 2007	2005		Kildare County Council	
Leixlip Local Area Plan, 2002 to 2008	2006		Kildare County Council	
Sallins Local Area plan, 2001 to 2007	2005		Kildare County Council	
Straffan Local Area Plan, 2002 to 2008	2006		Kildare County Council	
Clane Local Area Plan, 2002 to 2008	2006		Kildare County Council	
Kilcock Local Area Plan, 2002 to 2008	2009	Kildare County Council		
Kill Development Plan 2002 to 2008	2006	Kildare County Council		
Maynooth Development Plan, 2002 to 2008	2006	Kildare County Council		
Drogheda Docklands Area Plan, 2007 to 2011	2009	Louth County Council		
Collon Local Area Plan, 2002 to 2008	2006	Louth County Council		
Tullyallen Local Area Plan, 2003 to 2009	2007	Louth County Council		
North Drogheda Environs Local Area Plan, 2004 to 2010	2008	Louth County Council		
Effernock Local Area Plan, 2003 to 2009	2007	Meath County Council		
Trim Town Centre Local Area Plan, Local Area Plan, 2004 to 2008	2006	Meath County Council		
East Meath Local Area Plan, 2005 to 2013	2011	Meath County Council		
Kells Backlands Local Area Plan, 2006 to 2013	2011	Meath County Council		
Navan Local Area Plan 3, 2006 to 2011	2009	Meath County Council		
Navan Local Area Plan 4, 2007 to 2017	2015	Meath County Council		
Edenderry Town Development Plan 2003 to 2009	2007	Offaly County Council		
Rathcoole Local Area Plan, 2002 to 2008	2006	South Dublin County Council		
Newcastle – Lyons Local Area Plan, 2003 to 2009	2007	South Dublin County Council		
Tallaght Town Centre Local Area Plan, 2006 to 2012	2010	South Dublin County Council		
Liffey Valley Town Centre Local Area Plan, 2008 to 2014	2012	South Dublin County Council		
Clonburris Local Area Plan, 2008 to 2014	2012	South Dublin County Council		
Clonmellon Village Local Area Plan, 2005 to 2010	2008	Westmeath County Council		
Delvin Village Local Area Plan, 2002 to 2008	2008	Westmeath County Council		
Killucan/Rathwire Village Local Area Plan, 2004 to 2010	2008	Westmeath County Council		
Kinnegad Village Local Area Plan, 2002 to 2008	2006	Westmeath County Council		
Rochfortbridge Village Local Area Plan, 2002 to 2008	2006	Westmeath County Council		
Arklow Environs Local Area Plan, 2006 to 2012	2010	Wicklow County Council		
Ashford Town Local Area Plan, 2001 to 2007	2005	Wicklow County Council		
Enniskerry Local Area Plan, 2002 to 2008	2006	Wicklow County Council		
Greystones/Delgany Local Area Plan, 2006 to 2012	2010	Wicklow County Council		
Newtownmountkennedy Local Area Plan, 2002 to 2008	2006	Wicklow County Council		
Kilcoole Local Area Plan, 2002 to 2008	2006	Wicklow County Council		
Rathdrum Local Area Plan, 2006 to 2012	2006	Wicklow County Council		
Wicklow Environs Local Area Plan, 2001 to 2007	2006	Wicklow County Council		
Dublin Docklands Area Master Plan, 2003 to 2008	2008	Dublin Docklands Development Authority		

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Table A2: Eastern River Basin District – Conservation Measures Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
National				
2 nd National Biodiversity Plan, 2008 to 2012	2012	Obligation under the Convention on Biological Diversity, which Ireland ratified in 1996.	NPWS (DEHLG)	4 year plan Considers the work programmes of the Convention on Biological Diversity and the European Union Action Plan and develops a national work programme to achieve their implementation.
Forest Service Biodiversity Strategy	Not Specified	None	Forest Service	Open-ended strategy Strategy for conserving and enhancing biodiversity in forests using various good practice instruments.
Rural Environment Protection Scheme	Not Specified	None	Department of Agriculture, Fisheries & Food	Open-ended strategy Scheme designed to reward Farmers for carrying out their farming activities in an environmentally friendly manner and to bring about environmental improvement on existing farms
Local				
Wicklow Mountains National Park Management Plan, 2005 to 2009	2009	European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997) & Amendments Regulations in 1998 and 2005	DEHLG - NPWS	4 year plan Includes descriptive information about a site and a management framework section which outlines objectives and strategies.
Magherabeg Dunes cSAC 1766 Conservation Plan, 2005 to 2010	2010	European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997) & Amendments Regulations in 1998 and 2005	DEHLG - NPWS	5 year plan Includes descriptive information about a site and a management framework section which outlines objectives and strategies.
Dublin City Council Biodiversity Action Plan, 2008 to 2012	2012	National Biodiversity Plan	Dublin City Council	4 year plan Includes descriptive information about a site and a management framework section which outlines objectives and strategies.
Louth Biodiversity Action Plan, 2008 to 2013 Draft	2013	National Biodiversity Plan	Louth County Council	4 year plan Aims to contribute to the conservation and enhancement of natural heritage in Waterford. Identifies existing actions and proposes new actions.

Table A3: Eastern River Basin District – Water Services Strategic Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
Local				
Water Services Strategic Plan	as soon as regulations published	Water Services Act, 2007 (S.I. No. 30 of 2007) Enabling Regulations early 2009	Water Services Authorities	6 year plan, under development Relates to the provision of sufficient water services for domestic and non-domestic requirements while protecting human health and the environment and supporting proper planning and sustainable development

Table A4: Eastern River Basin District – Pollution Reduction Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
National				
IPPC licensing regime	Not specified	Environmental Protection Agency Act, 1992 Protection of the Environment Act, 2003 EPA Acts 1992 to 2007	EPA	Open-ended The EPA license certain large-scale industrial and agriculture activities through IPPC licenses. IPPC licences aim to prevent or reduce emissions to air, water and land, reduce waste and use energy/resources efficiently.
Local Authority Licensing	Not specified	Local Government (Water Pollution) Act, 1977	Local Authorities	Open-ended Local Authorities license small-scale commercial and industrial discharges to sewer systems and waters under the Water Pollution Acts through the Local Authority Licensing system.
The National Control Plan	Not specified	S.I. No. 882 of 2004	DAFF Food Safety Authority of Ireland	5 year plan Plan to ensure that feed and food is safe and wholesome, includes control of plant protection products.
Agri-Vision Action Plan 2015	Not specified	None	DAFF	Open-ended strategy Plan to develop new agri-environmental scheme that pro-actively enhances environment and biodiversity
Towards 2016	Not specified	None	DAFF DEHLG	Open-ended strategy Sets out agricultural objectives and way forward for the coming years and how agricultural sector will enhance the environment
CAP Rural Development Programme 2007-2013	Not specified	EC Council Regulation 1698/2005	DAFF DEHLG	7 year plan Plan to improve the competitiveness of the agriculture sector, the environment and the countryside and the quality of life in rural areas and encouraging diversification of economic activity.
Nitrates Action Plan 2006-2010	2009	Nitrates Directive (91/676/EEC) S.I. No. 378 of 2006	DAFF DEHLG	4 year plan Sets out the practices for the protection of waters against pollution caused by nitrates from agricultural sources.
Groundwater Protection Scheme	Not specified	Local Government (Water Pollution) Act, 1977 and 1990	DEHLG EPA GSI	Open-ended Provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater
Regional				
Bord na Móna Cutaway Bog Rehabilitation, 2002	Not specified	Environmental Protection Agency Act, 1992 Protection of the Environment Act, 2003 EPA Acts 1992 to 2007	EPA Bord na Móna	Duration not specified Management guidelines for the planning and implementation of cutaway bog rehabilitation in accordance with condition 10 of IPC Licences Nos. 500-507
Local				
Cavan County Council Water Pollution (Agricultural) Bye-Laws, 2000.	Not specified	Local Government (Water Pollution) (Amendment) Act, 1990. Local Government Act, 1994 (Bye-Laws) Regulations, 1999.	Cavan County Council	Duration not specified Bye-laws to address key aspects of agricultural practice in affected areas.
Westmeath County Council Water Pollution (Agricultural) Bye Laws, 2000	Not specified	Local Government (Water Pollution) (Amendment) Act, 1990. Local Government Act, 1994 (Bye-Laws) Regulations, 1999.	Westmeath County Council	Duration not specified Bye-laws to address key aspects of agricultural practice in affected areas.
Cavan County Council Water Pollution (Wastewater Treatment Systems for Single Houses) Bye-Laws, 2004	Not specified	Local Government (Water Pollution) (Amendment) Act, 1990. Local Government Act, 1994 (Bye-Laws) Regulations, 1999.	Cavan County Council	Duration not specified Bye-laws to control the design, operation and maintenance of wastewater treatment systems for single houses.
Carlingford Lough, Co. Louth Regulation 6 (Shellfish) Action Programme	Reviewed every 6 months	European Communities (Quality of Shellfish Waters) Regulations, 2006 (S.I. No. 268 of 2006).	Minister for Communications, Marine and Natural Resources, Bord lascaigh Mhara and the Marine Institute	Duration not specified The action programme describes the shellfish area catchment, the pressures and risks in the area and sets out the actions proposed to alleviate the risks.
Louth Action Programme for the Ardee, 2005	Not specified	European Communities (Drinking Water) Regulations, 2000	Louth County Council	Duration not specified Sets out the actions to protect the drinking water from the Ardee water treatment plant
Louth Action Programme for the Omeath, 2006	Not specified	European Communities (Drinking Water) Regulations, 2000	Louth County Council	Duration not specified Sets out the actions to protect the drinking water from the Omeath water treatment plant
Louth Action Programme for the Staleen, 2006	Not specified	European Communities (Drinking Water) Regulations, 2000	Louth County Council	Duration not specified Sets out the actions to protect the drinking water from the Staleen water treatment plant

Table A5: Eastern River Basin District – Sludge Management Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
National				
Sludge Management Plans: A Guide To Their Preparation and Implementation, 1998	Not Specified	Waste Management Act, 1996	DEHLG	Open-ended strategy Sets out the protocol for Local Authorities preparation of sludge management plans
Strategy Study on Options for the Treatment and Disposal of Sewage Sludge In Ireland, 1993	Not Specified	Waste Management Act, 1996	DEHLG	Open-ended strategy Sets out options for treatment for sludge arising from municipal wastewater.
Local				
County Cavan Sludge Management Plan	Not specified	Waste Management Act, 1996	Cavan County Council	Duration not specified Strategy for the management of non-hazardous sludges generated in the area.
Dun Laoghaire/Rathdown Sludge Management Plan	Not specified		Cork County Council	
Fingal Sludge Management Plan, 2002	Not specified		Dun Laoghaire/Rathdown County Council	
County Kildare Sludge Management Plan, 2000	Reviewed every 5 years		Kildare County Council	
County Louth Sludge Management Plan	Not specified		Cork County Council	
County Meath Sludge Management Plan	Not specified		Louth County Council	
County Offaly Sludge Management Plan, 2001 to 2021	Not specified		Offaly County Council	
South Dublin Sludge Management Plan	Not specified		South Dublin County Council	
County Westmeath Sludge Management Plan	Not specified		Westmeath County Council	
County Wexford Sludge Management Plan	Not specified		Wexford County Council	
County Wicklow Sludge Management Plan	Not specified		Wicklow County Council	

Table A6: Eastern River Basin District – Major Accident and Emergency Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
National				
A Framework for Major Emergency Management	Review Annually	None	DEHLG	Duration not specified. A Framework enabling An Garda Síochána, the Health Service Executive and Local Authorities to prepare for and make a co-ordinated response to major emergencies resulting from events such as fires, transport accidents, hazardous substance incidents and severe weather.
Preparing for Major Emergencies Handbook	Not specified	None	Office of Emergency Planning	Duration not specified. Handbook provides an introduction to comprehensive information on the Government's emergency planning.
National Emergency Plan for Nuclear Accidents, 2005	Not specified	SI 125 of 2000, Radiological Protection Act, 1991 (Ionising Radiation)	Department of Environment, Heritage and Local Government.	Duration not specified Provides a framework for dealing with a nuclear emergency and to ensure that all State resources are distributed to good effect and that gaps in the response arrangements are not allowed to Develop.
Public Health Emergency Plan	Not specified	None	CEO of the Health Service Executive	Duration not specified Prepared as a generic plan to facilitate all health service providers in developing and reviewing their plans for public health emergencies.
Regional				
Midland Region Major Emergency Plan, 1996	Reviewed Annually (Sept)	None	Midland Region Major Emergency Planning Group Local Authorities An Garda Síochána HSE	Duration not specified .Appraised & updated annually. Guidance for personnel and organisations who may be involved in a major emergency situation, with the aim of providing a basis for standard procedures and coordinated effort.

Table A6: Eastern River Basin District – Major Accident and Emergency Plans (contd.)

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
Local				
Offaly County Council Major Emergency Plan *	Annually	None	Offaly County Council, An Garda Siochana, Health Service Executive	Duration not specified To outline and co-ordinate procedures to be followed and functions to be undertaken by the council and emergency services responding to an emergency.
Cavan County Council Major Emergency Plan *	Annually		Cavan County Council, An Garda Siochana, Health Service Executive	
Dublin City Council Major Emergency Plan*	Annually		Dublin City Council, An Garda Siochana, Health Service Executive	
Dun Laoghaire/ Rathdown County Council Major Emergency Plan*	Annually		Dun Laoghaire/ Rathdown County Council, An Garda Siochana, Health Service Executive	
Fingal County Council Major Emergency Plan*	Annually	None	Fingal County Council, An Garda Siochana, Health Service Executive	Duration not specified To outline and co-ordinate procedures to be followed and functions to be undertaken by the council and emergency services responding to an emergency.
Kildare County Council Major Emergency Plan*	Annually		Kildare County Council, An Garda Siochana, Health Service Executive	
Louth County Council Major Emergency Plan*	Annually		Louth County Council, An Garda Siochana, Health Service Executive	
Westmeath County Council Major Emergency Plan*	Annually		Laois, Longford, Offaly, Westmeath County Councils, An Garda Siochana, Health Service Executive	
Wexford County Council Major Emergency Plan*	Annually	European Communities (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2000.	Wexford County Council, An Garda Siochana, Health Service Executive	December 2005 – until updated To outline and co-ordinate procedures to be followed and functions to be undertaken by the council and emergency services responding to an emergency.
Wicklow County Council Major Emergency Plan*	Annually	None	Wicklow County Council, An Garda Siochana, Health Service Executive	2006 until revised To outline and co-ordinate procedures to be followed and functions to be undertaken by the council and emergency services responding to an emergency.
Dublin Port Major Marine Incident Emergency Plan & Dublin Port Emergency Procedures, 2002	Not specified	Sea Pollution (Amendment) Act, 1999	Dublin Port Harbour Master	Duration not specified Sets out an emergency control organisation structure which will enable Dublin Port to respond rapidly and efficiently to any emergency
Dublin Port Emergency Response Plan, 2008	Not specified		Dublin Port Harbour Master	
Louth Draft Coastal Pollution Response Plan, 2007	Not specified		Louth County Council	
* all Local Authority Major Emergency Plans were put in place on the 30th September 2008. Major Emergency Plans are updated annually.				
Upper Tier Seveso Sites – all with Internal Emergency Plans				
Albion (Univar Ireland Ltd c/o Harry Crosbie Ltd) Tolka Quay Rd. Dublin Port.	Not requested	European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 74 of 2006)	Local competent authority and emergency services	Not requested
Calor Gas Teo. Tolka Quay, Alexander Rd., Dublin				
Chemco (Irl) Ltd., T/A Chemsources Unit 2, Stadium Business Park, Ballycoolin Rd., Cappagh, Dublin 11.				
Contract and General Warehousing Ltd. Westpoint Business Park, Navan Rd. Mulhuddart				
Esso Ireland Ltd., Dublin Joint Fuels Terminal, Alexandra Rd. D 1				
Flogas Irl. Ltd Marsh Rd. Drogheda, Co. Louth				
Irish Flavours and Fragrances Ltd Industrial Estate, Drogheda, Co. Louth				
Irish Industrial Explosives Ltd Clonagh, Enfield, Co Meath				
Indaver Ireland Tolka Quay Road, Dublin				
Schering-Plough (Avondale) Co. Rathdrum, Co. Wicklow.				
Tedcastles Oil Products (Yard 2) Promenade Rd, Dublin 3				

Table A6: Eastern River Basin District – Major Accident and Emergency Plans (contd.)

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
Mallinckrodt Medical Imaging - Ireland T/A Tyco Healthcare Dublin Damastown, Mulhuddart, D15	Not requested	European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 74 of 2006)	Local competent authority and emergency services	Not requested
Lower Tier Seveso Sites – all with internal emergency plans.				
Arch Chemicals B.V Watery Lane, Sword, Dublin	Not requested	European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 74 of 2006)	The operator & the HSA	Not requested
BOC Gases Ireland Ltd. Bluebell Ind. Est. Dublin 12				
Dublin Bay Power Pigeon House Road, Ringsend, Dublin 4				
ESB Poolbeg Power Station Pigeon House Road, Ringsend, Dublin 4				
ESB North Wall Generating Station Alexander Rd, Dublin 1				
ESB - Rhode Generating Station Rhode, Co. Offaly				
Esso Ireland Ltd. Dublin Airport Joint Storage Facility, Corballis Park, Dublin Airport.				
Helsinn Chemicals Damastown, Mulhuddart, D15				
Iarnrod Eireann Inchicore Inchicore, Dublin 8	Not requested	European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 74 of 2006)	The operator & the HSA	Not requested
Iarnrod Eireann Dublin Port Alexander Rd, Dublin Port				
Intel Ireland Ltd. Collinstown Industrial Park, Leixlip, Co. Kildare				
Irish Distillers Ltd. Robinhood Road, Clondalkin, D22				
Topaz Energy Ltd. (Irish Shell) Site 1, Alexandra Road, Dublin 1				
Topaz Energy Ltd. (Irish Shell) Site 2, Alexandra Road, Dublin 1				
Topaz Energy Ltd. (Irish Shell) Site 3, Alexandra Road, Dublin 1				
Sigma Aldrich Fine Chemicals Pharma Arklow Vale road, Arklow, Co. Wicklow				
Marsh Oil Products Ltd Marsh Road, Drogheda, Co. Louth				
Statoil Ireland Ltd Yard 1 Leaside Oil Terminal, Promenade Road, Dublin Port Dublin 3				
Statoil Ireland Ltd Yard 2 Leaside Oil Terminal, Promenade Road, Dublin Port Dublin 3				
Bristol Myers Squibb Cruiserath Cruiserath Rd. Mulhuddart, D15				
Swords Laboratories Watery Lane, Swords, Dublin				
Tedcastles Oil Products (Yard 1) Promenade Rd, Dublin 3				
Tibbett & Britten Group (Ireland) Ltd Robinhood Road, Clondalkin, D22				
Astellas Ireland Co. Ltd Damastown, Mulhuddart, D 15				
Gensys Power Ltd. T/A Huntstown Power Station Huntstown Quarry, Finglas, Dublin 11				
Grassland Fertilizers Limited The Pound Road, Slane, Co. Meath				

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Table A7: Eastern River Basin District – Forest Management Plans

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
National				
Growing for the Future – A Strategic Plan for the Forest Sector in Ireland	2015	Forestry Act 1946 Sustainable Forest Management	Forest Service	Open-ended strategy Strategic plan for the development of the forestry sector in Ireland
Irish National Forest Standard	Not specified	Forestry Act, 1946, 1956, 1988 Sustainable Forest Management	Forest Service	Open-ended strategy Sets out the framework within which the development and evaluation of sustainable forest management will take place in Ireland.
Code of Best Forest Practice		Forestry Act, 1946, 1956, 1988 Sustainable Forest Management		Open-ended strategy A Code Of Best Forest Practice designed to ensure that forest operations in Ireland are carried out in a way which meets high environmental, social and economic standards.
Native Woodland Scheme	To be determined by the DAFF	Forestry Act, 1946 Sustainable Forest Management	Forest Service	Open-ended strategy A financial incentives scheme for conservation and establishment of Native Woodlands.
Forestry and Water Quality Guidelines	Not specified	Forestry Act, 1946 Sustainable Forest Management	Forest Service	Open-ended strategy Sets out guidelines for forest practices to ensure conservation and enhancement of water quality.
Forestry and the Landscape Guidelines				Open-ended strategy Sets out guidelines with the objective of ensuring a positive relationship between the forest and the character of a given landscape, to optimise the aesthetic effect and to minimise the visual effect conflict.
Forest Harvesting and the Environment Guidelines				Open-ended strategy Includes issues relating to: soil conservation; the protection of water quality, archaeological sites, biodiversity and the visual landscape; the maintenance of forest health and productivity.
Forest Biodiversity Guidelines	Not specified	Forestry Act, 1946 Sustainable Forest Management	Forest Service	Open-ended strategy The Forest Biodiversity Guidelines Focus on how best to conserve and enhance biodiversity in Irish forests, through appropriate planning, conservation and management.
Forest and Aerial Fertilisation Guidelines	Not specified	S.I. No. 592 of 2006 and S.I. No. 79 of 2007, European Communities (Aerial Fertilisation) (Forestry) (Amendment) Regulations 2007	Forest Service	Open-ended strategy Sets put the requirements needed for an aerial fertilisation licence to be granted by the Forest Service.
Forestry and the Freshwater Pearl Mussel Requirements Site Assessment And Mitigation Measures	Not specified	Habitats Directive (92/43/EEC) and the Wildlife Acts (1976 amended 2000).	Forest Service	Open-ended strategy Sets out the requirements for forest operations potentially impacting within the catchments of Freshwater Pearl Mussel populations. The Requirements describe a range of measures intended to reduce potential negative impacts on the species arising from forest operations and supplement all other Forest Service Guidelines and regulations in order to assist in the protection and conservation of the Freshwater Pearl Mussel (FPM) and its habitat.
Regional				
Coillte District Strategic Plan Dublin/Wicklow E1, 2006 to 2010	2010	Sustainable Forest Management	Coillte	5 year plan Longterm vision for 20 years. Describes Coillte's forests in the Dublin/Wicklow District and sets out the long term vision for the management of these forests, sets out the policies and practices and specifies the short-term objectives for the district.
Coillte District Strategic Plan South East Counties E2, 2006 to 2010				
Coillte District Strategic Plan Lakelands N3, 2006 to 2010				
Local				

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Table A7: Eastern River Basin District – Forest Management Plans (contd.)

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
Glendalough Forest Management Plan, 2006 to 2010 (County Wicklow)	Not specified	Sustainable Forest Management	Coillte	5 year plan Describes the forest, catchment, management focus, long-term goals and details the forest operations planned for a 5 year period.
Glenmalure Forest Management Plan, 2006 to 2010 (County Wicklow)				
Hollywood Forest Management Plan, 2006 to 2010 (County Wicklow)				
Avonmore Forest Management Plan, 2006 to 2010 (County Wicklow)				
Shillelagh Forest Management Plan, 2006 to 2010 (County Wicklow)				
Avondale Forest Management Plan, 2006 to 2010 (County Wicklow)				
Glenree Forest Management Plan, 2006 to 2010 (County Wicklow)				
Roundwood Forest Management Plan, 2006 to 2010 (County Wicklow)				
Glen of Imaal Forest Management Plan, 2006 to 2010 (County Wicklow)				
Glenealy Forest Management Plan, 2006 to 2010 (County Wicklow)				
Aughrim Forest Management Plan, 2006 to 2010 (County Wicklow)				
Blessington Forest Management Plan, 2006 to 2010 (County Wicklow)				
Clonmoyle Forest Management Plan, 2006 to 2010 (County Kildare)				
Rahin Forest Management Plan, 2006 to 2010 (County Kildare)				
Lullymore Forest Management Plan, 2006 to 2010 (County Kildare)				
Brackney Forest Management Plan, 2006 to 2010 (County Kildare)				
Donedea Forest Management Plan, 2006 to 2010 (County Kildare)				
Hortland Forest Management Plan, 2006 to 2010 (County Kildare)				
Monasterevin Forest Management Plan, 2006 to 2010 (County Kildare)				
Nobber Forest Management Plan, 2006 to 2010 (County Meath)				
Kells Forest Management Plan, 2006 to 2010 (County Meath)				
Navan Forest Management Plan, 2006 to 2010 (County Meath)				
Summerhill Forest Management Plan, 2006 to 2010 (County Meath)				
Dublin South Forest Management Plan, 2006 to 2010 (County Dublin)				
Dundalk Forest Management Plan, 2006 to 2010 (County Louth)				

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Table A7: Eastern River Basin District – Forest Management Plans (contd.)

Plan Name	Date for Review	Enabling Legislation	Responsible Authorities	Plan Duration and Summary of Contents
Drogheda Forest Management Plan, 2006 to 2010 (County Louth)	Not specified	Sustainable Forest Management	Coillte	5 year plan Describes the forest, catchment, management focus, long-term goals and details the forest operations planned for a 5 year period.
Knockbarra Forest Management Plan, 2006 to 2010 (County Offaly)				
Glenafelly Forest Management Plan, 2006 to 2010 (County Offaly)				
Ballydaly Forest Management Plan, 2006 to 2010 (County Offaly)				
Derrycoffey Forest Management Plan, 2006 to 2010 (County Offaly)				
Garyhinch Forest Management Plan, 2006 to 2010 (County Offaly)				
Killeagh Forest Management Plan, 2006 to 2010 (County Offaly)				
Birr Forest Management Plan, 2006 to 2010 (County Offaly)				
Shinrone Forest Management Plan, 2006 to 2010 (County Offaly)				
Castlpollard Forest Management Plan, 2006 to 2010 (County Westmeath)				
Ballynafid Forest Management Plan, 2006 to 2010 (County Westmeath)				
Downs Forest Management Plan, 2006 to 2010 (County Westmeath)				
Lough Ennell Forest Management Plan, 2006 to 2010 (County Westmeath)				
Ballymore Forest Management Plan, 2006 to 2010 (County Westmeath)				
Macnean East Forest Management Plan, 2006 to 2010 (County Cavan)				
Glangevlin Forest Management Plan, 2006 to 2010 (County Cavan)				
Bawnboy Forest Management Plan, 2006 to 2010 (County Cavan)				
Cavan Forest Management Plan, 2006 to 2010 (County Cavan)				
Cootehill Forest Management Plan, 2006 to 2010 (County Cavan)				
Baillieboro Forest Management Plan, 2006 to 2010 (County Cavan)				
Dunari Forest Management Plan, 2006 to 2010 (County Cavan)				
Virginia Forest Management Plan, 2006 to 2010 (County Cavan)				
Foxfield Forest Management Plan, 2006 to 2010 (County Cavan)				
Nobber Forest Management Plan, 2006 to 2010 (County Meath)				
Kells Forest Management Plan, 2006 to 2010 (County Meath)				
Navan Forest Management Plan, 2006 to 2010 (County Meath)				

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Table A8: Eastern River Basin District – Arterial Drainage and Flood Relief Schemes

Scheme Name	Arterial Drainage / Flood Relief	RBD
Boyne	Arterial Drainage Scheme	Eastern
Broadmeadow and Ward	Arterial Drainage Scheme	Eastern
Matt	Arterial Drainage Scheme	Eastern
Ryewater	Arterial Drainage Scheme	Eastern
Avoca, Aughrim & Baltinglass, Co Wicklow	Flood Relief Scheme - Completed	Eastern
Duleek (Nanny)	Flood Relief Scheme - Completed	Eastern
Hazelhatch	Flood Relief Scheme - Completed	Eastern
Lyreen-Meadowbrook Rivers, Co. Kildare	Flood Relief Scheme - Completed	Eastern
Morrell River, Co Kildare	Flood Relief Scheme - Completed	Eastern
River Tolka, Dublin City area	Flood Relief Scheme - Completed	Eastern
River Tolka, Meath	Flood Relief Scheme - Completed	Eastern
Arklow, Co. Wicklow	Flood Relief Scheme - In Design / Progress	Eastern
Bray, Co. Wicklow	Flood Relief Scheme - In Design / Progress	Eastern
Mornington, Co. Meath	Flood Relief Scheme - In Design / Progress	Eastern
River Dodder, Dublin	Flood Relief Scheme - In Design / Progress	Eastern
River Tolka, Fingal	Flood Relief Scheme - In Design / Progress	Eastern
Rye Water, Leixlip, Co Kildare	Flood Relief Scheme - In Design / Progress	Eastern
South Docklands, Dublin City	Flood Relief Scheme - In Design / Progress	Eastern
Dublin Flooding Initiative (including SAFER and Flood Resilient Cities Project)	In Design / Progress	Eastern
River Liffey Flood Scheme	In Design / Progress	Eastern
Project 2030/2050	In Design / Progress	Eastern

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Appendix B - Comments on the Working Document for Discussion - Draft River Basin Management Plan - September 2008

This section of the Draft Plan summarises comments received by the Eastern District on our working document for discussion issued in September 2008 and distributed to both the Advisory Council and Technical Council. Comments and feedback were received from both individual council members and organisations, such as:

- Westmeath County Council
- Eastern Regional Fisheries Board
- Department of Agriculture
- Forestry Service
- Dublin City Council

Please note that the list that follows is necessarily abbreviated: it focuses on the major issues and concerns of the respondents, and are in no particular order:

1. Concerns over how marine and fishery interests will be protected and enhanced into the future under the Water Framework Directive.
2. Concerns over the designation of the Boyne, Liffey and Vartry Rivers and their Estuaries as Heavily Modified Water Bodies, with proposed exemptions, while these rivers are also areas that support rare and vulnerable habitats and wildlife.
3. Opposition to main channels of the Liffey, Vartry and Dodder Rivers being designated as Heavily Modified Water Bodies, with proposed exemptions, while they are also EU designated salmonid systems. Parts of these rivers already achieve Good Ecological Status.
4. Consider the connections between abstraction pressures, and Climate Change when developing requirements to be used in conditions of low flow in rivers.
5. Deferment of achievement of objectives until 2027 in some cases (such as diffused pollution from agriculture, unsewered properties and septic tanks) seems excessive, especially given all the work conducted in these areas thus far.
6. Request for notification should proposed exemptions change.
7. Request to include the restoration of the Avoca River since it has huge amenity potential.
8. Recommend inclusion of the EU Freshwater Fish Directive (79/659/EEC) and SI No 293/1998: European Communities (Quality of Salmonid Waters) Regulations, 1988 in the list of legislation within the Plan.
9. Include SI No 293/1998: European Communities (Quality of Salmonid Waters) Regulations, 1988 in the section on Protected Areas
10. Suggest a link to a list of legislation proposed for repeal under the Water Framework Directive.
11. With regard to supplementary measures in relation to pressures relating to morphological changes, should the plan include dredging operations regulated under the Foreshore Licences Acts 1933-1998, Planning Acts administered by Local Authorities and the 1945 Arterial Drainage Act of 1945.

12. Dredging is regulated either under the Waste Act for disposal on land or the by the requirement to have a Dumping at Sea permit for seas. Suggest the use of "comply" with either/both when detailing supplementary measures
13. Suggest that supplementary measure on Shipping Activities should state "Comply with SI 117/2003 (Port reception facilities for ship generated wastes and cargo residues) Regulations 2003, administered by the Department of the Marine and Transport.
14. In Potential Measures to Improve Status under Physical Modifications suggest rewording of item to "river barrier removal/habitat restoration/ enhancement schemes".
15. Under Forestry in Section on Programmes of Measures: The Issues, suggested rewording of parts of the section.
16. Suggest inclusion of information on how ecological status is determined
17. Concern over the absence of mention of the Liffey Reservoir Act of 1936 which allows the ESB to shut off the flow of the Liffey if it should desire. Suggest the Plan discuss this and requests the Act be changed. this act also affects section on Abstractions
18. Suggested changes to the reasons why some water bodies have been designated as Heavily Modified Water Bodies.
19. Suggest that Advisory Council have read access to both the RBMS and the Technical Council meeting minutes and reports
20. Suggested changes to the structure of the document.

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Appendix C - Comments on the Water Matters Report 2007

This section of the draft Plan summarises comments made during consultations and the topics discussed in the **Water Matters – Have Your Say!** booklet. Under each topic we highlight what the public and interested parties said during consultations and confirm that these comments have helped to develop our draft management plan by feeding into our proposed action plan. The statutory consultation period was from the 22nd December 2007 to 22nd June 2008. This appendix was provided by the North South Share Project.

Table C1: Water Matters Comments by Pressure

<p>Wastewater and industrial discharges</p> <p>Participants' concerns</p> <p>Treatment plants that are non-compliant with urban wastewater treatment standards must be upgraded and adequate wastewater treatment infrastructure should be put in place before permitting development.</p>	Background	Urban sewers carry wastewater to treatment plants from homes and industrial or commercial sources, as well as storm water from roads, roofs and recreational areas. Pollutants include nutrients, bacteria, organic materials and dangerous substances from homes and industries, metals and hydrocarbons from vehicle exhausts and pesticides from parks, golf courses and gardens. The wastewater is treated, to remove many pollutants, then discharged to surface waters or, occasionally, to groundwater.
	Possible effects	Inadequately treated effluents and spills or leakage from sewerage networks can cause unacceptable levels of pollutants in receiving waters, damaging water quality and downstream uses (for example bathing waters, shellfish waters or waters supporting sensitive species). Urban runoff can be contaminated with pollutants (typically metals and hydrocarbons) which can impact surface and groundwater quality as direct discharges, overflows from sewer networks, leaking from defective underground pipes or seepage from containment areas.
	Action plan	Wastewater discharges will be subject to EPA authorisation and will have to comply with the Urban Wastewater Directive. Wastewater facilities will be upgraded on a prioritised basis. Information on where, when and how urban runoff and overflows impact water quality will be gathered and codes of good practice for sewer operation and maintenance developed and implemented.
<p>Landfills, quarries, mines and contaminated lands</p> <p>Participants' concerns</p> <p>Timescales should be set for characterisation and remediation of contaminated land and historic mine sites and the end-of-life phase for mining operations should be planned.</p>	Background	Residues or waste products from previous activities at these sites may have seeped into the ground and continue to threaten groundwater and surface waters. Our knowledge of these sites is incomplete and is being updated to assess the scale of this problem.
	Possible effects	Pollutants (mainly metals and fuel) may travel through groundwaters and enter surface waters, affecting their quality, damaging aquatic plants and animals and impairing water uses. At some quarry sites, the water table is lowered; that can affect nearby wetland areas, and the transfer of groundwater to surface waters can change water chemistry.
	Action plan	Specific measures will be taken to address contaminated lands, both historic and current mines and extraction sites.
<p>Agriculture</p> <p>Participants' concerns</p> <p>The agricultural sector felt that the Good Agricultural Practice Regulations adequately represented farmers' contribution to the achievement of good water status.</p> <p>However, environmental groups expressed concern that the regulations may not fully address nutrient enrichment in specific areas.</p> <p>Participants also recommended that the use of bio-digestors for the disposal of slurry should be encouraged and funded.</p>	Background	Nutrients (phosphorus and nitrogen) can be carried into waters from farmyards, from manure store leaks or from fields treated with nutrient-rich organic and chemical fertilisers. Animal slurry/manure and silage effluent can cause organic pollution: Ireland's latest drinking water report shows widespread contamination of smaller rural water supplies from agricultural sources.
	Possible effects	Nutrients enrich water, accelerating plant growth and thus disturbing the balance of aquatic plants and animals and affecting water quality. This eutrophication is the most widespread threat to our water quality. The breakdown of 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.
	Action plan	Review and strengthen enforcement actions in support of the Good Agricultural Practice Regulations. Additional supplementary measures may emerge following the review during 2009 of the National Action Programme established under these regulations. These measures could for example include solutions such as the use of bio-digestors.

<p>Wastewater from unsewered properties</p> <p>Participants' concerns</p> <p>Controls are required to ensure that new developments install treatment systems appropriate to geology and soil conditions. There should be a clear responsibility on owners to maintain their systems to an appropriate standard.</p>	Background	<p>Many rural houses and businesses rely on on-site systems (conventional septic tanks or proprietary systems), via soil percolation areas, to treat and dispose of wastewater.</p> <p>To work properly, these treatment facilities must be located in suitable areas and designed, constructed and maintained to appropriate standards.</p>
	Possible effects	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.
	Action plan	Strengthen controls on new development. Identify sensitive areas where inspection, maintenance and remedial action will be taken to address impacts from existing on-site systems.

<p>Forestry</p> <p>Participants' concerns</p> <p>The 1946 Forestry Act's mandatory requirement to replant on deep peat sites should be amended. Clearfelling should be restricted with strict controls on coup sizes in sensitive areas.</p>	Background	<p>Acidification: forest canopies can capture sulphur and nitrogen compounds from the atmosphere; rain becomes more acidic as it passes through the canopies to the ground below. Forestry activities can introduce extra nutrients. Road-making and stream-crossing can cause erosion and sediment loss on susceptible soils. Flow pattern changes: the amount of water reaching the soil surface is reduced by evaporation of water intercepted by the canopy. Pesticides may be applied incorrectly.</p>
	Possible effects	Acidification may worsen the chemical balance of receiving waters. In naturally nutrient-poor areas, nutrient enrichment can lead to problems such as algal growth. Mobile sediments may reduce water quality or damage sensitive areas. Clearfelling of forests may change flow patterns. Incorrect application of pesticides may contaminate waters.
	Action plan	Strengthen forestry legislation and codes of practice. Identify sensitive areas where remedial action will be taken to address impacts from afforestation. Note that all activities related to forestry (including private forestry) must comply with the Irish Forest Standard, the first principle of which is sustainable forestry management.

<p>Physical modifications</p> <p>Participants' concerns</p> <p>A comprehensive registration and authorisation system is needed to control physical modifications, with a structured programme to rehabilitate previously drained rivers. Building is putting increasing pressure on floodplains.</p>	Background	<p>We have physically modified many of our waters for water supply, recreation, transport, flood protection, hydropower, aquaculture and land drainage.</p> <p>Physical modifications can impact physical form either directly by affecting habitats or indirectly by changing natural processes, altering plant and animal communities by reducing their variety or numbers.</p>
	Possible effects	Drained rivers need a mix of pools and shallow riffles and variation of flow patterns, to provide habitats for fish. Migratory fish need to access upstream spawning areas; bridges or weirs can restrict access and reduce spawning success and thus population numbers. Hard structures like ports and harbours can replace or reduce natural habitat. Land drainage, overgrazing, deforestation and cattle access can have an indirect effect, changing how much and how fast water drains off the land, resulting in increased risk of property flooding.
	Action plan	A new national control system for physical modifications is required. The programme identifies rivers where enhancement or investigation is needed to address historical modifications.

<p>Abstractions</p> <p>Participants' concerns</p> <p>The cumulative impact of abstractions needs to be addressed. Low flows should be used to determine acceptable abstraction limits. Leakage from existing infrastructure should be addressed.</p>	Background	<p>We use large amounts of water supply each day in homes, in agriculture, in industry and in recreation. All of that water has to be treated to a high standard to remove impurities and make it fit for consumption. The vast majority of our abstractions are currently sustainable, but population growth and climate change may mean that some areas will experience a reduction in the available water resource in the future.</p>
	Possible effects	Too much abstraction reduces flow in springs and rivers and causes lower water levels in lakes, wetlands and wells. This can make water supplies unsustainable and adversely affect 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.
	Action plan	<p>Set up a modern national abstraction control system for surface and groundwaters, based on sustainable abstraction levels that take full account of the sensitivity of the waters from which water is abstracted.</p> <p>Action on leakage reduction is addressed under measures to ensure sustainable water use; the programme also identifies waters where historical abstractions must be investigated and addressed.</p>

Climate change Participants' concerns River basin management plans should be proof against climate change, with more emphasis given to climate change impacts and adaptation.	Background	The specific impact of climate change is difficult to predict but it is likely that these changes may add to water management challenges that our waters are facing in the future.
	Possible effects	Heavier winter rainstorms may cause more flash flooding, causing an increase in diffuse pollution loads to our waters from soil run-off and raising demand for flood controls. Summer droughts are more likely and there may be a 40% reduction in drinking water supplies. Temperature changes might give invasive alien species a competitive advantage in our waters, thus affecting biodiversity.
	Action plan	Measures have been assessed for climate change adaptation using European Union recommendations. A Strategic Environmental Assessment has been undertaken to assess the impacts that the action plan could have on the wider environment including climate.

Invasive alien species Participants' concerns The ornamental plant and animal trade should be regulated. The recommendations from the national invasive species study should be implemented and resourced on an all island basis.	Background	The EPA has major concerns about eight aquatic species of non-native animals or plants that have successfully established themselves in our aquatic and fringing habitats and are damaging our natural flora and fauna.
	Possible effects	There is growing evidence that invasive alien species 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.
	Action plan	Prohibit the introduction of species that may be detrimental to native species. Support the ongoing national study of the nature and extent of alien invasive species, their impacts and potential control measures.

Protecting high quality areas Participants' concerns High quality areas have gradually declined since the 1970s when water quality monitoring began and our objective now is to prevent any further deterioration. Protected areas must, without exception, achieve good or High Status to support their designations, with specific targets for protection of priority species.	Background	High quality areas include rivers, lakes and estuarine and coastal areas little affected by human activity; which they are still near natural or pristine conditions, supporting a naturally diverse mix of aquatic wildlife. In addition, there are other designated special areas which are specifically protected under legislation: drinking waters, bathing waters, shellfish waters and areas designated for special habitats and species (Special Areas of Conservation and Special Protection Areas).
	Possible effects	The deterioration or loss of high quality and protected areas is often due to their sensitivity to land use changes in surrounding catchments, such as agriculture, forestry, peat harvesting and rural development activities.
	Action plan	Prioritise the protection of such areas. Identify nature conservation actions

Appendix D - A description of the Basic Measures under 11 key EU Directives

There follows an account of each of the Basic measures and the existing and new plans and programmes for implementing the measures. There is more detail in our background documents (www.wfdireland.ie). This Appendix has been provided by the North South Share Project.

Basic measures: the 11 key EU Directives

The first (and minimum) elements of our action programme are the basic measures to fully implement existing water protection directives. These mandatory measures include a comprehensive suite of obligations under eleven key EU Directives, which are already law in Ireland.

Bathing waters

The purpose of these regulations, which were updated during 2008, is to preserve, protect and improve the quality of bathing waters, thereby protecting human health. The new actions require local authorities to undertake comprehensive monitoring programmes, identify pollution sources and draw up management plans (with active involvement from users of the sites) to minimise risks to bathers. If a site has water quality problems, preventative and remedial actions must be taken. Local authorities must also make information about quality and management readily available to the public. Bathing waters are part of the Water Framework Directive's register of protected areas.

Birds and Habitats

Both of these regulations have similar conservation aims: protecting natural habitats, fauna and flora and creating a European network of protected sites including water-dependent species and habitats. The resulting Special Areas of Conservation and Special Protection Areas designated by Member States make up the European Natura 2000 network.

Irish natural habitats laws were introduced in 1997 and updated in 1998 and 2005 to transpose both nature conservation directives. Key provisions include the Minister of the Environment, Heritage and Local Government's powers to control damaging activities within and outside designated sites, and powers devolved to other ministers and agencies requiring them to incorporate Natura 2000 site protection into all their plans and programmes by carrying out appropriate assessment. Conservation measures for Natura 2000 sites are to be established in management plans. To this end, Environmental objectives for Ireland's most sensitive aquatic species, the freshwater pearl mussel (*Margaritifera margaritifera* and *Margaritifera durrovensis*), are due to be established by regulation in early 2009. Prioritised conservation plans for the sub-basins (or catchments) containing designated communities are being developed to identify risks and set out specific management actions. Natura 2000 sites are also part of the Water Framework Directive's register of protected areas.

Drinking waters

The objective of these regulations is to protect the health of consumers by ensuring that the quality of water intended for human consumption is wholesome and clean. Local authorities are responsible for Ireland's water service provision, with major capital schemes delivered under the Water Services Investment Programme and smaller schemes falling under the Rural Water Programme. The Department of the Environment, Heritage and Local Government sets government policy, administers major schemes and ensures that funding is available. In 2007, the Water Services Act introduced a new policy requiring Water Services Strategic Plans to support proper planning and sustainable development, with clear links to both development plans and river basin plans. Technical guidance and training on the preparation of Water Service Strategic Plans have been developed under the supervision of the Environmental Services National Training Group. Local authorities must prepare Water Services Strategic Plans taking full account of objectives established for waters in river basin plans. In addition the Water Framework Directive requires new measures to be taken to protect drinking water sources, which are also part of the Directive's register of protected areas.

Major accidents

National regulations, made in 2006, concern the control of major hazards involving dangerous substances. The Health and Safety Authority must organise a system of inspections or other suitable control measures for

relevant establishments. Internal and external emergency plans prepared by operators and the local competent authority, addressing the risks posed by relevant installations, must take full account of objectives established for nearby waters in river basin plans.

Environmental impact assessment

These regulations ensure that environmental consequences of individual projects are identified and systematically assessed, with any adverse effects being avoided, reduced or offset before authorisation can be given under planning law. This is set out in Ireland's Planning and Development Acts and Regulations. Review of regional planning guidelines, county development plans and local area land-use and spatial plans should take account of objectives established for waters in river basin management plans; thus ensuring that new projects will consider Water Framework Directive objectives. Regulations introduced in 2004 to transpose the Strategic Environmental Assessment Directive also provide for further linkage between river basin management and land-use planning at a strategic level.

Sewage sludge

National law, made in 1991 through Waste Management Regulations (amended in 1998 and 2001), sets standards and practices to be followed by local authorities for using sewage sludge in agriculture; encouraging use whilst regulating activities to prevent harmful effects on soil, vegetation, animals and humans. To this end, all local authorities have prepared sludge management plans in line with Ireland's Code of Good Practice for the Use of Biosolids in Agriculture. Local authorities are also required to maintain a register of sludge/biosolids movement and advance notification of spreading is required in accordance with a nutrient management plan. Local authorities will assess whether their sludge management plans need revision or review with regard to the objectives set in river basin management plans.

Urban wastewater treatment

The 2001 Urban Wastewater Treatment Regulations deal with the collection, treatment and discharge of urban wastewater and wastewater from certain industrial sectors. As with water supply, local authorities are responsible for sewerage service delivery under Water Services Investment and Rural Water Programmes and must prepare Water Services Strategic Plans with the river basin management plans in mind. Local authorities must undertake monitoring at treatment plants and make provision for pre-treatment requirements for industrial wastewater entering collection systems and treatment plants. Proposed Environmental Objectives Regulations, due to be made in 2009, will provide a basis for deciding on the appropriate treatment required in order to meet objectives, enabling necessary infrastructure and operational improvements to be prioritised in line with Water Framework Directive objectives.

Plant protection products

These regulations, introduced in 1981 and amended in 2001 and 2003, concern authorisation of plant protection products for marketing or use and aim to ensure no harmful human and animal health effects and no unacceptable environmental impact. Pesticides Control Service (Department of Agriculture, Fisheries and Food) operates the authorisation system. Only products which can be used safely are authorised and this list is kept under review. The EU Commission is developing a strategy for sustainable use of pesticides focusing on the use-phase in the life-cycle of pesticides and introducing specific measures to protect waters from the impact of pesticides. The 2006 draft Sustainable Use of Pesticides Directive proposes measures to establish pollution reduction programmes, which must include measures such as buffer strips or the use of particular technical equipment to reduce spray drift. There are also proposed measures to significantly reduce or ban the use of pesticides in safeguard zones used to protect drinking water sources and in sensitive areas (such as Natura 2000 sites) based on relevant risk assessments.

Nitrates

These regulations, implemented in 2006, protect waters against pollution caused by nitrates (and also phosphorus) from agricultural sources. Through the Good Agricultural Practice for Protection of Waters Regulations, Ireland set up a National Action Programme covering the whole national territory. The Minister for the Environment, Heritage and Local Government publishes action programmes following consultation with the Minister Agriculture, Fisheries and Food and other interested parties.

The Good Agricultural Practice for Protection of Waters Regulations aim to reduce water pollution caused or induced by nitrates and phosphates from agricultural sources and to prevent further such pollution. Compliance is primarily a matter for individual farmers. The effectiveness of implementation is monitored by surveys of water quality and agricultural practices, including studies of agricultural mini-catchments.

The Department of Agriculture, Fisheries and Food, local authorities and the Environmental Protection Agency have responsibilities for monitoring and identifying waters which are polluted or likely to become polluted and for developing and implementing action programmes to reduce and prevent such pollution. The Environmental Protection Agency has ongoing water quality monitoring programmes. Recently amended regulations strengthen the enforcement role of local authorities.

Technical guidance and training on agricultural pollution inspections are currently being developed under the supervision of the Environmental Services National Training Group to ensure consistent and effective enforcement nationwide. Teagasc commenced mini-catchment work in 2007 to review the effectiveness of the current National Action Programme. The outputs from the monitoring of water quality, farm practices and representative mini-catchments will be critical to demonstrating the effectiveness of the action programme and will determine the modifications (if any) needed to the programme during its review process. The current programme will be reviewed in 2009 and, where appropriate, adjustments will be introduced in the second 4-year action programme starting in 2010.

Integrated pollution prevention control

This directive aims to minimise pollution from various industrial sources (including intensive agricultural enterprises), in order to ensure a high level of protection of the environment. It has been implemented in national law through the Environmental Protection Agency Acts and the associated licensing regulations. Operators of certain industrial installations are required to obtain an authorisation (environmental permit) from the Environmental Protection Agency. The permit conditions include emission limit values; soil, water and air protection measures; and waste management measures; and must be based on Best Available Techniques. The establishment of environmental objectives in river basin management plans will require permits to take full account of these objectives.

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Appendix E - The range of supplementary measures

The supplementary measures identified by the National Programme of Measures further characterisation projects and considered in our Draft Plan are all judged to be technically feasible. The measures considered range from reducing the pressure at source (for example reducing nutrient loading on a treatments facility) through remediation by technical or engineering solutions (for example providing treatment upgrades) to relocation of the pressure (for example selecting a different discharge location). This Appendix has been provided by the North South Share Project.

Tackling the issues

The issues for which supplementary measures may be needed are:

- the point and diffuse sources of pollution (each of which is considered separately below), which are likely to hinder the restoration of Good Status. They include some locally focussed and future issues. Note that tackling these sources, and especially dangerous substances, will also reduce chemical pollution
- physical modifications, also likely to hinder the restoration of Good Status
- abstractions, similarly likely to hinder the restoration of Good Status
- research and education

Point and diffuse sources: wastewater

Water services authorities have to assess existing and proposed urban wastewater facilities to determine whether the level of treatment will meet discharge authorisations set by the Environmental Protection Agency in line with new surface water environmental objectives. Supplementary treatment beyond the requirements of the urban wastewater treatment regulations has to be considered on a case-by-case basis where judged necessary to restore status. This may mean nutrient reduction from smaller discharges or more stringent treatment to remove chemical pollutants (removal of metals by chemical precipitation or removal of organics by activated carbon). Supplementary measures must be planned through the Water Services Strategic Planning process. Consideration is being given to establishing a supplementary budget under the Water Services Investment Programme and Rural Water Programme to finance priorities for supplementary treatment identified in Water Services Strategic Plans.

Technical studies commissioned by local authorities on point source discharges will identify wastewater treatment plants and licensed discharges in the Eastern River Basin District which may require supplementary measures:

- Some urban wastewater treatment plants may lack capacity to cater for the projected future increase in population within the catchment area of the plant. Limiting development, additional controls on licensed discharges and public awareness campaigns could be considered as possible supplementary measures.
- Some treatment plants and licensed discharges may be discharging to waters where the available dilutions are considered insufficient to meet water quality objectives. Possible supplementary measures include further investigations to confirm assimilative capacity, reduction in wastewater treatment plant loading, applying a higher standard of treatment or relocating the point of discharge.
- Some urban wastewater treatment plants and licensed discharges may be discharging to protected areas where the required water quality standards are not being met. Supplementary measures could include initiating research to determine the impact of the discharge or applying a higher standard of treatment such as ultra-violet light treatment.

Technical studies estimate that, subject to further monitoring and investigation, the following wastewater discharges supplementary measures are required nationally:

Code	Supplementary Measure	National Numbers
Reduce		
S1	Measures intended to reduce loading to the treatment plant: - Limit or cease the direct importation of polluting matter (for example liquid wastes, landfill leachate, sludges) - Investigate the extent of use and impact of under-sink food waste disintegrators and take appropriate actions.. - Investigate fats/oils/grease influent concentrations and take actions to reduce FOG entering the collection system.	264
S2	Impose development controls where there is, or is likely to be in the future, insufficient capacity at treatment plants.	420
S3	Initiate investigations into characteristics of treated wastewater for parameters not presently required to be monitored under the urban wastewater treatment directive.	270
S4	Initiate research to verify risk assessment results and determine the impact of the discharge.	443
S5	Use decision making tools in point source discharge management.	180
Remediate		
S6	Install secondary treatment at plants where this level of treatment is not required under the urban wastewater treatment directive.	5
S7	Apply a higher standard of treatment (stricter emission controls) where necessary.	275
S8	Upgrade the plant to remove specific substances known to impact on water quality status	275
S9	Install ultra-violet or similar type treatment.	5
Relocate		
S10	Relocate the point of discharge.	275

Pollution from urban runoff and storm over flows needs further investigation due to the lack of existing data. Local authorities should increase investment in asset management. Water Service Strategic Plans, required under the Water Services Act, should include for asset management studies focussing on the identification of discharges to waters from storm overflows and leaking underground sewers. Possible supplementary measures to reduce urban pressures include surveys, mapping and research; codes of best practice or legislation (for example in relation to Sustainable Drainage Systems); groundwater quality monitoring; improved infrastructure; and planning.

Point and diffuse sources: industrial discharges

Review of industrial licenses may necessitate supplementary measures for some discharges in order to meet new environmental quality standards. Supplementary measures will be determined after license review and may address reduction and remediation of loading using the Best Available Techniques approach or consider relocation of discharge in a similar manner to waste water discharges measures.

Point and diffuse sources: landfills, quarries, mines & contaminated lands

Further investigation of landfill and quarry risks is needed before measures can be identified. Where investigations have identified waters impacted by landfill, quarry, mine or contaminated sites, supplementary measures in the form of site-specific remediation schemes or closure plans are required to restore status. The supplementary measures to remediate these existing sites typically include pollution containment measures and monitoring requirements.

The following sites may be identified as impacting status in the Eastern River Basin District and appropriate remediation schemes may be put in place:

- Quarries
- Mines
- Landfills
- Contaminated lands / urban areas

Point and diffuse sources: agriculture

There are a series of studies underway to evaluate the effectiveness of Ireland's Good Agricultural Practice Regulations in support of the Nitrates Directive. These studies include national water quality monitoring programmes to determine water quality impacts and trends and specific mini-catchment studies to determine the effectiveness of these basic agricultural control measures in a variety of settings. The National Action Programme will be reviewed in 2009 and every four years thereafter.

The review may identify that new national measures or targeted measures in some sensitive areas are needed. If national measures are required it is likely that the Good Agricultural Practice Regulations will be updated to reflect these as basic measures which will be built into river basin management plans. If the 2009 or subsequent reviews of the National Action Programme identify the need for specific measures these will be built into river basin management plans as supplementary measures.

Possible supplementary measures include:

- Reducing agricultural pollutant losses by creating buffer strips, fencing to prevent livestock access to watercourses, setting aside agricultural lands, reducing agricultural intensity, reduced levels of land reclamation or requiring nutrient management planning
- Remediation by targeted farmyard management system upgrades or rural environmental protection schemes, requiring stricter storage or closed periods than the current Good Agricultural Practice Regulations
- Relocation by using digestors in areas of nutrient surplus or tankering in areas of nutrient surplus.

Point and diffuse sources: wastewater from unsewered properties

The proposed supplementary measures support existing legislative measures:

- enhanced inspection and enforcement and standardisation of procedures
- management of the process of site investigation for large systems
- development of a national register of Certified Site Assessors.

A supplementary budget may be established under the Water Services Investment Programme and Rural Water Programme to finance priorities identified in Water Services Strategic Plans.

Technical studies commissioned by local authorities estimate that the following on-site systems supplementary measures may be required nationally:

Code	Supplementary Measure	National Numbers
Reduce		
S1	Amend Building Regulations - Code of Practice for single houses - Code of Practice for large systems - Certification of unsewered and percolation areas	all
S2	Establish certified expert panels for site investigation and certification of installed systems	all
S3	Assess applications for new unsewered systems by applying risk mapping/decision support systems and codes of practice	all
Remediate		
S4	Carry out an inspection programme in prioritised locations for existing systems and record results in an action tracking system	
S5	Enforce requirements for percolation and de-sludging	
Relocate		
S6	Consider connection to municipal systems	

Point and diffuse sources: forestry

Supplementary measures identified to ensure minimal impact on the aquatic environment include management instruments to ensure good governance and measures to mitigate acidification potential, nutrient enrichment and sediment loss. Some measures relating to hydromorphological impact and use of pesticides have also been identified. Recommendations have also been made for additional research and the trialling of some measures at catchment scale. These will lead to significant reduction in potential impact from forests and forestry practice into the future.

Technical studies commissioned by local authorities estimate that the following forestry supplementary measures may be required nationally:

Code	Supplementary Measure	National Numbers
Reduce		
S1	Management Instruments - Ensure regulations and guidance are cross referenced and revised to incorporate proposed measures.	
S2	Acidification - Avoid or limit (to below critical thresholds) afforestation on 1st and 2nd order stream catchments in acid sensitive catchments	
S3	Acidification - Restructure existing forests to include open space and structural diversity through age classes and species mix, including broadleaves	
S4	Acidification - Revise the Acidification Protocol to ensure actual minimum alkalinities are detected (that is ensure sampling under high flow conditions) and revise boundary conditions for afforestation in acid sensitive areas.	
S5	Eutrophication and Sedimentation - Avoid or limit forest cover on peat sites	
S6	Eutrophication and Sedimentation - Change the tree species mix (for example broadleaves) on replanting	
S7	Eutrophication and Sedimentation - Limiting felling coup size	
S8	Eutrophication and Sedimentation - Establish new forest structures on older plantation sites (including riparian zones, drainage layouts, species mix, open areas)	
S9	Hydromorphology - Audit existing drainage networks in forest catchments	
S10	Pesticide Use - Reduce pesticide usage	
S11	Pesticide Use - Pre-dip trees in nurseries prior to planting out	
S12	Pesticide Use - Maintain registers of pesticide use	
Remediate		
S13	Acidification - Mitigate acid impacts symptomatically using basic material (e.g. limestone or sand liming)	
S14	Acidification - Manage catchment drainage to increase residence times and soil wetting, including no drainage installation in some areas	
S15	Acidification - Implement measures to increase stream production – for example with native woodland in riparian zones.	
S16	Eutrophication and Sedimentation - Establish riparian zone management prior to clearfelling	
S17	Eutrophication and Sedimentation - Enhance sediment control	
S18	Eutrophication and Sedimentation - Manage catchment drainage to increase residence times and soil wetting, including no drainage in some locations	
S19	Hydromorphology - Enhance drainage network management – minimise drainage in peat soils	
S20	Pesticide Use - Develop biological control methods	

Point and diffuse sources: dangerous substances & chemical pollution

The supplementary measures for chemical discharges will be identified after review of wastewater and industrial licenses in accordance with recently introduced environmental objectives for surface waters. These include standards for specific pollutants relevant in Ireland's waters and priority substances prioritised across Europe.

Technical guidance and training are currently being developed through the Water Services National Training Group to assist local authorities in the review and revision of discharge authorisations. Supplementary measures for point discharges will have to be considered for discharge authorisations on a case-by-case basis. Technical options might include reduction by source control, remediation by upgrade of treatment to remove substances from effluent or discharge relocation. For diffuse sources of substances, stricter controls on activities might be required to reduce discharges, losses and emissions.

Physical modifications

The supplementary measures considered to restore rivers impacted by physical modifications include soft engineering techniques such as creating pool and riffle sequences and more conventional remediation works such as adding fish passes to artificial weir structures. It is proposed that channelisation enhancement priorities be built into the existing River Enhancement Programme operated by the Office of Public Works with additional supplementary channelisation budgets established by Drainage District Authorities where appropriate. It is also proposed that The Department of Agriculture, Fisheries and Food should undertake a programme to rehabilitate rivers damaged through over-grazing. Local authorities should seek additional funding to remove artificial barriers impacting on fish migration.

Technical studies estimate that the following physical modification supplementary measures may be required nationally:

Code	Supplementary Measure	National Numbers
Reduce		
S1	Code of Practice	all
S2	Support voluntary initiatives	all
Remediate		
S3	Channelisation impact remediation schemes	11
S4	Channelisation investigation	527
S5	Over-grazing remediation	142
S6	Impassable barriers remediation schemes	117
S7	Impassable barriers investigation	538

Many macroinvertebrates re-establish quite soon after river drainage, but impacted fish populations take longer to recover, so fish are key indicator of the impact of drainage. Similarly, fish are the key indicator that artificial weirs, bridge aprons, or culverts are barriers to migration. Therefore fish status is needed to identify appropriate areas for supplementary measures. Information on fish status is limited as it is a new monitoring requirement, but this dataset will improve with time. Measures will have to be reviewed as this information becomes available. Fish status monitoring and other surveys will be undertaken to confirm whether more waters where morphology risks have been identified are suitable for supplementary measures. It is also proposed that more detailed surveys of barriers to migration including fish surveys be undertaken on a catchment basis, so that impact of these structures can be confirmed.

Abstractions

Technical studies have shown that habitat for salmonid fish in Irish rivers can be reduced by abstractions. Generally, the effects are more significant in smaller rivers than in larger rivers. This research has been piloted for Ireland's central plain region and suggests that minimum instream flow requirements are needed to protect fisheries habitat.

The scientific understanding of the consequences of abstractions pressures on lake ecology is not well developed. Potential impacts of abstractions to the ecological health of a lake are related to physical changes in the lake's water level and/or flushing rate. Abstractions can increase water level fluctuation by increasing drawdown in a lake on a seasonal basis; lower lake levels could impact shallow littoral zones by exposing them to wave action and desiccation. These, in turn, can affect wetlands and sensitive species including spawning of fish such as the Arctic char and pike and the presence of Chara.

In the case of severe abstraction impacts, the volume withdrawn can exceed the ability of the lake's catchment to restore the water level to typical seasonal high levels resulting in the long-term lowering of the lake water level. Abstractions from the lake itself or the lake's catchment could decrease the flushing time, increasing the available time nutrient uptake by algae, periphyton and macrophytes. Proliferating plant life is a common indication of cultural eutrophication.

Over abstraction of groundwater bodies can reduce baseflow contribution into rivers and inflows to lakes resulting on direct impacts on dependant ecosystems (such as fens and bogs) and indirect impacts such as those noted above.

Further possible supplementary measures include:

- Reducing abstraction pressures by reducing water demand through measures such as:
 - implementing water conservation programmes,
 - supporting voluntary initiatives such as water conservation and rainwater harvesting schemes,
 - reducing leakage and unaccounted for water in distribution systems,
 - implementing more small schemes that distribute the demand on the resource,
 - establishing water metering and water charging programmes for residential users,
 - imposing restrictions on development if an abstraction is at its capacity

increasing the water available in the catchment through:

- promoting reduction and/or infiltration of runoff (for example sustainable drainage schemes—SuDS)
- reuse of grey water or treated wastewater effluent.
- Remediation schemes in priority areas including considering reducing current abstractions by; altered abstraction timing, conjunctive use, additional storage
- Relocation by considering alternative sources.

Additional data and monitoring is needed to improve the understanding of the effects of abstractions on surface waters, including information on:

- daily abstracted volumes
- additional hydrometric stations in small (less than 20 km²) catchments
- daily water levels in lakes with extant abstractions suspected as causing an impact or for future abstractions above a certain threshold
- effects of abstractions on lake ecology
- determination of instream flow needs for rivers outside the central plain region (by modelling with the PHABSIM program).

This further investigation will be undertaken in waters at risk enabling review or setting of compensation flow requirements and selection of the appropriate supplementary measures on a site specific basis.

Locally focussed and future issues

Possible supplementary measures generally necessitate focussed management and enforcement actions that will be coordinated at District level. They include:

- Climate change: all measures have been assessed to ensure that the plan adequately considers the potential impacts of climatic change
- Aquaculture: proposing national standards, designating additional sites and developing shellfish pollution reduction plans
- Invasive alien species: supporting measures being developed by the national alien species study and local investigations at District level
- Protecting high quality areas developing national guidance on favorable conservation status, introducing a web-based register of designated sites and supporting voluntary initiatives (nature conservation projects) at District level
- Cruising and boating: enforcing pump-out control and speed restrictions at District level
- Peat extraction: enforcing licensing controls and rehabilitation plans at District level

Research

To improve our understanding of certain problems and to have a better chance of identifying solutions, we need to carry out more research at national level to:

- characterise effluents and leachates to give better data on the quantities of pollutants associated with these discharges in Ireland
- determine the effectiveness of forestry measures
- establish natural background levels of metals in Irish waters so that the impact of human activities can be identified
- establish links between ecology and morphology to increase confidence in status classification and in the effectiveness of morphology measures
- establish links between ecology and abstractions including the flow requirements for fish populations. Again, this would increase confidence in status classification and in the effectiveness of abstraction measures
- investigate the ecological potential of heavily modified waters to establish mitigation measures to achieve good ecological potential
- investigate chemical pollution to establish possible sources and appropriate measures.

Education

Public awareness is a cornerstone of the Water Framework Directive. Raising general awareness and providing information about specific waters issues and their solutions at national level will help with water management. They will encourage people to participate in reduction programmes and will garner support for implementing the measures in the plan. A national campaign is needed, supported by specific targeted messages for example on clearer product labelling. This ties in with encouraging the use of low phosphorus products (which currently operates in Ireland by national voluntary agreement) and is under consideration by the Commission as a Europe wide initiative.

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River Basin Management Plan - Comments Form

Unique Identification Number

Use this form to send your comments to us.

Name:

Organisation/Association:

Address:

Phone/Fax:

Email:

Date of comments:

General Comments on this Plan:

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Question 1: How would you like to see the monitoring data being provided to a wider group of stakeholders?



Question 2: Do you think that the Classifications fairly reflect the status of waters in the Eastern River Basin District?

Question 3: Do you think that there are any common factors contributing to High Status waters?

Question 4: have we identified all the designated protected areas?

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Question 5: Have we identified all existing basic measures? Are there any other Supplementary measures that you think would be helpful? And cost effective?



Question 6: Do you agree that the catchment specific approach to measures is appropriate?

Question 7: Do you think that the proposed measures will achieve good ecological status?

Question 8: Do you agree that pilot studies and careful analysis are a necessary precursor to widespread implementation of measures?

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Question 9: How do you think economics should be taken on board in the Plan?



Question 10: Do you think that the exemptions suggested are realistic?

Question 11: What do you view to be the main issues caused by climate change?

Question 12: Have we focused on the right solutions?

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Question 13: Do you think the actions suggested to solve the problems, are too strict? Or too lenient?

Send your comments form to:

River Basin Management Plan Comments

Project Co-ordinator, Eastern River Basin District Project Office
Dublin City Council, 68-70 Marrowbone Lane, 4th Floor, Dublin 8

