Water Matters: Our Plan!

South Western River Basin Management Plan (2009-2015).

Foreword

Clean water is one of our most important national resources. Human activities have led to deterioration in water quality over many years. The Water Framework Directive was adopted by the EU in order to halt and reverse the decline in water quality. The Directive sets very strict deadlines for meeting water quality objectives, especially in protected areas. This plan sets out how we aim to achieve the objectives of the Directive in the South Western River Basin District.

Informed by pilot projects from the 1990's and through extensive research carried out since 2003, local authorities have developed this plan to provide an objective scientific approach to meeting the required water standards. In preparing the plan all known pressures on waters have been identified and quantified at the level of individual water bodies. Measures to address the pressures have been examined and the likelihood of water quality recovery has been assessed. All public bodies and other stakeholders have been consulted extensively in the process.

The plan's targets are ambitious yet they are no more than we are obliged to do by EU and national legislation. Further legislative change may be required to control specific activities. Responsibility for taking measures lies with all public bodies whose activities impact on water quality or who regulate such activities. Local authorities must perform their own activities in a way that will promote achievement of objectives and additionally must carry out a range of environmental monitoring and enforcement activities to ensure that other stakeholders' actions will lead to water quality improvements.

Local authorities today face an immense challenge to meet an ever increasing demand for services across all of their functions. We are required to work within tight resource constraints and depend heavily on funding provided by the Department of the Environment, Heritage and Local Government for capital works and indeed day to day expenditure. Under the circumstances it is ever more important that we plan carefully for the application of resources to satisfy obligations placed upon us by national legislation and to lead the general development of our administrative areas.

Following adoption of this plan, local authorities will develop implementation programmes and identify all resource implications and funding requirements. It is likely that the resource requirements will exceed the current capacity of local authorities. Meeting the commitments contained in the plan will depend on the Department of Environment, Heritage and Local Government together with other Government Departments making provision for the required resources and funding.

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Glossary and Abbreviations

AA:	Appropriate Assessment for Natura 2000 sites as required under the Habitats Directive.
Acidification (artificial):	The rough canopies of mature evergreen forests are efficient scavengers of particulate and gaseous contaminants in polluted air. This results in a more acidic deposition under the forest canopies than in open land. Chemical processes at the roots of trees, evergreens in particular, further acidify the soil and soil water in forest catchments. When the forests are located on poorly buffered soils, these processes can lead to a significant acidification of the run-off water and consequent damage to associated streams and lakes.
ACP:	Agricultural Catchment Programme
Advisory Council:	Select group of appointed council members whose role is to consider matters relating to the preparation of river basin management plans and other matters relevant to the protection and use of the aquatic environment and water resources in the district and to advise and make recommendations on these matters to the relevant public authorities.
Artificial water body:	A body of surface water created by human activity.
Biodiversity:	Word commonly used for biological diversity and defined as assemblage of living organisms from all habitats including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part.
CFB:	The Central Fisheries Board
Coastal waters:	That area of surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.
DAFF:	Department of Agriculture, Fisheries and Food.
DCENR:	Department of Communications, Energy and Natural Resources.
DEHLG:	Department of Environment, Heritage and Local Government.
DETE:	Department of Enterprise, Trade and Employment.
Diffuse sources (of pollution):	Non-point sources primarily associated with run-off and other discharges related to different land uses such as agriculture and forestry, from septic tanks associated with rural dwellings and from the land spreading of industrial, municipal and agricultural wastes.
EC:	European Commission
Ecological status:	An expression of the structure and functioning of aquatic ecosystems associated with surface waters. Such waters are classified as being of good ecological status when they meet the requirements of the Water Framework Directive.
Ecology:	The study of the relationships among organisms and between those organisms and their non-living environment.
Ecosystem:	A community of interdependent organisms together with the environment they inhabit and with which they interact; community and environment being distinct from adjacent communities and environments
EPA:	Environmental Protection Agency.
EU:	European Union
Eutrophic:	Having high primary productivity, the result of high nutrient content.

Eutrophication:	The process of enrichment of water by nutrients (principally phosphorus and nitrogen). The nutrients accelerate plant growth, disturbing the balance of aquatic plants and animals and affecting water quality.
Good status:	A collective term used to refer to the status achieved by a surface water body when both its ecological status and its chemical status are at least good or, for groundwater, when both its quantitative status and chemical status are at least good.
Groundwater:	All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. This zone is commonly referred to as an aquifer, which is a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow a significant flow of groundwater or the abstraction of significant quantities of groundwater.
GSI:	Geological Survey of Ireland.
Heavily modified water body:	A water body that has been changed substantially in character as a result of physical alterations by human activity.
HSE:	Health Service Executive
Hydromorphology:	A study of the quantity and dynamics of water flow within a water body that has variations in its width, depth, structure and substrate of bed and riparian zone.
Inland surface waters:	All standing or flowing water on the surface of the land (such as reservoirs, lakes, rivers) on the landward side of the baseline from which the breadth of territorial waters is measured.
Invasive alien species:	Invasive alien species are non-native plants or animals that successfully establish themselves in aquatic and fringing habitats and damage natural flora and fauna.
Leachate:	The liquid containing dissolved and suspended contaminants that is formed as percolating water passes through potentially polluting materials. The term is generally associated with landfills.
Mitigation measures:	Measures to avoid, prevent, minimise, reduce or, as fully as possible, offset or compensate for any significant adverse effects on the environment, as a result of implementing a plan or programme.
NAP:	National Action Programme
NPWS:	National Parks and Wildlife Service (part of DEHLG).
On-site system:	Septic tank or other system for treating wastewater from unsewered properties.
Oligotrophic:	Water bodies that are poorly nourished or unproductive.
OPW:	The Office of Public Works
PRP	Pollution reduction programme
Programme of measures:	Those actions, defined in detail, which are required to achieve the environmental objectives of the Directive within a river basin district.
Public Authority:	The relevant public authorities are those prescribed in Schedule 1 of the European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003).
Protected area:	Water protected by European legislation including drinking waters, shellfish waters, bathing waters, urban wastewater nutrient sensitive areas or sites designated as Special areas of Conservation or Special Protected Areas

Quantitative status:	An expression of the degree to which a body of groundwater is affected by direct and indirect abstractions. If this complies with Directive requirements the status is good.
River Basin District (RBD):	Administrative area for coordinated water management, composed of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD.
River basin:	The area of land from which all surface water run-off flows, through a sequence of streams, rivers and lakes into the sea at a single river mouth, estuary or delta.
SEA:	Strategic Environmental Assessment
Sedimentation:	The deposition by settling of a suspended material.
SNIFFER:	Scotland Northern Ireland Forum for Environmental Research.
Special Area of Conservation (SAC):	Site designated according to the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora).
Special Protection Area (SPA):	Area designated under the European Directive on the Conservation of Wild Birds [Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (this is the codified version of Directive 79/409/EEC as amended)].
Statutory Instrument (SI):	Any order, regulation, rule, scheme or bye-law made in exercise of a power conferred by statute.
Surface water:	Inland waters on the land surface (such as reservoirs, lakes, rivers, transitional waters, coastal waters) within a river basin.
SWAN:	Sustainable Water Network
Transitional waters:	Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their vicinity to coastal waters, but which are substantially influenced by freshwater flows.
Water body:	A coherent sub-unit in the river basin (district) to which the environmental objectives of the directive must apply. Hence, the main purpose of identifying “water bodies” is to enable the status to be accurately described and compared to environmental objectives
Water Framework Directive (WFD):	The Water Framework Directive is European legislation that promotes a new approach to water management through river basin planning. It covers inland surface waters, estuarine waters, coastal waters and groundwater.
WMU:	Water Management Unit – geographical sub unit of a river basin district consisting of a number of water bodies relevant to a particular sub catchment.

Executive summary

The South Western RBD is a largely rural area with many high quality waters and protected sites that depend on water. Its mix of fertile valleys and mountainous landscapes host agricultural and forestry activities and its spectacular coastline, surfing beaches and remote beauty spots attract many tourists. Water is critical to the economy of the South Western RBD, generating and sustaining wealth through activities such as agriculture, forestry, aquaculture, power generation, industry, services, transport and tourism. However, water is a fragile resource that needs to be protected.

The Water Framework Directive (WFD) was adopted in 2000. It requires governments to take a new approach to managing all their waters: rivers, canals, lakes, reservoirs, groundwaters, protected areas (including wetlands and other water-dependent ecosystems), estuaries (transitional) and coastal waters. Member states must ensure that their waters achieve at least good status, generally by 2027 at the latest, and that status doesn't deteriorate in any waters. To achieve good status and preserve the best waters, it is necessary to prepare and implement management plans for those waters.

This plan is for South Western RBD. It covers the period 2009–2015 and has been prepared in consultation with all stakeholders. It sets out the measures to be taken by all stakeholders and the tools to prioritise the application of available resources to those measures, with the aim of achieving the objectives of the Directive. The key parties in its implementation are:

- the district's local authorities (Cork and Kerry, Limerick, South Tipperary and Waterford and Cork City), which acted jointly to make the plan; Cork County Council, as the coordinating local authority in the district will aim to coordinate the work of the authorities and public participation in the district;

- the Environmental Protection Agency, which is responsible for reporting to the European Union, coordinating activities at national level and certain other tasks such as assigning status, monitoring programmes and review of the plan;

- the Department of the Environment, Heritage and Local Government which has a coordinating role in relation to implementation of the Water Framework Directive, and through the Local Government Fund and Water Services Investment Program plays a significant role in determining priority for investment in infrastructure and the availability of resources to local authorities;

- other public authorities identified under the 2003 Water Policy Regulations, which are required to exercise their functions in a manner which is consistent with the objectives of the river basin management plan;

- the Water Framework Directive National Advisory Committee which will oversee implementation of the plan at national level. It is chaired by the Department of the Environment, Heritage and Local Government and involves representatives from the Department of Agriculture, Fisheries and Food, the Environmental Protection Agency, the City and County Managers Association (representing local authorities) and other Government Departments as appropriate.

The Environmental Protection Agency has, in an interim status assessment based on the results of the monitoring up to 2008, classified the surface waters in the South Western RBD according to their ecological status and chemical status; groundwater is classified based on a system combining chemical and quantitative status. The Classification is as follows:

- 67% of rivers; 82% of lakes; 12% of estuaries; 30% of coastal waters are satisfactory, with high or good ecological status (percentage calculated by number);

- 33% of rivers; 18% of lakes; 56% of estuaries; 19% of coastal waters are less than good (moderate, poor or bad);
- 51% of our coastal waters and 32% of our estuaries are yet to have status assigned;
- all of the surface waters tested so far have good chemical status;
- 92% of our groundwaters have good combined status and 8% are currently poor status.

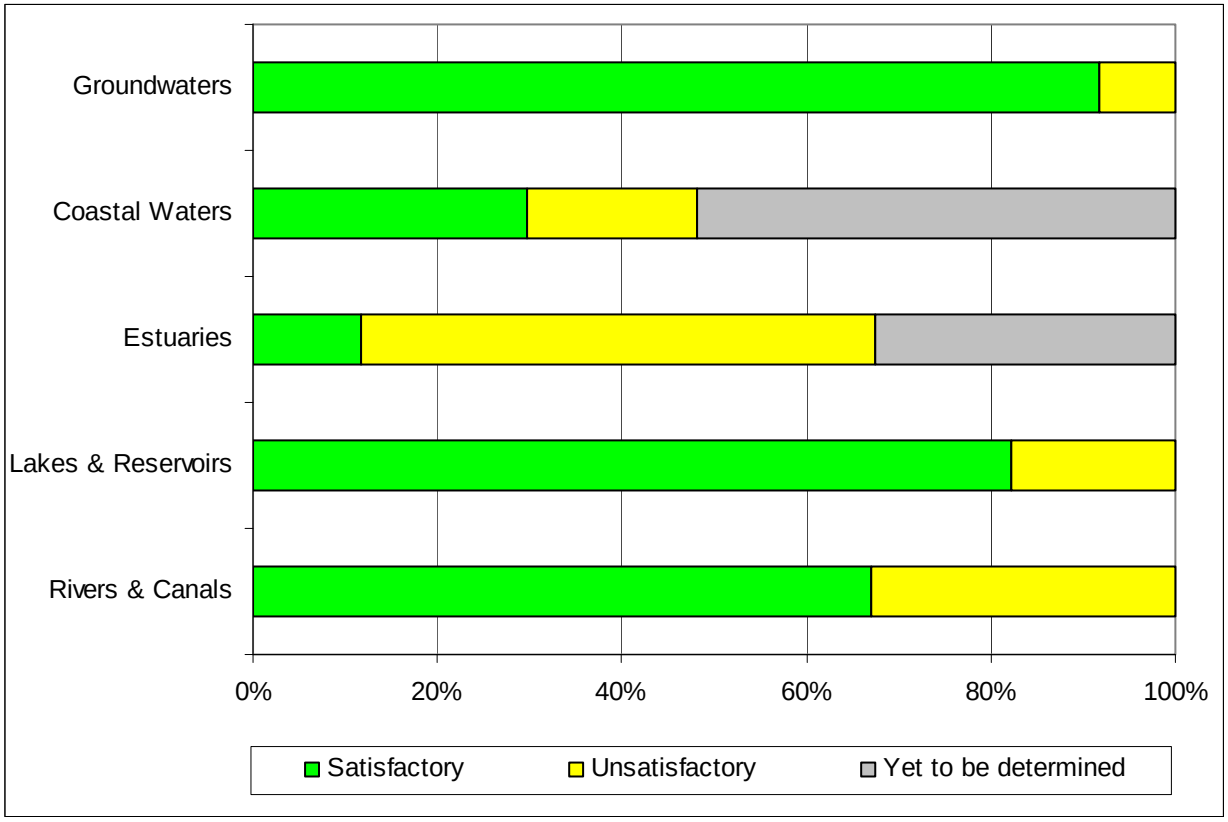


Chart I – Surface Water Classification in the SWRBD

The final status assessment based on the data collected during the first monitoring cycle (2007-2009) will be presented by the Environmental Protection Agency in 2011.

The Water Framework Directive sets out four core objectives to be achieved by 2015:

- prevent deterioration;
- restore good status;
- reduce chemical pollution;
- achieve protected areas objectives.

The Water Framework Directive also allows alternative objectives to be set for certain waters. It is estimated that implementation of the measures in this plan will result in good status being achieved by 2015 in 84% of rivers, 99% of lakes, 16% of estuaries, 31% of coastal waters and 94% of groundwaters, with further improvements during the second and third planning cycles.

The trends in status expected over the three planning cycles to 2027 are:

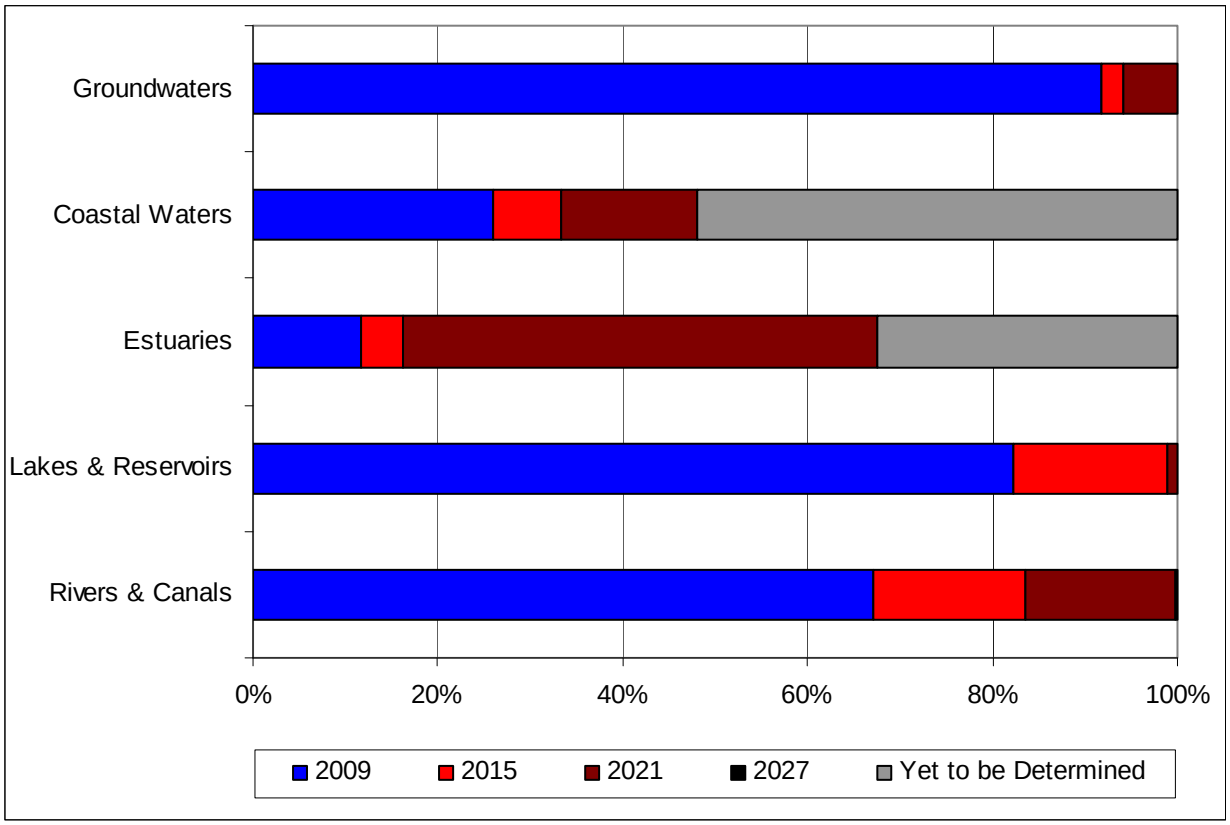


Chart II – Expected trends in status over three planning cycles to 2027

The principal suspected causes of less than satisfactory water in the state are discharges, principally of nutrients, from agricultural activities and from municipal wastewater treatment works. Industrial discharges, wastewater from unsewered properties and discharges from several other activities have also been identified as contributing. Action should concentrate in the first instance on these issues which pose the greatest threat to the water environment, but it is also important to address other possible sources of water pollution and impact, including issues such as water abstraction and physical modification and issues specific to the South Western RBD. This plan identifies a programme of measures to protect and restore water status by addressing the main pressures (that is sources of pollution or status impact) in the district.

Many of the measures are already provided for in national legislation and are being implemented. These include, for example, the Urban Waste Water Treatment Regulations 2001 to 2010 and the Good Agricultural Practice for the Protection of Waters Regulations of 2009. Other measures have been recently introduced (for example new Bathing Water Regulations, 2008) or are under preparation (for example proposed authorisation regulations for abstractions and physical modifications). The key measures include:

- Control of urban waste water discharges;
- Control of unsewered waste water discharges;
- Control of agricultural sources of pollution;
- Water pricing policy;
- Sub-basin management plans and programmes of measures for the purpose of achieving environmental water quality objectives for Natura 2000 sites designated for the protection of Freshwater Pearl Mussel populations;

- Pollution reduction programmes for the purpose of achieving water quality standards for designated shellfish waters; and

- Control of environmental impacts from forestry.

The action programme intended to achieve the plan's environmental objectives sets out:

- what the measure is;

- where and when it will be applied;

- who will take the action.

More detailed information is also set out in a series of water management unit (WMU) action plans. WMUs are at a smaller geographical scale than river basin districts, and allow for more focussed planning and implementation. There are twenty-eight water management units for the rivers and lakes in the South Western RBD plus action plans focusing on groundwaters and estuary and coastal waters. These action plans will be developed further to become implementation programmes and will be revised to reflect any updates (for example in relation to status) as implementation of the plan proceeds.

1 Introduction

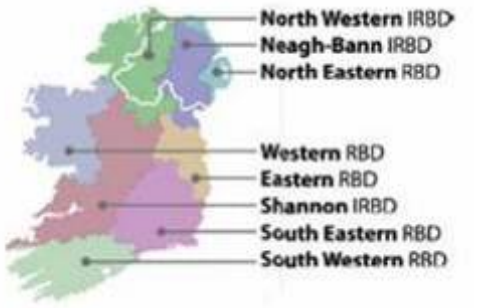
This River Basin Management Plan for the South Western River Basin District, covering the period 2009 to 2015, aims to protect all waters within the district and, where necessary, improve waters and achieve sustainable water use. Waters include rivers, canals, lakes, reservoirs, groundwaters, protected areas (including wetlands and other water-dependent ecosystems), estuaries (transitional) and coastal waters.

In accordance with the EU Water Framework Directive, Ireland is committed to manage all waters through a catchment based process, and the River Basin Management Plan is the mechanism for achieving this.

The implementation of the plan will bring incremental improvement leading to the majority of waters reaching at least "good status" by 2027 at the latest, benefiting the whole community by providing long-term sustainable access to and use of those waters. Where waters are currently at less than good status, they must be improved until they reach good status and there must be no deterioration in the existing status of waters.

1.1 The South Western River Basin District

Planning is based on river basins or catchments, so that all activities with a potential to impact on waters are managed in an integrated manner. Individual river basins are grouped into river basin districts; the districts cross administrative boundaries and are defined by the catchment areas of rivers. There are eight river basin districts (RBDs) covering the island of Ireland: four wholly within Ireland, one in Northern Ireland and three cross border. These cross-border districts are called International River Basin Districts (IRBDs).



Map 1.1 Ireland's River Basin Districts

The South Western River Basin District covers an area of just over 11,000 km^2 and a further 4,000 km^2 of marine waters. The South Western District encompasses most of counties Cork and Kerry, parts of Limerick, South Tipperary and Waterford and all of Cork City. It is bounded to the north by the Shannon International River Basin District and the South Eastern River Basin District, to the west by the Atlantic Ocean and to the South by the Celtic Sea. The climate is temperate; annual rainfall is about 1000 -1200mm in the low-lying areas to the east of the RBD but exceeds 2000 mm in the upland areas of Kerry.

The South Western River Basin District (RBD) contains the catchment areas of the Blackwater, the Lee, the Bandon, the Ilen, the Inny, the Maine and the Laune but there are also many smaller catchments along the coast including coastal waters up to 1 nautical mile from our coast line. There are 20 lakes in the district that are over 50 hectares in area. The largest lakes are Lough Leane in County Kerry and Carrigadrohid reservoir and Inniscarra reservoir in County Cork. Estuarine waters include Cork Harbour, where the Lee, Glashaboy and Owenboy rivers flow into the sea. The District covers the local authority areas of Cork and Kerry, Limerick, South Tipperary, Waterford and Cork City.

The District, which is home to just over half a million people, has a low average population density. 1.9% (Source: Corine) of the land is urbanised and many people live in small villages or single dwellings. The largest urban area is Cork City but there are also several large towns. The

growing population up to recent times has put increased demand on the systems that deliver drinking water and treat wastewater throughout the district.

Agriculture and tourism are the most important activities in the South Western River Basin District. In the eastern part of the district there is a more cultivated landscape. Industrial activity is concentrated in Cork City and its hinterland, particularly at Little Island and Ringaskiddy which also supports important port facilities. In the western half of the South Western River Basin District the landscape is dominated by mountains, natural grasslands and peatlands.

1.2 The authorities and their roles

A detailed list of the authorities involved in the management of the South Western RBD is included in the *contacts background documents* available at www.wfdireland.ie.

This plan has been developed by the local authorities of Cork, Kerry Waterford, Limerick and South Tipperary and Cork City Council. These local authorities, acting jointly, are the competent authorities for making this plan as defined by the *European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003)*. Similar plans have been drawn up by local authorities in the adjoining districts (the Shannon and South Eastern River Basin Districts).

Public bodies, identified in the 2003 *Water Policy Regulations*, are required to exercise their functions in a manner which is consistent with the objectives of the river basin management plan.

Cork County Council is the coordinating local authority in the South Western RBD. Public authorities at district level have been coordinated through Steering and Technical Groups and public participation has been facilitated through an RBD Advisory Council.

The Environmental Protection Agency is the competent authority for reporting to the European Union, coordinating certain activities and for other tasks assigned in the 2003 *Water Policy Regulations.* In relation to the plan's development the Agency's particular responsibilities include assigning status, monitoring programmes and the review of the plans. Under Section 63 of the Environmental Protection Agency Act (No 7 of 1992), as amended by the Protection of the Environment Act (No 27 of 2003), the Environmental Protection Agency is authorised to supervise the performance of all public authorities with statutory functions in relation to environmental protection.

The Department of the Environment, Heritage and Local Government which has a coordinating role in relation to implementation of the Water Framework Directive, and through the Local Government Fund and Water Services Investment Program plays a significant role in determining priority for investment in infrastructure and the availability of resources to local authorities.

Implementation of the plan will be overseen at national level by a National Advisory Committee chaired by the Department of the Environment, Heritage and Local Government with representatives from the Department of Agriculture, Fisheries and Food, Department of Enterprise, Trade and Employment, the Environmental Protection Agency, the City and County Managers Association (representing local authorities), and other Government Departments as appropriate.

This plan has been prepared in consultation with all stakeholders. Implementation of the plan will be challenging and will place obligations on all relevant authorities and stakeholders. Local authorities, through this plan, are committed to achieving the aims and objectives of the Water Framework Directive by implementing the measures specified to the best of their ability.

1.3 The development of the plan

Public authorities have undertaken technical work, co-ordination and consultations since 2000 in the preparation of this plan.

1.3.1 Investigation and technical work

River, canal, lake, reservoir, estuary and coastal water bodies and ground water bodies in the district have been delineated based on physical characteristics (typology). Potential sources of pollution (pressures) were identified and impacts assessed. Monitoring was carried out and the status of waters was classified based on the results of this monitoring. The *characterisation report* and *monitoring programme background documents* arising from this work are available from www.wfdireland.ie.

A draft of this plan was published in December 2008. The main technical studies undertaken to finalise the plan during 2009 included:

- An assessment of the timescales for water quality to recover once remedial measures are implemented in order to determine likely restoration timescales. This included an investigation of the rate of nutrient loss from agricultural lands and the likely timescales for status recovery following implementation of the *Good Agricultural Practice Regulations (SI 101 of 2009)*;

- Prioritisation of wastewater treatment plants for investigation and, where necessary, remedial works based on an assessment of compliance with the urban wastewater treatment regulations, current operational performance and known impacts on water quality. Protected areas (for example bathing waters, shellfish waters and water dependent Natura 2000 sites) were also taken into account, where impacted by discharges ;

- Preparation of catchment management plans for designated freshwater pearl mussel populations and Pollution Reduction Programmes for designated shellfish waters in order to develop measures for these protected areas;

- An assessment of the cost of measures for wastewater discharges and on-site systems.

During 2009 the Environmental Protection Agency updated the delineation of water bodies. This involved splitting some water bodies in order to better represent their status. The Agency also updated status classification based on 2008 monitoring information.

The outputs from the above studies were used to modify and update the objectives and measures presented in this final plan. Detailed action plans were prepared for more locally focused catchment areas called Water Management Units. These extract the key measures and objectives in the overall plan, presenting them for the geographical areas in which implementation will be coordinated.

1.3.2 Consultation

Consultation has been an important aspect throughout the development of this plan. The following *public participation background documents* (at www.wfdireland.ie) were produced:

- the administrative arrangements for implementing the Water Framework Directive*, Managing our Shared Waters [2003];*

- the process of characterising basins and assessing the impacts of human activity on them, including an economic analysis of water uses, *The Characterisation and Analysis of Ireland's River Basin Districts [2004];*
- the milestones for developing river basin management plans, *Timetable and Work Programme for making a River Basin Management Plan for the South Western River Basin District in Ireland [2006];*
- the identification of the most significant water issues and how they affect waters, including what is being done and what is planned to do about them, *Water Matters – Have Your Say! South Western River Basin District [2007];*
- a summary of consultations and stakeholder engagement, *Digest of submissions and responses to Significant Water Management Issues Reports for Ireland, South Western River Basin District [2008];*
- the strategic environmental assessment scoping process; *Strategic Environmental Assessment for the Water Framework Directive River Basin Management Plans and Programmes of Measures - Scoping Document [2008];*
- the draft river basin management plan; *Water Matters "Help Us Plan!" Draft River Basin Management Plan for the South Western River Basin District [2008];*
- the strategic environmental assessment environmental report; *Strategic Environmental Assessment for the Water Framework Directive River Basin Management Plans and Programmes of Measures – South Western RBD – Environmental Report [2008];*
- the digest of submissions on the draft plan which details the comments made and their responses and summarises where these have been addressed in the preparation of the final plan: *Digest of submissions and responses to the draft River Basin Management Plan for the South Western River Basin District [2010].*

The management plan was considered during its preparation by the RBD Advisory Council, which consists of representatives from local authorities (County and Town Councilors) and community and stakeholder groups (agriculture, angling, industry and non-governmental organisations).

Voluntary groups are also involved in River Basin Planning activities primarily through the activities of SWAN (Sustainable Water Network) www.swanireland.ie. SWAN is an umbrella network of 25 of Ireland's leading national and local environmental organisations specifically constituted to address public participation requirements of the Water Framework Directive.

The plan was also considered by Steering and Technical Groups which facilitates information exchange, consultation, cooperation and liaison within and between public authorities.

Significant water management issues were discussed with interest groups and county councils and at a series of public consultation events in 2007 and 2008. Draft plan public consultation events were held between December 2008 and June 2009 including the following public meetings:

Date	Location	Venue
Tuesday 28th April	Cork	Foyer, County Hall, Cork City
Tuesday 5th May	Waterford	Foyer, Waterford County Council, Civic Offices, Davitts Quay, Dungarvan, Co. Waterford.
Thursday 7th May	Cork	Mallow GAA Sports Complex, St Joseph's Rd,

		Carrigoon, Mallow, Co Cork
Monday 11th May	Cork	Council Chambers, Town Council Offices, North Street, Skibbereen, Co. Cork
Tuesday 12th May	Kerry	Killarney Library, Rock Road, Killarney, Co. Kerry

A total of 44 written submissions were received in relation to the draft River Basin Management Plan for the South Western RBD across the following sectoral interest groups: local and public authorities; non-governmental organisations; business; and private individuals. A summary of the issues raised and responses is contained in the draft plan submissions digest in the *public participation background documents* which are available at www.wfdireland.ie.

1.3.3 Planning

This plan is the result of a systematic process of identifying risks to waters, assessing the status of waters, setting objectives and developing measures to achieve those objectives. It has resulted from a significant body of technical preparatory work and public stakeholder participation.

This plan establishes water status objectives and identifies the measures to achieve those objectives. It also identifies the organisations that are responsible for implementing measures. The plan will remain in force until 2015. The data used to develop the plan (for example status assessments and the results of research and investigation programmes) will be continually updated and reviewed to ensure that measures achieve their objectives. A second plan will be prepared to cover the period 2015–2021 and a third, covering the period 2021–2027.

Much of the detailed information behind this plan has been incorporated into a computer-based interactive plan tool, *Water Maps* on www.wfdireland.ie. The plan is also supported by a large number of background documents, also on www.wfdireland.ie. They provide in-depth information about technical and detailed aspects of the plan including pressures, status, economic analysis, public participation arrangements, competent authorities and related plans and programmes.

1.4 Layout of this plan

Chapter 2 describes the South Western RBD identifying its waters, protected areas and the key water management issues.

Chapter 3 establishes the status of the waters in the district summarising the monitoring programme and classification of waters.

Chapter 4 covers the objectives for protecting and restoring waters during the first and, where necessary, subsequent planning cycles.

Chapter 5 identifies the measures to achieve the objectives, the South Western RBD action programme is supported by a series of more locally focused Water Management Unit action plans.

Chapter 6 considers the linkages of this plan with other plans and describes the wider climate change and environmental assessments of this plan.

This river basin management plan sets out a realistic approach to securing environmental objectives, and is in compliance with the requirements of the Water Framework Directive. Its contents have been checked against the Directive's requirements to ensure that the plan provides all the information needed. The *compliance statement background document* is available at www.wfdireland.ie.

2 Description of the South Western RBD

2.1 The waters of the South Western RBD

2.1.1 Surface waters

The South Western RBD has both lowland rivers (wide valleys, slow flows) and upland rivers (steep valleys, flash flows).There are 891 river and canal waterbodies in the district and the main river catchments are the Blackwater, the Lee, the Bandon, the Ilen, the Inny, the Maine and the Laune but there are also many smaller catchments along the coastline. There are 90 significant lakes in the district. The largest lakes are Lough Leane (19.5 km^2) in County Kerry and Carrigadrohid (5.86 km^2) and Inniscarra (4.9 km^2) in County Cork. Inniscarra is the largest source of drinking water in County Cork.

The district has a coastline of over 1,800 km along the Atlantic Ocean and Celtic Sea which consists mainly of Cork's and Kerry's coastlines. The marine waters include 43 estuaries and 26 coastal waters. Major features include many islands, headlands and inlets, Cork Harbour and Dingle Bay.

2.1.2 Groundwaters

There are 84 groundwater bodies in the South Western RBD ranging in size from less than 1 km^2 to over 1880 km^2. Throughout the South Western District sandstone, siltstone and mudstone are predominant. These rock types range from poorly productive to moderately productive aquifers (water-bearing rocks) but are generally not capable of producing groundwater supply for large population centres. Limestone and gravels are less prevalent but are important drinking water sources where they occur in North and East Cork. Groundwater, primarily in the limestone aquifers, also makes an important contribution to river flows.

2.1.3 Heavily modified and artificial waters

Five surface waters in the district have been heavily modified for such uses as navigation (for example ports), water storage, public drinking-water supply, flood defence or land drainage. These are: Carrigadrohid and Inniscarra Reservoirs, the Lower Lee Estuary, Lough Mahon and Cork Harbour. Other waters are man-made (artificial), of which there is only one in the district, Lismore Canal. These modified and artificial waters provide important uses and benefits to society, which cannot be replaced by other means and need to be retained. Therefore, these waters are subject to a different set of objectives.

2.1.4 Protected areas

A significant proportion of waters in the district are protected under existing European and National legislation and they require special protection due to their sensitivity to pollution or their particular economic, social or environmental importance. All of the areas requiring special protection in the South Western RBD have been identified, mapped and listed in a *register of protected areas background document* (available at www.wfdireland.ie). They include drinking water sources such as Caragh Lake and Lough Guitane, shellfish waters such as Bantry Bay and Roaringwater Bay, bathing waters such as Redbarn and Barleycove beaches, nutrient

sensitive areas, such as Lough Leane and Bandon Estuary, Special Areas of Conservation and Special Protection Areas such as the Kerry Blackwater and Bandon Rivers.

Table 2.1 Water dependent protected areas in the South Western RBD

Protected area	Implementing Legislation	Number
Drinking waters	The European Communities (Drinking Water) (No. 2) Regulations 2007 (SI 278 of 2007)	76 rivers, 22 lakes, 84 groundwaters
Shellfish waters	European Communities (Quality of Shellfish Waters) Regulations 2006 (SI 268 of 2006) as amended in 2009	20 estuarine / coastal waters.
Bathing waters	Bathing Water Quality Regulations SI 79 of 2008	11 estuarine / coastal waters.
Nutrient sensitive areas	Urban Waste Water Treatment Regulations 2001 (SI 254 of 2001) as amended in 2004 and 2010.	4 rivers, 1 lake, 8 estuarine / coastal waters.
Special areas of conservation	European Communities (Natural Habitats) Regulations, SI 94 of 1997 as amended in 1998 and 2005. Environmental Objectives (Freshwater Pearl Mussel) Regulations (SI 296 of 2009)	486 rivers, 76 lakes, 43 estuarine / coastal waters.
Special protection areas	European Communities (Natural Habitats) Regulations, SI 94 of 1997 as amended in 1998 and 2005	36 rivers, 8 lakes, 19 estuarine / coastal waters.

A full list of all the protected areas in the South Western RBD is presented in Appendix 3. Map 2.2 provides an overview of the protected areas.

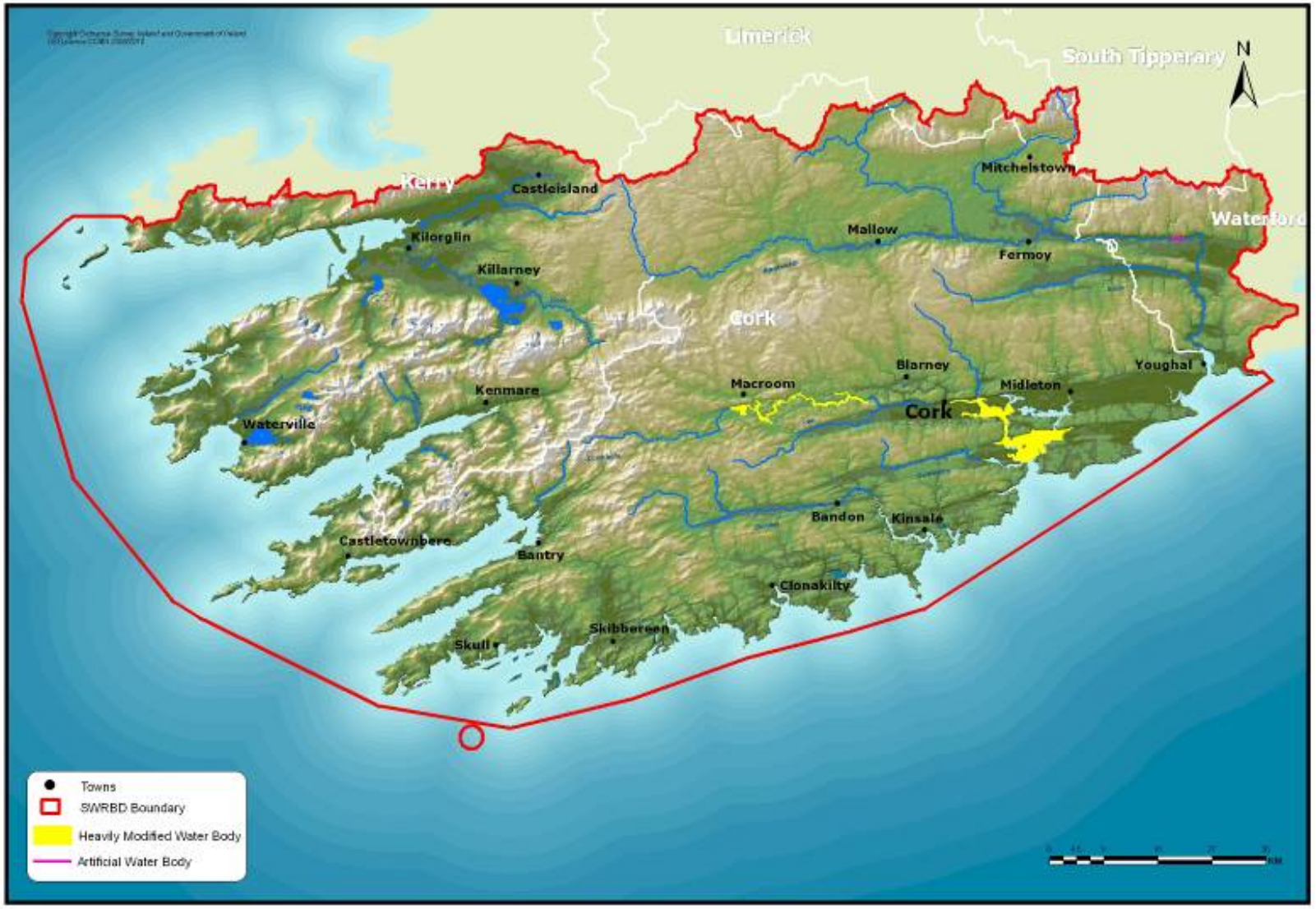
2.2 Key Issues for the South Western RBD

The key water management issues in the South Western RBD and their possible effects on water status are set out in this section. The locations of these impacts and pressures are shown on Maps 2.3 to 2.9.

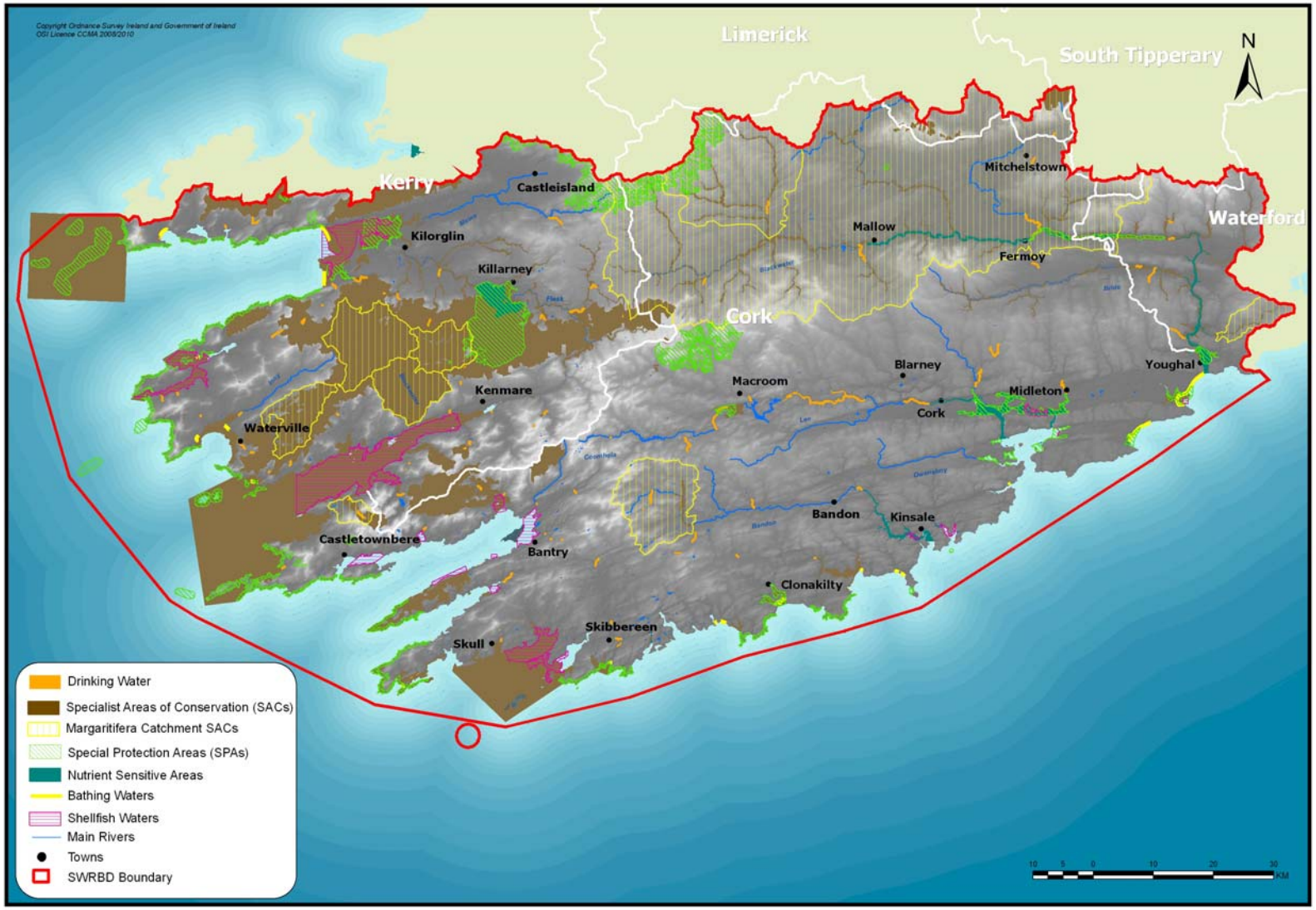
2.2.1 Protecting high quality areas

In the South Western RBD there are 284 rivers (32%), 51 lakes (57%), 3 estuaries (7%) and 6 coastal waters (22%) that are classified by the Environmental Protection Agency as high status. According to the 2009 Environmental Protection Agency indicators report the number of high quality river sites, nationally, has almost halved over the last 20 years. High quality areas include rivers, lakes and estuarine and coastal areas little affected by human activity; they are still at or near unimpacted natural conditions, supporting a naturally diverse mix of aquatic wildlife. These areas are important for supporting aquatic species which are sensitive to enrichment or siltation such as the protected, but declining, freshwater pearl mussel (*Margaritifera margaritifera*) and juvenile salmon (*Salmo salar*). The presence of high status areas along a river system can contribute significantly to the overall species diversity and

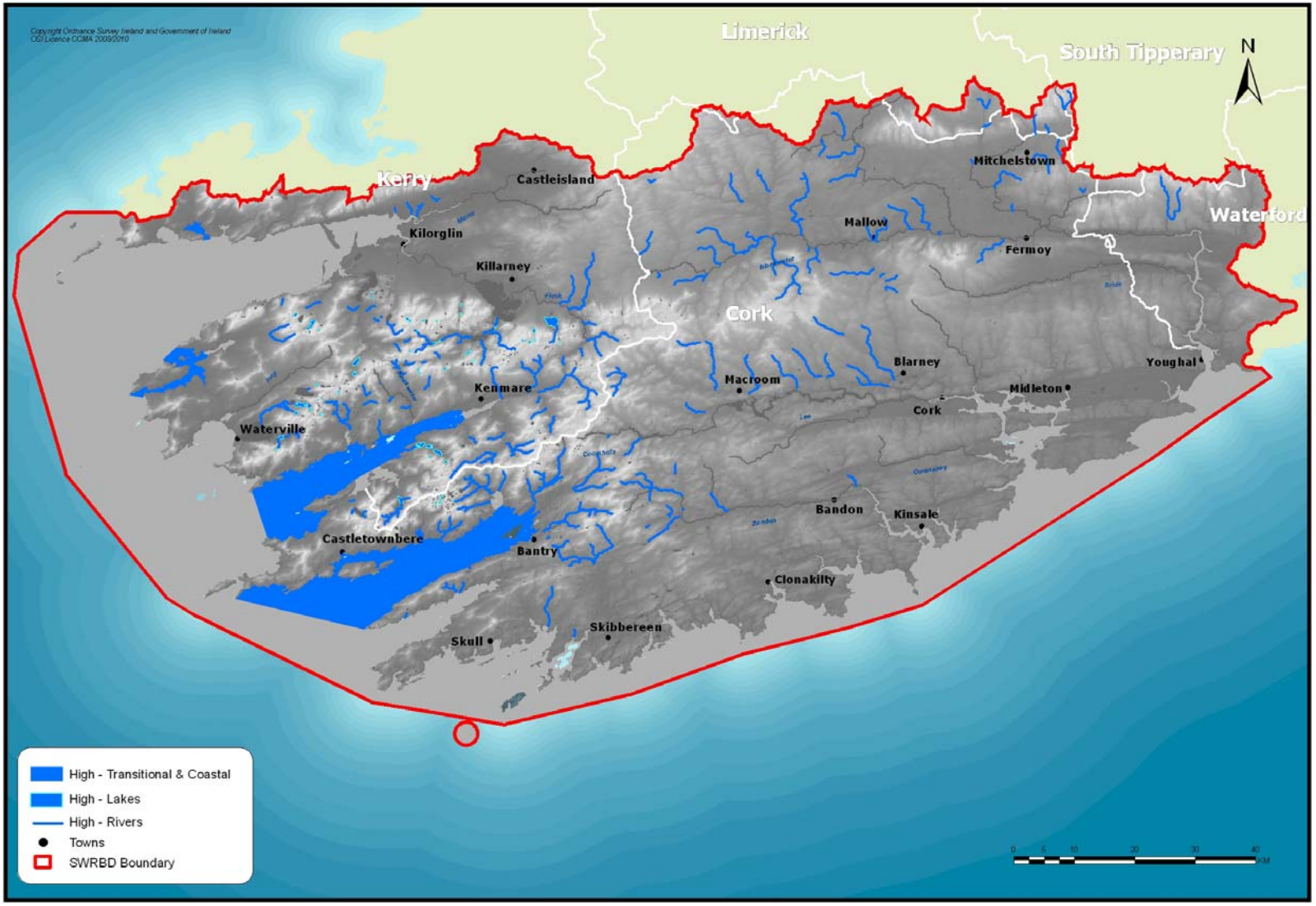
recolonisation of species to rehabilitated stretches. These areas play an important part in conserving individual species and overall catchment biodiversity. The deterioration or loss of high quality and protected areas is often due to their sensitivity to land use changes in surrounding catchments, such as agriculture, forestry, peat harvesting and rural development activities. High quality areas in the South Western RBD are shown in Map 2.3.



Map 2.1 The South Western RBD main surface waters (including heavily modified and artificial waters)



Map 2.2 Protected areas in the South Western RBD



Map 2.3 High Quality Areas in the South Western RBD

2.2.2 Pressures

Agriculture

The Environmental Protection Agency's diffuse risk model indicates that 233 rivers and 6 lakes in the South Western RBD are at risk of failing to achieve the required standards due to diffuse pollution. Sources of diffuse pollution include agriculture, forestry, peatland and urban land uses 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. Nutrient enriched water accelerates plant growth and disturbs the balance of aquatic plants and animals and affects water quality. Nutrient enrichment is the most widespread threat to water quality in the South Western RBD. 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. Slurry can also contaminate drinking water with bacteria, parasites and viruses. Agricultural land uses in the South Western RBD are illustrated in Map 2.4.

Wastewater and industrial discharges

In the South Western RBD there are 66 rivers, 11 estuaries and 8 coastal waters at risk of failing to achieve the required standards due to municipal wastewater and industrial discharges. According to the Environmental Protection Agency 2009 report on urban waste water discharges, Cobh, Skibbereen and Youghal are among the 28 agglomerations nationally requiring secondary treatment that did not have the required level of treatment in place and were non-compliant with the requirements of the Urban Waste Water Treatment Regulations. 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. The wastewater is treated, to remove many pollutants, then discharged to surface waters or, very occasionally, groundwaters. Inadequately treated effluents and spills or leakage from sewerage networks can impact on receiving waters, damaging water quality and downstream uses (for example bathing waters or shellfish waters). Urban runoff can be contaminated with pollutants (such as from vehicle exhausts) and impact on surface and groundwater quality through direct discharges. Overflows from sewer networks, leaking from defective underground pipes or seepage from containment areas can also lead to surface and groundwater pollution. The location of wastewater and industrial discharges in the South Western RBD are illustrated in Map 2.5.

Wastewater from unsewered properties

In the South Western RBD there are approximately 115,700 unsewered properties of which 51,023 are located in areas where the hydrogeological characteristics mean that inadequate percolation is available. There are 20 rivers that have been assessed to be at risk of failing to achieve the required standards due to unsuitable hydrogeological conditions and the high density and location of unsewered properties in these areas. 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. To work properly, these treatment facilities must be located in suitable areas and designed, constructed and maintained to appropriate standards. If they are not working properly, nutrients, organic material, chemicals and bacteria may seep from wastewater into groundwater, contaminating nearby drinking water wells or damaging the quality of receiving rivers, lakes or marine waters. The locations of unsewered properties in the South Western RBD are shown in Map 2.6.

Forestry

In the South Western RBD there are 49,930 hectares of private forestry and 68,186 hectares of public forestry. A risk assessment of acidification, eutrophication and sedimentation pressures

based on percentage forest cover and underlying geology and soils has identified 13 rivers that are at risk of failing to achieve the required standards due to potential impacts from coniferous forestry. Where mature plantations of coniferous trees have been established on acid-sensitive soils, it can lead to increased acidity and heavy metal concentrations in the run-off waters from such soils. Forestry activities can introduce extra nutrients; in naturally nutrient-poor areas, that can lead to problems such as excessive algal growth. Road-making and stream-crossing can cause erosion and sediment loss on susceptible soils, afforestation and clearfelling of forests may change flow patterns: and pesticides can damage aquatic organisms if applied incorrectly. Map 2.7 shows the locations of private and public forestry in the South Western RBD.

Landfills, quarries, mines and contaminated lands

Assessments of groundwaters in the South Western RBD indicate that 17 groundwater bodies are at risk of failing to achieve the required standards due to contamination from landfills. Seven groundwaters are at risk of failing to achieve the required standards due to pollution from contaminated/urban areas pressures, Three groundwaters are at risk from quarry activities, and no groundwaters are at risk from mines. The status assessment by the EPA shows that 92% of groundwaters in the South Western RBD currently are at good status (of the 8% at poor status, 7% are failing chemical status). Pollutants (mainly metals and fuel) from landfills and urban areas can seep into the ground and travel through groundwaters to enter surface waters, affecting their quality, damaging aquatic plants and animals and impairing water uses. The lowering of water tables at some quarry sites can affect nearby wetland areas, and the transfer of groundwater to surface waters can change water chemistry. Quarries can also be significant sources of silt which can adversely affect downstream aquatic habitats and species. These issues are site specific; the sites in the South Western RBD (shown in Map 2.5) are being further investigated by the Environmental Protection Agency and local authorities to assess the extent of the pressures and confirm the scale of any problems or impact.

Physical modifications and damage

In the South Western RBD 8% of river channels have been drained and 8.2% of the coastline is defended against erosion e.g. the Port of Cork. There are 11 rivers where water status has the potential to be impacted from physical modification. Further investigative monitoring is underway to confirm impact on status. Waters are physically modified for water supply, navigation, transport, flood protection, hydropower, aquaculture and land drainage. Such modifications can reduce the diversity of plant and animal communities either directly by affecting habitats or indirectly by changing natural processes. Rivers need a mix of pools and shallow riffles and variation of flow patterns, to provide habitats for fish. Where rivers have been drained these features are often removed. Migratory fish need to access upstream spawning areas. However, instream structures e.g. weirs, bridge aprons etc. can restrict or prohibit fish access if they are not designed to allow fish passage, consequently spawning success and population sizes can be reduced. Hard structures like ports and harbours can replace or reduce natural habitat. Land drainage and development, overgrazing, deforestation and cattle access can cause impacts such as bank erosion and siltation or increased risk of flooding due to faster runoff. Overgrazing can increase erosion rates, significantly disturbing siltation and hydrology regimes, and can cause physical damage and loss of habitat in rivers. Map 2.8 shows the rivers that have been physically modified and coastline that has been reinforced in the South Western RBD.

Water Abstractions

Most water abstractions are currently sustainable in the South Western RBD. However abstraction poses a potential risk to 34 rivers and 8 lakes due to their possible impact on river flows and lake levels particularly during periods of low flow. Large amounts of water are abstracted daily for domestic use and for use in agriculture, industry and recreation. Most of this

water is treated to a high standard to remove impurities and make it fit for consumption. Too much abstraction reduces flow in springs and rivers and lowers water levels in lakes, wetlands and wells. That 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. Population growth and climate change may reduce the available water resource in some areas in the future. Map 2.9 shows the abstraction locations in the South Western RBD and the volumes of water abstracted.

Dangerous substances

The recently introduced monitoring programme for dangerous substances has identified one waterbody in the South Western RBD, Cork Harbour, which is failing chemical status due to a breach of the polycyclic Aromatic Hydrocarbon and metals standards. As the monitoring programme is new the extent of the problem with dangerous substances has not yet been fully assessed. A wide range of chemicals, harmful to the aquatic environment and which may be toxic to people, plants and animals, are contained in everyday products used in households, industry, forestry, agriculture, construction sites and water or wastewater treatment works. Runoff from roads and urban areas can contain dangerous substances arising from the combustion of hydrocarbon fuels. Some dangerous substances can be toxic to aquatic plants and animals at very low concentrations. They can persist in waters and sediments and accumulate in the bodies of aquatic organisms, poisoning them and causing problems higher up the food chain or interfering with their natural breeding processes.

Aquaculture

The South Western RBD has 20 designated shellfish waters and 40 licensed finfish farms. Mussels, pacific and native oysters, clams and scallops are the main shellfish species farmed in Ireland; salmon and rainbow trout are the principal finfish. Counties Galway, Cork and Donegal have the highest numbers of aquaculture licences. Aquaculture activities (including harvesting) unless appropriately managed and controlled, can affect water quality, physical habitat, biodiversity and indigenous species populations. Finfish farming can cause increased nutrient loading and organic pollution around cages. Misuse of authorised chemicals and medicines to control disease and possible infection of wild fish with sea lice if not appropriately managed are other concerns. Map 2.10 illustrates the location of aquaculture activities in the South Western RBD.

Invasive alien species

Alien species including Dace (Munster Blackwater), Japanese Knotweed, Water Fern and Nuttall's Pondweed have been recorded in the waters of the South Western RBD. The Environmental Protection Agency has identified eight key aquatic species of non-native animals or plants nationally, that have successfully established themselves in aquatic and fringing habitats and are damaging natural flora and fauna and poses the threat of spreading within the waters the South Western RBD. These species pose a major threat to the 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.

Climate change

The specific impacts of climate change are difficult to predict, but it is likely that they will add to water management challenges in the future. Heavier winter rainstorms may cause more flash flooding, increasing diffuse pollution loads from soil run-off and raising demand for flood controls. The recent significant flooding events in Cork City, Bandon and other parts of the RBD

may have been evidence of this. 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, thus affecting biodiversity. Sea level rise may also impinge on water management. More detail on how climate change has been considered in developing these plans is provided in Chapter 6.

Eutrophication of Estuaries and Lakes

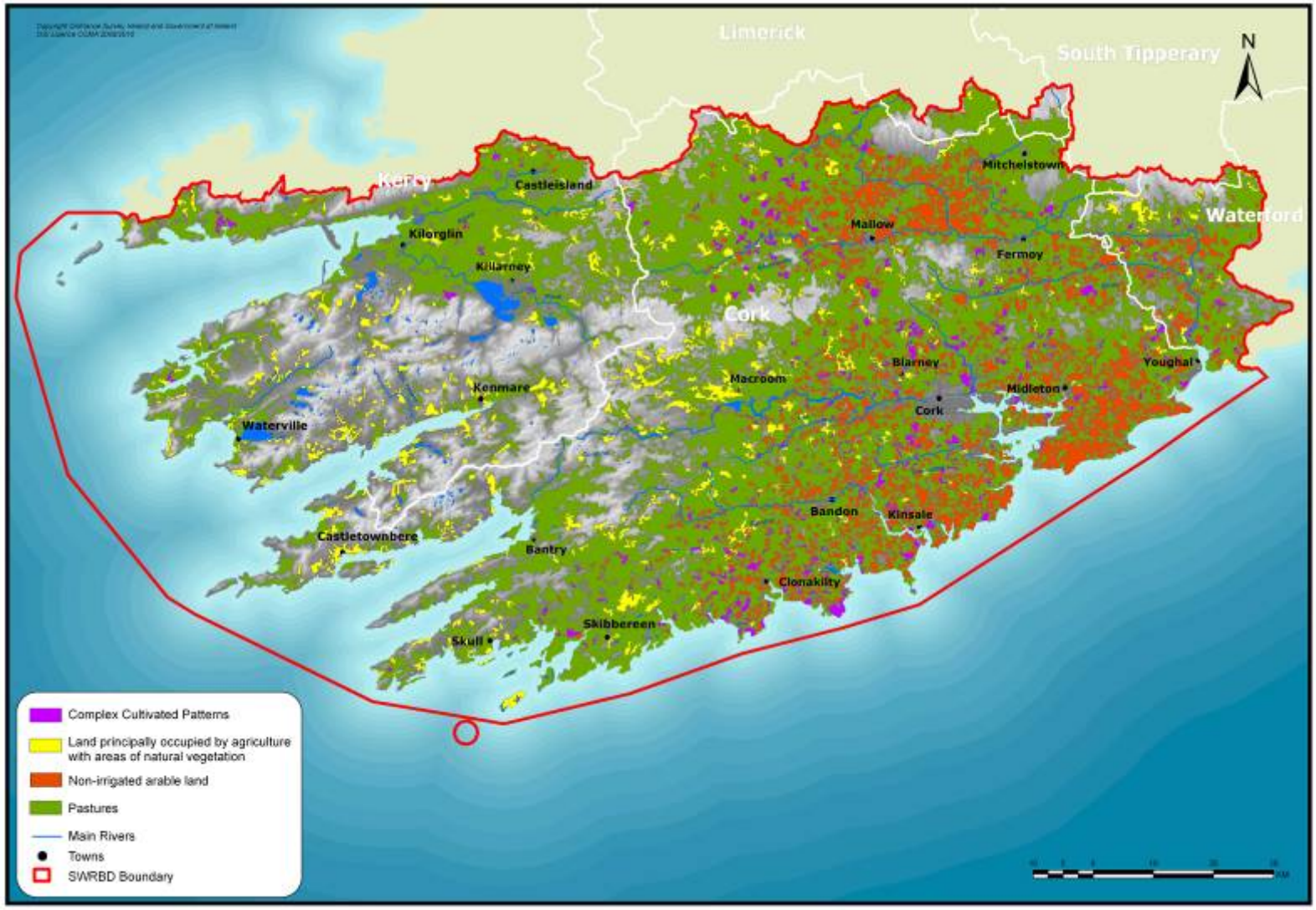
Excessive nutrients in our natural waters can lead to the growth of algae and weeds. This enrichment of waters is called eutrophication and it is recognised as a major threat to the quality of our waters. Algal blooms and weeds can disrupt the normal functioning of an ecosystem causing a variety of problems. They reduce the value of affected waters for fishing, swimming and other amenity uses. They can also interfere with the treatment of drinking water. In the majority of cases phosphorus is the principal contributor to eutrophication which may be inputted by industrial, agricultural, domestic losses and forestry activities. Agriculture has been identified as the single biggest contributor.

In 1997 a major algal bloom occurred in Lough Leane, Co. Kerry. A working group was set up as a result of this to develop the Lough Leane Catchment and Monitoring system. The final report entitled ' *A Catchment based approach for reducing nutrient inputs from all sources to the Lakes of Killarney'* was published in 2003*.* A number of the measures outlined in the report have already been implemented by the stakeholders including Kerry County Council. The report together with a number of supporting technical reports is available from Kerry County Council (www.kerrycoco.ie). The long term continuation of the Lough Leane Catchment and Monitoring System will be ensured through its incorporation into the South Western RBMP.

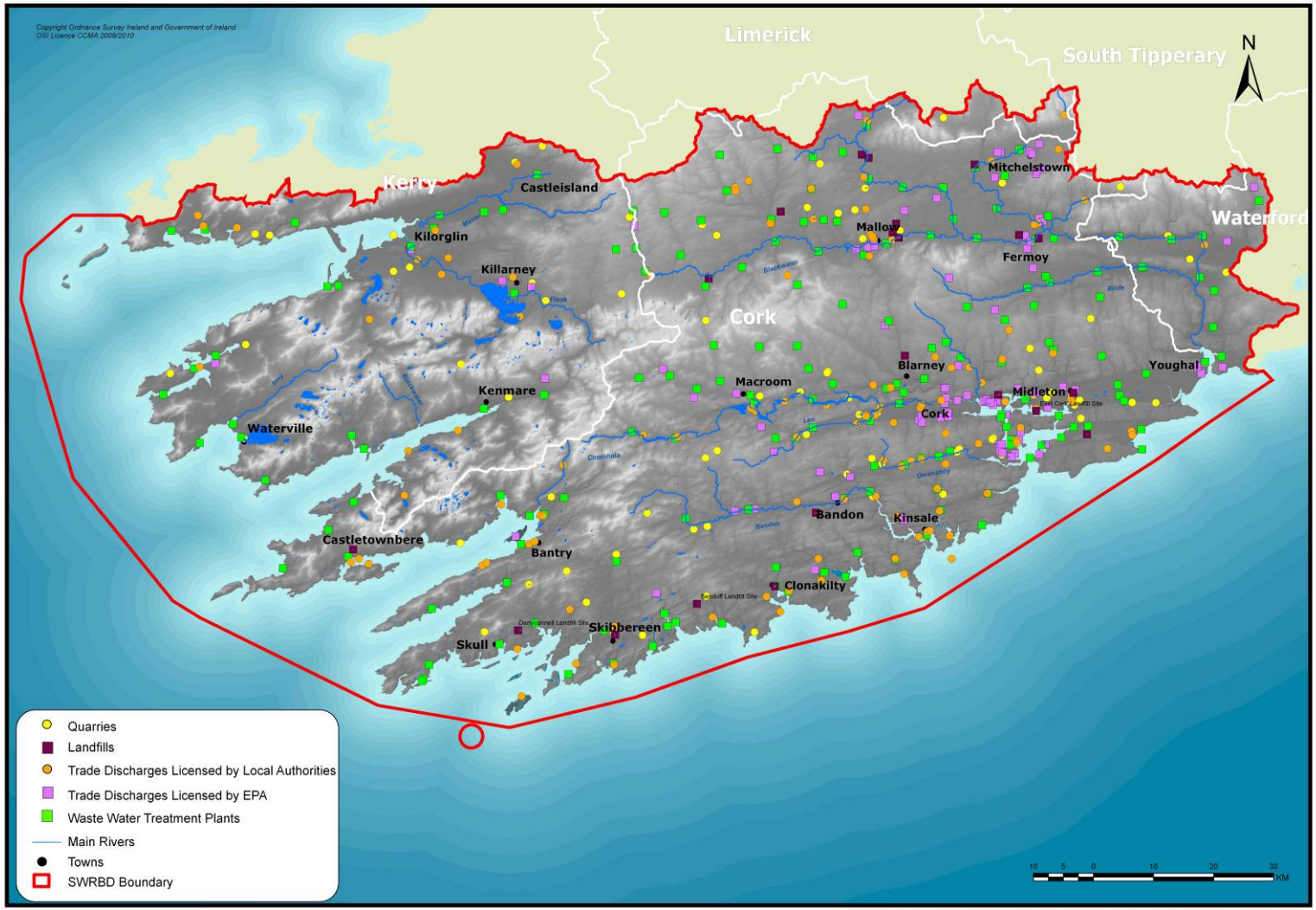
Eutrophication was also identified in a number of estuaries in the South Western District between 2001 and 2009. These included the lower Blackwater Estuary, Owenacurra Estuary, Upper and Lower Bandon Estuary and Argideen Estuary in Cork and also on the beaches in Clonakilty.

Opportunistic green seaweeds occur naturally in all coastal waters and estuaries around the Irish coast. In some instances the level of these seaweeds, particularly sea lettuce, can pose a nuisance to amenity use of coastal area, and in particular beaches, when seaweeds are washed ashore and accumulate at high levels. In Ireland, accumulations of *Ulva* have been recorded in several location around the coast e.g. Dublin Bay, Rosscarberry lagoon, Courtmacsherry Bay, Belfast Lough since the early 1990s. In a number of areas, particularly in the west Cork region, this problem has been escalating and the Local Authority has traditionally being dealing with it by collecting it and discharging to sea on an ebbing tide. Due to the escalations in 2008 and 2009 there has been growing concerns on the impacts on the tourism, leisure, fishing and other maritime activities. In October 2009, following discussions between Cork County Council and the Coastal Zone Management Division of the Department of Agriculture Fisheries and Food (DAFF), a Task Force was established with the following Terms of Reference:

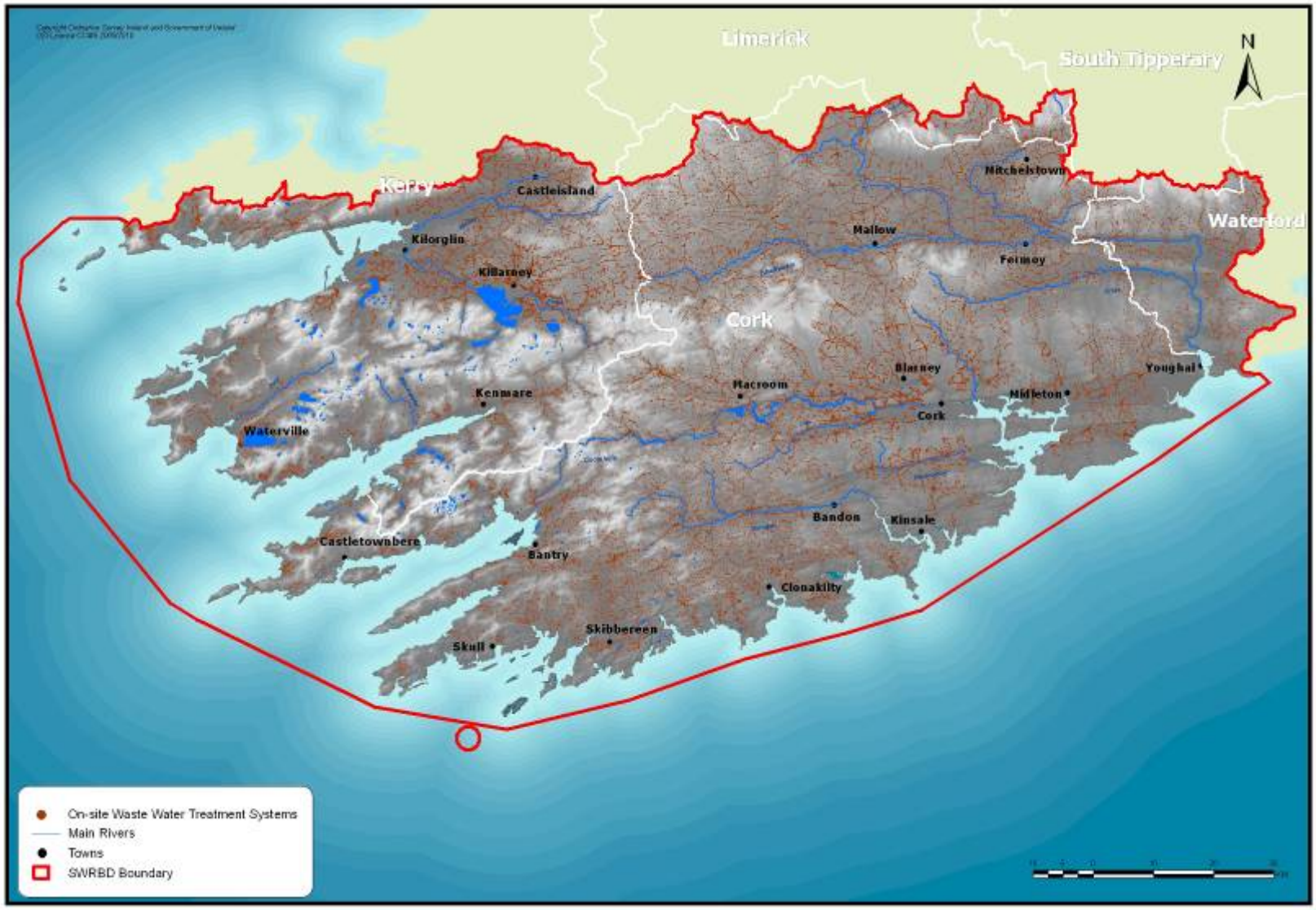
'To advise the Minister on the scientific, engineering, public safety and policy aspects relevant to the management & control of the sea lettuce problem on beaches at Inchydoney, Ring, Harbour View and Coolmaine, and the Argideen estuary, County Cork'



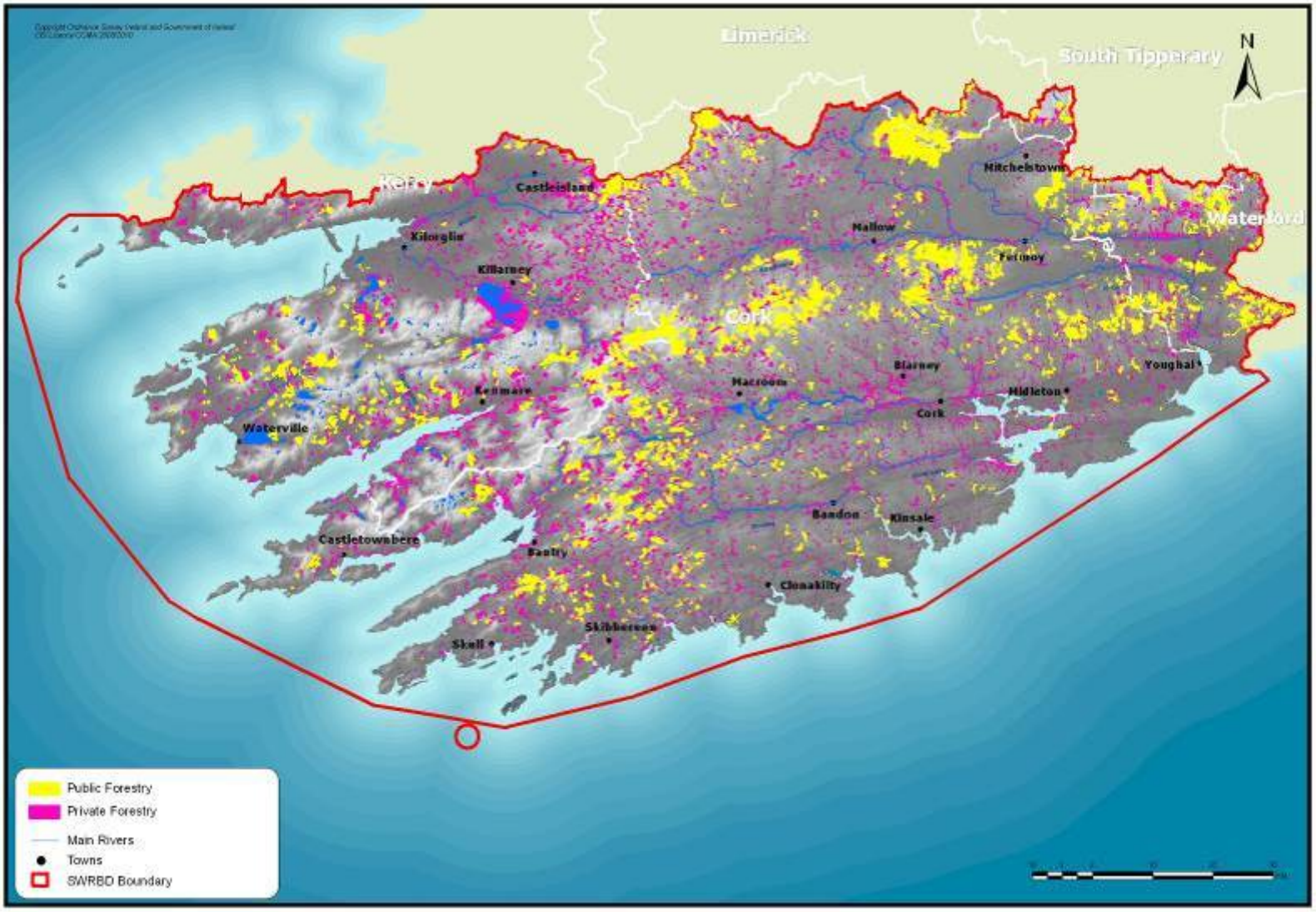
Map 2.4 Agricultural land use in the South Western RBD



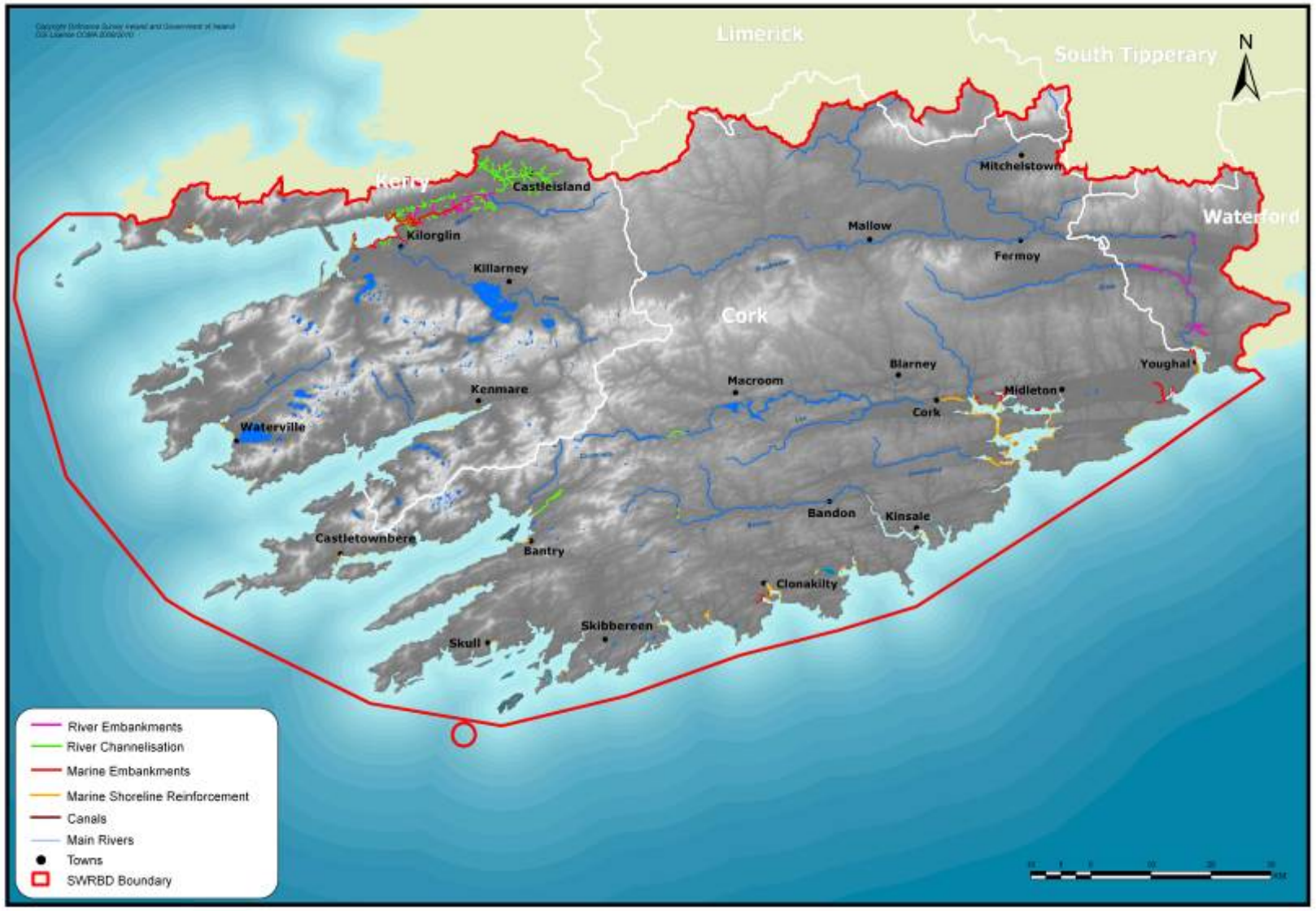
Map 2.5 Point source pollution locations in the South Western RBD



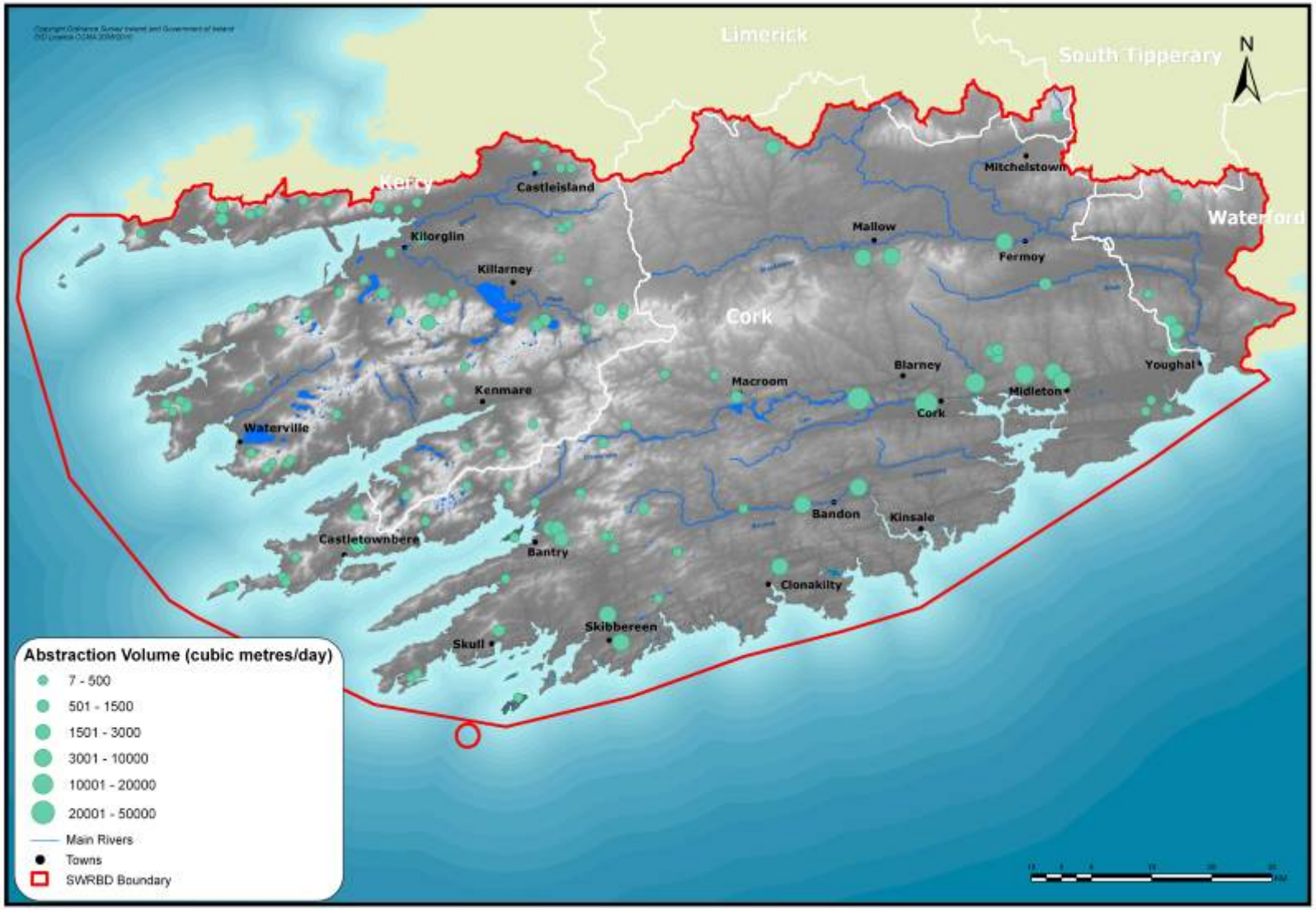
Map 2.6 Unsewered property locations in the South Western RBD



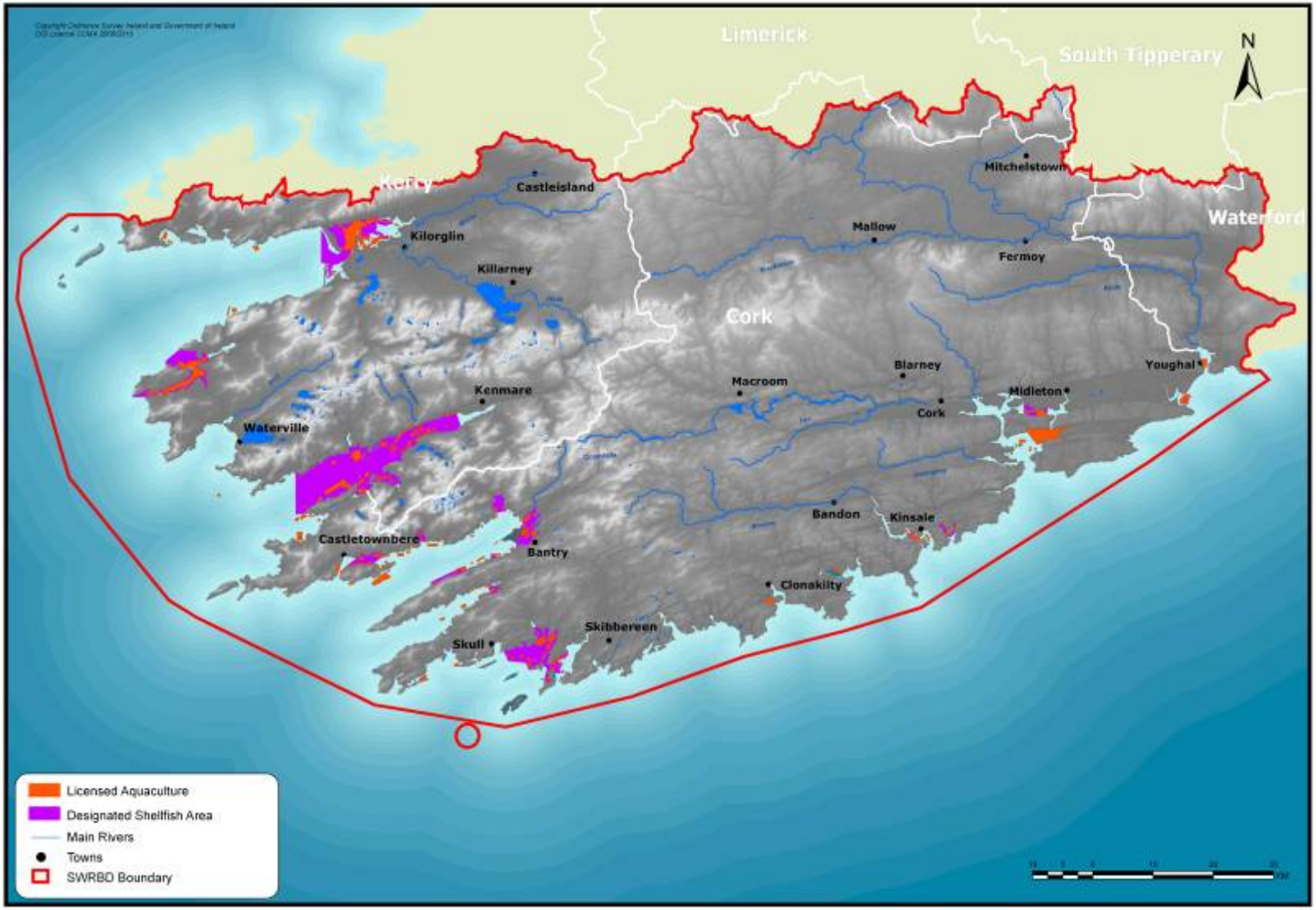
Map 2.7 Forestry in the South Western RBD



Map 2.8 Physical modification pressures in the South Western RBD



Map 2.9 Abstraction pressures in the South Western RBD



Map 2.10 Aquaculture activities in the South Western RBD

3 The status of the waters of the South Western RBD

3.1 Monitoring and Classification

The Environmental Protection Agency has developed a new monitoring programme to comply with the requirements of the Water Framework Directive. The results from the monitoring programme will provide a coherent and comprehensive overview of water status within Ireland. This programme was specifically introduced to implement the Water Framework Directive. It builds on previous monitoring programmes providing a more comprehensive assessment of water quality and quantity. It includes three primary monitoring networks: surveillance, operational and investigative.

- The surveillance monitoring programme is designed to be representative of general status providing data on long term trends, large and significant international waters and validating risk assessments undertaken to characterise water bodies. A full range of parameters are examined at surveillance monitoring sites.
- Operational monitoring is intended to assess the effectiveness of programmes of measures including measures for combating pollution, measures for addressing other impacts and measures for maintaining high or good status. The monitoring programme therefore includes both water bodies that are below good status and water bodies that are at good or high status.
- Investigative monitoring is applied where the reason for status failures is unknown, to ascertain the magnitude and impacts of pollution and to establish the factors causing water bodies to fail to achieve environmental objectives.

Monitoring of surface waters includes ecological and chemical parameters and also water level and rate of flow. For groundwater bodies the programme covers the monitoring of chemical and quantitative status. Protected areas and wetlands are also monitored. The new monitoring programme became operational in 2007. It includes monitoring required under other specific EU Directives and replaces existing programmes for monitoring rivers and lakes, groundwaters, coastal and estuarine waters. The structure and content of the monitoring programme are the outcome of a major research and development process undertaken to implement the Water Framework Directive. Monitoring tasks are assigned to the Environmental Protection Agency, Central Fisheries Board, Marine Institute, Office of Public Works, National Parks and Wildlife Service (part of DEHLG), Waterways Ireland and local authorities.

The national monitoring programme is ‘representative’, which means that certain water bodies are considered to be representative of others with similar physical characteristics (typology), and with similar risks to water status. These representative (donor) water bodies are monitored and their status is extrapolated to the unmonitored (recipient) water bodies. In some cases monitored water bodies may have more than one monitoring site. Nationally, monitoring is carried out at 1,840 out of 4,585 river water bodies (this includes 3,077 sites), 224 out of 816 lake water bodies, 151 out of 757 groundwater bodies (this includes 297 sites) and 117 out of 309 coastal and estuarine (transitional) water bodies (this includes 185 monitoring sites). The South Western RBD monitoring programme assesses 300 out of 891 river waterbodies (at 900 sites), 28 out of 90 lake waterbodies (at 44 sites), 16 out of 84 groundwater bodies (at 26 sites) and 27 out of 70 coastal and estuarine (transitional) waters.

The Environmental Protection Agency has developed new biological classification systems for seven biological element descriptors (rivers - macroinvertebrates (quality element) and phytobenthos, lakes - phytoplankton biomass and macrophytes, coastal and estuarine (transitional) waters - phytoplankton biomass, opportunistic macroalgae and rocky shore reduced species list) to assist in the status assessment of surface water bodies. These classification systems have been intercalibrated to allow comparison with results across EU member states. New standards for seven physico-chemical parameters and 62 chemical

substances have also been developed. The new standards have been established by the *Surface Waters Environmental Quality Objectives* Regulations *(SI 272 of 2009)* and *Groundwaters Environmental Quality Objectives* Regulations *(SI 9 of 2010).* The Environmental Protection Agency will continue to develop the required biological classification systems and have them intercalibrated at EU level. The Agency is continuing to review water quality standards and may recommend additional standards where considered necessary. The new classification systems are more rigorous than previous systems as they measure a greater range of biological elements and pollutants. Failure of a single biological element or chemical standard can downgrade the overall status of the waters.

Details of the Water Framework Directive monitoring programme, new classification standards and the status setting process for surface and groundwaters are available in the *monitoring and status background documents* on www.wfdireland.ie.

The Environmental Protection Agency has made interim status assessments of surface waters according to their ecological status and chemical status based on the results of the monitoring carried out in 2007 and 2008. Groundwaters have been assessed based on a system that combines chemical and quantitative status. This plan presents the best current understanding of status of the waters in the South Western RBD using these new classification systems, standards and monitoring information.

Status will be updated by the Environmental Protection Agency as monitoring data, and the new scientific tools used to interpret it, are applied and improved. Final status based on the results of the completed first monitoring cycle carried out in 2007-2009 will be reported in 2011. Monitoring of inland waters, including rivers, lakes and groundwaters, is now well established. The coastal and estuarine monitoring programmes have yet to be fully implemented. Status will be updated as monitoring information becomes available. The programme of measures will be reviewed and revised if there are significant changes to status as a result of updates.

The detailed status of the district's individual rivers, canals, lakes, reservoirs, estuaries, coastal waters or groundwaters can be viewed using the interactive map *Water Maps* on www.wfdireland.ie; details are also mapped and tabulated in *Water Management Unit action plan background documents* (available at www.wfdireland.ie).

3.2 Surface water status

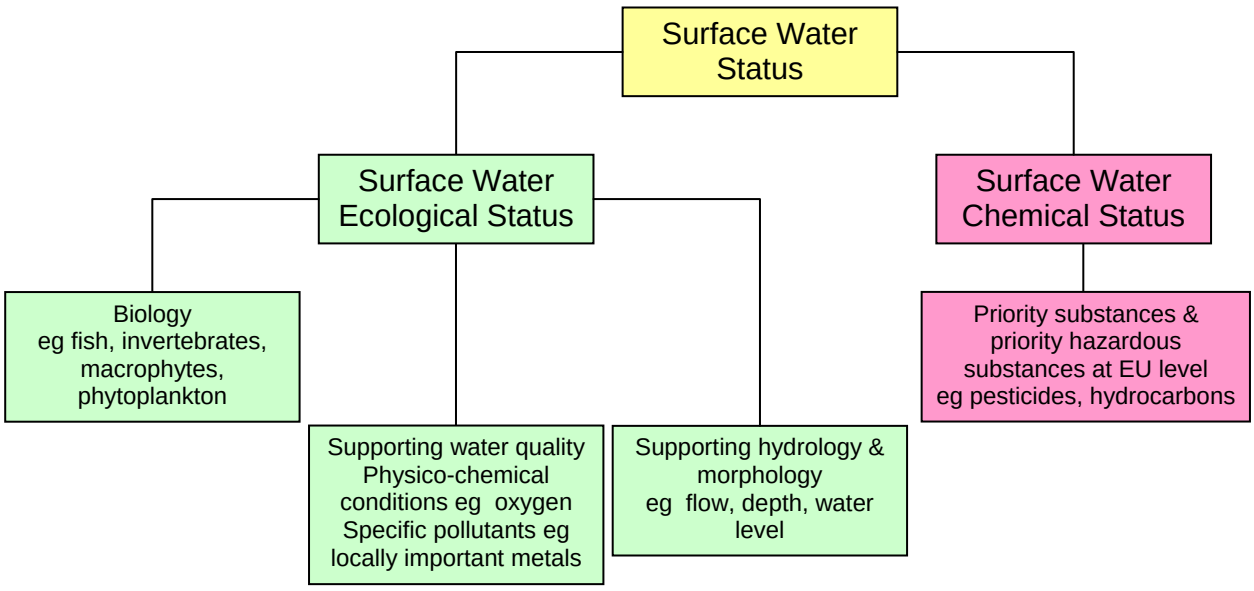
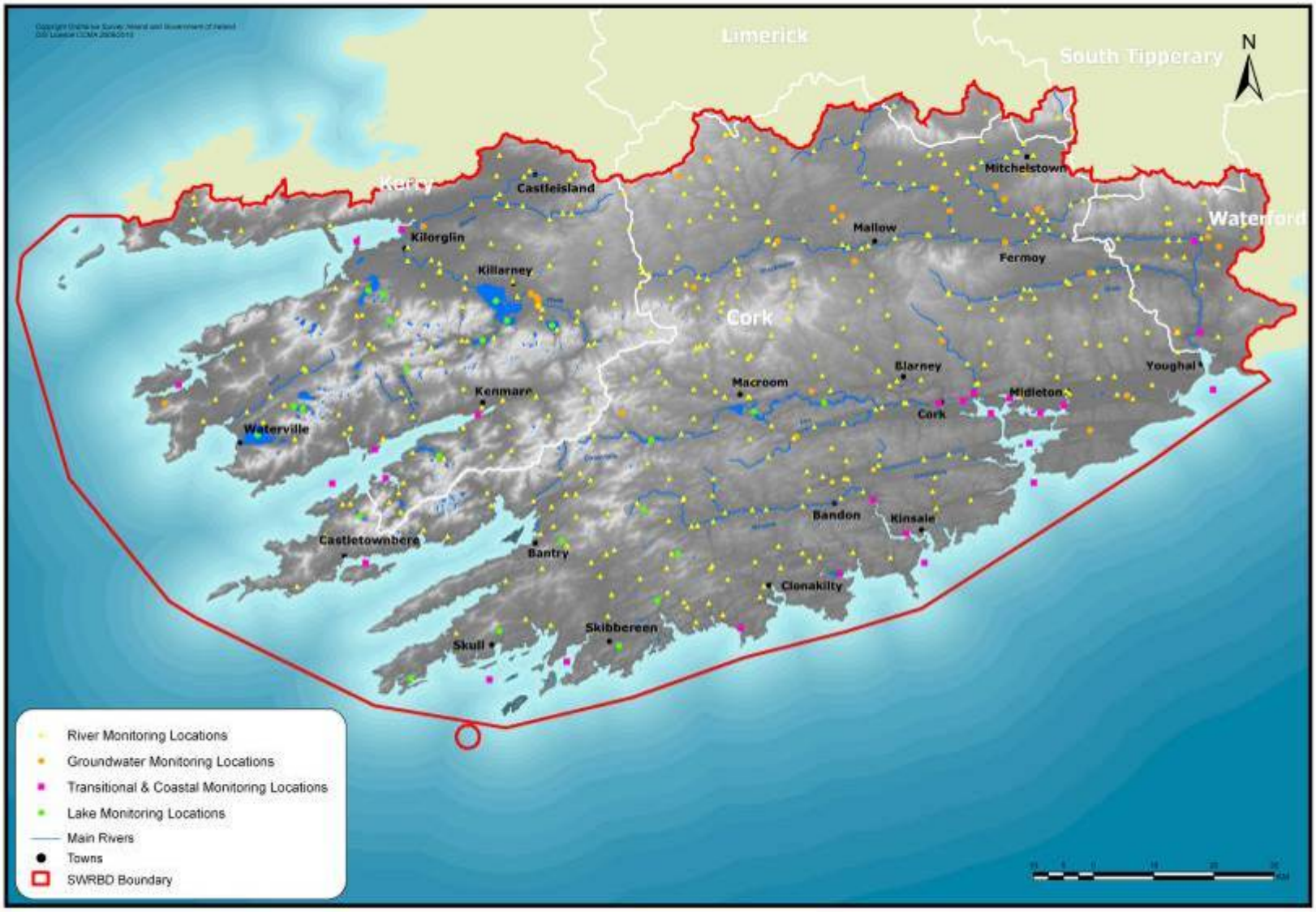


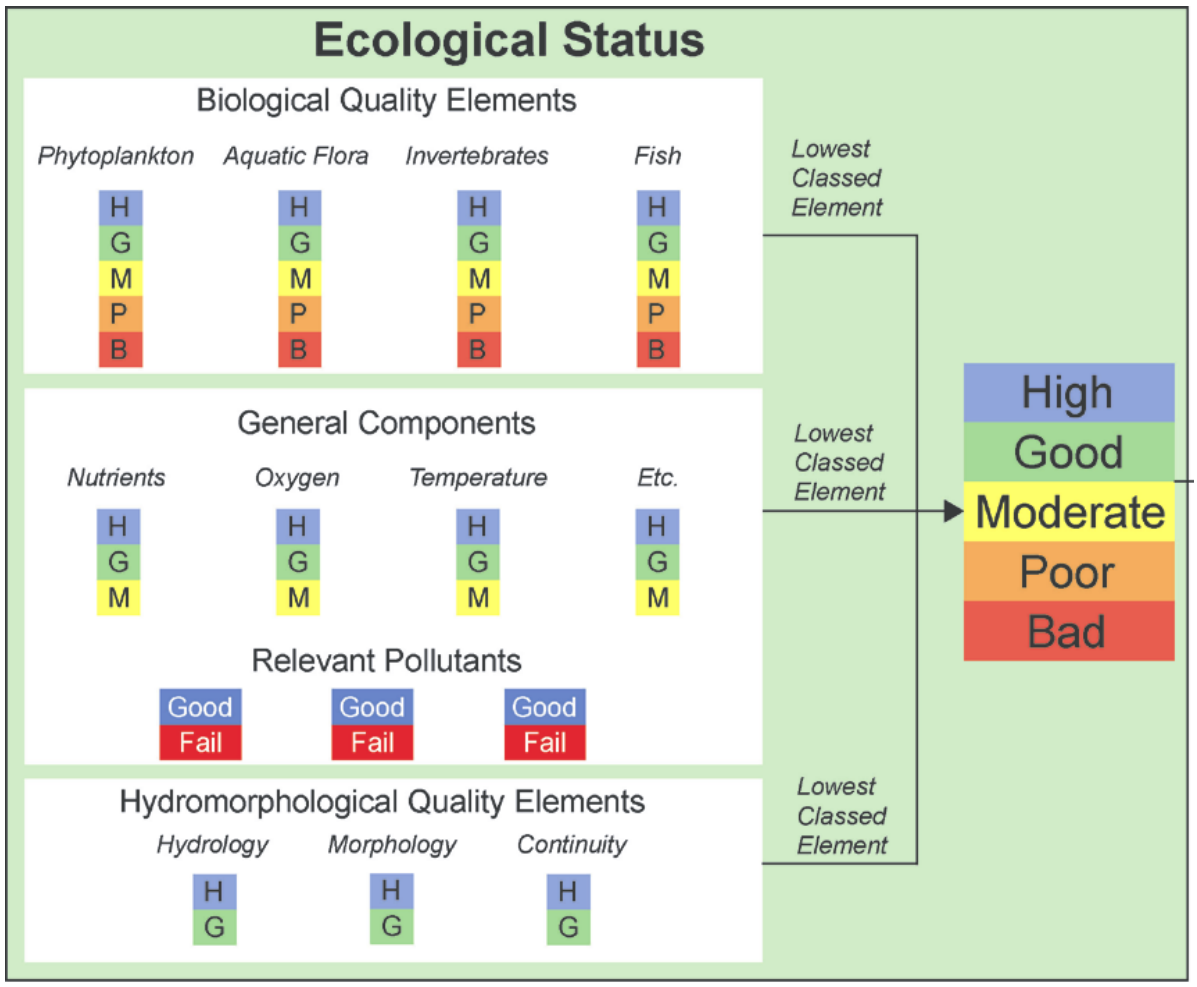
Chart 3.0 – Surface Water Status Ecological and Chemical Status



Map 3.1 Surface water and groundwater monitoring sites in the South Western RBD

3.2.1 Surface water ecological status

The monitoring programme collects data on certain plants, insects and fish, along with supporting water quality, hydrology and morphological conditions. The results of this monitoring information are used to assign ecological status to waters. Waters are assigned one of five classes of ecological status; high, good, moderate, poor or bad.



In order to make the biological classification systems comparable and consistent with the Water Framework Directive the value for the boundaries between the classes of high and good status, and between good and moderate status were established through an EU intercalibration exercise involving all member states.

Heavily modified or artificial water bodies are classified according to ecological potential which is the expression of the quality of the structure and functioning of their associated aquatic ecosystems. These waters are classified as either good ecological potential or better, (maximum ecological potential), or moderate ecological potential or worse.

The surface water ecological classification combines three factors:

- biology;
- supporting water quality conditions (general conditions and specific pollutants);
- supporting hydrology and morphology (physical condition).

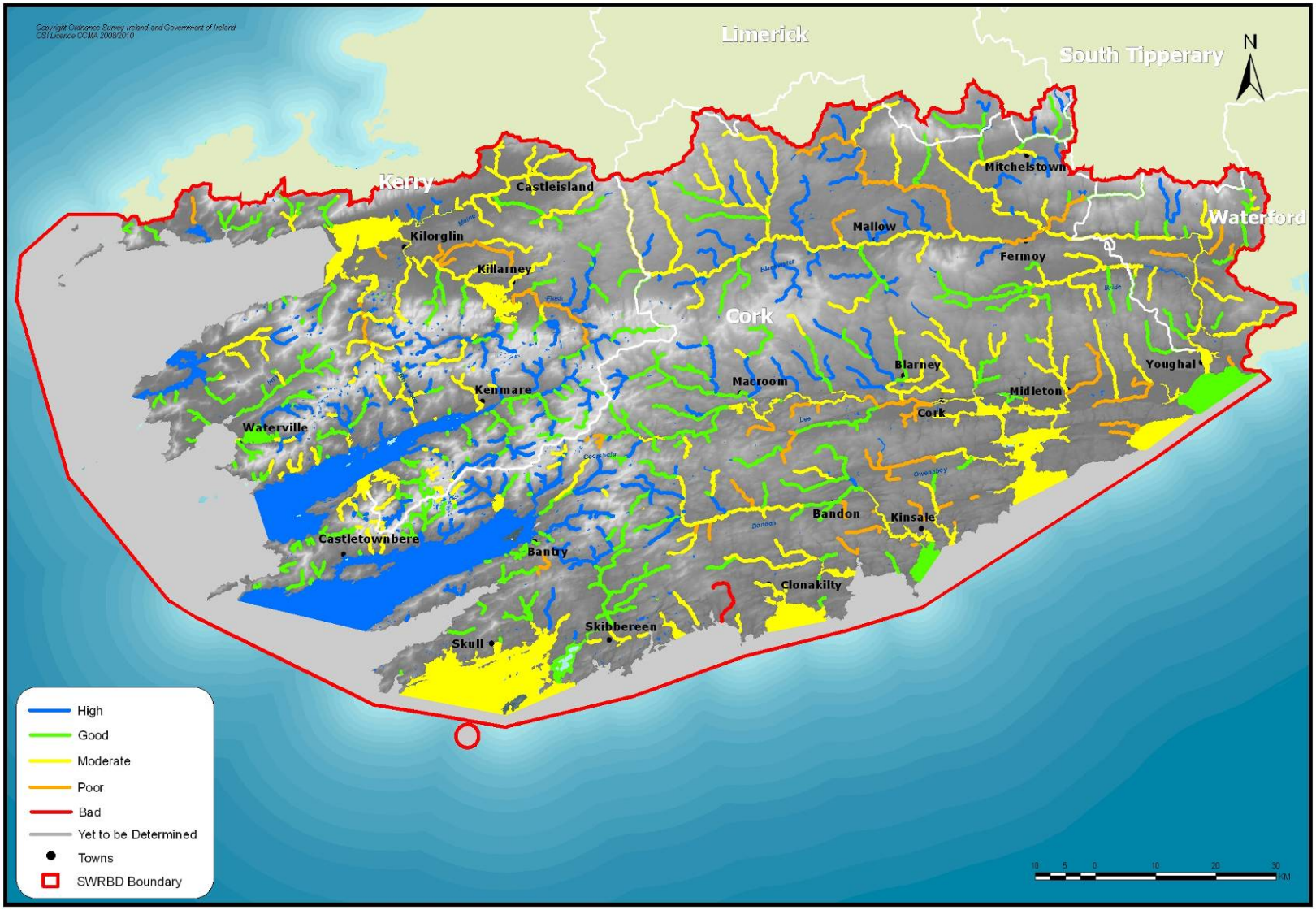
Overall ecological status is determined by the poorest scoring element assessed in the water body (ref Map 3.2 for status in the South Western RBD).

Biology

The biological classification systems describe the extent to which human activity has altered aquatic animal and plant communities by comparison with undisturbed conditions. The animals and plants that are assessed for impact are outlined in Table 3.1 below:

Table 3.1 Aquatic plants and animals in the surface water biology classification system

	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 (larger aquatic plants) Filamentous algae Phytoplankton (a microscopic plant containing the green pigment chlorophyll) in lakes and deep rivers	Seaweeds Seagrasses Marine phytoplankton



Map 3.2 Surface water ecological status in the South Western RBD

Supporting water quality conditions

Water quality conditions must be adequate to support a healthy aquatic biological community. Environmental standards have been established for general physico-chemical and specific pollutant parameters which aim to protect ecological status. These supporting water quality factors that affect ecological status are:
general physico-chemical conditions which include oxygen, nutrients, transparency (water clarity), temperature, acid status and salinity;

specific pollutants of concern in Ireland including; certain metals, pesticides and hydrocarbon compounds.

Supporting hydrology and morphology

Hydrology and morphology (physical) conditions must be adequate to support a healthy aquatic biological community. Hydrology conditions include river flow, lake level and tidal patterns and are assessed using the national hydrometric monitoring programme. Morphology is assessed by surveying channel, substrate and bed shape using new classification systems developed for the purpose of river basin planning.

The overall ecological status (or ecological potential) of water bodies in the South Western RBD based on all three combined factors is summarised in Table 3.2.

Table 3.2 Surface water body ecological status/potential in the South Western RBD

	River & canals Number (%) Length km (%)	**Lakes & reservoirs Number (%) Area km^2 (%)**	**Estuaries * Number (%) Area km^2 (%)**	**Coastal * Number (%) Area km^2 (%)**
High	284 (32%) 820 (25%)	51 (57%) 13 (18%)	3 (7%) 17 (10%)	6 (22%) 510 (14%)
Good	314 (35%) 1158 (35%)	23 (25%) 18 (25%)	2 (5%) 12 (7%)	2 (7%) 62 (2%)
Moderate	228 (26%) 1007 (30%)	16 (18%) 41 (57%)	24 (56%) 136 (82%)	5 (19%) 307 (9%)
Poor	64 (7%) 318 (10%)	0		
Bad	1 (0.1%) 11 (0.3%)	0		
Yet to be determined*	0	0	14 (32%) 1 (1%)	14 (52%) 2710 (75%)

*** It should be noted that status has not been determined for 32% of estuarine waters and 52%of coastal waters. Percentages given include all waters.**

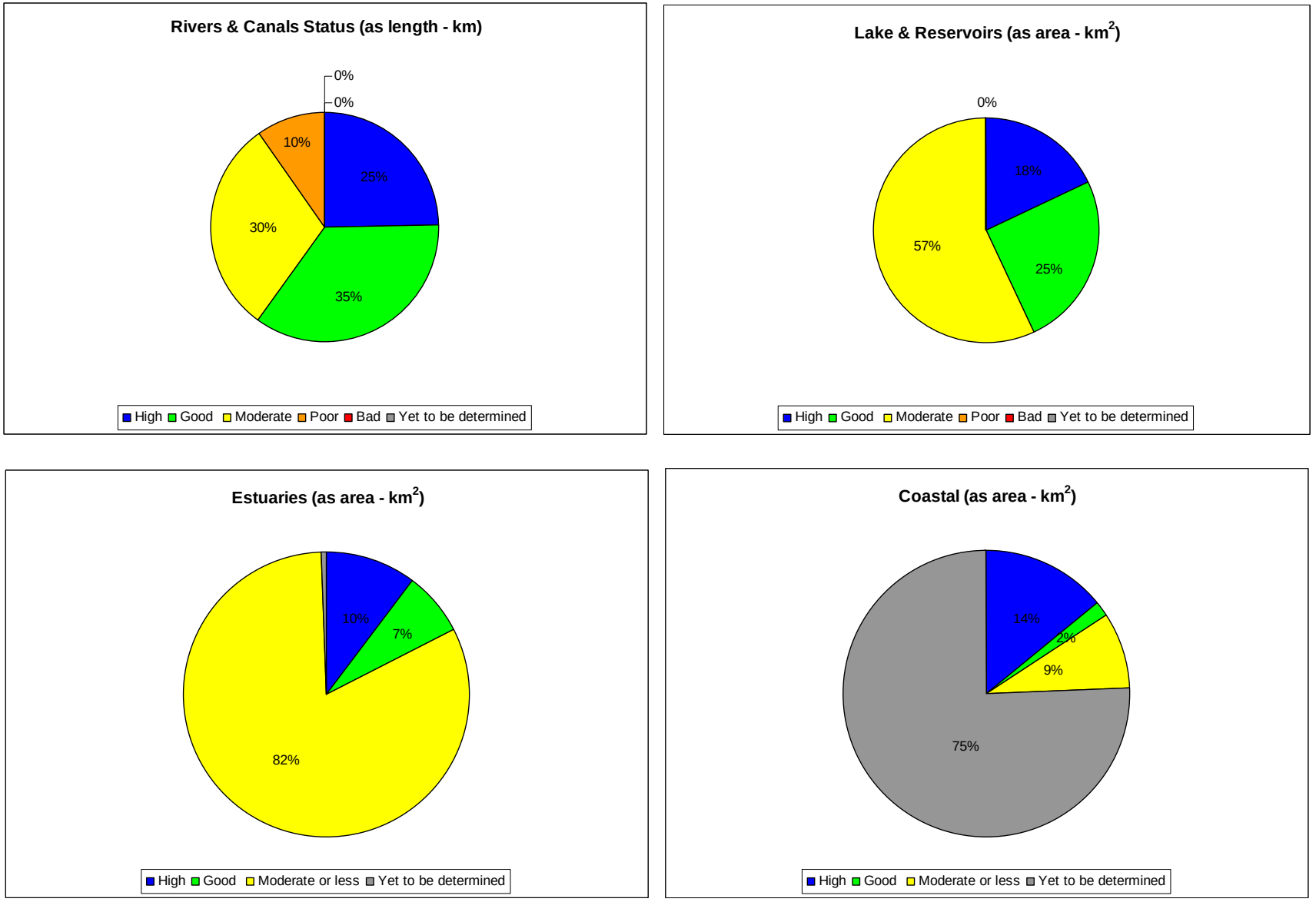
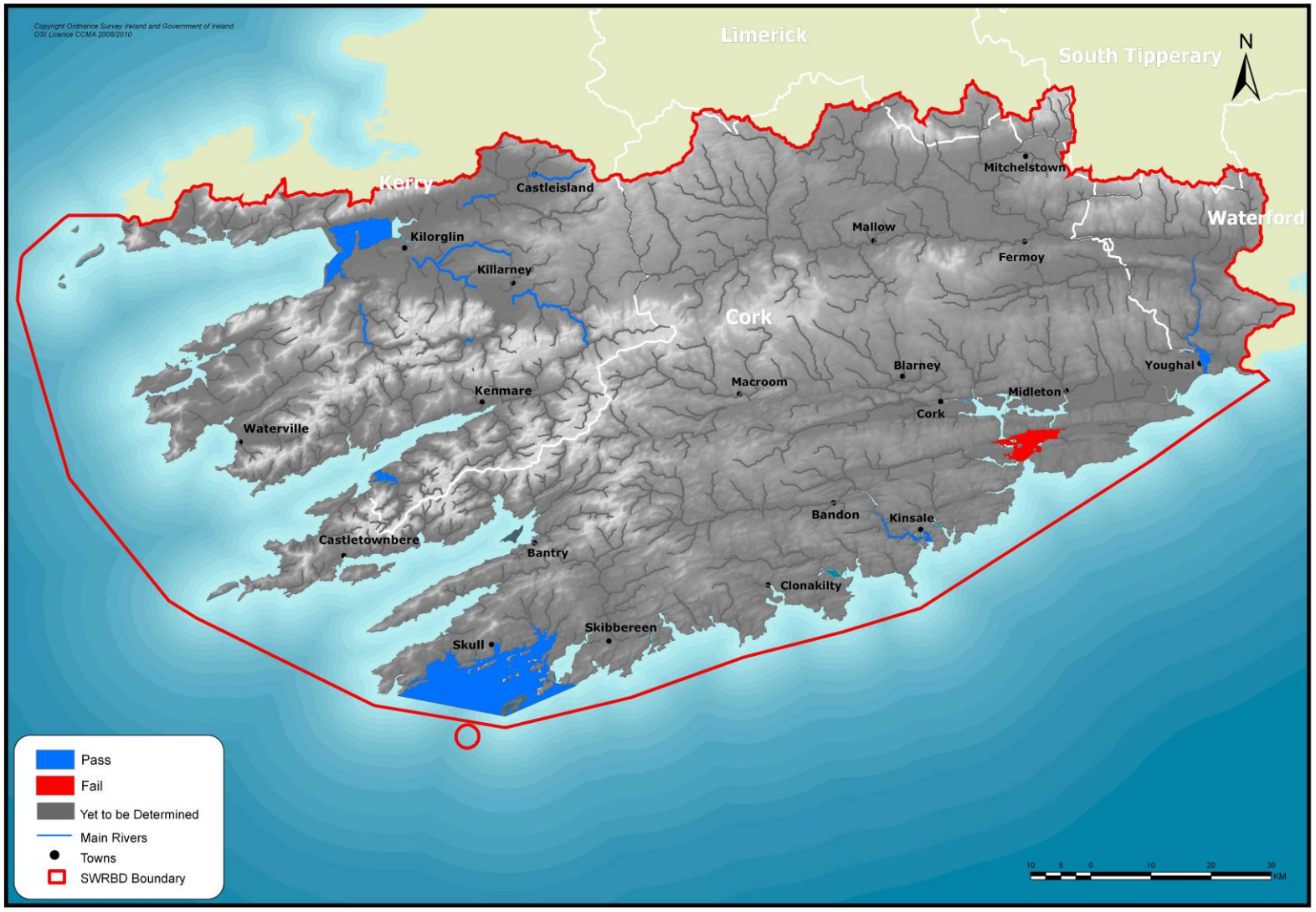


Figure 3.1 Ecological status of surface waters in the South Western RBD



Map 3.3 Surface water chemical status in the South Western RBD

3.2.2 Surface water chemical status

EU wide standards have been established for priority and priority hazardous substances which include certain metals, pesticides, hydrocarbons, volatiles and hormone-disrupting compounds. These standards have been transposed in Irish legislation *(SI 272 of 2009).* Exceedance of a standard results in a water body failing good chemical status.

There are two classes for the chemical status of surface waters: good or fail.

Table 3.3 Surface water body chemical status in the South Western RBD

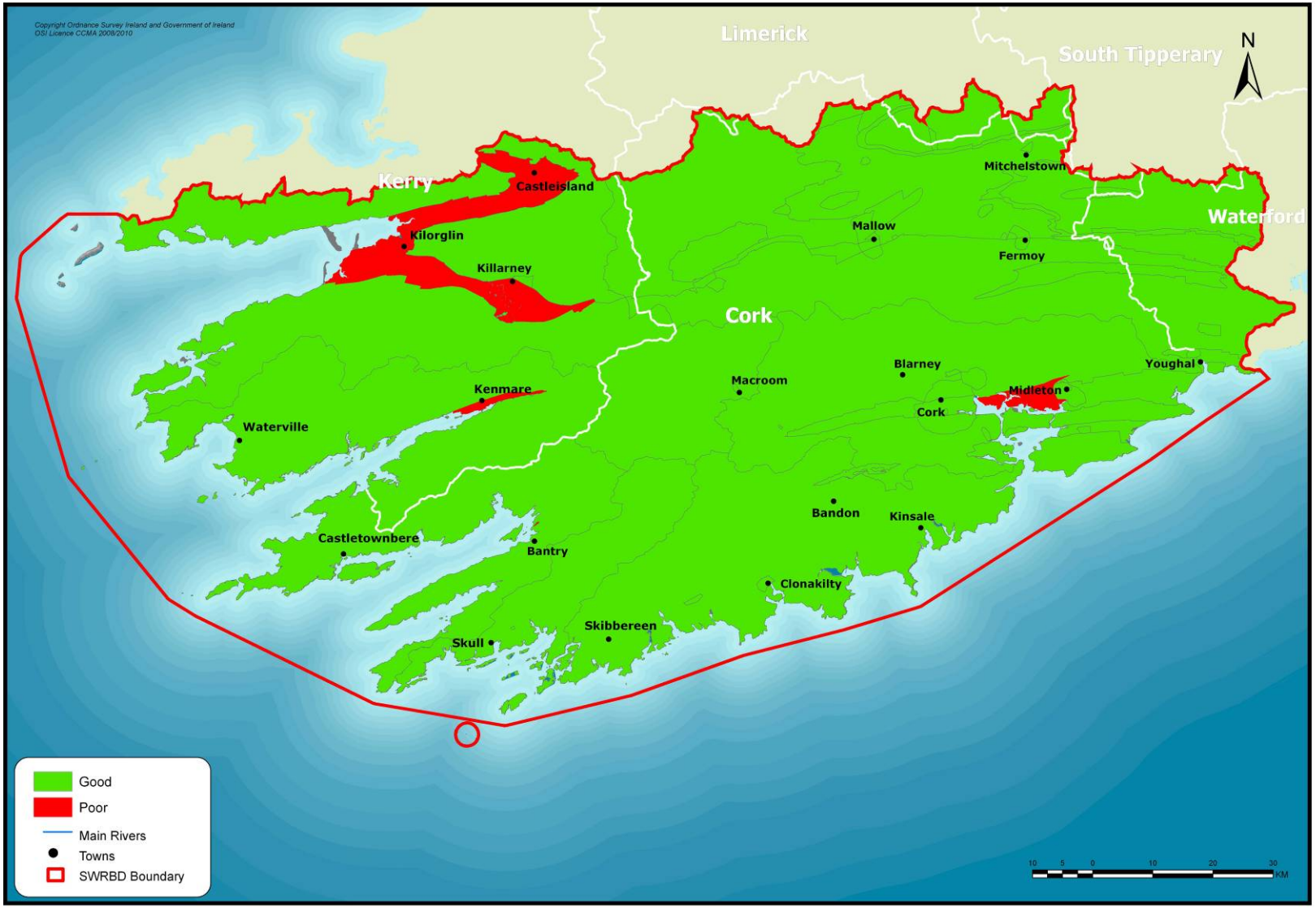
	River & canals Number (%) Length km (%)	Lakes & reservoirs Number (%) Area km^2 (%)	Estuaries Number (%) Area km^2 (%)	Coastal Number (%) Area km^2 (%)
Good	7 (23%) 83 (16%)	0 (0%) 0 (0%)	4 (9%) 76 (46%)	1 (4%) 190 (5%)
Fail	0 (0%) 0 (0%)	0 (0%) 0 (0%)	0 (0%) 0 (0%)	1 (4%) 28 (1%)
Yet to be determined	23 (77%) 450 (84%)	7 (100%) 29 (100%)	39 (91%) 91(54%)	25 (92%) 3371 (94%)

3.3 Groundwater

The groundwater monitoring programme (Map 3.1) has been developed to be representative of such waters in Ireland; to improve knowledge of groundwater quality and quantity, and the links between groundwater and the ecological health of associated surface water receptors. Monitoring points were selected to be representative of the variations in hydrogeology and human pressures across a groundwater body and to reflect the 'average' concentrations for pollutants across the whole groundwater body. The monitoring programme includes:

- a quantitative monitoring network (based on the assessment of water levels and water balance estimations);
- a surveillance and operational water quality monitoring network;
- appropriate monitoring to support the achievement of protected areas objectives, for example drinking water and Habitats protected areas.

The number and location of monitoring points is influenced by the hydrogeological characteristics of the South Western RBD. Three groundwater quality monitoring points are located in areas underlain by productive bedrock and sand/gravel aquifers (1% of the district). Poorly productive rocks (which underlie 88% of the district) and karstic rock (which underlie 11% of the district), are characterised by high surface runoff, low bedrock transmissivity and storage properties, low well yields, small localised underground flow systems and occasional narrow high transmissivity zones. Consequently, achieving a representative network in these rocks can be problematical. Two level monitoring wells and 17 quality monitoring sites are located within poorly productive aquifers in the RBD. The groundwater monitoring network will provide high quality groundwater chemistry and level information, which will aid understanding of groundwater in similar rock types in the South Western RBD and in other areas in Ireland.



Map 3.4 Groundwater status in the South Western RBD

Classification of groundwater bodies differs from that undertaken for surface water bodies, in that the surface water standards relate to ecological status and these standards define the classification boundaries. Groundwater status does not directly assess ecology, but the classification process takes account of the ecological needs of the relevant rivers, lakes and terrestrial ecosystems that depend on contributions from groundwater. Another key component of the groundwater classification is assessment of the impact of pollution on the uses (or potential uses) of groundwater from the groundwater body, for example water supply. Threshold values have been developed by the Environmental Protection Agency for forty pollutants that are causing a risk to groundwater bodies. They include inorganic substances, metals, pesticides and organic substances. Exceedance of a relevant threshold value at a representative monitoring point triggers further investigation to confirm whether the criteria for poor groundwater chemical status are being met. If the criteria for poor chemical status are met a body or a group of bodies of groundwater is classified as being at poor chemical status.

Table 3.4 Groundwater body status in the South Western RBD

Groundwater	Chemical status Number (%) Area km^2 (%)	Quantitative status Number (%) Area km^2 (%)	Combined status Number (%) Area km^2 (%)
Good	78 (93%) 10961 (97%)	83 (99%) 11261 (99.7%)	77 (92%) 10932 (97%)
Poor	6 (7%) 329 (3%)	1 (1%) 29 (0.26%)	7 (8%) 358 (3%)

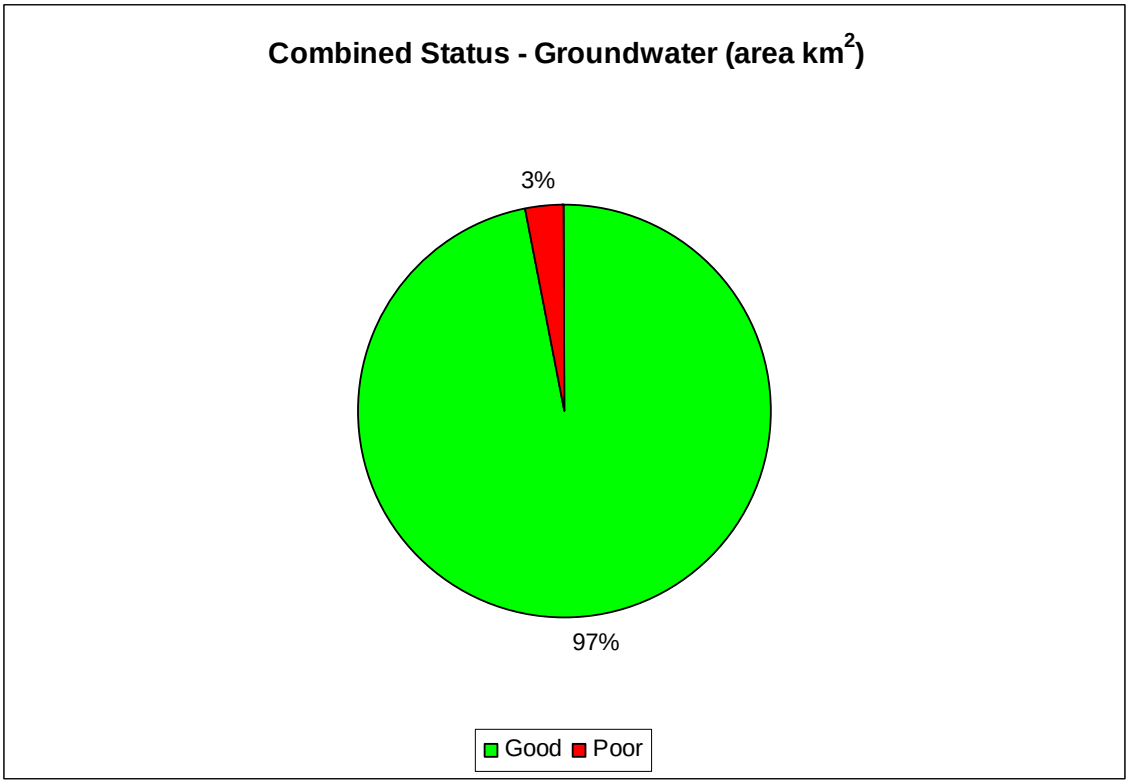


Figure 3.2 Combined status of groundwater in the South Western RBD

3.4 Protected areas

For water bodies containing water dependent protected areas, the assessment of status takes into account the water related objectives set for that protected area by the EU legislation under which the individual protected area was established. Where standards or objectives for protected area water bodies are not met, arising from a failure to meet the required water quality or hydrological standards, then less than good ecological status is assigned by the EPA in accordance with the provisions of the *Surface Water Environmental Objectives Regulations (SI 272 of 2009*).

All nine designated freshwater pearl mussel populations in the South Western RBD did not meet their protected area objectives due to water quality conditions and therefore status has been downgraded. The catchments do not achieve favourable conservation status and fail most of the requirements as specified in the *European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations (SI 296 of 2009).* These freshwater pearl mussel catchments are:

- Allow - The population is failing due to the deterioration in habitat quality which is evident from the high levels of siltation and macrophyte growth. Its demographic profile is poor as there are not the numbers of juveniles present in the population to provide sustainable replacement of the current adult numbers. Status was downgraded in one river water body.

- Ownagappul - The Freshwater Pearl mussel population in the Ownagappul consists of a very large population of adults, and all ages of juveniles. However there are not the numbers of juveniles under 30mm present in the population to provide sustainable replacement of the current adult numbers. Status was downgraded in two river water bodies.

- Bandon/Caha - The population of Margaritifera in the Bandon and Caha is not likely to be in favourable condition, based on most recent available information from surveys in 2005 and on habitat surveys in 2009. Its demographic profile is poor and there is an absence of juveniles and rarity of small mussels throughout the catchment. Status was downgraded in two river water bodies.

- Munster Blackwater - Monitoring of this catchment is incomplete. Three sites were investigated on the main channel of the Munster Blackwater upstream of Rathmore in 2009 and no Margaritifera were found. Heavy siltation has been observed at all locations investigated to date (both upstream and downstream of Mallow), indicating that conditions are unsuitable for the survival of juvenile mussels in the Munster Blackwater system. Status was downgraded in 6 river water bodies.

- Currane - Its demographic profile is poor as there are not the numbers of juveniles present in the population to provide sustainable replacement of the current adult numbers. A comprehensive survey is required to gather detailed data on the distribution and demography of the population present. Status was downgraded in two river water bodies.

- Caragh - The Caragh holds twice as many mussels as all other European countries combined, with the exception of Scotland. This illustrates its significance as a freshwater pearl mussel catchment in a European context. While good numbers of adults are found throughout the catchment, juveniles and small mussels are rare due to the unsuitable habitat conditions for them. Status was downgraded in 7 water bodies.

- Licky - The population is failing due to the deterioration in habitat quality which is evident from the high levels of siltation. It has small numbers of adults from historical records, and very few juveniles. Status was downgraded in 2 river water bodies.

- Kerry Blackwater -There has been an observed reduction of mussel numbers at all sites investigated in the catchment with an apparent absence of juveniles and rarity of small mussels. Its demographic profile is poor as there are not the numbers of juveniles present in the population to provide sustainable replacement of the current adult numbers. Status was downgraded in 5 river water bodies.

- Gearhameen - Initial baseline monitoring has not yet taken place in the Gearhameen catchment, so the work carried out to date represents the best expert judgement on the current status of the river, without the benefit of comprehensive past survey information. Due to the apparent absence of juveniles and the scarcity of small mussels, at the sites investigated, the catchment is in unfavourable status. Status was downgraded in 1 river water body.

4 The objectives for the South Western RBD

Having identified the status of the waters according to the best available information, the next stage is to set environmental objectives for the waters. Objective setting considered waters that require protection from deterioration as well as waters that require restoration and the timescales needed for recovery. This section of the plan sets out the objectives that the plan aims to achieve. The Water Framework Directive has four core environmental objectives; it also allows alternative objectives to be set in certain circumstances.

The recent *Surface Waters Environmental Objectives Regulations* (SI 272 of 2009) and new *Groundwaters Environmental Objectives Regulations* (SI 9 of 2010) establish the legal basis for setting objectives for waters. These regulations also place a legal obligation on public authorities to aim to achieve these objectives through their functions.

Local authorities have set objectives for all waters in the South Western RBD.

4.1 The core objectives

The plan establishes four core environmental objectives to be achieved generally by 2015:

- prevent deterioration;
- restore good status;
- reduce chemical pollution:
- achieve water related protected areas objectives.

Tables 4.1 to 4.4 show which of the objectives apply to the waters of the South Western RBD. More information is available in the *objectives background documents* and the web-based interactive map *Water Maps* on www.wfdireland.ie.

4.1.1 Prevent deterioration

The Directive requires implementation of the measures necessary to prevent deterioration in status of all surface waters and groundwaters.

The Environmental Protection Agency has highlighted, as a key concern, the decline in high status waters over the past two decades. According to the 2009 Environmental Protection Agency indicators report the number of high quality river sites, nationally, has almost halved over the last 20 years.

Table 4.1 Water bodies currently at high or good status

Current status	**Rivers & canals Number (%) Length km (%)**	**Lakes & reservoirs Number (%) Area km^2 (%)**	**Estuaries* Number (%) Area km^2 (%)**	**Coastal* Number (%) Area km^2 (%)**	**Groundwater Number (%) Area km^2 (%)**
High or Good	598 (67%) 1,979 (60%)	74 (82%) 31 (43%)	5 (12%) 29 (17%)	8 (30%) 572 (16%)	77 (91%) 10,931 (97%)

*** It should be noted that status has not been determined for 32% of estuarine waters and 52% of coastal waters. Percentages given include all waters**

4.1.2 Restore good status

The objective for surface waters is to improve waters where necessary with the aim of achieving at least good ecological status.

The objective for groundwaters is to restore good status, reversing significant and sustained declining quality trends.

Restoring good status is to be achieved generally by 2015 where it is technically feasible, environmentally sustainable and not disproportionately expensive to do so. However, despite the implementation of measures some waters will take longer than others to reach their target because of the slower natural rates of recovery caused by local conditions (for example existing high soil phosphorus levels, soil characteristics and hydrogeological conditions).

The classification results for the South Western RBD show that 293 rivers and canals, 16 lakes and reservoirs, 24 estuaries, 5 coastal waters and 7 groundwaters are currently below good status and require restoration to good status.

Table 4.2 Water bodies currently at less than good status

Current status	Rivers & canals Number (%) Length km (%)	Lakes & reservoirs Number (%) Area km^2 (%)	Estuaries* Number (%) Area km^2 (%)	Coastal* Number (%) Area km^2 (%)	Groundwater Number (%) Area km^2 (%)
Less than good	293 (33%) 1336 (40%)	16 (18%) 41 (56%)	24 (56%) 136 (81%)	5 (19%) 307 (9%)	7 (8%) 358 (3%)

*** It should be noted that status has not been determined for 32% of estuarine waters and 52%of coastal waters. Percentages given include all waters**

4.1.3 Reduce chemical pollution in surface waters

The core objective is to progressively reduce surface water pollution from priority substances and cease or phase out emissions, discharges and losses of priority hazardous substances. Chemical standards for forty-one substances were established by the EU. The chemical monitoring programme has been completed for freshwaters and groundwaters, but the full set of results for 2009 were not available for consideration in the current assessment. The corresponding data for estuarine (transitional) and coastal waters is not available. Based on the limited information available to date, the level of failures appears to be very low. One waterbody, Cork Harbour, out of 6 estuarine/coastal waters and 7 freshwater sites monitored to date in the South Western RBD has failed chemical status. Work is underway to identify the source and to determine appropriate measures to reduce chemical pollution.

Table 4.3 Water bodies currently failing chemical pollution standards

Current status	Rivers and canals Number (%) Length km (%)	Lakes and reservoirs Number (%) Area km^2 (%)	Estuaries Number (%) Area km^2 (%)	Coastal Number (%) Area km^2 (%)
Failing chemical status	0 (0%)	0 (0%)	0 (0%)	1 (4%) 28 (1%)

4.1.4 Achieve protected areas objectives

Some protected areas do not currently meet their protected areas objectives due to water quality conditions. The objective for the water bodies associated with these protected areas is to restore them so that they meet all applicable water standards. In the South Western RBD amongst the most sensitive of these protected sites are nine designated sites with freshwater pearl mussel populations that are in unfavourable conservation status due to water quality deterioration, particularly heavy siltation and also nutrient enrichment.

Table 4.4 Water bodies associated with protected areas

	Rivers and canals **Number (%)** **Length km (%)**	**Lakes and Reservoirs** **Number (%)** **Area km^2 (%)**	**Estuaries** **Number (%)** **Area km^2 (%)**	**Coastal** **Number (%)** **Area km^2 (%)**
Waters supporting protected areas	565 (63%) 2,473 (72%)	86 (96%) 71 (97%)	42 (98%) 164 (98%)	24 (89%) 3573 (99.5%)

4.2 Alternative objectives

The Water Framework Directive allows alternative objectives to be set in certain specified circumstances:

- technical, economic, environmental or recovery constraints. In some cases extended deadlines have been set for waters where necessary;
- the nature and uses of certain artificial or heavily modified waters. Alternative objectives have been set to account for their sustainable use;
- proposed new physical modifications and sustainable developments. Alternative objectives may have to be set to cater for future projects.

In these cases, measures must still be taken to achieve best possible status by 2015, even where alternative objectives are set. This plan establishes alternative objectives for certain water bodies in accordance with the *Surface Waters Environmental Objectives Regulations (SI 272 of 2009)* and *Groundwaters Environmental Objectives Regulations (SI 9 of 2010).* Further information on *alternative objectives* can be found on www.wfdireland.ie.

4.2.1 Extended deadlines

Extended deadlines, usually of one planning cycle (6 years, to 2021) and in some cases two cycles (to 2027) may be applied to some water bodies due to technical, economic, environmental or recovery constraints.

In some cases further investigations are required to confirm the extent of impacts or to identify appropriate measures and implement them. The effectiveness of some measures is uncertain and status recovery is expected to take longer than the first planning cycle. The reasons why timescale extensions are required to restore certain waters to good status in the South Western RBD are set out in Table 4.5. The waters where timescale extensions have been set are presented in Maps 4.1 to 4.6.

Objectives will be kept under review during each planning cycle. In some limited circumstances it may be necessary to apply a less stringent objective if assessments demonstrate that good status cannot be achieved by 2027.

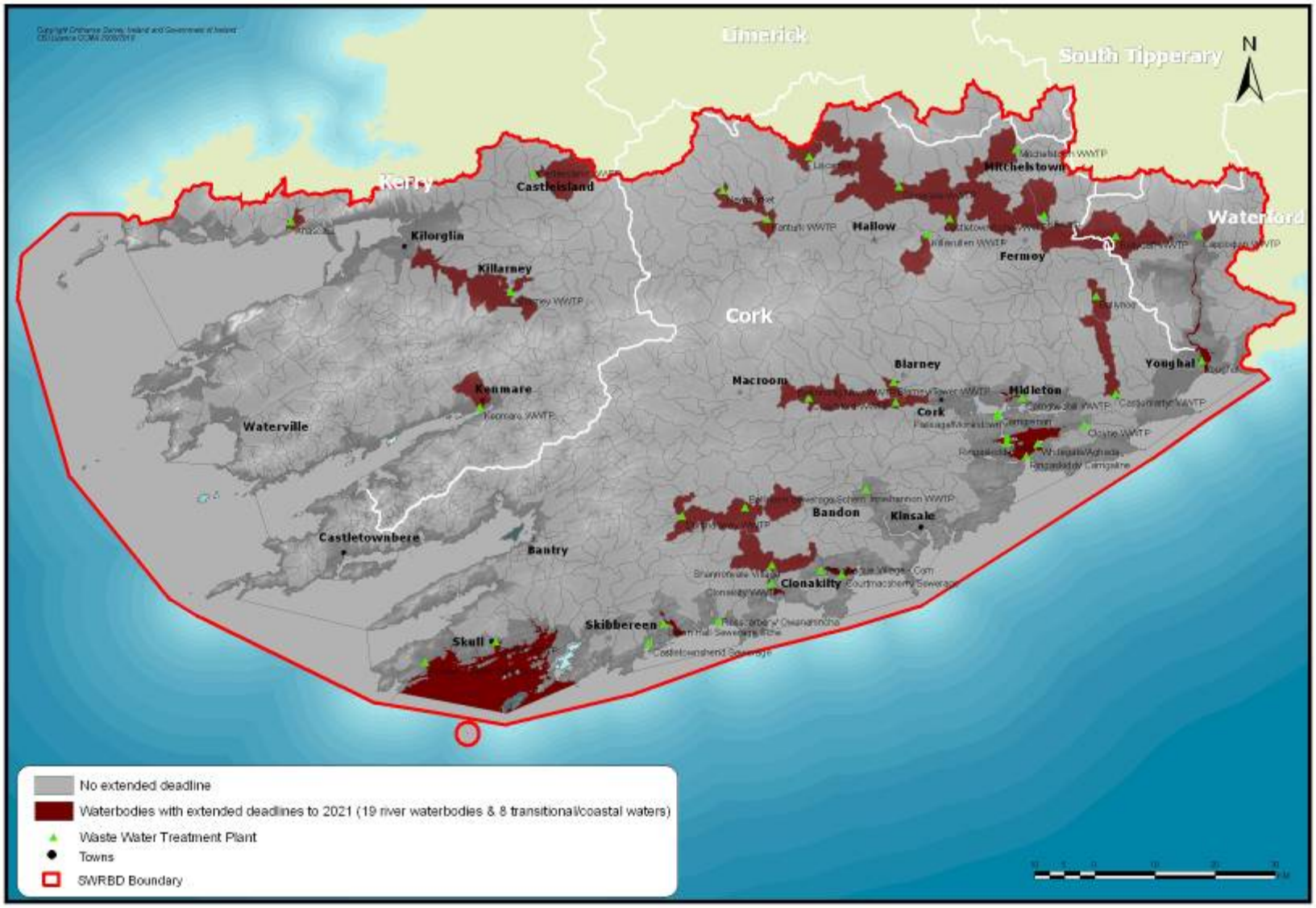
Table 4.5 Reasons why extended timescales are required in certain water bodies in the South Western RBD

Issue and extension required	Rivers (number)	Lakes (number)	Transitional (number)	Coastal (number)	Groundwater (number)	Likely failing status element	Constraint	Action to 2015
Wastewater discharges from some treatment plants **Extend to 2021** **Map 4.1**	19	-	6	2	-	Mainly phosphorus levels or oxygen conditions supporting ecological status	Practical constraint: the time required to plan and design upgrades to treatment plants and to achieve approvals and licensing means it is not technically possible to achieve good status in 2015. Case by case assessment showed that infrastructure provision is critical to achieving good status.	Local authorities to upgrade plants through the Water Service Investment Programme and operate and manage plants in accordance with discharge authorisation
Agriculture: phosphorus losses to surface waters by runoff **Extend to 2021** **Map 4.2**	22	1	-	-	-	Phosphorus levels supporting ecological status	Physical recovery: research (Schulte, *et al,* in press), has found that reductions from high soil phosphorus levels (Index 4) to environmentally sustainable levels (Index 3) takes an average of 7 to 15 years, even with full implementation of the Good Agricultural Practice Regulations (SI 272 of 2009), and therefore nutrient losses to waters may persist. The downstream catchment effect on lake recovery is dependent on river recovery timescale.	DAFF/DEHLG to review outcomes of agricultural catchment programmes (ACPs) and Nitrates Action Programme (NAP)
Agriculture: phosphorus losses to surface waters via groundwaters in karst areas **Extend to 2021** **Map 4.2**	24	1	-	-	5	Phosphorus levels supporting ecological status	Certainty of cause: where groundwaters contribute significantly to surface water phosphorus loadings in karst areas, the extent of impact and potential measures need to be investigated. This poses a technical constraint as the cause of the problem has not yet been established with certainty and it is not yet clear what (if any) additional agricultural measures are required or how effective technical solutions would be.	Review outcomes of ACPs and NAP. DEHLG-NPWS to map turloughs' zones of contribution. DAFF to increase farm inspections in karst areas with turloughs and consider piloting of environmentally friendly farming scheme

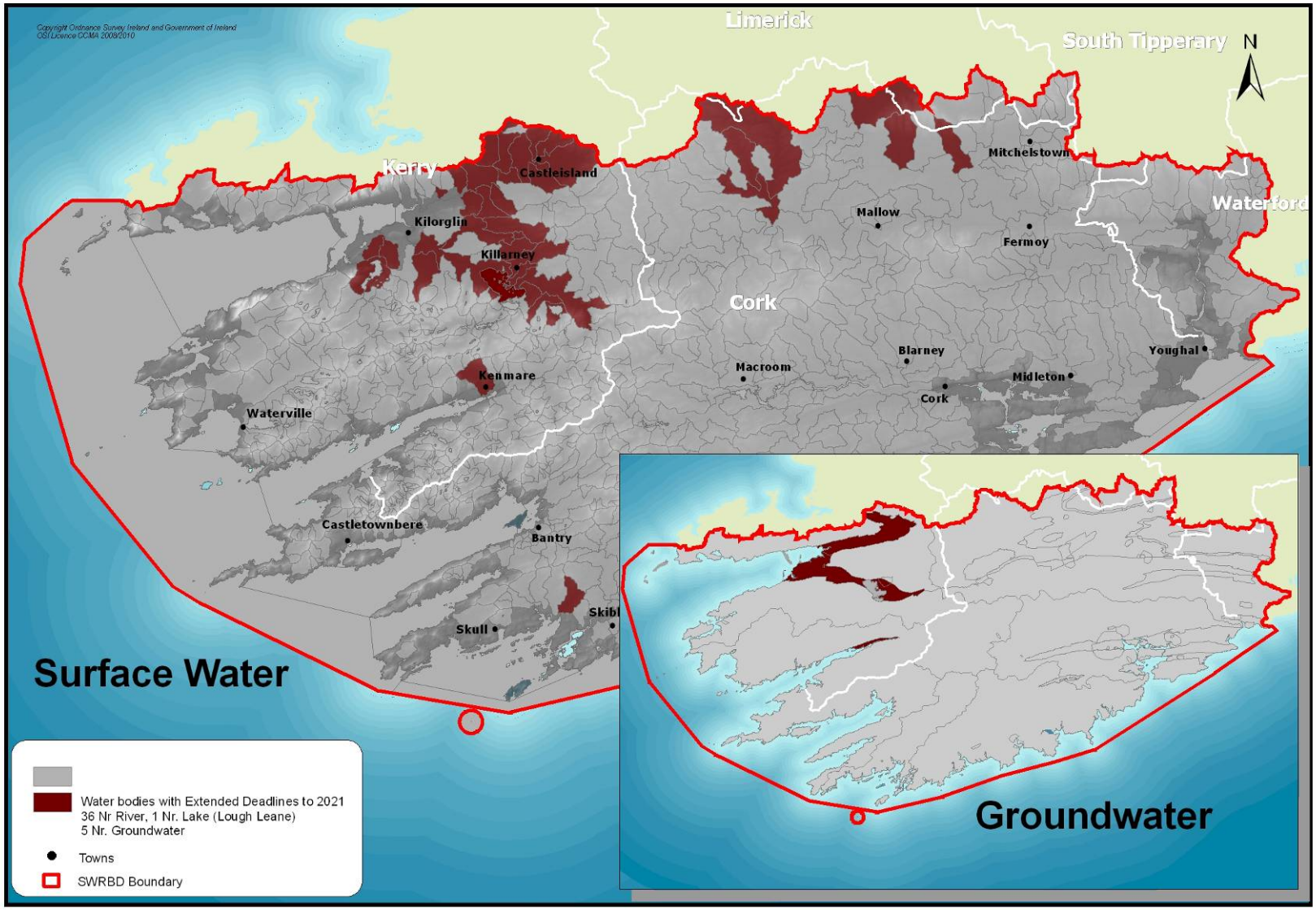
Issue and extension required	Rivers (number)	Lakes (number)	Transitional (number)	Coastal (number)	Groundwater (number)	Likely failing status element	Constraint	Action to 2015
Forestry: acidification risks **Extend to 2027** **Map 4.3**	2	-	-	-	-	pH, invertebrates, fish	Certainty of cause: the extent to which ecological restoration can be achieved is not known and poses a technical constraint. A forest's life cycle is several decades; evaluation and implementation of measures, and water quality response, will require three cycles.	EPA and Fisheries Boards to monitor catchments; Forest Service to investigate, research and trial measures
Dangerous substances: chemical pollution &: chemical status failures **Extend to 2021** **Map 4.4**	-	--	9	2	-	Priority substances, specific pollutants	Certainty of cause: the national monitoring programme has been recently expanded to include a much broader range of substances. More time is needed to find the extent, causes and sources of chemical status non-compliance and to investigate and implement measures. In that light, there is a technical constraint and objectives will need review in 2015.	EPA to monitor waters and establish a register of discharges, emissions and losses. Local Authorities to prepare pollution reduction programmes. In accordance with the Surface Waters Environmental Objectives Regulations 2009.
Nitrogen losses to estuaries & surface waters **Extend to 2021** **Map 4.5**	81	-	9	3	-	Eutrophication in transitional and coastal waters and surface waters	Certainty of cause: estuaries are eutrophic due to nitrogen inputs from upstream catchments. Evidence suggests that this may be due to elevated nitrogen in groundwaters resulting from land applications of nitrogen on free draining soils [Fenton, *et al.* in press]. These groundwaters may be contributing significant nitrogen loads to river catchments which discharge to the estuaries. This poses a technical constraint as the source of the problem has not yet been established with certainty and it is not yet clear what (if any) measures are required or how effective technical solutions would be.	EPA and local authorities to monitor and review objectives under WFD programmes Review outcomes of ACPs and NAP

Issue and extension required	Rivers (number)	Lakes (number)	Transitional (number)	Coastal (number)	Groundwater (number)	Likely failing status element	Constraint	Action to 2015
Delayed recovery of highly impacted sites **Extend to 2021** **Map 4.6**	17	-	3	-	-	Overall ecological status	Recent EPA surveys suggest that recovery is slower for waters where status is more than one band below good (i.e. poor or bad). Recovery rates have been assessed on a case-by-case basis considering the pressures acting. It is expected that, as a result of the complex mix of pressures present and the level of impact restoration of status to good in certain poor and bad status sites will extend beyond the first plan period.	Programme of measures to be implemented and EPA to monitor and report on status recovery rates
Combined total number *	144	1	22	4	5			
Total as % of all waters	16%	1%	51%	15%	6%			

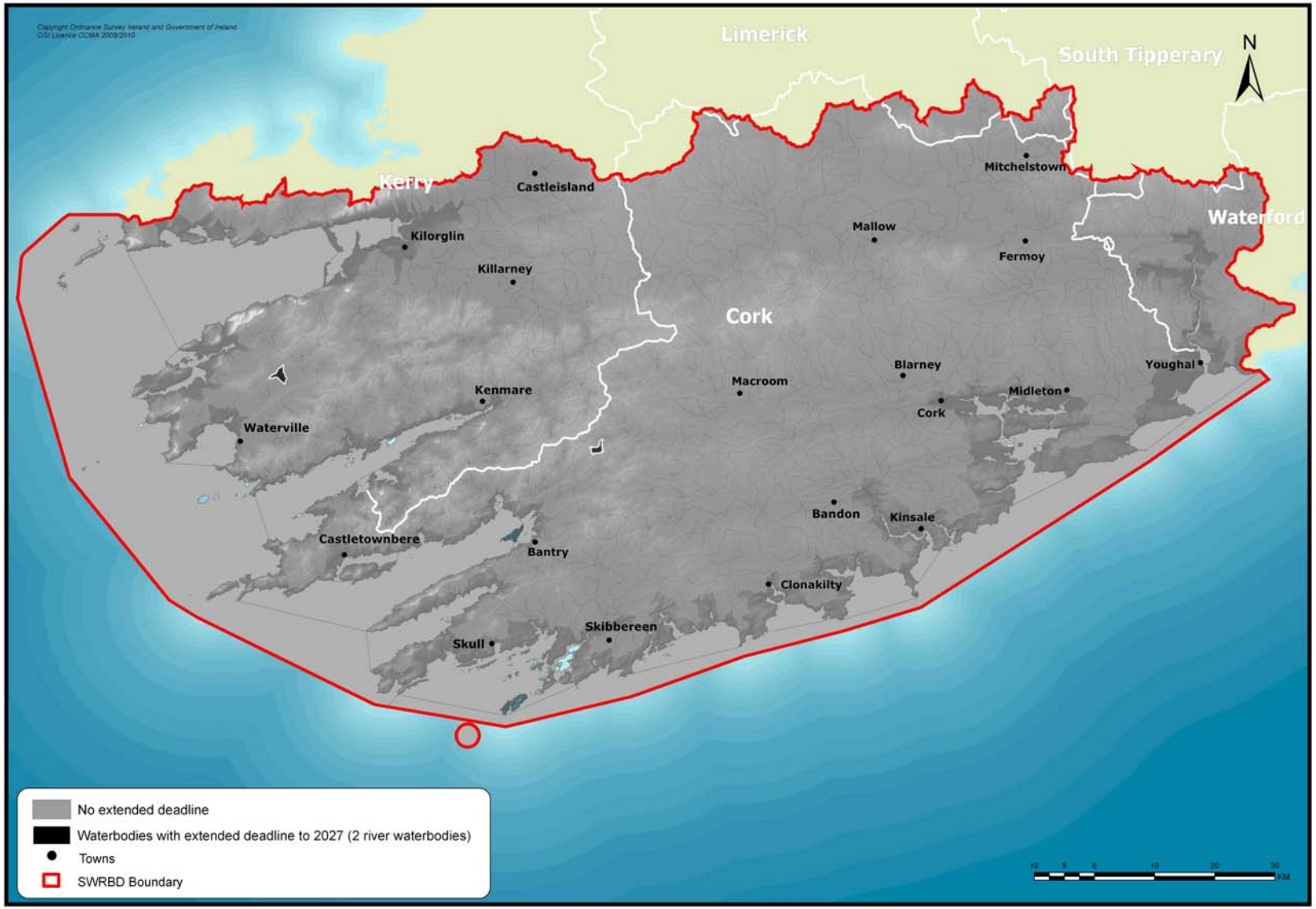
**Note a number of waterbodies have been given extended timescales for the achievement of Good Status for more than one issue.*



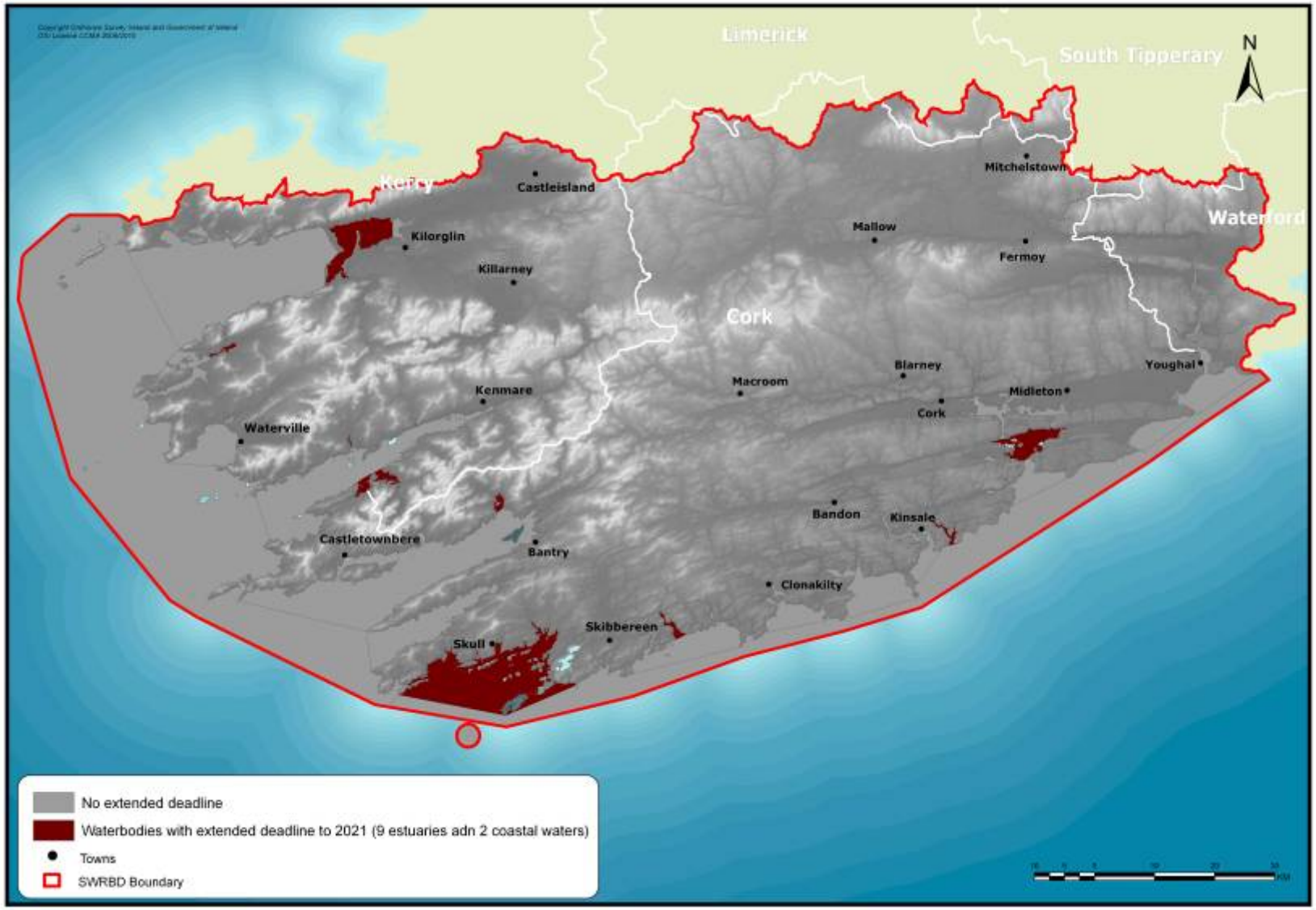
Map 4.1 Extended timescales due to time requirements to upgrade wastewater treatment plant discharges in the South Western RBD



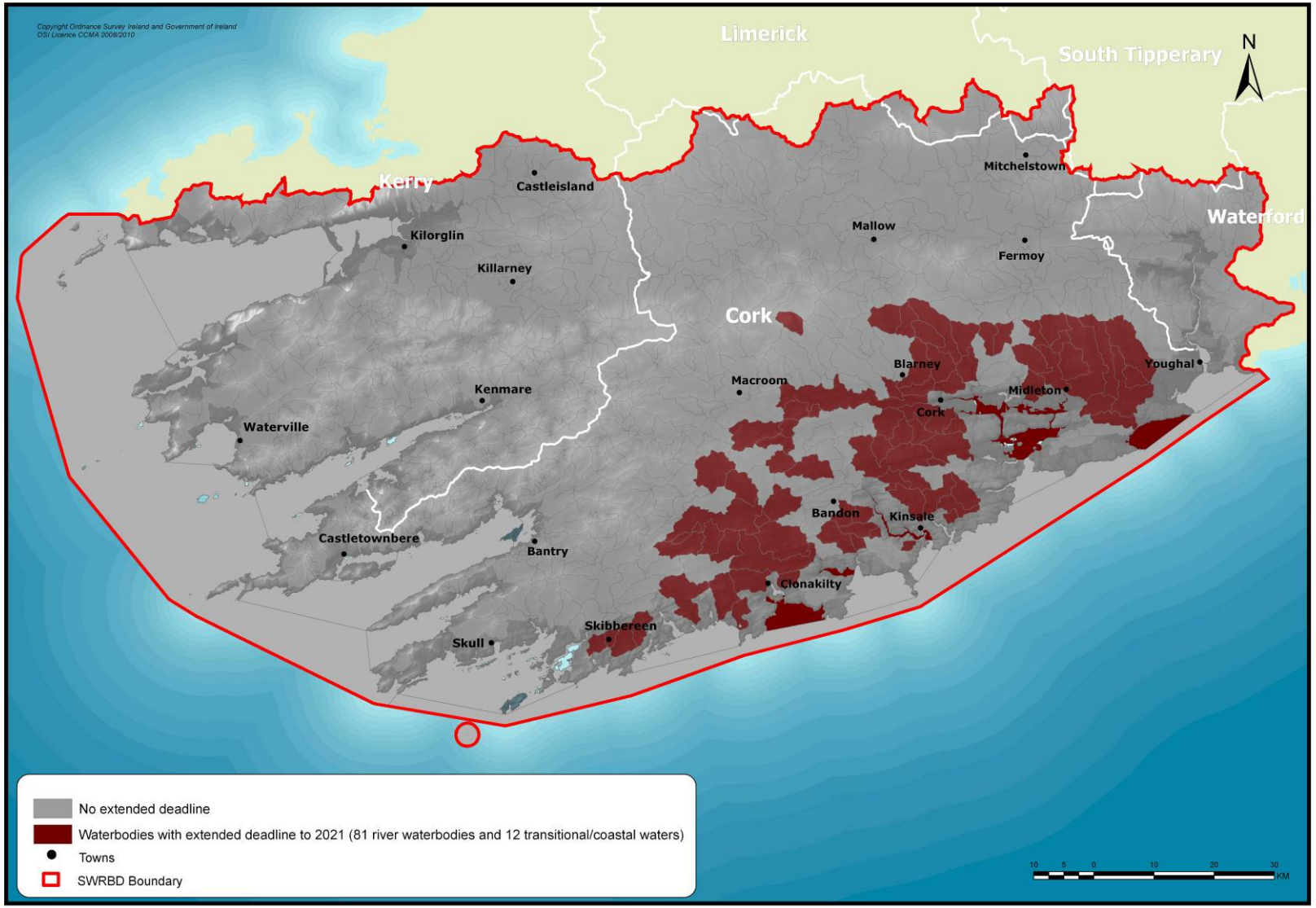
Map 4.2 Extended timescales due to delayed recovery following reduction in agricultural nutrient losses in the South Western RBD



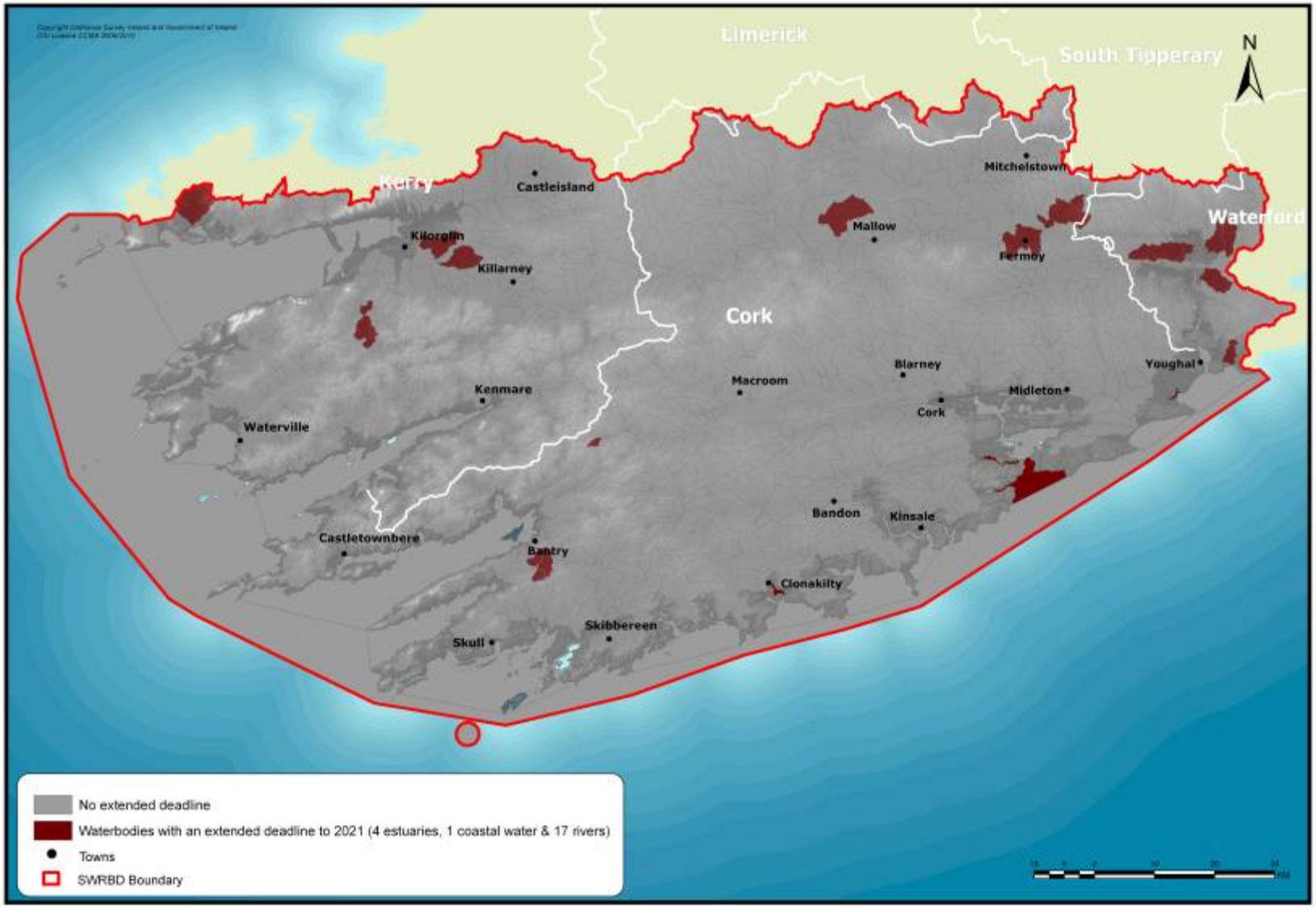
Map 4.3 Extended timescales due to delayed recovery following implementing forestry acidification measures in the South Western RBD



Map 4.4 Extended timescales due to delayed recovery of chemical pollution and chemical status failures in the South Western RBD



Map 4.5 Extended timescales due to delayed recovery from nitrogen losses to estuaries and inland surface waters in the South Western RBD



Map 4.6 Extended timescales due to delayed recovery of highly impacted sites in the South Western RBD

4.2.2 Heavily modified waters and artificial waters

Some surface waters have been substantially changed in character or have been artificially constructed for uses such as navigation, water storage, public water supply, flood defence and land drainage. Six such waters have been designated as heavily modified waters or artificial waters in the South Western RBD

The objective for heavily modified waters and artificial waters is to achieve good ecological potential generally by 2015. This objective allows the important function of these waters to be retained while ensuring that the ecology is protected or improved as far as possible. A detailed screening process was undertaken to designate artificial and heavily modified waters and to establish objectives for these: see the *artificial and heavily modified background document* on www.wfdireland.ie. The method used is based on a common approach, agreed between EU member states. The method requires that a set of agreed mitigation measures are implemented to improve the hydromorphological characteristics (water flow and physical conditions) as much as possible without having significant adverse impacts on the function of these waters or the wider environment.

The application of this methodology required case specific knowledge and judgements to be made on whether a mitigation measure would have a significant impact on the use. Where ecological monitoring data is available and all appropriate mitigation measures are in place, a water body is assessed as meeting good ecological potential otherwise the action plan includes the investigations and mitigation measures needed to achieve good ecological potential.

Table 4.5a Designated heavily modified and artificial waters in the South Western District

Artificial waters	Action by relevant public authority
Lismore Canal: this canal is a 2.3 km long canal cut by-passing a section of the River Blackwater in west Co. Waterford.	No monitoring data was available in order to identify if the canal currently meets its equivalent potential standard and, therefore, no measures are currently identified.
Heavily modified waters	**Action by stakeholder**
Carrigadrohid and Inniscarra Reservoirs: were created between 1953 and 1957 when two hydroelectric dams were constructed in the Lee valley upstream of Cork City. They are identified as two separate heavily modified lake water bodies. Carrigadrohid has an area of approximately 5.9 km^2 whilst Inniscarra's area is 4.9 km^2.	Both are identified as not currently reaching their equivalent potential standard. As the reservoirs are located along the same river system, actions and measures towards achieving the required standard by 2015 are identified to apply to both lakes in unison. The recommendation is, during the cycle of this, the first plan, to undertake a study to investigate the impacts of the two schemes on the ecological potential and identify opportunities for measures to be implemented in later plan cycles.
Lee (Cork) Estuary Lower: this estuarine water body was identified due to the presence and scale of port and shipping related operations at and approaching Cork City Quay and at Tivoli Dock. The water body area is 0.9 km^2.	It has been identified as not currently reaching its equivalent potential standard. The measures assigned towards achieving the required standard by 2015 are the investigation of any obsolete structures' impacts and their removal if required and feasible, the investigation of propeller bed scouring impacts and its elimination if feasible and ensuring steps are taken to minimise the impacts of dredging such as the suspension of silt.
Lough Mahon: this estuarine water body was identified due to the impacts of shipping traffic and the frequency of maintenance dredging undertaken in the shipping channel. The water body area is 12.2 km^2.	It has been identified as not currently reaching its equivalent potential standard. The measures assigned towards achieving the required standard by 2015 are similar to those in the upstream modified water body of the Lee (Cork) Estuary Lower; it is recommended that any obsolete structures should be removed and all feasible

	steps should be taken to minimise the impacts of dredging.
Cork Harbour: this coastal water body was identified due to the presence and scale of port and shipping related operations at Ringaskiddy and Cobh. The water body area is 27.8 km^2.	The measures assigned towards achieving the required standard by 2015 are identical to those recommended for Lee (Cork) Estuary Lower: the removal of any obsolete structures, identification of impacts and opportunities for eliminating bed scouring by ship propellers and implementation of any measures feasible and the minimisation of dredging impacts such as silt suspension

Table 4.6 Heavily modified and artificial waters

Category	Rivers & canals Number (%) Length km (%)	Lakes & reservoirs Number (%) Area km^2 (%)	Estuaries Number (%) Area km^2 (%)	Coastal Number (%) Area km2 (%)
Artificial waters	1 (<0.1%)	0 (0%)	0 (0%)	0 (0%)
Heavily modified waters	0	2 (2%) 1 (2%)	2 (5%) 1 (0.4%)	1 (4%) 0.55 (0%)
Total as % of all waters	0.2%	0.2%	0.2%	0.1%

In response to the SWRBD draft River Basin Management Plan a list of additional candidate HMWBs were compiled. The candidates were suggested largely by the Office of Public Works (OPW), but also as output from national Programmes of Measures and Standards (PoMS) studies. The candidates have been screened at a high level and assessed to determine if they should be designated as HMWB.

As an initial screening step, waterbodies with modifications not falling under one of the following categories were screened out:

- Flood Protection (Urban)
- Drinking Water Supply
- Power Generation
- Ports/Harbours (none of the candidates were suggested for this reason)

As a second screening step, those waterbodies achieving Good Ecological Status based on monitoring data, and not deemed at risk from morphological pressures were removed from the list.

Waterbodies with similarities to Test Cases undertaken through the HMWB and AWB POMS Study (Refer to http://wfdireland.ie) were designated based on previous decisions taken. However, if further consideration was needed, waterbodies were then subject to the Scottish Environmental Protection Agency's (SEPA) Rapid Designation Test (Refer to http://www.nsshare.com for details of the decision test).

Below is a list of submissions made in relation to candidate HMWB for the South West and the decisions made in terms of designation as HMWB:

Table 4.6a Candidate heavily modified water bodies in the South Western District

Name	Category	Decision
Mallow, Co Cork (Munster Blackwater River)	River	New Modification (This is a future modification requiring tailored objectives through detailed consideration at a project level)
Fermoy, Co Cork (Munster Blackwater River)	River	New Modification (This is a future modification requiring tailored objectives through detailed consideration at a project level)
Bandon River, (Dunmanway Scheme), Co. Cork	River	Further data is required before assessment can be made. This candidate HMWB is to remain on the list pending results of further status investigation, particularly fish status to confirm impact of physcial modification.
Outer Cork Harbour	Coastal	Further data is required before assessment can be made. Detailed case study required
Womanagh Estuary	Transitional	Further data is required before assessment can be made. Refer to Feale Cashen Test Case
Upper Blackwater M Estuary	Transitional	Moderate Status due to DO and Phytobenthos Biomass. Morph Status is Good. DEHLG-NPWS Conservation Status is Moderate. Physical Modification unlikely to be cause of Moderate Status. Determined that Candidate is not HMWB

4.2.3 New modifications or sustainable development

Alternative objectives can also be set in cases where certain developments may cause a failure to achieve good status or to maintain high status. This is subject to the developments being of overriding public interest and/or there being overriding benefits to human health and safety. Alternative options for delivering these benefits must be considered and all practicable steps must be taken to mitigate adverse impact on the water body.

The absence from the plan of such developments does not preclude them from progressing, but they must be reported to the EC during subsequent plan updates. Examples of such developments may include the implementation of measures such as flood relief schemes to meet the objectives of, for example, the Lee Catchment Flood Risk Assessment and Management Plan (CFRAMS) or specific road projects by the National Roads Authority through the Transport 21 initiative and National Road Development Strategy.

The proposed new modification in the South Western RBD, which may require alternative objectives are identified below. These may require detailed assessment if they progress.

Table 4.6b Known new modifications or developments

New modification	Organisation	MS_CD	WB_type
Construction underway on Mallow North flood alleviation Scheme with works completed in the 4th Quarter of 2009.	OPW	SW_18_2292_4	River
Fermoy North flood alleviation Scheme commenced in mid-2008 with overall works to be completed within 4-5 years.	OPW	SW_18_2292_6	River
Flood Relief Measures in Bandon, Dunmanway and other locations in SW	OPW	TBC	
New Container and Multi-purpose Terminal in the Lower Harbour - New Bulk Facilities in the Lower Harbour as replacement to those which will be lost at City Quays and Tivoli - 5-year Maintenance Dredging Plan (2008 - 2013) - Potential expansion of Cobh Cruise Terminal facilities - Marine Aggregate Extraction (subject to Statutory licensing approval procedures)	Port of Cork	SW_060_0000	coastal
Proposed to abstract 14500 cubic metres per day, for Mid-Kerry Water Supply Scheme from Lough Callee and Lough Gouragh in the Hags Glen, in the McGillycuddy Reeks, which are the source of the Gaddagh River.	Kerry County Council	SW_22_179	lake
Sheen River, in the townland of Gortnadullagh, Kenmare. Proposed to abstract 2500 cubic metres per day, for Kenmare Water Supply Scheme	Kerry County Council	SW_21_6879	river
Eastern Gateway and Water Street Bridges in Docklands to the east of Cork City. Intentions to raise the ground level throughout the entire docklands to a minimum level of 3.5m.OD Malin Head	Cork City Council	SW_060_0900	transitional
Windfarm to include 17 no. turbines, 60m meteorological mast,120KV substation, control building, fencing, compound & anc. works at Coomacheo, Co. Cork.	Airtricity Dev. Ltd. & Coillte Teoranta	SW_22_1863	river
15.6 MW windfarm to incl. 13 turbines, 45m high measuring mast, control building, hard standing areas,compound,access roads, signs & anc. site works at Gneeves, Co. Cork	private	SW_22_1863	river
Proposed Dam and Impoundment for Bantry Water Supply Scheme	Cork County Council	SW_21_6183	river
Various Road improvements * M20 Cork-Limerick N22 Macroom - Ballyvourney N25 Midleton-Youghal N29 Cork-Ringaskiddy Cork North Ring Road	National Roads Authority	Various TBC	river and lake

Table 4.7 Known waters where there may be new modifications or developments

Type	Rivers and Canals Number (%)	Lakes and Reservoirs Number (%)	Estuaries Number (%)	Coastal Number (%)
Total as % of all waters	5 (1%)	2 (0.2%)	1 (0.1%)	1 (0.1%)

*excluding water bodies that maybe affected by road improvement schemes

4.3 The full picture

Table 4.8 shows target timescales for improvement of the South Western RBD waters over the Water Framework Directive's three cycles. By 2015 many surface waters that are currently of moderate quality will be restored to good status; most bad and poor waters will improve in status.

Table 4.8 Timescale for achieving at least good status in surface waters and groundwaters

Deadline	Rivers & Canals Number (%) Length km (%)	Lakes & Reservoirs Number (%) Area km^2 (%)	Estuaries* Number (%) Area km^2 (%)	Coastal* Number (%) Area km^2 (%)	Groundwaters Number (%) Area km^2 (%)
2009	598 (67%) 1979 (60%)	74 (82%) 31 (42%)	5 (12%) 29 (17%)	7 (26%) 568 (16%)	77 (92%) 10,931 (97%)
2015	745 (84%) 2444 (74%)	89 (99%) 53 (73%)	7 (16%) 34 (20%)	9 (33%) 603 (17%)	79 (94%) 10,966 (97%)
2021	889 (99.7%) 3310 (99.8%)	90 (100%) 73 (100%)	29 (67%) 163 (98%)	13 (48%) 880(25%)	84 (100%) 11,289 (100%)
2027	891 (100%) 3315 (100%)	90 (100%) 73 (100%)	29 (67%) 163 (98%)	13 (48%) 880(25%)	84 (100%) 11,289 (100%)

*Objectives have not been set for water bodies where status has not yet been determined.

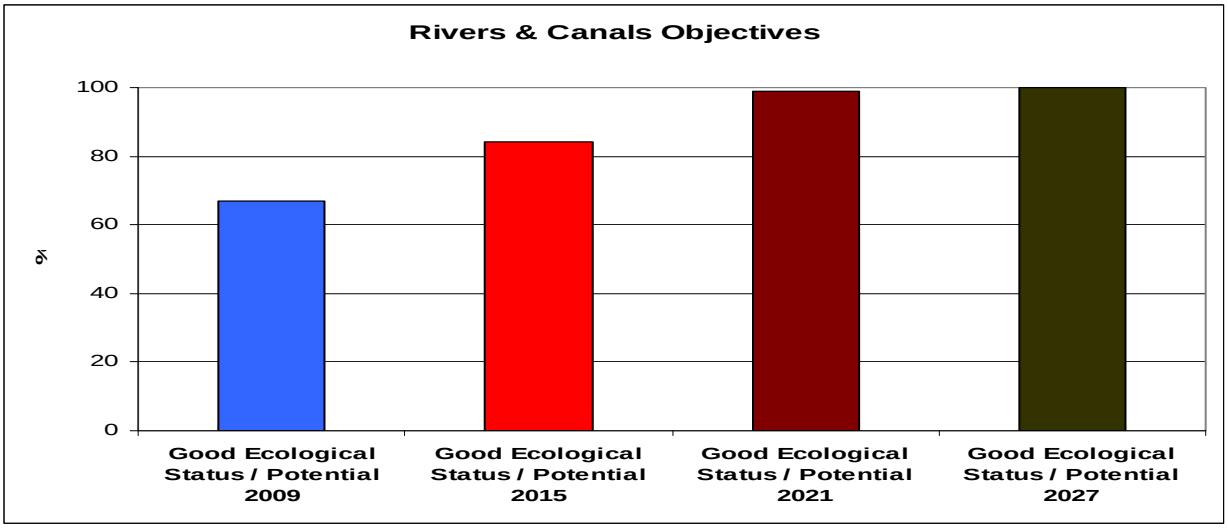
It is estimated that implementing the measures in this plan will achieve good status by 2015 in 745 rivers and canals, 89 lakes and reservoirs, 7 estuaries, 9 coastal waters and 79 groundwaters, with further improvements during the second and third planning cycles. Graphs 4.1 – 4.5 illustrate the expected trends in status expected over three planning cycles to 2027. Maps 4.9 and 4.10 summarise the environmental objectives for the district's surface waters and groundwaters.

Between publication of the draft plan and finalisation of this plan a detailed assessment was made of the expected timescales for recovery of waters following implementation of measures. This assessment indicates that longer recovery timescales can be expected for a larger number of water bodies. In the draft plans 98% of rivers and canals, and100% of lakes and reservoirs, estuaries, coastal waters and groundwaters were expected to achieve good status by 2015. It is now expected that the good status will be achieved by 2015 in 84% of rivers and canals, 99% of lakes and reservoirs, 16% of estuaries, 33% of coastal waters and 92% of groundwaters.

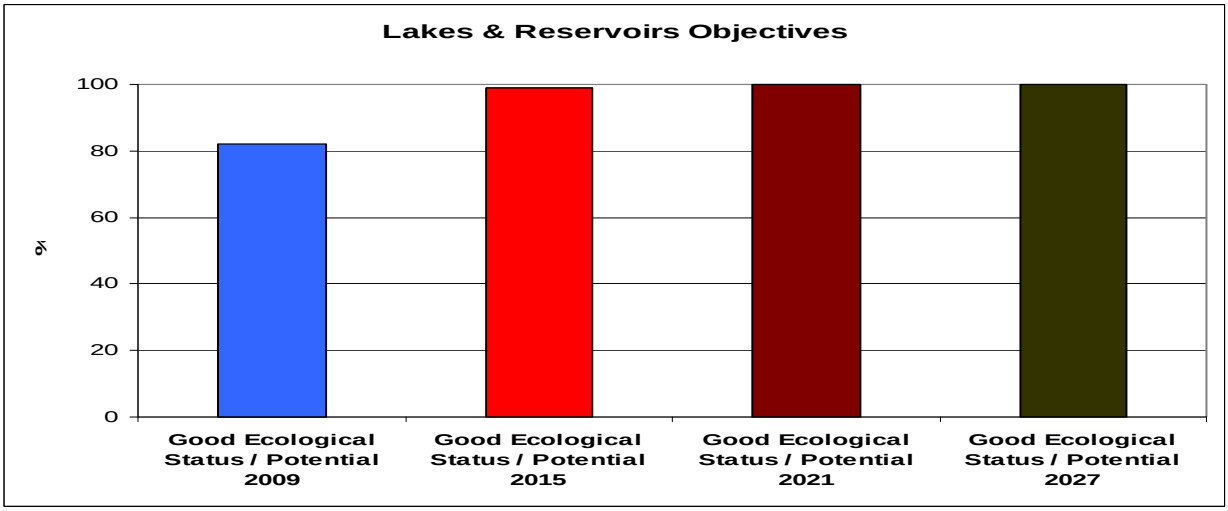
Objectives will be reviewed and may need to be amended during the lifetime of the plan and in 2015 where significant new information on status, pressures or recovery rates becomes available. For example, the status of certain waters experiencing morphological pressures has yet to be determined. Impacts due to morphological alterations and damage are being assessed

for the first time. Fish status is believed to be the most sensitive biological element to morphological impact, however, fish status is also being assessed for the first time. Consequently it will take several years before an adequate knowledge of morphological impacts is established.

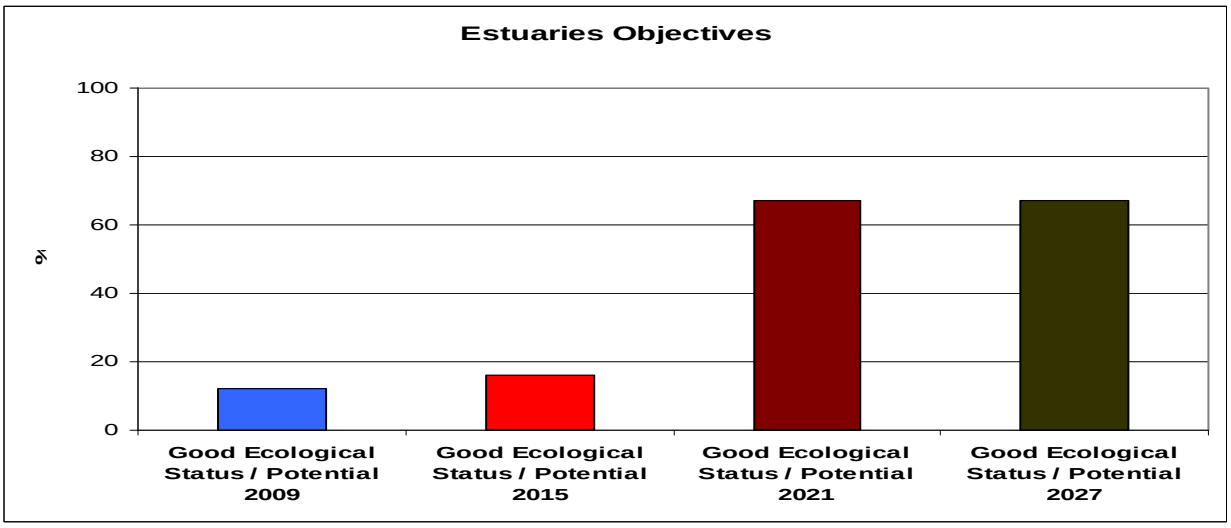
Graph 4.1 – Status trends over three planning cycles rivers and canals (number)



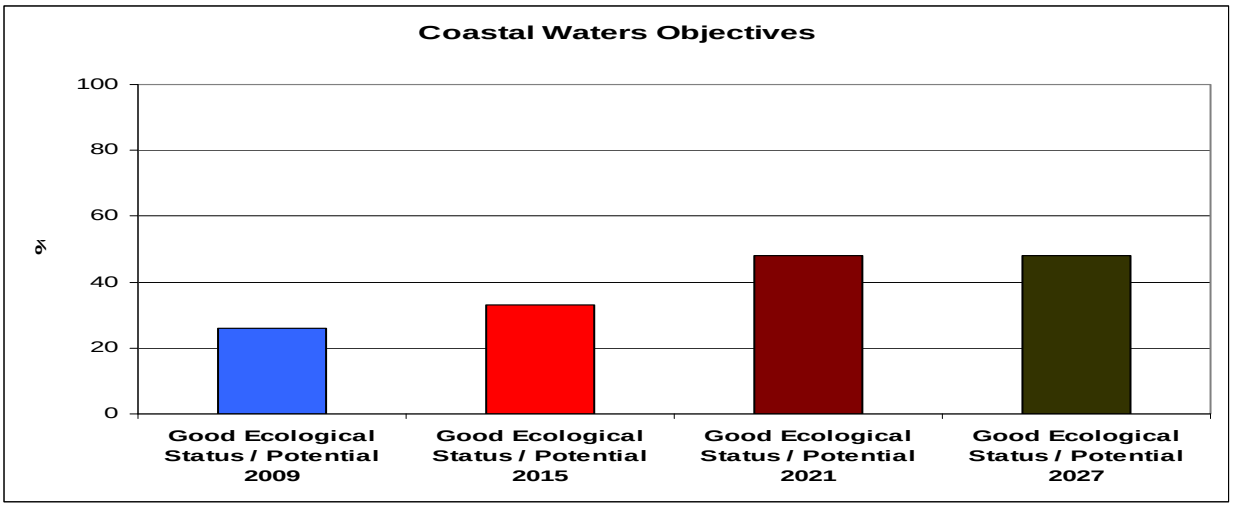
Graph 4.2 – Status trends over three planning cycles lakes and reservoirs (number)



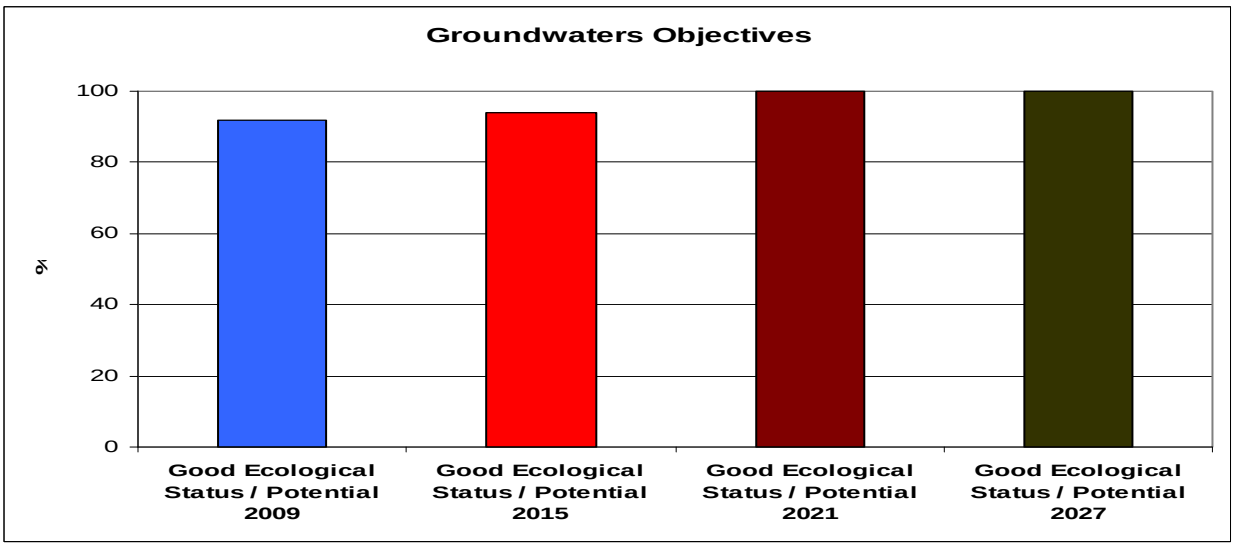
Graph 4.3 – Status trends over three planning cycles estuaries (number)

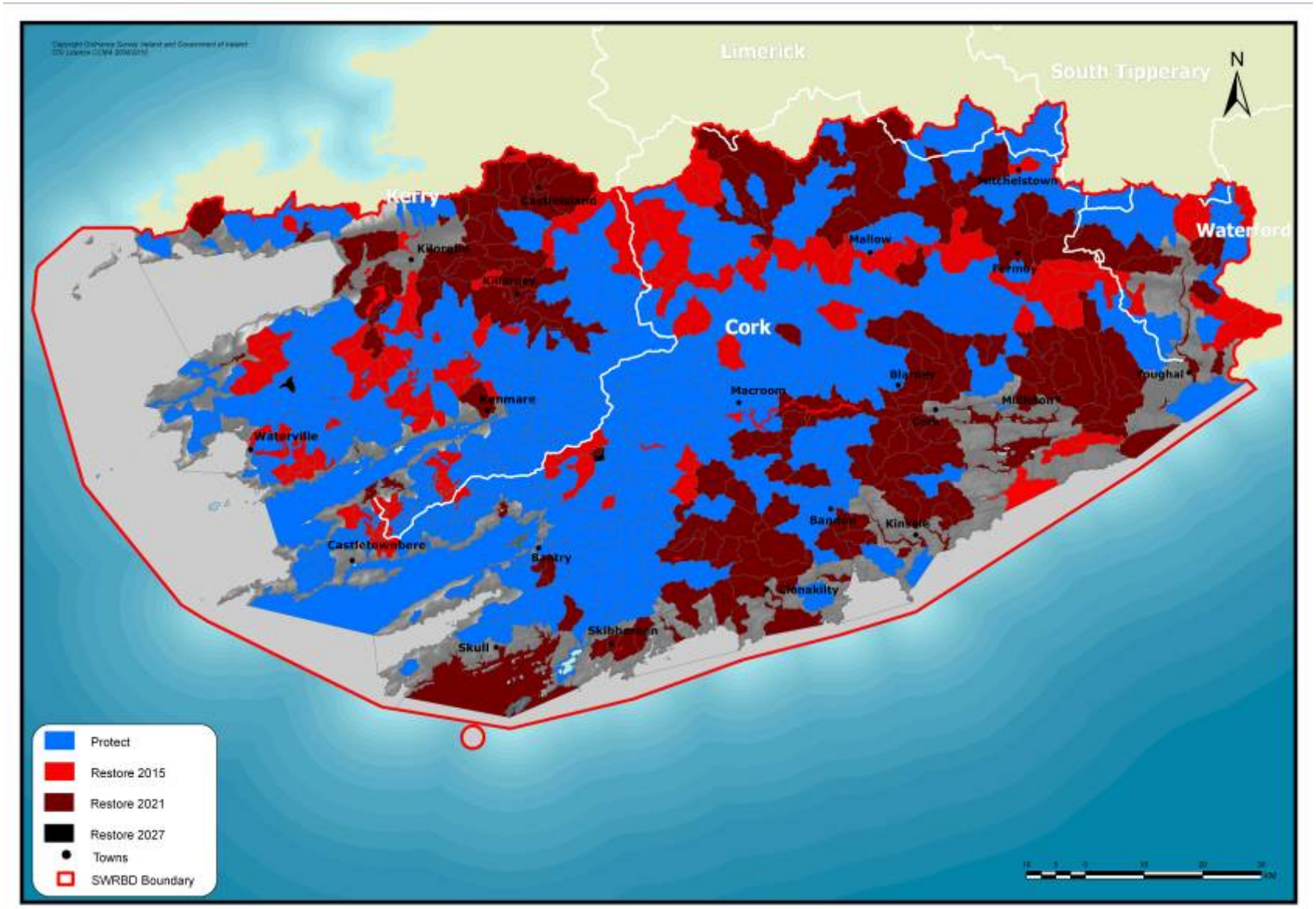


Graph 4.4 – Status trends over three planning cycles coastal waters (number)

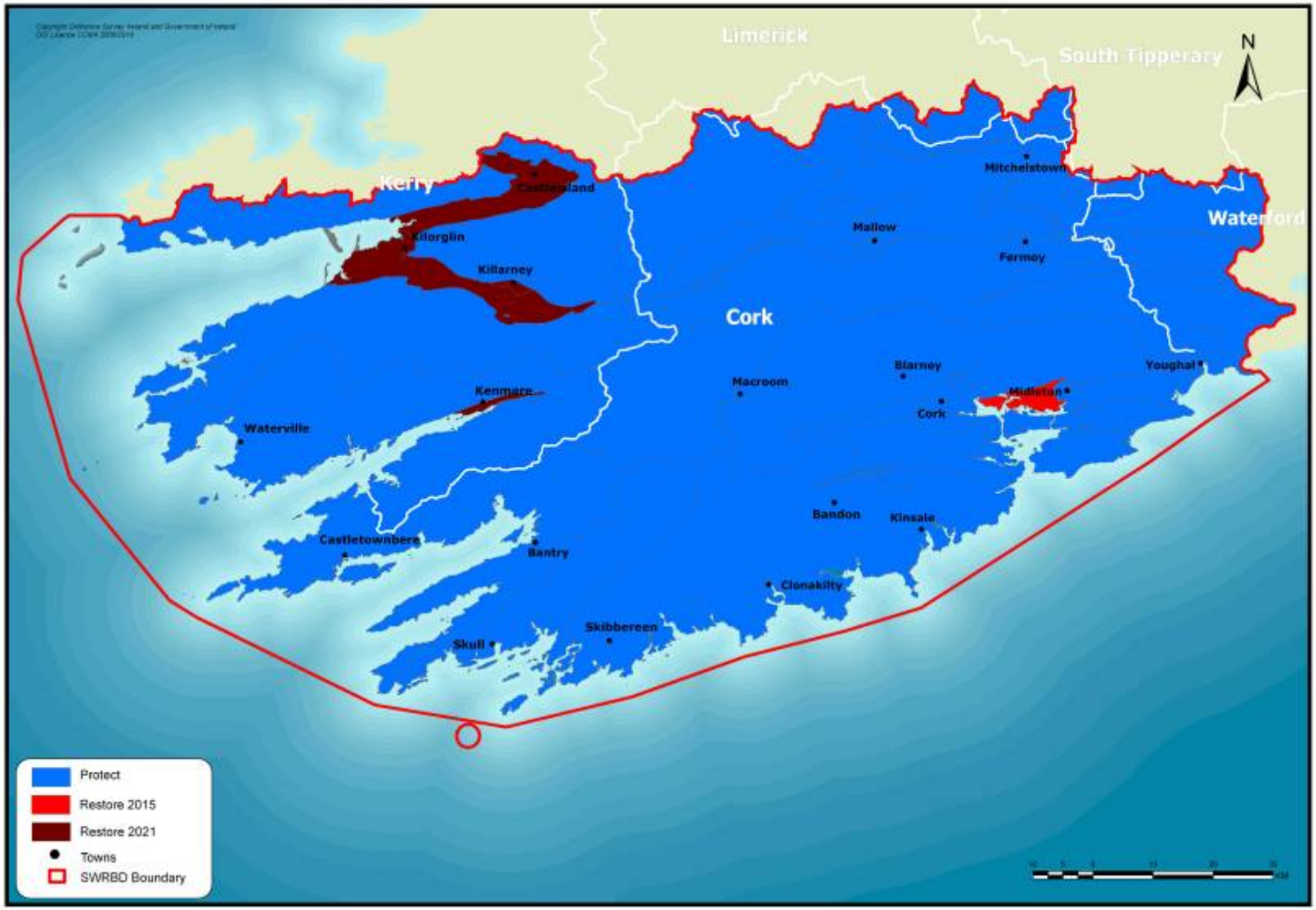


Graph 4.5 – Status trends over three planning cycles groundwaters (number)





Map 4.7 Overall surface waters objectives in the South Western RBD



Map 4.8 Overall groundwaters objectives in the South Western RBD

5 The programme of measures for the South Western RBD

Chapter 4 sets out the objectives for the South Western RBD. This chapter describes the measures to be taken to achieve those objectives. Many of the measures are already provided for in national legislation and are being implemented. These include, for example, the Urban Waste Water Treatment Regulations 2001 to 2010 and the Good Agricultural Practice for the Protection of Waters Regulations of 2009. Others measures have been recently introduced (for example new Bathing Water Regulations, 2008) or are under preparation (for example proposed authorisation regulations for abstractions and physical modifications). A full and detailed list of measures is provided in Appendices 4 and 5 and there is more information about the measures in the *national programme of measures background document* and also the suite of *programme of measures — technical studies background documents* where the specific measures for key water management issues are explained (available on www.wfdireland.ie).

The following sections describe:

- legislation recently introduced to give further legal effect to measures required to achieve the objectives established in all river basin plans in Ireland,
- the key measures to be implemented during the first planning cycle,
- range of other potential measures which are being considered but which require further development;
- the more detailed action plans established for the Water Management Units within the South Western RBD and
- the key measures to be implemented in the Water Management Units.

5.1 Recent legislation supporting the implementation of the programme of measures

Significant progress has been made in recent years in putting the necessary legislation in place to support the implementation of river basin plans and programmes of measures in Ireland. The core requirements of the Water Framework Directive (2000/60/EC) were transposed under the *Water Policy Regulations* (*SI 722 of 2003* as amended). In addition, the *Surface Waters Environmental Objectives Regulations* (*SI 272 of 2009*) and the *Groundwater Environmental Objectives Regulations (SI 9 of 2010)* were made to give effect to the measures needed to achieve surface water and groundwater environmental objectives established in river basin management plans. The Regulations place a legal obligation on public authorities to aim to achieve those objectives in the context of their statutory functions. For example, both sets of Regulations require the relevant authorities to review all pollutant discharge authorisations to take account of the objectives established in river basin plans.

Other legislation introduced in recent years, gives effect to various measures required by the Water Framework Directive. These include:

- the *Waste Water Discharge (Authorisation) Regulations (SI 684 of 2007)* which establish an authorisation system of local authority wastewater discharges operated by the Environmental Protection Agency.
- the *Water Services Act (No. 30 of 2007)* which introduces strategic planning in relation to water services provision, strengthening the administrative arrangements for planning the delivery of water services at national and local level. Water Services Strategic Plans prepared by water services authorities in accordance with Section 36 of this Act must take full account of the proper planning and sustainable development of their functional areas

including, amongst other things, the provisions of river basin management plans prepared for the relevant area.

- the *Bathing Water Quality Regulations (SI 79 of 2008)* which transposed the new Bathing Waters Directive (2006/7/EC) establishes a new classification system for bathing water quality and require monitoring and management plans to preserve, protect and improve the quality of bathing waters.
- the *European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations (SI 296 of 2009)* which set legally binding objectives for water quality in rivers, or parts of rivers, inhabited by freshwater pearl mussels *(Margaritifera)* and designated as a Special Area of Conservation to protect those species. The Regulations also require authorities to take the steps necessary to attain those objectives. They also require the Minister for Environment, Heritage and Local Government, subject to consultations, to prepare a programme of measures for the attainment of the ecological objectives in rivers containing protected populations; and to publish a sub-basin management plan for each relevant river.
- the *Quality of Shellfish Waters Regulations 2006 (SI 268 of 2006)* which set water quality requirements, provide for the designation of shellfish growing areas and also for the establishment of pollution reduction programmes for the designated waters in order to support shellfish life and growth. The Regulations were amended in 2009 (SI 55 of 2009 and SI 464 of 2009) to designate an additional fifty shellfish waters. There are now a total of sixty-four shellfish waters, nationally. Twenty are located in the South Western RBD.
- the *Good Agricultural Practice for Protection of Waters Regulations (SI 101 of 2009),* which provide statutory support for good agricultural practice to protect waters against pollution from agricultural sources and include measures aimed at achieving that objective. These regulations revised and replaced previous regulations made in 2006 and 2007 and provided for strengthened enforcement provisions and for better farmyard management.
- amendments to the *Urban Waste Water Treatment Regulations 2001 (SI 48 of 2010)* which designate an additional 10 sites as Sensitive Areas (one of which is located in the South Western RBD - Clonakilty Harbour – from Clonakilty to Ring Harbour / Inchydoney Island). This brings the total number of sites designated nationally to 43 (9 of which are in the South Western RBD).
- the *European Communities (Control Of Dangerous Substances From Offshore Installations) Regulations 2009 (SI 358 of 2009)* which provide for the permitting of discharges of certain dangerous substances from offshore installations into the Irish territorial sea by the Minister for Communications, Energy and Natural Resources. The Regulations also provide for the preparation of a pollution reduction programme by the Minister.

5.2 The programme of measures

The key provisions of the programme of measures are summarised in the following sections. The details of measures for the South Western RBD are contained in the Water Management action plans for the district.

5.2.1 Control of urban waste water discharges

According to assessments from the Environmental Protection Agency municipal wastewater discharge is one of the two most important sources of pollution in Irish rivers, accounting for 38% of the number of polluted river sites recorded (the other source being agricultural activities). The latest Agency report on water quality covering the period 2004-2006 underlines why the control of urban waste water discharges is so important in the Irish context. Of the 39

locations assessed as seriously polluted in this period, 21 were suspected to be so classified as a result of municipal, mostly sewage, discharges. With regard to cases of moderate pollution detected in the period, the bulk of these were suspected to be caused by municipal sources also.

The main effect of pollution from municipal sources is nutrient enrichment (that results in greatly enhanced plant and algal growth) caused by nutrients (nitrogen and phosphorus). Another frequently encountered effect is siltation. The majority of instances of moderate pollution attributed to 'municipal' sources are locations downstream of sewage discharges from towns.

There has been, and continues to be significant improvements in the management of municipal wastewater discharges. Over the period 2000 to 2006 €2.3 billion was invested in wastewater treatment, meeting 90% of Ireland's infrastructure needs. A further estimated €2.5 billion will be invested during the period 2007 to 2013. However, the focus to date has been on the provision of infrastructure whereas operational aspects also need significant improvement. In the 2006/2007 reporting period, non-compliance with the Urban Waste Water Treatment regulations for very large treatment plant discharges (>15,000 population equivalent) was high (48%), while the majority (81%) of smaller treatment plants (<2,000 population equivalent) did not comply with the required standards (EPA, 2009).

Ireland has enacted two major pieces of legislation in recent times that together constitute key elements in the legislative framework in the area of urban waste water. First, the Waste Water Discharge Authorisation Regulations made in 2007, providing for authorisation in accordance with emission limit values and secondly, the Surface Waters Regulations 2009, providing statutory quality standards for a range of substances in water.

5.2.1.1 Urban Waste Water Treatment Regulations (2001-2010)

The main objective in relation to wastewater is to meet the requirements of the EU Urban Waste Water Treatment Regulations (2001-2010) in full. The purpose of the Regulations is to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors. The Regulations require:

- scheduled provision of urban waste water collecting systems – depending on the size of the agglomeration and on the type of water body to which the waste water is discharged;
- scheduled provision of urban waste water treatment plants – depending on the size of the agglomeration and on the type of water body to which the waste water is discharged;
- provision for industrial waste water which enters collecting systems and urban waste water treatment plants to receive any pre-treatment that is required to protect the health of staff, the environment and the fabric and integrity of plant;
- monitoring by local authorities of discharges from urban waste water treatment plants including the transmission of results to the EPA.

The Urban Waste Water Treatment Regulations (2001-2010) have also designated 43 water bodies as sensitive and in need of special protection due to the threat of eutrophication. This number includes an additional ten sensitive waters designated in recent amending Regulations (SI 48 of 2010).

The Environmental Protection Agency has responsibility for enforcing the Regulations in order to secure improvements in the quality of discharges from urban waste water treatment plants through a strategic, risk based enforcement programme. Based on audits and monitoring returns the Environmental Protection Agency has pointed out various improvements that are needed to comply fully with the Regulations, namely:

- Put in place appropriate treatment at those locations across the country where wastewater is being discharged with either no treatment or inappropriate treatment.

- Provide secondary treatment for those agglomerations that do not have the required level of treatment.
- Carry out monitoring and analysis in accordance with the Urban Waste Water Treatment Regulations, for all treatment plants including those that are managed and operated by third parties on behalf of the local authority.
- Local authorities to review the operation of all urban waste water treatment plants in their functional areas including those below 500 population equivalent. Corrective action programmes must be developed as a priority where discharges cause environmental pollution in the waters to which the effluents discharge.

5.2.1.2 Waste Water Discharge (Authorisation) Regulation (SI 684 of 2007)

The Waste Water Discharge (Authorisation) Regulations of 2007 (SI 684 of 2007) were introduced for the purpose of making local authority waste water discharges subject to an authorisation regime. The Regulations give effect to obligations under the Water Framework Directive requiring prior authorisation of point source discharges liable to cause pollution. This includes all discharges, losses and emission of pollutants from wastewater works. The regulations also address and implement measures required under a number of other Directives (that is Drinking Water, Ground Water, Habitats, Shellfish, Bathing Water and Birds). The main provisions of the Regulations are as follows:

- the Environmental Protection Agency is the competent authority for the purposes of authorising urban waste water discharges;
- the Environmental Protection Agency sets emission limits for pollutants likely to be in the waste water concerned, and the timeframe within which these limits are to be achieved;
- the Environmental Protection Agency has the power to review a discharge authorisation;
- water services authorities must apply to the Environmental Protection Agency for a licence/certificate authorising all waste water discharges from sewage works;
- discharges from agglomerations with population equivalents greater than 500 must be licensed;
- discharges from agglomerations with a population equivalent below 500 must be certified;
- failure by water services authorities to comply with conditions attaching to an authorisation granted by the Environmental Protection Agency is an offence;
- the provision of false or misleading information or failure to provide a response to a licence review initiated by the Environmental Protection Agency are also offences.

Authorisations have been introduced on a phased basis having commenced in December 2007. All discharges to the aquatic environment from waste water works owned, managed and operated by water service authorities require a waste water discharge licence or certificate of authorisation from the Environmental Protection Agency. The authorities are required to apply to the Agency for a licence or certificate of authorisation by specified dates depending on the population equivalent of the area served by the waste water works.

The Environmental Protection Agency has developed a draft enforcement plan to ensure the requirements of the licences/authorisations are complied with by water services authorities. The enforcement approach to these licences is to be risk based and focuses on the development and implementation of a strategic enforcement plan in conjunction with the relevant stakeholders.

The Waste Water Discharge (Authorisation) Regulations establish a clear linkage between decisions that planning authorities and An Bord Pleanála make on individual planning applications/appeals, and parallel obligations on local authorities, as water services authorities.

The "Combined Approach[1] in the Waste Water Discharge (Authorisation) Regulations 2007 require water services authorities to comply with emission limits for the discharge of wastewaters to water bodies arising from the stricter of either or both the Urban Waste Water Regulations (S.I. No. 254 of 2001) and emission limits based on achieving the environmental quality standards for the receiving waters. The Environmental Protection Agency is required under the Waste Water Regulations to apply the combined approach when issuing licences, ensuring that the licence issued and discharge limits set therein comply in full with the requirements of the EU Urban Waste Water Treatment Directive.

Where a planning authority or An Bord Pleanála forms an opinion that the discharge from a proposed development would result in non-compliance with or a significant breach of the combined approach, the planning authority or the Board must either:

- refuse permission or approval for the development,
- impose conditions on any grant of permission or approval to ensure that the discharge will not cause non-compliance with, or a significant breach of, relevant limits; or
- decide not to proceed with the development (as in the case of local authority's own development).

5.2.1.3 Water Services Investment Programme

The Water Services Investment Programme (WSIP) is the instrument through which all major public water and wastewater infrastructure schemes are delivered. The Department of Environment, Heritage and Local Government in collaboration with the water services authorities, is responsible for prioritising, approving, scheduling and financing individual schemes. The Programme is implemented through City and County Councils, which, as water services authorities, are responsible for design, procurement, contract supervision and post-completion operation and maintenance.

The availability of waste water services is an important pre-requisite for environmental sustainability and economic activity across all sectors. Continuing substantial investment is needed to sustain progress on eliminating the deficit in national water services capacity and to attract and support investment that will stimulate economic activity and recovery and increase the productive capacity of the economy.

The main drivers for investment in waste water infrastructure under the Programme are works required to:

- ensure compliance with the Urban Waste Water Treatment Directives;
- ensure compliance with bathing water requirements and elimination of pollution blackspots;
- ensure compliance with shellfish waters requirements;
- meet strategic priorities, for example schemes in cities and towns facing shortages in water services capacity;
- comply with Environmental Protection Agency licensing requirements for municipal waste water discharges;
- meet the requirements of the Water Framework Directive.

Obligations under the Urban Wastewater Treatment Directive have been a central focus of the Water Services Investment Programme. As a result, Ireland's compliance with the requirements

[1] "combined approach", in relation to a waste water works, means the control of discharges and emissions to waters whereby the emission limits for the discharge are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Regulations, and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater or protected areas for the water body into which the discharge is made.

of that Directive for the provision of secondary treatment rose to approximately 90% by the end of 2007, compared to 25% at the beginning of the last National Development Plan in 2000. All remaining schemes required for full compliance were included in the Water Services Investment Programme 2007 – 2009.

5.2.1.4 Priorities for follow up actions

Water services authorities, in collaboration with the Department of Environment, Heritage and Local Government, have undertaken a review of priorities for a range of follow up actions in order to ensure that:

- investment under the Water Services Investment Programme is aligned with the high level goals outlined above,
- investment is appropriately targeted at key schemes and
- other appropriate steps are taken.

These actions include; investment in infrastructure, further investigation, improvements in operational performance and the management of treatment capacity. This review has formed the basis for prioritising investment in the next phases of the Water Services Investment Programme (2010-2012) and other actions described below. The criteria used to prioritise included information on design capacity of treatment plants, actual capacity, projected growth in loadings to the plant, compliance of effluent with the standards specified in the urban waste water treatment Regulations and observed impacts on receiving waters.

The review identified the following six categories of urban agglomerations where waste water treatment facilities are to be subject to a range of follow up actions:

Category 1 - Agglomerations with treatment plants requiring identifiable Capital Works. This includes plants deemed to be operating above original design capacity or where constraints on assimilative capacity or sensitivity of receiving waters impose requirements for more stringent discharge standards.

Category 2 - Agglomerations with treatment plants requiring further investigation prior to Capital Works. This category includes agglomerations where the available information suggests that the plant should not result in pressure on the water body, but water quality assessment does not support that. In these cases, the measure is to examine the agglomeration and determine the source of the pressure. At this time, it is not possible to determine the additional measures that will be required and consequently, any works identified as necessary will not be in place to before the end of the first planning cycle.

Category 3 - Agglomerations requiring the implementation of actions identified in Pollution Reduction Programmes (PRPs) for Shellfish Waters designated under the European Communities (quality of shellfish waters) Regulations (2006-2009). PRPs for agglomerations discharging to shellfish waters impose additional microbiological discharge standards that must be complied with. This may require additional capital works in some cases. Implementation of the PRPs commenced in early 2010. As part of implementation the need for additional works to achieve all water quality standards will be examined. Where works are identified as necessary they shall be priorities for investment under the WSIP.

Category 4 - Agglomerations with treatment plants requiring improved operational performance through the implementation of Performance Management Systems ranging from improved monitoring of loadings, flows and discharge standards to documented operational management systems. Work is to commence immediately.

Category 5 - Agglomerations requiring investigation of Combined Storm Overflows (CSOs). In these cases, the discharge standards for the waste water treatment plant were acceptable, but observed impacts on the receiving waters suggested that untreated waste water discharges were occurring. The measure is to investigate all suspect CSOs. In cases where the

investigation identifies maintenance or management issues, they can be readily addressed and may result in early recovery of receiving waters. However as the result of the investigation cannot be predicted at this time and the time scale for any identified capital works is unknown works are unlikely be in place before the end of the first planning cycle.

Category 6 - Agglomerations where existing waste water treatment capacity is currently adequate but predicted loadings (based on assumed 3% growth in load *per annum*) would result in overloading. The measure is to manage development so that treatment capacity is in accordance with the requirements of the Urban Waste Water Discharges (Authorisations) Regulations of 2007.

5.2.2 Control of unsewered waste water discharges

The Environmental Protection Agency recently published a new binding Code of Practice for Wastewater Treatment Systems and Disposal Systems serving Single Houses (October 2009) following extensive public consultation. The new Code of Practice updates the earlier manual published in 2000 and sets standards for new developments. From a planning perspective, the publication of the new Code of Practice is a very significant step forward in ensuring environmentally sustainable rural development in line with the statutory Planning Guidelines on Sustainable Rural Housing (2005) issued by the Department of Environment, Heritage and Local Government. The purpose of the new Code of Practice is to provide guidance on the provision of wastewater treatment and disposal systems for new single houses. It is intended to assist planning authorities, developers, system manufacturers and designers, system installers and system operators to deal with the complexities of on-site systems.

The Environmental Protection Agency Code of Practice provides guidance on:

- Methods for assessing site suitability for on-site wastewater treatment systems and for identifying minimum environmental protection requirements
- Selection of suitable wastewater treatment systems for sites in un-sewered rural areas
- The design and installation of septic tank systems, filter systems, packaged treatment systems and tertiary treatment systems,
- Maintenance requirements for on-site wastewater treatment systems.

The Department issued a circular letter (Reference PSSP 1/10) to all planning authorities and An Bord Pleanála in January 2010 on foot of the new Environmental Protection Agency Code of Practice. The circular advises authorities of the new arrangements to apply for the assessment of on-site waste water disposal systems for single houses in the light of the new Code of Practice. The circular emphasises that the Code is a key element in ensuring that the planning system fully addresses the protection of water quality when assessing development proposals for new housing in rural areas and in line with the Planning Guidelines for Sustainable Rural Housing issued by the Department in 2005. Planning authorities must ensure that developments in un-sewered areas undergo a site suitability assessment and that both the site itself and the on-site waste water treatment system to be installed are appropriate and meet the required standards.

It is also the Department's intention to amend the Technical Guidance Document supporting the 1997 Building Regulations (SI 497 of 1997) relating to standards for "drainage and waste water disposal" (TGD-H of 2005). This will involve incorporating new and additional guidance based on the new Environmental Protection Agency Code of Practice. The Department will also issue a Circular Letter to all Local Building Control Authorities drawing their attention to the amended guidance document.

In relation to existing unsewered properties, improvements are required regarding the operational performance, maintenance and monitoring arrangements of septic tanks and other on-site waste water treatment systems serving such properties. In response, the Minister for

Environment, Heritage and Local Government intends to bring forward and consult on proposals for legislation during 2010. It is intended that this legislation will be in place by quarter 3 of 2010. The proposed legislation will provide standards for the performance, operation and maintenance of septic tanks and similar on-site wastewater treatment systems. It will also provide for the monitoring and inspection of the performance of such treatment systems and will set out the responsibilities of households served by those systems, including requirements to carry out remedial actions where necessary.

5.2.3. Control of agricultural sources of pollution

The control of pollution from agriculture remains a significant challenge to achieving water quality standards in Ireland. The Environmental Protection Agency estimates that agricultural sources accounts for 31% of pollution incidences. The main measure for addressing pollution from agricultural sources is the Good Agricultural Practices Regulations (SI 101 of 2009), commonly known as the “Nitrates Regulations”. These Regulations also give effect to several other EU Directives including those relating to; dangerous substances in water, waste management, protection of groundwater, public participation in policy development and water policy (the Water Framework Directive). The Nitrates Regulations are the main instrument for controlling pollution from agriculture, providing statutory support for good agricultural practice to protect waters against pollution. There have been significant improvements in terms of agricultural pollution control since the introduction of the original Good Agricultural Practice Regulations in 2006. The Regulations require a “National Action Programme” of measures aimed at protecting waters from pollution, and they introduced a binding code of good agricultural practice, which is applicable to all farmers. The regulations have been supported by significant investment in farm waste management (€2 billion since 2006).

A key requirement of the Good Agricultural Practice Regulations is the monitoring and evaluation of the National Action Programme. This consists of;

- collection of accurate baseline data,
- implementation of the Action Programme measures,
- collection of data over the monitoring period, and
- evaluation of effectiveness by comparison of data collected after implementation with baseline data, targets levels and limits. .

Water quality monitoring for the purposes of the National Action Programme has been integrated into the previously outlined National water monitoring programme established in 2007 under the Water Framework Directive and is carried out by local authorities and the Environmental Protection Agency.

Despite the improvements in agricultural pollution control in recent years, surveys carried out by local authorities indicate that on average 31% of farms nationally may be non-compliant with the Nitrates Regulations. While the Regulations are in the early stage of implementation, it is clear that an effective inspection and enforcement regime is needed to ensure full compliance.

Enforcement of the Nitrates Regulations is primarily the responsibility of the local authorities acting under the direct supervision of the Environmental Protection Agency. Local authorities have a duty under the Regulations to initiate the necessary farm inspection programmes to assess the level of compliance with the Regulations. These inspections are to be co-ordinated with inspections carried out by other public authorities such as the Department of Agriculture, Fisheries and Food.

Following discussions between the Minister for the Environment, Heritage and Local Government, the Minister for Agriculture, Fisheries and Food and the local authorities it has been agreed that, starting in 2010, inspectors from the Department of Agriculture, Fisheries and Food will, on behalf of the local authorities, carry out a programme of systematic inspections for the purposes of checking compliance with the Nitrates Regulations. Local authorities will continue to retain responsibility for undertaking pollution investigations based on local priorities in accordance with their duties under the full scope of water quality legislation and in line with their respective environmental inspection plans prepared in accordance with the European Union's Recommendation on Minimum Criteria for Environmental Inspections (RMCEI). The aim of this approach is to ensure that the combined resources of Department of Agriculture, Fisheries and Food and the local authorities are used to best effect and that duplication of on-farm inspections is avoided.

The selection of farms for inspection by Department of Agriculture, Fisheries and Food will be based on risk-assessment criteria taking into account the level of agricultural pressures, sensitivity of catchments and water quality targets established in River Basin Management Plans. This arrangement, together with inspections undertaken by Department of Agriculture, Fisheries and Food for the purpose of cross compliance, will result in a total of approximately 3,000 farms being inspected nationally *per annum*. If a farm is found to be non-compliant it may be subject to penalty under the single farm payment scheme and follow up inspections and enforcement action will be the remit of local authorities. As noted above, local authorities will continue to carry out inspections, based on local priorities, as required under the full scope of water quality legislation.

The Agricultural Catchments Programme (ACP) is an important component of the National Action Programme. Its main purpose is to provide a scientific evaluation of the effectiveness of the National Action Programme measures and where necessary to underpin the basis for any modifications of the measures that might be required to achieve Water Framework Directive water quality objectives. The ACP is an agri-environmental and socio-economic research programme at the catchment scale supported by a team of scientists, advisors and technicians and managed by Teagasc. It will initially run for a four-year period (2008 –2011). Six agricultural catchments are being intensively managed and monitored nationally. One of these catchments (the Timoleague Catchment) is located in the South Western RBD. The catchments were selected to represent various typical agricultural enterprise types and typical environmental risks to groundwater and surface water. Two of these catchments contain a high proportion of tillage. One of these is located on free-draining soils where the greatest risk is of nitrogen loss through leaching and the other is located on heavier soils where phosphorus loss through surface run-off is more likely. There are four grassland-dominated catchments. One of these involves high risk of nitrogen loss, while the other three relate predominantly to risk of phosphorus loss (with varying levels of risk of nitrogen loss).

The ACP is intended to identify challenges in implementation of the National Action Programme and will provide a basis for modifications to the programme and/or recommendations for new agricultural measures for the protection of water, where necessary. (Further information is available at: http://www.teagasc.ie/agcatchments/).

The Nitrates Regulations represent a major step forward in protecting waters from agricultural sources of pollution and are expected to deliver significant improvement in water quality when fully effective. Evidence suggests, however, that they may not be sufficient in some areas of the country:

- The National monitoring programme has indicated a number of patterns of concern. Elevated nitrate concentrations have been consistently observed in the east and southeast of the country in both groundwater and surface waters (EPA, 2008 and 2009). The presence of intensive agricultural practices on free draining soils in the southeast suggests that

diffuse agricultural sources are the cause of the elevated nitrate concentrations. Also, the estuaries of the south-east and south of the country, such as the Slaney, Blackwater and Bandon were found to be the most seriously eutrophic. It is suspected that the nitrogen loads from upstream catchments is a significant contributing factor as nitrogen is the main growth-limiting nutrient in seawater.

- The vulnerable nature of the karst limestone aquifers in the west (Galway, Mayo and Roscommon) may explain the elevated phosphate concentrations in groundwater. The groundwater may be contributing to eutrophication in rivers and lakes in these areas. Phosphorus deposited as organic or chemical fertiliser on shallow soils over fissured karst limestone may enter groundwater readily and may then discharge to rivers through springs. Approximately 20% of the area of Ireland consists of karstified limestone.

- Elevated phosphorus levels have also been observed in areas covered by heavy gley soils with high phosphorus content (Index 4) including parts of counties Cavan and Monaghan.

The three scenarios described above pose particular difficulties for water quality management and the agricultural sector in the areas mentioned. Even with the full implementation of the Nitrates Regulations and the National Action Programme it is unlikely that the objective of good status for groundwater and/or surface waters will be met by the 2015 deadline in those areas. Challenges include slow natural rates of water quality recovery, which may extend up to 20 years, and certain ground conditions (hydrogeological and soil characteristics), which cause groundwater bodies to be vulnerable to pollution from nutrient inputs from agricultural activities. Time extensions for achieving water quality objectives have been applied to waters in such areas in order to provide adequate time to investigate the extent of impacts, to identify and implement appropriate management measures and to allow time for water quality to recover.

5.2.4 Water pricing policy

The Water Framework directive intends that water pricing policy should act as an incentive towards efficient water usage so as to "contribute to the environmental objectives of the directive" and to recover "an adequate contribution" of the costs of water services from the main user groups, including industry, agriculture and households.

Since 1998 Government's National Water Pricing Policy has been to charge non-domestic customers for water and waste water services to recover the full costs of providing such services to these customers. Metering of all non-domestic uses is largely complete. The installation of meters on the supply of non-domestic customers facilitates the equitable, transparent and efficient implementation of water pricing policy.

In relation to the domestic sector the cost of capital, operational and maintenance costs for water services have been met in full from the Exchequer since 1997. Following a recent Government decision, legislation is to be introduced by the Minister for Environment, Heritage and Local Government to enable local authorities to charge domestic users for water services in a manner which provides incentives for efficient water use and which recovers an adequate contribution of the costs of water services. Proposals will also be brought forward for a metering programme for domestic users.

5.2.5 Sub-basin management plans and programmes of measures for the purpose of achieving environmental water quality objectives for Natura 2000 sites designated for the protection of Freshwater Pearl Mussel populations

Under the European Communities environmental objectives (Freshwater Pearl Mussel) Regulations, 2009 (SI 296 of 2009) the Minister for Environment, Heritage and Local Government is required to have sub-basin management plans with programmes of measures prepared to achieve environmental water quality objectives established for objectives for Natura 2000 sites designated for the protection of Freshwater Pearl Mussel populations.

There are twenty-seven designated populations listed in the Regulations, nine of these are located in the South Western RBD (Allow, Ownagappul, Bandon/Caha, Munster Blackwater, Currane, Caragh, Licky, Kerry Blackwater and Gearhameen). A sub-basin management plan is required for each catchment containing a designated freshwater pearl mussel population.

Twenty six of the twenty-seven designated populations are failing good ecological status due to inadequate water conditions and therefore plans are being prepared for each, in consultation with the relevant public authorities. Plans are expected to be completed by mid 2010. Each sub-basin management plan is required to:

- specify environmental objectives and targets;
- provide for the investigation of sources of pressures leading to the unfavourable conservation status of the freshwater pearl mussel;
- establish a programme of measures, including a timeframe, for the reduction of pressures giving rise to unfavourable conservation status;
- lay down a detailed programme of monitoring to be implemented in order to evaluate the effectiveness of measures and progress made towards restoring favourable conservation status.

A duty is placed on each public authority to take such steps as are necessary, in the context of their functions, to implement the measures identified in the sub-basin management plans. The measures included in sub-basin management plans are complementary and additional to measures contained in a river basin management plan prepared by local authorities. Sub-basin management plans are to be reviewed every 6 years and revised where necessary.

5.2.6 Pollution reduction programmes for the purpose of achieving water quality standards for designated shellfish waters

Under the European Communities (quality of shellfish waters) Regulations (2006-2009) the Minister for Environment, Heritage and Local Government is required to have Pollution Reduction Programmes (PRP) prepared for each designated shellfish water. The purpose of each programme is to take reasonably practicable steps to protect and, where necessary, improve water quality in the designated shellfish growing areas with the aim of achieving the environmental water quality standards established for them. Nationally there are sixty-four designated shellfish waters, twenty are located in the South Western RBD. Following consultations with the relevant public authorities all shellfish PRPs and Strategic Environmental Assessments (SEA) of each, were completed by January 2010. Implementation has now commenced.

The PRP for each shellfish growing area consists of a characterisation of the surrounding catchment area and pressures that may influence water quality (for example known waste water discharges and the nature of agricultural activities), an assessment of water quality in the area

and a schedule of detailed catchment level actions planned to control known sources of pollution.

All relevant public authorities are required to perform their statutory functions in a manner that, as far as practicable, will promote compliance with the water quality standards established for designated shellfish waters. The Marine Institute is carrying out a monitoring programme to assess the condition of waters in the shellfish growing area and to verify compliance, or otherwise with the water quality standards. The Marine Institute will submit a report on water quality in each designated area to the Minister each year, including any non-compliances with water quality standards to enable investigation to be undertaken. The PRPs will be reviewed by the Minister at intervals not exceeding three years, and will be updated and amended as needed from time to time.

The PRP schedule of actions identifies the measures required, timescales and the public authority responsible for undertaking the action. The measures are complementary and additional to measures contained in a river basin management plan focussing on the pressures acting on each designated shellfish water.

5.2.7 Control of environmental impacts from forestry

The National Forestry Inventory shows that forest now occupies 10% of the total land area of Ireland; 57% of forest is in public ownership and 43% in private. Conifers comprise 74% of the total stock. An estimated 43% of the total stocked forest estate is on peat type soils. These plantations are currently being harvested for the Irish timber sector. There are 118,116 hectares of public and private forestry in the South Western RBD. A typical forest lifecycle for conifer plantations is 40 years; that for broadleaves is longer.

Research into the interaction between forestry and water has continued since the 1980s and the findings have been integrated into Forest Service guidance and codes of practice. While there are many positive benefits of forests, such as biodiversity enhancement through broadleaf plantation, some potential negative pressures have been identified through recent research. These pressures include:

- artificial acidification of waters arising from the presence of coniferous afforestation on acid-sensitive soils. Afforestation on well buffered acid mineral soils do not exert an acidifiying effect. Some 5% of national stocked areas are located in areas with acid-sensitive soils that can exert an acidifying effect on waters.
- nutrient enrichment and sedimentation impacts arising from forestry operations (mainly fertilisation and high levels of felling activity) in catchments with forest cover of over 50% on peat soils. Observed impacts from forest stands on mineral soils were significantly less than those on peats. Some 1% of forest stands are located in such settings.

Research has shown that these problems were generally associated with forest stands planted before 1990, the year in which the Forest Service Guidelines controlling forestry began to be introduced. This is significant as these older forest stands may have drainage networks directly connected to the river networks and were generally planted right down to the stream edge. Research has highlighted the complex nature of the interaction between forest, forestry activities and water. A number of forestry research projects are currently ongoing[2] investigating

[2]

EPA-COFORD funded project HYDROFOR (due for completion in 2013) is investigating the impacts of forests and forestry operations on Ireland's aquatic ecology.

EPA-funded EFFECT project (due for completion in 2011) is assessing the impacts of POMs on stream water quality, focusing on areas of coniferous forest, looking in particular at how do management measures affect stream biology;

COFORD-funded SANIFAC project (due for completion in 2010) which is looking into the effects of clearfelling on the hydrology, chemistry and biology of the receiving waters will be monitored pre and post clearfelling;

practical mitigation measures to address the pressures that water bodies may experience from forests and forestry operations. The Environmental Protection Agency is also considering additional future research needs to investigate the effectiveness of pollution control measures to address problems of acidification, siltation and nutrient enrichment from fertilisation.

To date forestry in Ireland has been controlled under the Forestry Act 1946 and through a grant support system administered by the Forest Service of the Department of Agriculture, Fisheries and Food through its guidance documents and codes of practice. To strengthen sustainable forestry management, a new Forestry Bill, replacing the 1946 Forestry Act, has been drafted. A number of provisions are of particular importance to water protection, namely;

All forestry operations, whether licensed, approved or exempt must be carried out in accordance with any guidelines and regulations issued by the Minister for Agriculture, Fisheries and Food. Non-adherence to relevant guidelines, code of practice, standards, conditions or regulations issued by the Minister will be an offence.

It is intended to introduce more flexibility and clarity to the issue of the compulsory replanting after felling. It is proposed to allow for change of land use from forestry to other sustainable uses. It is proposed to give the Minister the power to waive the replanting obligation in certain limited circumstances (for example “public good” infrastructure projects, woodland development, including eco-clusters, limited housing and recreation, areas that are environmentally sensitive to commercial forestry etc.).

In addition, Aerial Fertilisation Regulations (2006-2007) were introduced to control nutrient pollution from the aerial application of fertilisers to forests. To undertake aerial fertilisation of a forest an Aerial Fertilisation Licence must first be obtained from Department of Agriculture Fisheries and Food. The Regulations lay down a number of conditions, which must be met before the Minister may grant a licence. They also specify certain exclusion zones.

In March 2008 the Minister for Agriculture, Fisheries and Food and the Minister for the Environment, Heritage and Local Government published guidelines for the protection of Natura 2000 sites designated for the protection Freshwater Pearl Mussel populations from forestry activities. The guidelines are intended to ensure that forest operations such as afforestation, forest road construction, harvesting and forest planning are compatible with the protection of this particularly sensitive species. The guidelines describe a range of measures intended to reduce any potential negative impacts on the species arising from forest operations. They complement all other Forest Service Guidelines, the Code of Best Forest Practice and other regulations. The implementation of the guidelines is mandatory.

To address the problem of acidification of waters in acid sensitive catchments from afforestation a protocol was agreed between the Department of Environment, Heritage and Local Government, the Forest Service, the Environmental Protection Agency and COFORD in 2001 for dealing with grant-aid applications in acid sensitive areas. All applications received by the Forest Service for grant-aid for afforestation in areas identified as being acid-sensitive are checked for acid buffering capacity as determined by alkalinity levels in run-off water. Soils with moderate acid buffering capacity are referred to the Environmental Protection Agency for recommendation with regard to grant-aid. Depending on the alkalinity levels:

Afforestation may be grant aided in areas where the minimum alkalinity of the run-off water is greater than 15mg $CaCO_3 1^{-1}$.

Where the minimum alkalinity of the run-off water is in the range 8-15mg $CaCO_3 1^{-1}$, full, partial or no afforestation may be allowed following discussion and agreement between the Environmental Protection Agency and the Forest Service.

COFORD-funded FORFLUX project (due for completion in 2010) looking into understanding the long-term implications of the interaction of the forest with the atmosphere, the soil and surface waters.

Afforestation is not grant aided in areas where the minimum alkalinity of the run-off water is less than 8mg $CaCO_3 1^{-1}$ (calcium carbonate).

5.3 Other measures being considered

A range of other potential measures which are being considered but which require further development are outlined below. Agreed measures in relation to these issues can be introduced through update of Water Management Unit Action Plans during the implementation process:

- Protection of high quality waters: Additional measures may be required in order to protect and restore these sensitive areas and in particular to reduce the impacts of development, forestry and farming.
- Mines and Contaminated Sites: Additional measures may be required in order to address issues caused by mines and contaminated sites. Further research may be required in order to address knowledge gaps.
- Physical impact of channelisation on river status: Further monitoring is required in order to identify where ecological status has been impacted by arterial drainage. Remediation measures may be required.
- Control of Abstractions, Impoundments and Physical modifications: New regulations may be introduced to create a registration and authorisation system for abstractions and impoundments.
- Estuarine and Coastal (Marine) Monitoring: Increased monitoring is required for these waters. The marine monitoring programme has not been fully implemented in this planning cycle and due to insufficient monitoring it has not been possible to assign status to a large proportion of coastal and transitional waters.
- Integration of Water Quality and Planning: There may be need to strengthen the statutory basis for integration of water quality objectives with the planning system.
- Further research: While significant research has already been carried out to support development of these plans, a further programme of research may be warranted to improve our knowledge of the water environment and how best to achieve water quality objectives.

5.4 Water Management Unit action plans

Information on status, objectives and measures in the South Western RBD has been compiled for smaller, more manageable geographical areas than river basin districts, termed water management unit action plans. There are twenty-eight water management units (WMUs) in the South Western RBD (Map 5.1). These units represent smaller river and lake basins where management of the pressures, investigations and measures will be focussed and refined during implementation of this plan. In addition, action plans focusing on groundwater and a transitional and coastal water management have been prepared for the South Western RBD. The full set of detailed water management unit action plans which are available in *action plan background documents* that accompany this final plan (and are also available on line at www.wfdireland.ie).

WMU action plans are a key background document to the plan. They:

- map the local geographical area showing key point sources of pollutants;
- describe, map and tabulate water status;

- estimate phosphorus loadings from various sources[3];
- summarise the risks in relation to key water management issues;
- identify the key measures to address these issues (drawn from the programme of measures)
- tabulate objectives, identifying protected area locations and cases where alternative objectives were chosen.

The WMU action plans are the basis for detailed implementation programmes, which will guide and monitor the progress of implementation between 2009 and 2015. The principal measures identified in WMU action plans to address the key issues in the South Western RBD include:

- wastewater treatment plant discharge licensing and prioritised upgrade and operational improvement of some plants;
- licence review and enforcement regarding industrial activities and trade discharges;
- farm inspections and enforcement under the Good Agricultural Practice Regulations;
- monitoring, inspection and enforcement of standards relating to the operation of unsewered property wastewater treatment systems;
- compliance with codes of practice and Forest Service Protocol in the forestry sector;
- implementing Freshwater Pearl Mussel sub-basin plans (available at www.wfdireland.ie) for the following nine areas: Allow, Ownagappul, Bandon/Caha, Munster Blackwater, Currane, Caragh, Licky, Kerry Blackwater and Gearhameen;
- implementing Shellfish Waters Pollution Reduction Programmes (available at www.wfdireland.ie) for the following twenty sites: Castletownbere, Adrigole Harbour, League Point, Bantry Bay South, Dunmanus Inner, Kinsale, Oyster Haven, Valentia Harbour, Kenmare River/Sneem/Ardgroom, Kilmakilloge, Rostellan South, Rostellan North, Rostellan West, Cork Great Island North Channel, Baltimore Harbour/Sherkin, Ballymacoda Bay, Roaringwater Bay , Cromane, Bantry Inner, Glengarriff;
- appropriate regulation of future activities such as abstraction schemes or physical modification schemes;
- coordination of public authority actions and education and awareness activities where appropriate to engage stakeholders and implement actions in a collaborative and proactive manner;
- an environmental research programme and investigations to include: verification of impacts on some waters and the identification and piloting of a number of new management measures.

Economic assessment may be required in certain instances when selecting between alternative measures and when determining whether any particular measure should be applied. Guidance on economic assessment and a baseline report on the economic analysis of water use in Ireland are available as *economic background documents* on www.wfdireland.ie. The Environmental Protection Agency have begun some additional work with regard to quantifying the benefits of the water environment. Economic analysis has not been used to justify deferral of measures or extension of objectives in the district.

[3] Phosphorus loadings were estimated using methods from the OSPAR Guidelines for Harmonised Quantification and Reporting Procedures for Nutrients. It must be noted that these represent nutrient source estimates and do not imply water quality impact.

5.5 Summary programme of measures for the South Western RBD

Table 5.1 provides a summary of the key measures to be implemented in the Water Management Units in the South Western RBD.

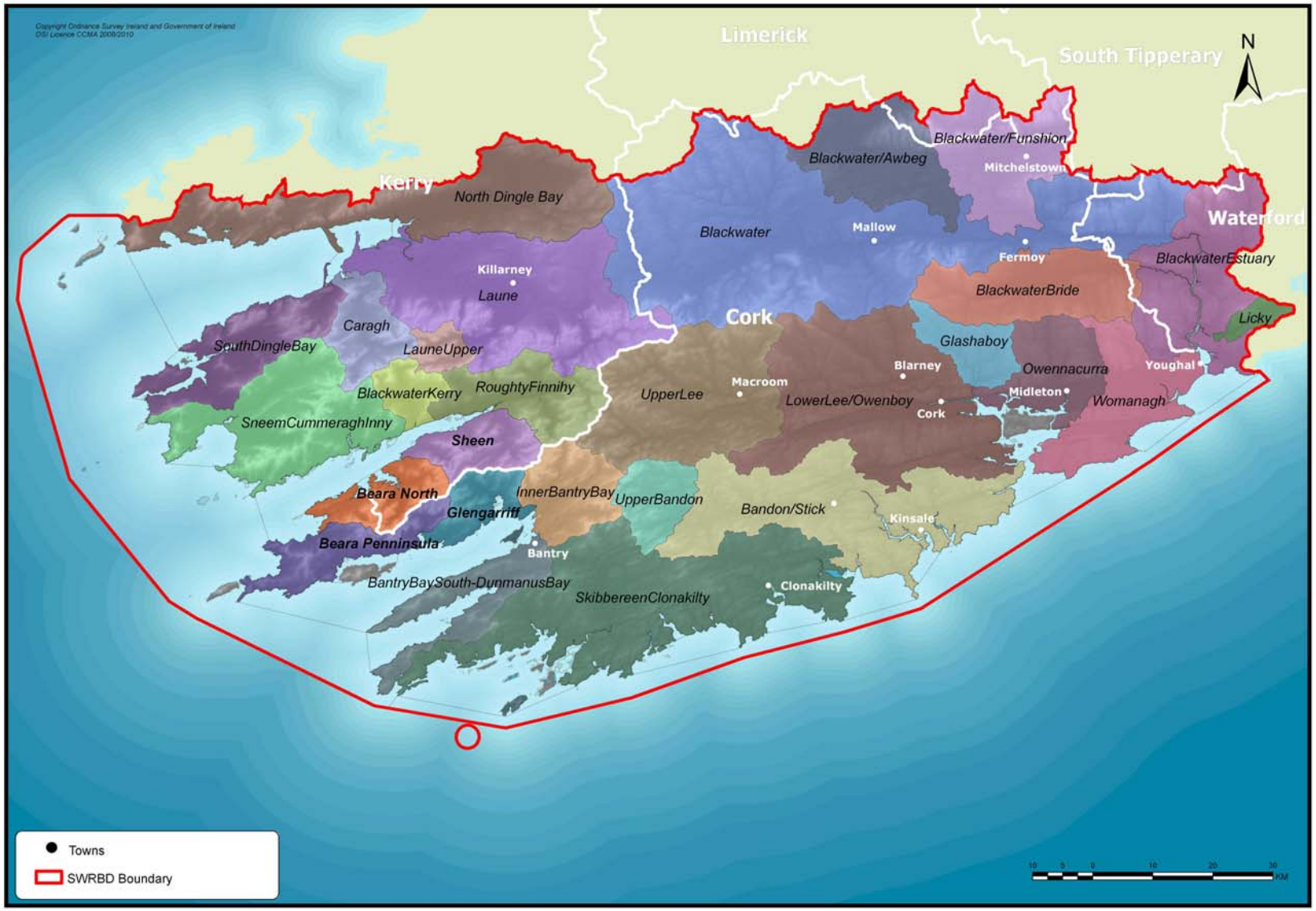
Table 5.1 Summary programme of measures for the South Western RBD

	Water Management Units														
	Bandon / Stick	Bantry Bay South-Dunmanus Bay	Beara North	Beara Penninsula	Blackwater	Blackwater / Awbeg	Blackwater Funshion	Blackwater Bride	Blackwater Estuary	Blackwate rKerry	Caragh	Glashaboy	Inner Bantry Bay	Laune	Laune Upper
Control of urban waste water discharges	10	3	1	3	26	7	4	8	3	0	0	3	2	3	0
Treatment plants requiring capital works	2	0	0	0	2	0	0	1	1	0	0	0	0	0	0
Treatment plants requiring further investigation	1	0	0	0	2	0	0	2	0	0	0	1	0	1	0
Treatment plants requiring attention to meet Shellfish water PRPs	1	2	0	1	0	0	0	0	0	0	0	0	0	1	0
Treatment plants requiring improvements in operational performance	1	0	0	0	9	6	2	2	1	0	0	0	0	0	0
Urban agglomerations requiring investigation of CSOs	2	0	0	0	5	3	1	2	0	0	0	0	0	0	0
Agglomerations that require management of development	2	0	0	1	8	1	0	0	2	0	0	1	1	1	0
Properties that will be subject to performance, operational and maintenance standards for on-site waste water treatment	Total: 9764 At risk: 559	Total: 2062 At risk: 429	Total: 742 At risk: 263	Total: 1725 At risk: 733	Total: 13045 At risk: 8586	Total: 3024 At risk: 2468	Total: 3392 At risk: 1527	Total: 2707 At risk: 534	Total: 3328 At risk: 296	Total: 230 At risk: 148	Total:770 At risk: 361	Total:2163 At risk: 30	Total:1338 At risk: 325	Total: 9962 At risk: 6010	Total: 52 At risk: 25

	Water Management Units														
	Bandon / Stick	Bantry Bay South-Dunmanus Bay	Beara North	Beara Penninsula	Blackwater	Blackwater / Awbeg	Blackwater Funshion	Blackwater Bride	Blackwater Estuary	Blackwate rKerry	Caragh	Glashaboy	Inner Bantry Bay	Laune	Laune Upper
systems															
Sub-basin plans for Natura 2000 sites designated for the protection of Freshwater pearl mussel populations	1	0	1	0	2	1	1	0	0	1	1	0	0	1	1
Pollution Reduction Plans for designated shellfish waters	2	4	2	2	0	0	0	0	0	1	0	0	1	1	0
IPPC licences with discharges to waters that require review	9	0	0	0	6	2	1	3	0	0	0	0	1	1	0
Licences for discharges to waters under the Water Pollution Acts that require review	7	0	1	3	7	2	2	0	0	0	0	1	2	5	0
Number of river waterbodies assessed to be at risk from diffuse sources including agriculture	32	2	0	0	77	10	13	18	16	10	8	9	2	13	3
Estimate of planned agricultural inspections under the Good agricultural practice Regulations	It is not possible at this stage to provide a breakdown of inspections to be carried out in each of the WMUs. It has been agreed that farms will be inspected by inspectors from the Department of Agriculture, Fisheries and Food for the purposes of checking compliance with the European Communities (Good Agricultural Practice for the Protection of Waters) Regulation 2009 (SI 101 of 2009). In addition, local authorities will continue to retain responsibility for undertaking pollution investigations based on local priorities in accordance with their duties under a range of environmental legislation and in line their respective environmental inspection plans prepared in accordance with the European Union's Recommendation on Minimum Criteria for Environmental Inspections (RMCEI).														

Table 5.1(continued) Summary programme of measures for the South Western RBD

	Water Management Units												
	Licky	Lower Lee/Owenboy	North Dingle Bay	Owennacurra	Roughty Finnihy	Sheen	Glengarriff	Skibbereen Clonakilty	Sneem Cummeragh Inny	South Dingle Bay	Upper Bandon	Upper Lee	Womanagh
Control of urban waste water discharges	0	24	8	5	2	0	2	20	6	5	1	11	12
Treatment plants requiring capital works	0	6	3	1	1	0	0	3	0	1	1	4	1
Treatment plants requiring further investigation	0	6	3	1	1	0	0	10	4	2	0	0	3
Treatment plants requiring attention to meet Shellfish water PRPs	0	4	2	2	0	0	0	1	0	5	0	0	2
Treatment plants requiring improvements in operational performance	0	1	1	0	0	0	0	3	0	0	0	0	1
Urban agglomerations requiring investigation of CSOs	0	2	1	0	0	0	0	0	0	0	0	0	0
Agglomerations that require management of development	0	5	0	0	0	0	0	1	0	0	0	2	1
Properties that will be subject to performance, operational and maintenance standards for on-site waste water treatment systems	Total: 181 At risk: 43	Total: 15275 At risk: 963	Total: 7684 At risk: 4651	Total: 3654 At risk: 495	Total: 1348 At risk: 566	Total: 469 At risk: 379	Total:461 At risk: 394	Total: 12561 At risk: 2577	Total: 3330 At risk: 1267	Total: 2513 At risk: 828	Total: 872 At risk: 439	Total: 4499 At risk: 1518	Total: 6252 At risk: 1198
Sub-basin plans for Natura 2000 sites designated for the protection of Freshwater pearl mussel populations	1	0	0	0	0	0	0	0	1	0	1	0	0
Pollution Reduction Plans for designated shellfish waters	0	0	1	2	1	1	3	2	1	1	0	0	2
IPPC licences with discharges to waters that require review	0	8	0	17	1	0	0	3	0	1	0	4	5
Licences for discharges to waters under the Water Pollution Acts that require review	0	13	0	4	0	2	1	12	0	1	0	4	3
Number of river waterbodies assessed to be at risk from diffuse sources including agriculture	0	39	13	8	6	0	0	20	6	1	14	11	8
Estimate of planned agricultural inspections under the Good agricultural practice Regulations	It is not possible at this stage to provide a breakdown of inspections to be carried out in each of the WMUs. It has been agreed that farms will be inspected by inspectors from the Department of Agriculture, Fisheries and Food for the purposes of checking compliance with the European Communities (Good Agricultural Practice for the Protection of Waters) Regulation 2009 (SI 101 of 2009). In addition, local authorities will continue to retain responsibility for undertaking pollution investigations based on local priorities in accordance with their duties under a range of environmental legislation and in line their respective environmental inspection plans prepared in accordance with the European Union's Recommendation on Minimum Criteria for Environmental Inspections (RMCEI).												



Map 5.1 Water Management Units in the South Western RBD

6 Integrating plans and programmes

6.1 Introduction

In order to effectively protect our water it is important that the River Basin Management Plans are integrated with other plans such as:

- land use and spatial plans;
- conservation plans: habitat and species protection plans (including freshwater pearl mussel subbasin plans);
- water services strategic plans;
- pollution reduction plans and programmes (including surface water pollution reduction plans, groundwater controls, groundwater protection schemes, the National Action Programme, discharge authorisation programmes under the Water Pollution Acts and Environmental Protection Agency Act, shellfish water and bathing water plans);
- waste management plans;
- sludge management plans;
- major accident emergency plans;
- forest management plans;
- flood risk management plans.

6.1.1 Land use planning

Any potential impacts from future development on waters can be mitigated by properly incorporating the objectives established in this plan into development plans to ensure sustainable development. At strategic level Ireland's National Spatial Strategy and elements of the National Development Plan are the key mechanisms to ensure a balance between social, economic and development needs. At regional and local levels, the potential risks to water objectives from future developments will be subject to Strategic Environmental Assessment when preparing statutory planning guidelines and development plans, such as:

- regional planning guidelines;
- county and city development plans and local area plans;
- planning schemes for strategic development zones.

In addition, planning authorities must consider potential risks to waters during the detailed development proposal stages using the Environmental Impact Assessment procedure.

Regional planning guidelines require that development plans incorporate water objectives established in river basin management plans. The Planning and Development Bill 2010 aims to strengthen the legal basis of planning guidelines by requiring development plans to set out a core strategy that demonstrates that the development objectives in the development plan are consistent, as far as practicable, with national and regional development objectives set out in the National Spatial Strategy and regional planning guidelines. A planning authority is required to ensure, when making a development plan, that the plan is consistent with any regional planning guidelines in force for its area.

River basin management plans will be revised in 2015 and 2021. All regional planning guidelines are currently under review and will be reviewed every six years thereafter. All development plans and local plans are required to take account of these regional guidelines and must be reviewed every six years. Guidance on integrating development planning and river basin planning will be issued by the Department of the Environment, Heritage and Local Government in due course.

6.1.2 Flood risk management plans

The Report of Ireland's Flood Policy Review Group 2004 set out a new policy on the management of flood risks which is consistent with the new Floods Directive (2007/60/EC). This includes the preparation of catchment-based Flood Risk Management Plans that will set out the long-term strategy and a prioritised set of measures for managing flood risks, both structural and non-structural. Regulations transposing the Floods Directive are expected soon. Implementation of the *Water Framework Directive* and the *Floods Directive* is to be coordinated. The principal requirements of the *Floods Directive* are:

- undertaking a preliminary flood risk assessment (by 2011);
- preparing flood hazard and risk maps (by 2013);
- preparing flood risk management plans (by 2015);
- coordination with the Water Framework Directive;
- cooperation between member states in relation to transboundary river basins;
- public participation, consultation and dissemination of information and results.

Of relevance to the South Western RBD is the Lee Catchment Flood Risk Assessment and Management Study (CFRAMS), which is one of three pilot studies carried out to date to meet the requirements of the EU Floods Directive. The study focuses on urban areas known to have experienced flooding in the past and areas subject to significant development pressure both now and in the future. The Catchment Flood Risk Management Plan (CFRMP) for the Lee identifies structural (including flood walls and embankments and construction of culverts) and non-structural (including flood forecasting and warning systems and public awareness campaigns) options for managing the flood risks within the catchment as a whole and for localised high-risk areas. The plan refers to the objectives and measures in the South Western RBMP and states that the actions recommended in the CFRMP at a minimum must not prevent the achievement of the required standards in the South Western RBMP.

6.1.3 Planning for climate change

River basin management provides an effective mechanism to prepare for and adapt to climate change by incorporating adaptation into the programme of measures. However, due to the high level of uncertainty in present climate predictions, a flexible approach is required. This river basin plan is adaptable to climate change in that the actions are 'no regrets'; that is, they are worthwhile whatever the extent of future climate change. The Water Framework Directive monitoring programme will collect information that improves understanding of climate change. In accordance with EU guidance, information is provided in this section of the plan on climate trends and impacts, paving the way for further action in later river basin management cycles. *Climate change background documents,* referred to in this section, are available at www.wfdireland.ie.

Projected climate impacts have been summarised in a number of recent publications including "A Summary of the State of Knowledge on Climate Change Impacts for Ireland" (EPA), and "Climate Change: Meeting the Challenge of Adaptation', (Irish Academy of Engineering). These provide expert reviews of impacts and recommendations that are relevant to the management of the river basin district. They predict a wide range of significant changes, notably temperature rise, increased precipitation, sea level rise, increased storm surge, wetter winters and drier summers; other changes are expected in ground and surface water runoff and surface fresh water temperatures. This will lead to enhanced evapotranspiration from soils and evaporation from waters.

Many of these changes will impact on aquatic ecosystems and on water management. For example, they could potentially change the movement of diffuse pollutants, and the seasonal response to temperature, for example, more extreme rainfall events will accelerate the movement of diffuse pollutant plumes through soils and aquifers into water bodies, with less time for natural biological treatment within the soil, or seasonal timing of agricultural spreading may need to be modified as rainfall and temperatures change. A northward shift in the spatial distribution of species has been observed across Europe. Continued increases in occurrence of invasive species may affect indigenous vulnerable species in the river basin district, thereby altering natural biodiversity and requiring special protection measures.

With due regard to the uncertainties of climate prediction modelling, actions in this plan have been "climate checked", that is their resilience to predicted trends has been considered. The report 'Adapting the Plan to Climate Change', available at www.wfdireland.ie concludes that climate issues may be relatively significant for measures and actions related to:

- biodiversity and protected areas;
- abstractions;
- river and marine morphology.

Measures contained within this plan, and the monitoring programme, will need to take account of changes to temperature, to ground and surface water flows, and to sediment movement, and to allow for their link with changes to habitats and species, particularly habitat fragmentation and alien species.

In order to ensure sustainable water use, abstraction controls will need to take account of future changes in rainfall patterns and consequent impacts on availability of water resources. Water conservation programmes and increased storage capacity will improve climate resilience. Buffer zones around water bodies are a win-win measure, ensuring that habitats are better able to cope and migrate with changing climatic conditions, while improving soil and subsoil water retention.

The climate check also highlighted more general climate considerations. For example, design standards for critical infrastructure (such as combined sewer overflows) may need to be adapted to cope with more frequent storm flow surges.

In summary, the programme of measures will need to be resilient to climate change impacts. This is especially important for expensive and long-term investments such as large infrastructure projects. Planning for protected areas, droughts, water scarcity and flood prevention will also become increasingly crucial. During the period of this plan, preparations will be made for more detailed climate-proofing of actions in the next plan.

6.1.4 Strategic Environmental Assessment and Appropriate Assessment for Natura 2000 Sites

To ensure that the plan does not have adverse consequences for the wider environment (beyond its focus on waters), an Environmental Report was prepared as part of the Strategic Environmental Assessment (SEA) of the river basin management plan and programme of measures for the South Western RBD in accordance with national and EU legislation. Similarly an Appropriate Assessment (AA) for Natura 2000 Sites was prepared to ascertain any impacts to Protected Areas. Statutory consultation about these assessments was undertaken with the relevant bodies (Environmental Protection Agency, Department of the Environment, Heritage and Local Government and Department of Communications, Energy and Natural Resources). Views on the Environmental Report, the Habitats Directive Assessment Report and the draft plan were also sought during a consultation period from December 2008 to June 2009. The

comments made in the submissions received on the three documents were used to refine and amend the contents of the final plan; their influence is discussed in detail in the SEA Statement. All SEA and AA reports, including the SEA Statement are available with the *environmental assessment background documents* at www.wfdireland.ie.

The SEA considered three alternative scenarios:

- Business as Usual: implementation of the Basic Measures;
- Business as Usual Plus: as above but with added Other Basic Measures;
- Individual Additional or Supplementary Measures.

The alternatives were tested against defined SEA Environmental Objectives, and cover each of a series of SEA environmental topic issues from the legislation. The objectives took account of the current state of the environment, feedback received and relevant national and EU plans, programmes and legislation.

Topic issue	**Objective**
Biodiversity, flora & fauna	Prevent damage to terrestrial, aquatic and soil biodiversity, particularly EU designated sites and protected species.
Population	Contribute to sustainable development.
Human health	Protect and reduce risk to human health in undertaking water management activities.
Soil	Avoid damage to the function and quality of the soil resource in the district.
Water	Prevent deterioration of the status of waters with regard to quality, quantity and improve status for rivers, lakes, transitional and coastal waters and groundwaters to at least good status, as appropriate to the Water Framework Directive.
Air quality	Minimise emissions to air as a result of plan activities.
Climatic factors	Minimise contribution to climate change by emission of greenhouse gasses associated with plan implementation.
Material assets 1	Maintain level of protection provided by existing morphological infrastructure, eg flood defences, coastal barriers, groynes.
Material assets 2	Provide new and upgrade existing water management infrastructure to protect human health and ecological status of water bodies.
Material assets 3	Support economic activities within the district without conflicting with the objectives of the Water Framework Directive.
Material assets 4	Protect water as an economic resource.
Cultural heritage	Avoid damage to cultural heritage resources in the district.
Landscape	Avoid damage to designated landscapes in the district.

The SEA Statement documents how the recommendations of both the Environmental and Appropriate Assessment Reports, as well as the views of the statutory consultees and other submissions received during consultation, have influenced the preparation of the final South Western RBD plan and programme of measures. It also provides information on the arrangements put in place to monitor and mitigate any significant environmental effects of implementing the plan.

The SEA has allowed integration of sustainability objectives in the decision-making process. The SEA has included valuable mitigation which recognises the multiple stakeholders in the district and has a focussed agenda to help achieve a balance between land uses that are not always compatible.

An extensive list of mitigation measures was included as part of the South Western RBD plan. There is a *summary of SEA mitigation measures* on www.wfdireland.ie. A total of 84 mitigation

measures have been recommended, including a number of measures identified during the Appropriate Assessment for Natura 2000 Sites. These are broadly categorised as:

- requirement for Environmental Assessment at the project level where measures were anticipated to impact on EU Designated sites and on built heritage in particular;
- recommendations for changes to land-use planning;
- recommendation for education and awareness campaigns to inform stakeholders of how they are impacting on our waters and what they can do to mitigate their impacts;
- guidance to assist sector specific changes;
- requirement to take account of cumulative impacts in nutrient planning and loading;
- measures to contribute to climate change abatement including use of renewable energy;
- recognition that pollution pathways other than water should be considered; and
- further studies to inform information gaps and assist in monitoring.

Linked with the SEA Environmental Objectives are targets and Indicators, which will be used to monitor the impact of the plan on the wider environment. The *targets and indicators document* is on www.wfdireland.ie.

Appendix 1 Background documents

Background documents published both nationally and by the South Western RBD to facilitate understanding of the Water Framework Directive, can be found at www.wfdireland.ie.

Contacts

- South Western River Basin District competent authorities
- South Western River Basin District Advisory Council Membership

Click here

Characterisation Report

Submission in accordance with Article 5 of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, and in accordance with EC-DG Environment D.2 document "Reporting Sheets for 2005 Reporting" dated 19 November 2004. Click here

The Characterisation and Analysis of Ireland's River Basin Districts National Summary Report Click here

South Western River Basin District Article 5 Characterisation Summary Report Click here

Compendium of public submissions and responses Click here

Characterisation Report background documents Click here

- Approach to Delineation of Groundwater Bodies
- Technical Requirements for Groundwater and Related Aspects
- The Calcareous/ Non-Calcareous ("Siliceous") Classification of Bedrock Aquifers in the Republic of Ireland
- Reference Conditions for Irish Rivers – Description of River Types and Communities
- Summary Note of Irish Lake Typology to be applied in Ireland's River Basin Districts
- Heavily Modified & Artificial Water Bodies Preliminary Identification Methodology Guidance on Thresholds and Methodology to be Applied in Ireland's River Basin Districts
- Economic Analysis of Water Use in Ireland Final Report
- Guidance on the Assessment of the Impact of Groundwater Abstractions
- Methodology for Risk Characterisation of Ireland's Groundwater
- Advice on the Implementation of Guidance on Monitoring Groundwater
- Point Source Pressure Risk Assessment for Groundwaters
- Guidance on the Assessment of Pressures and Impacts on Groundwater Dependent Terrestrial Ecosystems
- Verifying the Predictive Risk Assessment Methodology for Mobile Diffuse Inorganic Pollutants
- Guidance on the Application of Groundwater Risk Assessment to Areas Designated for the Protection of Habitats and Species
- Guidance on Pressures and Impacts Methodology
- Guidance for Practitioners on the Methodology to be Applied In Ireland's River Basin Districts - Alien Species Risk Assessment Methodology
- Linking catchment characteristics and water chemistry to the ecological status of Irish rivers
- Guidance on Thresholds and Methodology to be Applied in Ireland's River Basin Districts:
    - Bathing Waters Impact Data Risk Assessment Methodology

- Fishing & Aquaculture Risk Assessment Methodology
- Surface Water Hydrology Risk Assessment Methodology
- Surface Water Lakes Risk Assessment Methodology
- Fresh Water Pearl Mussel (Margaritifera) Risk Assessment Methodology
- Marine Direct Impact Risk Assessment Methodology
- Surface Water Morphological Risk Assessment Methodology
- Surface Water Point Source Discharges Risk Assessment Methodology
- Rivers Diffuse Pollution Risk Assessment Methodology

Monitoring Programme

Water Framework Directive Monitoring Programme. Prepared to meet the requirements of the EU Water Framework Directive (2000/60/EC) and National Regulations implementing the Water Framework Directive (S.I. No. 722 of 2003) and National Regulations implementing the Nitrates Directive (S.I. No. 788 of 2005) Click here

Significant Water Management Issues Report

Water Matters "*Have your say"* South Western River Basin District Summary Leaflet Click here

Water Matters "*Have your say"* South Western River Basin District Basin District Booklet Click here

Digest of submissions and responses to Significant Water Management Issues Reports, South Western River Basin District Click here

Significant Water Management Issues background documents Click here

- Dangerous Substances Usage 'Bottom-up study' – Background Report
- Freshwater Morphology POMS Study - Progress Update in support of SWMI Report
- Abstraction Pressure Assessment - Background document to the Water matters Report
- Groundwater risk from Urban Pressures - Background document to the Water matters Report
- Urban Pressures – Background document to the Water matters Report
- Groundwater risk from Diffuse Mobile Organics (Pesticides) - Background document to the Water matters Report
- Forest and Water - Support Document to Water Matters Report
- Onsite Waste Water Treatment Systems – Background document to the Water matters Reports
- Municipal & Industrial Regulation (discharges) - Progress Update in support of the SWMI Report
- Marine Morphology Progress Update in support of the SWMI Report
- Heavily Modified Water Bodies & Artificial Water Bodies - Progress Update in support of the SWMI Report.

Draft River Basin Management Plan

Water Matters "*Help Us Plan*!" Summary Leaflet Click here

Water Matters "*Help Us Plan*!" Draft River Basin Management Plan for South Western River

Basin District Click here

Digest of submissions and responses to Draft River Basin Management Plan, South Western River Basin District Click here

Register of Protected Areas and High Status Sites

Register of Protected Areas document and lists Click here

Water Framework Directive Annex IV Protected Areas: Water Dependant Habitats and Species and High Status Sites Click here

Programmes of Measures – technical studies

National Summary Programme of Measures Report Click here

Water Framework Directive Risk Assessment Update Click here

Municipal and Industrial Regulation

Recommendations For Programmes of Measures for Point Source Discharges to Surface Waters Resulting from Municipal and Industrial Regulated Activities. Click here

Programme Of Measures Discharges From Urban Waste Water Treatment Plants Background Document. Click Here

Forest and Water

- Forests and Surface Water Eutrophication and Sedimentation For Water Final Draft Report
- Forests and Surface water Eutrophication - Sedimentation Literature Review
- Programme of Measures and Standards For Forest and Water
- Forestry and Surface Water Acidification (For Water)
- Forests and Surface water Acidification Literature Review
- Priority action, relevant pollutant and general component candidate substances for surface waters in Ireland

Click here

On-site Wastewater Treatment Systems

- Unsewered Wastewater Treatment Systems National Study Final Report
- National Identification and Mapping of Sewered and Unsewered Areas
- An assessment into the potential impact of on-site wastewater treatment systems on surface water quality. Summary Report.

Click here

Dangerous Substances

- Dangerous Substances Usage Programme of Measures Study Literature Review and Final Report
- Summary Document - Dangerous Substances Screening Summary Report and

appendices
- Veterinary treatments and other substances used in finfish aquaculture in Ireland.

Click here

Freshwater Morphology

- A Freshwater Morphology Programme of Measures and Standards Study *Aerial Survey, Feature extraction, typology generation and development of a GIS tool to assist in Irish river and lake morphological assessment*
- Freshwater Morphological Assessment in Rivers Risk Assessment Refinement, Classification and Management Outcome Report
- Assessment of the Risk of Barriers to Fish Migration in the Nore
- Catchment
- Review of Best Practice Measures
- Channelisation Recovery Assessment
- Cost Effectiveness and Feasibility of River Enhancement Schemes
- Comparative Studies of Morphological Fieldwork Techniques Outcome Report
- Analysis of Irish Recovery Datasets
- Legislation Review
- Literature Review
- Recommendations for Programmes of Measures
- Final Report

Click here

Marine Morphology

Marine Morphology National Methodology Report Click here

Abstractions

- Assessment Methodology for Surface Water Abstractions from Lakes
- Groundwater Abstractions Pressure Assessment
- A review of the environmental flow methods focusing on their use with various biotic groups to assess the effects of abstraction pressures in Ireland
- The Assessment of Abstraction Pressures in Rivers in Ireland
- Revised River Risk Assessment for Abstractions Pressures

Click here

Urban Pressures

- The Assessment of Urban Pressures in River and Transitional Water Bodies in Ireland
- Urban Groundwater Pressures Assessment

Click here

Surface Water Groundwater Interactions

Further Characterisation Study. An integrated approach to quantifying groundwater and surface water contributions to streamflow Click here

Diffuse Mobile Organics

Risk to Groundwater from Diffuse Mobile Organics Click here

Status

- Report on the Interim Classification of Ecological Potential and Identification of Measures for Ireland's Artificial Water Bodies (AWBs)
- Report on the Interim Classification of Ecological Potential
- And identification of measures for Ireland's Heavily Modified Water Bodies (HMWBs)
- Interim Classification of Irish Coastal and Transitional Waters for the purposes of the EU Water Framework Directive. November 2008.
- Interim Lake Status Report
- Interim Classification of Rivers for the purposes of the EU Water Framework Directive.
- Interim Classification of Groundwater for the purposes of the EU Water Framework Directive

Click here

Economic

- Review of Water Resource Benefit Values
- Economic Analysis of Water Use in Ireland Final Rep

Click here

WMU Action Plans

- Bandon Stick Water Management Unit Action Plan
- BantryBaySouth-DunmanusBay Water Management Unit Action Plan
- Beara North Water Management Unit Action Plan
- Beara Peninsula Water Management Unit Action Plan
- Blackwater Water Management Unit Action Plan
- Blackwater Awbeg Bay Water Management Unit Action Plan
- Blackwater Bride Water Management Unit Action Plan
- Blackwater Estuary Water Management Unit Action Plan
- Blackwater Funshion Water Management Unit Action Plan
- Blackwater Kerry Water Management Unit Action Plan
- Caragh Water Management Unit Action Plan
- Glashaboy Water Management Unit Action Plan
- Glengarriff Water Management Unit Action Plan
- Inner Bantry Bay Water Management Unit Action Plan
- Laune Water Management Unit Action Plan
- Laune Upper Management Unit Action Plan
- Licky Water Management Unit Action Plan
- Lower Lee Owenboy Water Management Unit Action Plan
- North Dingle Bay Water Management Unit Action Plan
- Owennacurra Water Management Unit Action Plan
- Roughty Finnihy Water Management Unit Action Plan
- Sheen Water Management Unit Action Plan
- Skibbereen Clonakilty Water Management Unit Action Plan
- Sneem Cummeragh Inny Water Management Unit Action Plan
- South Dingle Bay Water Management Unit Action Plan
- Upper Bandon Water Management Unit Action Plan
- Upper Lee Water Management Unit Action Plan
- Womanagh Water Management Unit Action Plan

Click here
South-Western RBD Transitional & Coastal Waters Action Programme South-Western RBD Groundwater Action Programme Click here
Ospar Guidance
OSPAR Guidelines for Harmonised Quantification and Reporting Procedures for Nutrients (HARP-NUT) Click here
Climate Change
A Summary of the State of Knowledge on Climate Change Impacts for Ireland. Climate Change Research Programme (CCRP) 2007-2013 Report Series No. 1 Click here
2009 SNIFFER Workshop Report, June 2009, Click here
Ireland at Risk, Critical Infrastructure, Adaptation for Climate Change", The Irish Academy for Engineers, 2009 (Carroll, E., Sparks T., Donnelly, A. and Cooney, T. 2009 Biology and Environment Proceedings of the Royal Irish Academy 109B, 115–126) Click here
Adapting the Plans to Climate Change Final Report Click here
Environmental Assessment
Scoping Document Strategic Environmental Assessment for the Water Framework Directive River Basin Management Plans and Programmes of Measures South Western River Basin District Click here
Environmental Report Strategic Environmental Assessment for the Water Framework Directive River Basin Management Plans and Programmes of Measures South Western River Basin District Click here
Habitats Directive Article 6 Assessment Water Framework Directive River Basin Management Plans and Programmes of Measures - South Western River Basin District Click here
Artificial and heavily modified water bodies
Programmes of Measures and Standards Overall Summary Report - Heavily Modified Water Bodies and Artificial Water Bodies Click here

Objectives

Objectives Setting Background Document Click here

Lag Time: A Methodology For The Estimation Of Vertical, Horizontal Travel & Flushing Timescales To Nitrate Threshold Concentrations In Irish Aquifers *Fenton et al in press*

A review of nitrate lag times in Europe and their implications for the Water Framework Directive *Fenton et al in press*

Modelling phosphorus decline: expectations of the Water Framework Directive in Ireland *Schulte et al in press*

Links to Plans and Programmes

Register of Plans and Programmes Click here

Guidance

River Basin Management Planning – A Practical Guide for Public Authorities Click here

Public participation

Consultation Paper on Public Participation in River Basin Management Click here

Public Consultation Events flyers and newspaper notices Click here

Timetable and Work Programme for making a River Basin Management Plan for South Western River Basin District Click here

Compliance statement

South Western River Basin District Compliance Report Click here

More Detailed Plans and Programmes

Freshwater Pearl Mussel Sub-basin Management Plans

- Freshwater Pearl Mussel - Allow Sub-Basin Management Plan
- Freshwater Pearl Mussel - Ownagappul Sub-Basin Management Plan
- Freshwater Pearl Mussel - Bandon/Caha Sub-Basin Management Plan
- Freshwater Pearl Mussel - Munster Blackwater Sub-Basin Management Plan
- Freshwater Pearl Mussel - Currane Sub-Basin Management Plan
- Freshwater Pearl Mussel - Caragh Sub-Basin Management Plan
- Freshwater Pearl Mussel - Licky Sub-Basin Management Plan
- Freshwater Pearl Mussel - Kerry Blackwater Sub-Basin Management Plan
- Freshwater Pearl Mussel - Gearhameen Sub-Basin Management Plan

Click here

Monitoring Methods Report Freshwater Pearl Mussel Sub-basin Plans Click here

Shellfish Pollution Reduction Programmes

- Castletownbere Shellfish Pollution Reduction Programme
- Adrigole Harbour Shellfish Pollution Reduction Programme
- League Point Shellfish Pollution Reduction Programme
- Bantry Bay South Shellfish Pollution Reduction Programme
- Dunmanus Inner Shellfish Pollution Reduction Programme
- Kinsale Shellfish Pollution Reduction Programme
- Oyster Haven Shellfish Pollution Reduction Programme
- Valentia Harbour Shellfish Pollution Reduction Programme
- Kenmare River/Sneem/Ardgroom Shellfish Pollution Reduction Programme
- Kilmakilloge Shellfish Pollution Reduction Programme
- Rostellan South Shellfish Pollution Reduction Programme
- Rostellan North Shellfish Pollution Reduction Programme
- Rostellan West Shellfish Pollution Reduction Programme
- Cork Great Island North Channel Shellfish Pollution Reduction Programme
- Baltimore Harbour/Sherkin Shellfish Pollution Reduction Programme
- Ballymacoda Bay Shellfish Pollution Reduction Programme
- Roaringwater Bay Shellfish Pollution Reduction Programme
- Cromane Shellfish Pollution Reduction Programme
- Bantry Inner Shellfish Pollution Reduction Programme
- Glengarriff Shellfish Pollution Reduction Programme

Click here

Miscellaneous

DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy. Click here

European Community (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003) Click here

European Communities (Water Policy) (Amendment) Regulations 2005, (S.I. No. 413 of 2005) Click here

Appendix 2 Contact Details for Local Authorities

Local Authority	Title	Department	Telephone	General Email
Cork County Council	Director of Services	Environment	021 4532700	
Cork County Council	Senior Scientist	Environment	021 4532700	CustomerService@corkcoco.ie
Kerry County Council	Director of Services	Environment	066 7162000	environ@kerrycoco.ie
Kerry County Council	Senior Executive Engineer	Environment	066 7162000	
Waterford County Council	Director of Services	Water Services	058 22055	
Waterford County Council	Senior Executive Engineer	Water Services	058 22055	customercare@waterfordcoco.ie
Cork City Council	Director of Services	Water Services	021 4966222	
Cork City Council	Senior Engineer	Water Services	021 4966222	waterservices@corkcity.ie
South Tipperary County Council	Director of Services	Environment	052 6134455	
South Tipperary County Council	Senior Executive Engineer	Environment	052 6134455	info@southtippcoco.ie
Limerick County Council	Director of Services	Environment	061 496583	
Limerick County Council	Senior Engineer	Environment	061 496444	environ@limerickcoco.ie

Appendix 3 Protected Areas in the South Western RBD

Drinking Water Protected Area - River Waterbodies	
NAME	CODE
Gaddagh (River)	PA1_22_208
Cottoners (River)	PA1_22_570
	PA1_22_924
	PA1_22_997
Owgarriff (River)	PA1_22_1050
Owenalondrig (River)	PA1_22_1689
Dogue (River)	PA1_22_1894
	PA1_22_1925
	PA1_22_2163
Beheenagh (River)	PA1_22_2692
Gaddagh (River)	PA1_22_2753
Owneyskeagh (River)	PA1_22_2883
Finow (River)	PA1_22_3681
	PA1_22_3748
	PA1_22_3781
Behy (River)	PA1_22_3936
Caragh (River)	PA1_22_3938
Garfinny (River)	PA1_22_3994
Doneelagh (Stream)	PA1_21_51
Emlaghmore (River)	PA1_21_620
Gowla (River)	PA1_21_896
Glengarriff (River)	PA1_21_902
	PA1_21_975
	PA1_21_1235
	PA1_21_1685
Glashagoruv (River)	PA1_21_1786
Dromgarriff (River)	PA1_21_2247
Owngar (River)	PA1_21_4750
	PA1_21_5043
Ahadav (River)	PA1_21_5265
Ballydonegan (River)	PA1_21_5332
Dromoghty (River)	PA1_21_6155
Mealagh (River)	PA1_21_6183
	PA1_21_6309
	PA1_21_6417
Coomnahorna (River)	PA1_21_7285
Four Mile (Water)	PA1_21_7736
Finglas (River)	PA1_21_7883
Ardrigole (River)	PA1_21_8052
Inny (River)	PA1_21_8081
	PA1_20_556
Ihernagh (River)	PA1_20_687

Drinking Water Protected Area - River Waterbodies	
NAME	CODE
Bealanscartane (River)	PA1_20_1534
Ilen (River)	PA1_20_1861
Garrown (River)	PA1_20_2076
	PA1_20_2116
	PA1_20_2198
Bandon (River)	PA1_20_2230
Argideen (River)	PA1_20_2251
Ilen (River)	PA1_20_2266
Butlerstown (River)	PA1_19_742
	PA1_19_922
	PA1_19_1284
	PA1_19_1513
Butlerstown (River)	PA1_19_1547
Lee (River)	PA1_19_1663
Sullane (River)	PA1_19_1710
Lee (River)	PA1_19_1901
Glashaboy (River)	PA1_19_1961
Allow (River)	PA1_18_548
Tanyard (Stream)	PA1_18_917
	PA1_18_950
Shanowennadrimina (Stream)	PA1_18_1233
Glenakeefe (River)	PA1_18_1585
Funshion (River)	PA1_18_1836
Blackwater (River)	PA1_18_2292
Clyda (River)	PA1_18_2541
Behanagh (River)	PA1_18_2643
Bride (River)	PA1_18_2778
	PA1_18_2786
Glendine (River)	PA1_18_2822
Coomhola (River)	PA1_21_2303
Sheen (River)	PA1_21_6879
	PA1_21_8061
Owennacurra (River)	PA1_19_1955
Blackwater (River)	PA1_18_2755

Drinking Water Protected Area - Lake Waterbodies	
NAME	CODE
	PA1_19_135
Inniscarra Reservoir	PA1_19_138
Mount Eagle Lough	PA1_22_58
Glannafreaghaun	PA1_22_152
Callee (Lough)	PA1_22_182
Coomaglaslaw Lake	PA1_22_197
Cummernamuck (Lake)	PA1_22_199
Gowlaun Lough	PA1_21_241

Drinking Water Protected Area - Lake Waterbodies	
NAME	CODE
	PA1_21_361
Eirk Lough	PA1_21_369
Dromtine Lough	PA1_21_405
Coomclogherane Lake	PA1_21_429
Cummer Lough	PA1_21_440
Glenbeg Lough	PA1_21_444
Bofinna (Lough)	PA1_21_448
Skeagh Lough [Schull Reservoir]	PA1_20_53
Castlemehigan Lough	PA1_20_130
Tooreen Lough	PA1_20_133
Abisdealy (Lough)	PA1_20_148
Coolkellure Lake	PA1_20_153
Curraghalicky Lake	PA1_20_158
Lough Guitane	PA1_22_3681
Ballin Lough	PA1_32_364

Drinking Water Protected Area - Groundwater	
NAME	CODE
Araglin	PA1_SW_G_001
Ballincollig	PA1_SW_G_002
Ballincollig_A	PA1_SW_G_003
Ballinhassig_1	PA1_SW_G_004
Ballinhassig_2	PA1_SW_G_005
Ballinhassig_A	PA1_SW_G_006
Ballinhassig_B	PA1_SW_G_007
Ballinhassig_C	PA1_SW_G_008
Ballinhassig_D	PA1_SW_G_009
Ballyhoura	PA1_SW_G_010
Ballyhoura Kiltorcan	PA1_SW_G_011
Ballyhoura_A	PA1_SW_G_012
Bandon Islands	PA1_SW_G_013
Bandon_1	PA1_SW_G_014
Bandon_2	PA1_SW_G_015
Bandon_2_A	PA1_SW_G_016
Bandon_A	PA1_SW_G_017
Banteer	PA1_SW_G_018
Beara Sneem	PA1_SW_G_019
Beara Sneem Islands	PA1_SW_G_020
Brinny	PA1_SW_G_021
Cahersiveen	PA1_SW_G_022
Cahersiveen Islands	PA1_SW_G_023
Cahersiveen_A	PA1_SW_G_024
Cappoquin Kiltorcan	PA1_SW_G_025
Castlemaine	PA1_SW_G_026
Clonakilty Town_1	PA1_SW_G_027

Drinking Water Protected Area - Groundwater	
NAME	CODE
Cloyne	PA1_SW_G_028
Cloyne_A	PA1_SW_G_029
CorkCity_1	PA1_SW_G_030
CorkCity_2	PA1_SW_G_031
CorkCity_3	PA1_SW_G_032
Dingle	PA1_SW_G_033
FermoyTown_1	PA1_SW_G_034
FermoyTown_2	PA1_SW_G_035
GlanmireTown_1	PA1_SW_G_036
Glenville	PA1_SW_G_037
Glenville_A	PA1_SW_G_038
Kanturk	PA1_SW_G_039
Kenmare	PA1_SW_G_040
Kenmare Islands	PA1_SW_G_041
KillarneyTown_2	PA1_SW_G_042
KillarneyTown_1	PA1_SW_G_043
Kilmaclenine	PA1_SW_G_044
Knockadoon_E	PA1_SW_G_045
Knockadoon_W	PA1_SW_G_046
Knockmealdown	PA1_SW_G_047
Laune Muckross	PA1_SW_G_048
Laune Muckross_A	PA1_SW_G_049
Lismore	PA1_SW_G_050
LittleIsland	PA1_SW_G_051
MallowTown_1	PA1_SW_G_052
MallowTown_2	PA1_SW_G_053
MallowTown_3	PA1_SW_G_054
MallowTown_4	PA1_SW_G_055
MidletonTown_1	PA1_SW_G_056
MidletonTown_2	PA1_SW_G_057
Midleton 1	PA1_SW_G_058
Midleton_B	PA1_SW_G_059
Midleton_C	PA1_SW_G_060
Mitchelstown 2	PA1_SW_G_061
Mitchelstown A	PA1_SW_G_062
Mitchelstown B	PA1_SW_G_063
Mitchelstown C	PA1_SW_G_064
Mitchelstown D	PA1_SW_G_065
Mitchelstown E	PA1_SW_G_066
Mitchelstown F	PA1_SW_G_067
Newtown Ballyhay	PA1_SW_G_068
Rathmore_E	PA1_SW_G_069
Rathmore_W	PA1_SW_G_070
Rathnacally	PA1_SW_G_071
Ringaskiddy	PA1_SW_G_072
Scartaglin	PA1_SW_G_073

Drinking Water Protected Area - Groundwater	
NAME	CODE
Tallow	PA1_SW_G_074
Tourig Group 1	PA1_SW_G_075
Tourig Group 2	PA1_SW_G_076
Tourig Group 3	PA1_SW_G_077
Tourig Group_A	PA1_SW_G_078
Whitegate	PA1_SW_G_079
Midleton 2	PA1_SW_G_080
Mitchelstown G	PA1_SW_G_081
Mitchelstown 1	PA1_SW_G_082
Haulbowline Island	PA1_SW_G_083
CobhTown	PA1_SW_G_084

Special Area of Conservation	
NAME	SITE CODE
BALLYMACODA (CLONPRIEST AND PILLMORE)	PA5_SAC_000077
GLENGARRIFF HARBOUR AND WOODLAND	PA5_SAC_000090
CLONAKILTY BAY	PA5_SAC_000091
CAHA MOUNTAINS	PA5_SAC_000093
LOUGH HYNE NATURE RESERVE AND ENVIRONS	PA5_SAC_000097
ROARINGWATER BAY AND ISLANDS	PA5_SAC_000101
SHEEP'S HEAD	PA5_SAC_000102
ST. GOBNET'S WOOD	PA5_SAC_000106
THE GEARAGH	PA5_SAC_000108
THREE CASTLE HEAD TO MIZEN HEAD	PA5_SAC_000109
BALLINSKELLIGS BAY AND INNY ESTUARY	PA5_SAC_000335
CASTLEMAINE HARBOUR	PA5_SAC_000343
OLD DOMESTIC BUILDING, DROMORE WOOD	PA5_SAC_000353
KILGARVAN ICE HOUSE	PA5_SAC_000364
KILLARNEY NATIONAL PARK, MACGILLYCUDDY'S REEKS AND CARAGH RIVER CATCHMENT	PA5_SAC_000365
LOUGH YGANAVAN AND LOUGH NAMBRACKDARRIG	PA5_SAC_000370
SHEHEREE (ARDAGH)	PA5_SAC_000382

Special Area of Conservation	
NAME	SITE CODE
BOG	
BARLEY COVE TO BALLYRISODE POINT	PA5_SAC_001040
CLEANDERRY WOOD	PA5_SAC_001043
GREAT ISLAND CHANNEL	PA5_SAC_001058
KILKERAN LAKE AND CASTLEFREKE DUNES	PA5_SAC_001061
MYROSS WOOD	PA5_SAC_001070
COURTMACSHERRY ESTUARY	PA5_SAC_001230
CLOONEE AND INCHIQUIN LOUGHS, URAGH WOOD	PA5_SAC_001342
MUCKSNA WOOD	PA5_SAC_001371
CASTLETOWNSHEND	PA5_SAC_001547
DERRYCLOGHER (KNOCKBOY) BOG	PA5_SAC_001873
GLANMORE BOG	PA5_SAC_001879
MAULAGOWNA BOG	PA5_SAC_001881
MULLAGHANISH BOG	PA5_SAC_001890
BALLYHOURA MOUNTAINS	PA5_SAC_002036
CARRIGEENAMRONETY HILL	PA5_SAC_002037
OLD DOMESTIC BUILDING, CURRAGLASS WOOD	PA5_SAC_002041
OLD DOMESTIC BUILDING, ASKIVE WOOD	PA5_SAC_002098
ARDMORE HEAD	PA5_SAC_002123
KENMARE RIVER	PA5_SAC_002158
BLACKWATER RIVER (CORK/WATERFORD)	PA5_SAC_002170
BANDON RIVER	PA5_SAC_002171
BLASKET ISLANDS	PA5_SAC_002172
BLACKWATER RIVER (KERRY)	PA5_SAC_002173
SLIEVE MISH MOUNTAINS	PA5_SAC_002185
DRONGAWN LOUGH	PA5_SAC_002187
FARRANAMANAGH LOUGH	PA5_SAC_002189
VALENCIA HARBOUR/PORTMAGEE CHANNEL	PA5_SAC_002262
DUNBEACON SHINGLE	PA5_SAC_002280
REEN POINT SHINGLE	PA5_SAC_002281
GLANLOUGH WOODS	PA5_SAC_002315

Special Protection Area	
NAME	SITE CODE
Ballycotton Bay	004022
Ballymacoda bay	004023
Blackwater Callows	004094
Blackwater Estuary	004028
Blasket Islands SPA	004008
Castlemaine Harbour SPA	004029
Clonakilty Bay SPA	004081
Cork Harbour	004030
Eirk Bog	004108
Kilcoman Bog SPA	004095
Killarney National Park	004038
Old Head of Kinsale SPA	004021
Puffin Island	004003
Skelligs SPA	004007
Sovereign Islands SPA	004124
The Bull and The Cow Rocks SPA	004066
The Gearagh SPA	004109

Bathing Water Protected Areas	
NAME	CODE
BARLEY COVE	PA3_0014
TRAGUMNA	PA3_0015
FOUNTAINSTOWN	PA3_0018
GARRYLUCAS, WHITE STRAND	PA3_0022
WARREN	PA3_0023
ROSSBEIGH, WHITE STRAND	PA3_0073
INCH	PA3_0074
VENTRY	PA3_0077
WHITE STRAND, CAHERCIVEEN	PA3_0082
KELLS	PA3_0085
BALLINSKELLIGS	PA3_0086
DERRYNANE	PA3_0080
INNY, WATERVILLE	PA3_0078
COOLMAINE	PA3_0012
REDBARN	PA3_0013
GARRYVOE	PA3_0016
GARRETTSTOWN	PA3_0017
YOUGHAL, MAIN BEACH	PA3_0019
INCHYDONEY	PA3_0020
CLAYCASTLE	PA3_0021
OWENAHINCHA	PA3_0024

Designated Shellfish Areas
Castletownbere
Kenmare River/Sneem/Ardgroom
Valentia Harbour
Ballymacoda Bay
Rostellan South
Rostellan West
Rostellan North
Cork Great Island North Channel
Oyster Haven
Baltimore Harbour/Sherkin
Dunmanus Inner
Bantry Bay South
League Point
Adrigole Harbour
Kinsale
Kilmakillogue
Roaringwater bay
Cromane
Bantry Inner
Glengariff

Nutrient Sensitive Areas	
NAME	CODE
Blackwater Estuary Upper	PA4_0039
Bandon Estuary Upper	PA4_0032
Blackwater Estuary Lower	PA4_0040
Lough Leane, County Kerry	PA4_0009
Lee Estuary / Lough Mahon	PA4_0041
Owennacurra Estuary / North Channel	PA4_0042
Bandon Estuary Lower	PA4_0033
River Blackwater (Munster)	PA4_0022
Clonakilty Harbour	TBC

Designated Freshwater Pearl Mussel Areas
Allow
Ownagappul
Bandon/Caha
Munster Blackwater
Currane
Caragh
Licky
Kerry Blackwater
Gearhameen

Appendix 4: National legislation transposing eleven key EU Directives relevant to water protection

The 11 key EU Directives	National legislation
Bathing Waters Directive (2006/7/EC)	Bathing Water Quality Regulations SI 79 of 2008
Birds Directive (79/409/EEC)	European Communities (Natural Habitats) Regulations, SI 94 of 1997 as amended in 1998 and 2005
Habitats Directive (92/43/EEC)	European Communities (Natural Habitats) Regulations, SI 94 of 1997 as amended by in 1998 and 2005 Environmental Objectives (Freshwater Pearl Mussel) Regulations, SI 296 of 2009
Drinking Waters Directive (98/83/EC)	European Communities (Drinking Water) (No.2) Regulations, SI 278 of 2007 Water Services Act (No 30 of 2007)
Major Accidents and Emergencies Directive (96/82/EC)	European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, SI 74 of 2006 Planning and Development Act, No 30 of 2000 as amended 2002
Environmental Impact Assessment (85/337/EEC) as amended by Directive 2003/35/EC	Planning and Development Act, No 30 of 2000 as amended 2002 Planning and Development Regulations, SI 600 of 2001 as amended 2006 to 2007 Environmental Impact Assessment Regulations, SI 349 of 1989 as amended 1994 to 2006
Sewage Sludge Directive (86/278/EEC)	Waste Management (Use of Sewage Sludge in Agriculture) Regulations, SI 148 of 1998 as amended 2001 Waste Management Act (No 10 of 1996) as amended 2001
Urban Wastewater Treatment Directive (91/271/EEC)	Urban Waste Water Treatment Regulations, SI 254 of 2001 as amended in 2004 and 2010. Water Services Act (No 30 of 2007)
Plant Protection Products Directive EU Regulation: (EC) No 1107/2009	Authorisation, Placing on the Market, Use & Control of Plant Protection Products Regulations, SI 83 of 2003 as amended from 2003 to 2009
Nitrates Directive (91/676/EEC)	European Communities (Good Agricultural Practice for the Protection of Waters) Regulations, SI 101 of 2009
Integrated Pollution Prevention Control Directive (2008/1/EC)	Environmental Protection Agency Acts, No 7 of 1992 and No 27 of 2003 and Environmental Protection Agency (Licensing) Regulations, SI 85 of 1994 as amended in 1995, 1996, 2004 and 2008:

Appendix 5: South Western RBD Action Programme

What	Who leads	When & where
CO-ORDINATING ACTIONS		
Water Policy Regulations (SI 722 of 2003) as amended in 2005: **Purpose**: provide statutory basis for the provisions of the Water Framework Directive **Relevant Actions:**		
Each public authority must exercise its functions in a manner which is consistent with, and contributes to, achieving the objectives of the plan.	Public authorities in Regulations	2009–2015 National
Coordinate activities for the purposes of Articles 4, 5, 7, 10, 11 and 13 of the Directive and report to the European Commission. Maintain a register of protected areas	EPA	2009–2015 National
Coordinate plan implementation at district level	Local authorities	2009–2015 Whole RBD
Support ongoing public participation and RBD Advisory Councils	Local & public authorities	2009–2015 Whole RBD
Conduct public awareness and targeted education campaigns, including disseminating information using tools such as Water Maps	DEHLG, EPA, local authorities DEHLG, local authorities	2009–2015 Shared waters 2009–2015 National
Surface Water Objectives Regulations (SI 272 of 2009) and Groundwater Objectives Regulations (SI 9 of 2010): **Purpose:** to give effect to the measures needed to achieve the environmental objectives under Water Framework Directive and the Dangerous Substances Directive **Relevant Actions:**		2009–2015 National
Where necessary align the following plans and programmes with river basin management plans: • land use and spatial plans • conservation and heritage plans • water services strategic plans • pollution reduction plans including national action plan, IPPC programme, local authority discharge authorisation programmes, groundwater and surface water pollution reduction programmes, shellfish waters pollution reduction programmes, bathing waters management plans, waste management plans, freshwater pearl mussel sub-basin plans, groundwater protection schemes, eel and salmon fishery conservation plans	Local authorities, DEHLG-NPWS, DEHLG, EPA, Coillte, OPW	

What	Who leads	When & where
• waste and sludge management plans • major accident emergency plans • forest management plans • flood risk management plans (forthcoming)		
Other potential measures which are being considered but which require further development as outlined in Section 5.3. Agreed measures in relation to these issues can be introduced through update of Water Management Unit Action Plans during the implementation process: • Protection of high quality waters: • Mines and Contaminated Sites: • Physical impact of channelisation on river status: • Control of Abstractions, Impoundments and Physical modifications: • Estuarine and Coastal (Marine) Monitoring: • Integration of Water Quality and Planning: • Further research.	To be confirmed	2009–2015 National
Develop guidance and training for local authorities as required	Environmental Services National Training Group	2009–2015 National
BATHING WATERS DIRECTIVE (2006/7/EC)		
Bathing Water Quality Regulations (SI 79 of 2008): **Purpose:** to ensure that the quality of bathing water is maintained or improved to comply with bathing water standards in order to protect public health and the environment. **Relevant actions:**		2009–2015 Designated sites
Identify bathing waters. Monitor and classify bathing water quality status. Develop Bathing Waters Management Plans, including any necessary measures, to achieve bathing water quality standards. Disseminate bathing water quality information to the public.	Local authorities	
Cooperate on cross border bathing waters including exchange of information and joint action.	Local authorities, DEHLG, EPA	
BIRDS AND HABITATS DIRECTIVES (79/409/EEC and 92/43/EEC)		
European Communities (Natural Habitats) Regulations (SI 94 of 1997) as amended in 1998 and 2005: **Purpose:** to ensure the protection of habitats and species of European importance. **Relevant actions:**		2009–2015 Designated sites
Designate sites hosting habitats and species of European importance for inclusion in the Natura 2000 network as	DEHLG-NPWS,	

What	Who leads	When & where
needed. Establish appropriate conservation measures, and management plans where necessary, to ensure achievement of favourable conservation status. Ensure that appropriate assessment is carried out in relation to activities which are likely to impact on designated sites and, where necessary, regulate activities. Introduce compensatory measures to ensure the coherence of the Natura 2000 network if damaging activities are allowed to go ahead. Promote education on the need to protect species and habitats, encourage research necessary to achieve the aims of the regulations. **Environmental Objectives (Freshwater Pearl Mussel) Regulations (SI 296 of 2009):** **Purpose:** To set legally binding objectives for water quality in rivers, or parts of rivers, inhabited by freshwater pearl mussels Margaritifera and designated as Special Area of Conservation (SAC) so as to protect this species. The regulations also require steps to be taken to attain those objectives. **Relevant actions:** Establish environmental quality objectives. Undertake monitoring, assess conservation status and investigate pollution. Develop management plans (sub-basin plans of River Basin Management Plans), including any necessary measures, to ensure achievement of environmental quality objectives. Examine discharge authorisations to designated areas and establish if they require review. Monitor the implementation of the sub-basin management plans and ensure their implementation.	DEHLG Relevant parties DEHLG-NPWS, DEHLG, DEHLG DEHLG-NPWS Public authorities DEHLG	
DRINKING WATER DIRECTIVE (98/83/EC)		
European Communities (Drinking Water) (No. 2) Regulations (SI 278 of 2007): **Purpose:** to ensure that drinking water intended for human consumption is wholesome and clean. **Relevant actions:** Monitor for compliance with drinking water quality standards. Maintain a register of water supplies. Immediately investigate non-compliances and inform consumers. Prepare Action Programmes where the drinking water quality standards are not met. Prohibit water supplies considered to pose a potential danger to human health. Ensure compliance with the regulations and supervise group water schemes.	Local authorities Local authorities, HSE EPA	2009–2015 Designated sites

What	Who leads	When & where
Water Services Act (No 30 of 2007): **Purpose:** to facilitate the provision of safe and efficient water services and water service infrastructure for domestic and non-domestic requirements.		
Relevant actions: Monitor public water supplies and monitor and supervise private drinking water supplies. Develop Water Services Strategic Plans, including measures, to meet the Act's requirements including achievement of drinking water standards. Prohibit or restrict water supplies that pose a potential threat to human health or the environment. Inform consumers of non-compliances and ensure that remedial actions are taken where necessary. Prohibit or restrict certain water uses if there is a deficiency of supply. Implement a Rural Water Programme and a licensing system for the Group Water Scheme sector.	Local authorities	
Supervise and monitor water services authorities and issue compliance notices in relation to non-compliances. Plan and supervise investment under the Water Services Investment Programme.	DEHLG	
Supervise public water supplies	EPA	
MAJOR ACCIDENTS AND EMERGENCY DIRECTIVE (96/82/EC)		
European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (SI 74 of 2006): **Purpose:** to ensure that operators of establishments where dangerous substances are present take all necessary measures to prevent the occurrence of major accidents and to limit the consequences of accidents for people and the environment.		2009–2015 Qualifying sites
Relevant actions: Prepare on-site emergency plans identifying major hazards and specifying prevention and mitigation measures.	Operators	
Prepare off-site emergency plans for action outside the establishment in the event of a major accident.	Local authorities	
Require written notification of activities involving specified dangerous substances. Require operators to demonstrate safe operation and storage and to investigate their operations in the event of a major accident. Organise inspections and measures where necessary. Supply information on major accidents to public authorities.	DETE	
Planning and Development Act (No. 30 of 2000) as amended in 2002: **Purpose:** to provide for the proper planning and development of urban and rural areas.		2009–2015 Qualifying sites
Relevant actions:		

What	Who leads	When & where
Ensure that adequate controls are in place for relevant new developments.	Local authorities	
ENVIRONMENTAL IMPACT ASSESSMENT DIRECTIVE (85/337/EEC)		
Environmental Impact Assessment Regulations (SI 349 of 1989) as amended from 1994 to 2006: **Purpose:** require that certain developments be assessed for likely environmental effects before planning permission is granted.		2009–2015 National
Relevant actions: Require certain developments, by either the private or the public sector, to prepare Environmental Impact Assessments for consideration before planning permission is granted (taking account of objectives established in river basin management plans) and make them available to the public.	Planning authorities	
SEWAGE SLUDGE DIRECTIVE (86/278/EEC)		
Use of Sewage Sludge in Agriculture Regulations (SI 148 of 1998) as amended in 2001: **Purpose:** require that sewage sludge is used in accordance with a nutrient management plan.		2009–2015 National
Relevant actions: Supervise the supply and use of sewage sludge in agriculture and ensure that it is used in accordance with nutrient management plans. Maintain a register of sludge biosolids movements and use and make it available to the public. Ensure adherence to the code of practice in relation to the use of biosolids in agriculture.	Local authorities	
Waste Management Act (No. 10 of 1996): **Purpose:** to regulate waste management in order to protect human health and the environment.		2009–2015 National
Relevant actions: Prepare sludge management plans for the management of waterworks and wastewater sludge (taking account of WFD objectives). Require measures to be taken in relation to the holding, recovery or disposal of waste in order to prevent or limit environmental pollution, where necessary. Require land owners to prepare nutrient management plans where necessary.	Local authorities	
URBAN WASTEWATER TREATMENT DIRECTIVE (91/271/EEC)		
Urban Wastewater Treatment Regulations (SI 254 of 2001) as amended in 2004 and 2010: **Purpose:** to ensure that the environment is not adversely affected by the disposal of inadequately treated urban waste water through the provision of urban wastewater collection systems and treatment plants.		2009–2015 National
Relevant actions: Design, construct, operate, maintain and monitor treatment plants to achieve requirements in relation to treatment standards, nutrient sensitive areas and WFD objectives. Choose discharge points so as to minimise impact on the environment. Ensure that sewage sludge can be recycled or disposed of safely. Financial investments can be made	Local authorities, DEHLG	

What	Who leads	When & where
under the Water Services Investment Programme. **Water Services Act (No 30 of 2007):** **Purpose:** to facilitate the provision of safe and efficient water services and water service infrastructure for domestic and non-domestic requirements. **Relevant actions:** Plan and supervise provision of wastewater services under the Water Services Investment Programme. Prepare and implement Water Services Strategic Plans to support sustainable provision of wastewater services.	Local authorities	2009–2015 National
PLANT PROTECTION PRODUCTS DIRECTIVE (91/414/EEC)		
Authorisation, Placing on the Market, Use & Control of Plant Protection Products Regulations (SI 83 of 2003) as amended from 2003 to 2009: **Purpose:** to authorise plant protection product for use or placing on the market to ensure that no harmful effects arise for human and animal health and that there is no unacceptable impact on the environment **Relevant actions:** Notify the DEHLG of all new information on potentially dangerous effects of authorised plant protection products on the environment or groundwater. The conditions of authorisation are selected to minimise risks for consumers, workers and the environment. The use of a plant protection product in a manner other than specified on its approved label is illegal.	Relevant persons	2009–2015 National
NITRATES DIRECTIVE (91/676/EEC)		
Good Agricultural Practice for the Protection of Waters Regulations (SI 101 of 2009): **Purpose:** provide statutory support for good agricultural practice to protect waters against pollution from agricultural sources and give further effect to several EU Directives including the Nitrates Directive, dangerous substances in water, waste management, protection of groundwater, public participation in policy development and water policy (the Water Framework Directive). **Relevant actions:** Review the nitrates National Action Programme to determine its effectiveness, including Agricultural Catchment Programme studies, in consultation with all interested parties. Ensure implementation of the National Action Programme. Monitor as necessary for the purposes of the Regulations. Provide recommendations and direction to local authorities with respect to monitoring, inspections and measures.	DEHLG, DAFF EPA	2009–2015 National

What	Who leads	When & where
Carry out monitoring to establish the extent of pollution in surface and groundwaters attributable to agriculture and determine trends in the occurrence and extent of such pollution. Carry out farm inspections (to coordinate with other farm inspection programmes).	Local authorities, DAFF	
Additional actions: Agriculture: Consider increasing farm inspections in karst areas with turloughs and piloting of environmentally friendly farming scheme Map turloughs' zones of contribution.	DAFF, DEHLG-NPWS	
INTEGRATED POLLUTION PREVENTION CONTROL DIRECTIVE (2008/1/EC)		
Environmental Protection Agency Acts (No 7 of 1992; No 27 of 2003) and Environmental Protection Agency (Licensing) Regulations (SI 85 of 1994) as amended in 1995, 1996, 2004 and 2008: **Purpose:** to prevent or reduce emissions to water, land and air, to reduce waste and to use energy and resources efficiently.		2009–2015 National
Relevant actions: Ensure that operators of certain industrial and agricultural installations obtain IPPC licenses with conditions and ELVs based on BAT and relevant national and European legislation. Enforce licence conditions including monitoring. Maintain a register of licences and make available to the Commission and to the public. Undertake reviews of existing licences as required (taking account of WFD and Environmental Quality Objectives). Ensure cross border consultation where necessary.	EPA	
Obtain the consent of sanitary authorities for discharges to sewers	Operator	
COST RECOVERY FOR WATER SERVICES		
Water Pricing Policy: **Purpose:** to promote the conservation and efficient use of water resources in accordance with the Water Framework Directive		2009–2015 National
Relevant actions: Develop and implement strategy to achieve water metering of domestic users connected to public water supplies.	DEHLG	
Introduce legislation to allow local authorities to charge domestic users for water services.	DEHLG	
Develop charging methodology for water services and introduce water charges for domestic users.	Local Authorities	
PROMOTION OF EFFICIENT AND SUSTAINABLE WATER USE		
Water Services Act (No. 30 of 2007): **Purpose:** to facilitate the provision of safe and efficient water services and water service infrastructure for domestic		2009–2015 National

What	Who leads	When & where
and non-domestic requirements. **Relevant actions:** Develop and implement strategy to achieve water metering of domestic users connected to public water supplies. Facilitate the provision of efficient water services. Rehabilitate and repair water works. Ensure that water distribution systems are in a fit state and free from leaks. **National Water Conservation (Leakage Reduction) Programme:** **Purpose:** to establish water conservation and leakage control strategies. **Relevant actions:** Establish and maintain GIS-based water management systems. Establish an ongoing leakage control programme. Rehabilitate and replace defective water supply networks. Develop water conservation public awareness campaigns. Provide project-specific funding designed to meet specific leakage reduction targets.	 DEHLG Local Authorities Premises owner/occupier Local authorities, DEHLG	 2009–2015 National
PROTECTION OF DRINKING WATER SOURCES		
Groundwater Protection Schemes: **Purpose:** to protect groundwater sources by enabling regulatory authorities to take account of the potential risks to groundwater when considering the control and location of potentially polluting activities. **Relevant actions:** Control the location and nature of developments and activities in accordance with groundwater protection schemes. **Good Agricultural Practice for the Protection of Waters Regulations (SI 101 of 2009):** **Purpose:** the protection of waters against pollution caused by nitrates from agricultural sources. **Relevant actions:** Exclude chemical and organic fertilisers and farm manures from within specified distances of wells, boreholes, springs or abstractions points **Planning and Development Act (No. 30 of 2000):** **Purpose:** to provide for the proper planning and development of urban and rural areas. **Relevant actions:** Control of developments and activities in order to protect water resources.	 Local authorities Farmers Local authorities,	2009–2015 National 2009–2015 National 2009–2015 National

What	Who leads	When & where
Water Policy Regulations (SI 722 of 2003) as amended in 2005: **Purpose**: to provide a statutory basis for the provisions of the Water Framework Directive including the establishment and maintenance of a Register of Protected Areas. **Relevant actions:**	An Bord Pleanála DEHLG	2009–2015 Designated sites
Keep Register of Protected Areas, which includes protected drinking waters, updated.	EPA	
Also, identify and protect all surface and groundwater bodies that are used, or may be used in the future, as sources of drinking water for more than 50 people or where the rate of abstraction is > $10m^3$ per day. Establish monitoring programmes for bodies of water providing >100 cubic metres as an average. Ensure that there is no deterioration of quality in identified bodies of water so as to reduce the level of purification treatment required.	To be assigned	
Consideration is also being given to the designation of safeguard zones around current and future abstractions under the Drinking Water Regulations.	To be assigned	
ABSTRACTION AND IMPOUNDMENTS		
Environmental Impact Assessment Regulations (SI 349 of 1989) as amended from 1994 to 2006: **Purpose:** require that certain developments be assessed for likely environmental effects before planning permission can be granted. **Relevant actions:**		2012–2015 National
Undertake environmental impact assessment for drilling for water supplies above specified thresholds, groundwater abstraction and artificial groundwater recharge schemes above specified thresholds and works for the transfer of water resources between river basins above specified thresholds.	Local authorities	
Water Pollution Act (No 1 of 1977) as amended in 1990: **Purpose:** to provide for the control of water pollution thereby protecting possible drinking water sources **Relevant actions:**		2012–2015 National
Maintain registers of abstractions and make available to the public.	Local authorities	
Water Supplies Act (No. 1 of 1942): **Purpose:** require that provisional orders be obtained by local authorities abstracting drinking water supplies. **Relevant actions:**		2009–2015 Prioritised sites

What	Who leads	When & where
Local authorities must adhere to conditions set down in provisional orders when abstracting drinking water from a water source.	Local authorities, DEHLG	
Planning and Development Act (No. 30 of 2000) as amended in 2002: **Purpose:** to provide for the proper planning and development of urban and rural areas.		2009–2015 Prioritised sites
Relevant actions: Local authorities must obtain planning permission for groundwater abstractions for public drinking water supplies.	Local authorities, An Bord Pleanála	
Additional actions: Abstractions: Good practice measures are available in the Programmes of Measures – technical studies – Abstractions and National Summary Programme of Measures background documents.		
POINT SOURCE DISCHARGES		
Environmental Objectives (Surface Water) Regulations (SI 272 of 2009): **Purpose:** The establishment of legally binding quality objectives for all surface waters and environmental quality standards for pollutants. Public authorities are required to examine and where appropriate, review existing discharge authorisations to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives/standards. .		2009–2015 National
Relevant actions: Establish measures to achieve the quality objectives and standards. Where necessary, consult with other public authorities.	Public authorities	
Set emission limits based on BAT when authorising new discharges to ensure achievement of the quality objectives. Review all existing discharge authorisations to take into account the new quality standards. Prepare programmes for the monitoring and inspection of farm installations to verify compliance.	Local authorities, EPA, DEHLG	
Classify waters and make the classification available in GIS. Establish an inventory of emissions discharges and losses of priority substances, priority hazardous substances and other pollutants.	EPA	
Prepare a plan for the progressive reduction of pollution by priority substances and the ceasing or phasing out emissions, discharges and losses of priority hazardous substances.	Coordinating local authority	
Environmental Objectives (Groundwater) Regulations (SI 9 of 2010): **Purpose:** The establishment of legally binding quality objectives for all bodies of groundwater and environmental quality standards for pollutants. Public authorities are required to examine and where appropriate, review existing		2009–2015 National

What	Who leads	When & where
discharge authorisations to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives/standards.		
Relevant actions: All direct discharges of pollutants into groundwater are prohibited subject to certain exemptions.	Local authorities	
Point source discharges and diffuse sources liable to cause groundwater pollution must be controlled so as to prevent or limit the input of pollutants into groundwater.	EPA	
Identify hazardous and non-hazardous substances for the purpose of preventing and limiting pollutant inputs	EPA	
Where necessary or appropriate, issue advice and/or give directions to a public authority or authorities concerned on the measures to be taken to prevent and limit inputs of pollutants into groundwater.	EPA	
Where necessary or appropriate, issue advice and/or give directions to a public authority or authorities concerned on the measures to be taken to prevent and limit inputs of pollutants into groundwater.	EPA	
Where necessary or appropriate: (a) review, or cause to have reviewed, existing codes of practice including other such mechanisms and controls already in place for the purpose of preventing or limiting the input of pollutants into groundwater; (b) identify such other areas and/or activities requiring the introduction of similar type controls so as to prevent or limit the input of pollutants into groundwater ; (c) direct a public authority to undertake a review and, where necessary, update a code of practice, or in the case of an activity requiring the introduction of new controls, prepare a new code of practice or system of control for the activity in question. A public authority must comply with the direction given by the Agency within the timeframe prescribed;	EPA	
Examine and if necessary review all existing discharge authorisations to groundwater to take into account the new quality standards and to prevent or limit inputs of pollutants to groundwater.	Relevant authorities	
Water Pollution Act (No 1 of 1977) as amended in 1990 and Water Pollution Regulations (SI 108 of 1978) as amended in 1992 and 1996: **Purpose:** to provide for the control of water pollution through prosecution for water pollution offences; use of pollution control conditions in the licensing of effluent discharges; issue of notices specifying measures to prevent water pollution.		2009–2015 National

What	Who leads	When & where
Relevant actions: License discharges to surface waters and sewers from small scale industrial and commercial sources. Review licenses at intervals of not less than 3 years. Keep registers of discharge licenses and make them available to the public.	Local authorities	
Prosecute for water pollution offences; attach appropriate pollution control conditions in the licensing of effluent discharges from industry, etc., made to waters or to sewers; issue notices specifying measures to be taken within a prescribed period to prevent water pollution; Issue notices to stop pollution of waters and requiring the mitigation or remedying within a period specified; seek court orders, including High Court injunctions.	Local authorities, Fisheries Boards, DEHLG-NPWS	
Notify local authorities of accidental discharges and spillages of polluting materials which enter, or are likely to enter, waters.	Relevant persons	
Wastewater Discharge Authorisation Regulations (SI 684 of 2007): **Purpose:** to provide for the authorisation by the EPA of urban waste water discharges by local authorities.		2009–2015 National
Relevant actions: Authorise Local Authority WWTPs (taking account of WFD objectives). Review licenses at intervals not less than 6 years. Enforce compliance with WWTP licensing conditions. Maintain a register of WWTP licences and certificates and make available on request.	EPA	
Water Services Act (No 30 of 2007): **Purpose:** to facilitate the provision of safe and efficient water services and water service infrastructure for domestic and non-domestic requirements.		2009–2015 National
Relevant actions: Prepare and implement Water Services Strategic Plans.	Local Authorities	
Duty of care on owners of premises to ensure that treatment systems for wastewater are kept in good condition.	Relevant Persons	
Additional actions: Urban Wastewater Treatment Plants: Measures for improved management: keep register of plant capacity and update annually; install facilities to monitor influent loads and effluent discharges in accordance with EPA guidelines and best practice; put auditable procedures in place to monitor compliance of licensed discharges; implement training procedures for staff involved with licensing of discharges; monitor receiving water quality upstream and downstream of the point of discharge.	Local Authorities	2009–2015 Prioritised Sites
Optimise treatment plant performance by the implementation of a performance management system supported by the		

What	Who leads	When & where
use of decision making tools. Actions have been identified for certain categories of treatment plant: • Category 1 - Agglomerations with treatment plants requiring identifiable Capital Works. • Category 2 - Agglomerations with treatment plants requiring further investigation prior to Capital Works. • Category 3 - Agglomerations requiring the implementation of actions identified in Pollution Reduction Plans for Shellfish Waters designated under the Shellfish Water Regulations. • Category 4 - Agglomerations with treatment plants requiring improved operational performance through the implementation of Performance Management Systems. • Category 5 - Agglomerations requiring investigation of Combined Storm Overflows (CSOs). • Category 6 - Agglomerations where existing waste water treatment capacity is currently adequate but predicted loadings (based on assumed 3% growth in load per annum) would result in overloading requiring management of development. Good practice measures are available in the Programmes of Measures – technical studies – Municipal and Industrial Regulations, Urban Pressures and National Summary Programme of Measures background documents.	Local Authorities	
Minerals Development Act (No 31 of 1940) as amended from 1960 to 1999: **Purpose:** to provide for the development and working of the mineral resources of the State whilst managing potential impact on the water environment		2009–2015 National
Relevant actions: Grant Prospecting Licenses for exploration of specified minerals in specified areas subject to conditions. Grant Minerals or Mining Licenses with respect to State owned minerals. Grant Mining Permissions to work substances in small quantities. Grant Unworked Minerals Licenses with respect to unworked minerals.	DCENR	
Energy Act (No. 40 of 2006): **Purpose:** to regulate the energy industry whilst managing potential impact on the water environment		2009–2015 Prioritised Sites
Relevant actions: Prepare Mine Rehabilitations Plans for the long-term rehabilitation of mine sites where it is considered necessary for the purposes of public or animal health or the environment.	DCENR Local authorities,	
Waste Management Act (No 10 of 1996) as amended in 2001: **Purpose:** to regulate waste management in order to protect human health and the environment.		2009–2015 Prioritised Sites

What	Who leads	When & where
Relevant actions: Prepare an inventory of closed waste disposal or recovery sites.	EPA, GSI	2009–2015
European Communities (Quality of Shellfish Waters) Regulations (SI 268 of 2006) as amended in 2009: **Purpose:** to protect or improve shellfish waters in order to support shellfish life and growth by setting water quality requirements to be met.		Designated sites
Relevant actions: Undertake monitoring and investigate pollution. Develop and implement Shellfish Pollution Reduction Programmes, including any necessary measures, to achieve shellfish water quality standards.	DEHLG, Local authorities	2009–2015
European Communities (Freshwater Pearl Mussel) Regulations (SI 296 of 2009): **Purpose:** For the purpose of achieving the water quality objectives established for designated sites for the protection of freshwater pearl mussel populations.		Designated sites
Relevant actions: Public authorities that authorise discharge to any of the listed rivers to set down emission limit values that aim to achieve the prescribed ecological quality targets; and to examine existing authorisations within a set time and review them as appropriate.	Public authorities	
DIFFUSE SOURCE DISCHARGES		
Water Pollution Act (No 1 of 1977) as amended in 1990 and Water Pollution Regulations (SI 108 of 1978) as amended in 1992 and 1996: **Purpose:** to provide for the control of water pollution through prosecution for water pollution offences; use of pollution control conditions in the licensing of effluent discharges made to waters or to sewers; issue of notices specifying measures to be taken to prevent water pollution.		2009–2015 National
Relevant actions: Serve notices or directions on persons requiring measures to be taken in order to prevent or control pollution of waters, where necessary.	Local authorities, Fisheries Boards, DEHLG-NPWS	
Notify local authorities of accidental discharges and spillages of polluting materials which enter, or are likely to enter, waters.	Relevant persons	2009–2015
Planning and Development Act (No 30 of 2000) as amended in 2002: **Purpose:** to provide for the proper planning and development of urban and rural areas.		National
Relevant actions:		

What	Who leads	When & where
Grant permission for on-site waste water treatment systems subject to site suitability assessment. **EPA Code of Practice for Wastewater Treatment Systems serving Single Houses (2009)** **Purpose:** to provide guidance on the provision of wastewater treatment and disposal systems for new single houses. **Relevant actions:** the guidance addresses the following Assess site suitability for on-site wastewater treatment systems and identify minimum environmental protection requirements Select suitable wastewater treatment systems for sites in un-sewered rural areas Design and install septic tank systems, filter systems, packaged treatment systems and tertiary treatment systems, Maintenance requirements for on-site wastewater treatment systems. The guidance is supported by DEHLG circular letter (Reference PSSP 1/10) and Planning Guidelines on Sustainable Rural Housing (2005) Amend the Technical Guidance Document supporting the 1997 Building Regulations (SI 497 of 1997) relating to standards for "drainage and waste water disposal" (TGD-H of 2005) and issue a supporting Circular Letter to all Local Building Control Authorities. For existing unsewered properties, bring forward and consult on proposals for legislation to provide standards for the performance, operation and maintenance of septic tanks and similar on-site wastewater treatment systems and also for the monitoring and inspection of the performance of such treatment systems and set out the responsibilities of households served by those systems, including requirements to carry out remedial actions where necessary. **Additional actions: On-site systems:** Good practice measures are available in the Programmes of Measures – technical studies – On-site wastewater treatment systems and National Summary Programme of Measures background documents. **Forestry Act (No 13 of 1946) as amended in 1976 and 1988 and Aerial Fertilisation Regulations (SI 592 of 2006) as amended in 2007 and codes of practice, guidance documents administered through a grant support system:** **Purpose:** to provide for the development and regulation of forestry.	Local authorities Planning authorities, developers, manufacturers designers, installers and operators Planning authorities & An Bord Pleanála DEHLG Minister for the Environment, Heritage and Local Government	2009–2015 National 2010 2009–2015 National

What	Who leads	When & where
Relevant actions: Promote forestry with financial incentives. License forestry activity and where necessary, attach additional conditions in sensitive areas.	Forest Service	
Encourage sustainable, commercial afforestation. Ensure compliance with guidance and codes of practice.	Forest Service	
A new Forestry Bill, replacing the 1946 Forestry Act, has been drafted to strengthen sustainable forestry management. Provisions relating to water protection are; • All forestry operations must be carried out in accordance with any guidelines and regulations issued by the Minister for Agriculture, Fisheries and Food. • Allowing for change of land use from forestry to other sustainable uses.	Minister for the Department of Agriculture, Fisheries and Food	
In acid sensitive catchments apply a protocol agreed between the Department of Environment, Heritage and Local Government, the Forest Service, the EPA and COFORD for dealing with grant-aid applications in acid sensitive areas. All relevant applications received by the Forest Service are checked for alkalinity levels in run-off water. Borderline cases are referred to the Environmental Protection Agency for recommendations.	Forest Service, EPA	
2008 guidelines for the protection of Natura 2000 sites designated for the protection Freshwater Pearl Mussel populations from forestry activities are intended to ensure that forest operations such as afforestation, forest road construction, harvesting and forest planning are compatible with the protection of this particularly sensitive species. The guidelines describe a range of measures intended to reduce any potential negative impacts on the species arising from forest operations.	Forest Service	
Strategic Plan for the Development of Forestry: **Purpose:** to provide for the development and regulation of forestry.		2009–2015 National
Relevant actions: Adhere to forest management plans and the principles of sustainable forest management.	All stakeholders	
Ensure implementation of the National Forestry Standard and adherence to the code of best forest practice.	Forest Service	
Additional actions: Forestry: Good practice measures are available in the Programmes of Measures – technical studies – Forest and Water and National Summary Programme of Measures background documents.		
Environmental Objectives (Freshwater Pearl Mussel) Regulations (SI 296 of 2009)		2009–2015

What	Who leads	When & where
Purpose: For the purpose of achieving the water quality objectives established for designated sites for the protection of freshwater pearl mussel populations. **Relevant actions:** Develop management plans (sub-basin plans of River Basin Management Plans), including any necessary measures, to ensure achievement of environmental quality objectives.	DEHLG-NPWS, relevant public authorities	Designated sites
AUTHORISATION OF DISCHARGES TO GROUNDWATERS		
Environmental Objectives (Groundwater) Regulations (SI 9 of 2010): **Purpose:** to provide for specifying the criteria for classifying groundwater status and identifying significant increasing pollution trends; provide for a proportionate risk–based response to groundwater protection. **Relevant actions:** Review all existing discharge authorisations to take into account the new quality standards.	Local authorities	2009–2015 National
Wastewater Discharge Authorisation Regulations (SI 684 of 2007): **Purpose:** Where a local authority proposes to discharge urban waste water effluent to groundwater an authorisation by the Environmental Protection Agency is required. **Relevant actions:** Authorisation of Local Authority WWTPs effluent discharges discharging to groundwater.	EPA	2009–2015 National
Water Pollution Act (No 1 of 1977) as amended in 1990: **Purpose:** to provide for the control of water pollution**.** **Relevant actions:** License discharges to groundwaters from small scale industrial and commercial sources. Review licenses at intervals of not less than 3 years. Keep registers of discharge licenses and make them available to the public.	Local authorities	2009–2015 National
PRIORITY SUBSTANCES		
Environmental Objectives (Surface Water) Regulations (SI 272 of 2009): **Purpose:** to provide for quality objectives for surface waters, EQSs for pollutants, review of discharge authorisations, classification of surface waters, inventories of priority substances. **Relevant actions:** Prepare a plan for the progressive reduction of pollution by priority substances and the ceasing or phasing out of	EPA,	2009–2015 National

What	Who leads	When & where
emissions, discharges and losses of priority hazardous substances. Establish an inventory of emissions discharges and losses of priority substances, priority hazardous substances and other pollutants and publish a summary of the inventory.	coordinating local authority	
Chemicals Act (No. 13 of 2008): **Purpose:** to provide for the regulation of certain dangerous chemicals.		2009–2015 National
Relevant actions: Administration and enforcement of the European Registration, Evaluation and Authorisation of Chemicals regulations (REACH).	Health and Safety Authority	
Identify and manage risks linked to the chemicals manufactured or imported and registration of chemicals produced or imported in quantities greater than 1 tonne.	Manufacturers or importers of chemicals	
European Pollutant Release and Transfer Register Regulations (SI 123 of 2007): **Purpose:** the prevention and reduction of pollution by the establishment of a publicly accessible pollutant release and transfer register.		2009–2015 National
Relevant actions: Submit required data in relation to releases of pollutants and off-site transfers of pollutants and waste.	Operators	
Provide for electronic collection, assessment of data and report data to the EU Commission in relation to releases of pollutants and off-site transfers of pollutants and waste. Enforce regulations.	EPA	
PHYSICAL MODIFICATIONS		
Planning and Development Act (No 30 of 2000) as amended in 2002; Environmental Impact Assessment Regulations (SI 349 of 1989) as amended from 1994 to 2006: **Purpose:** to provide for the proper planning and development of urban and rural areas. Require that certain developments be assessed for likely environmental effects before planning permission is granted.		2009–2015 National
Relevant actions: Consider the environmental impacts of developments as part of the planning process.	Local authorities	
Additional actions: Physical modifications: Good practice measures are available in the Programmes of Measures – technical studies – Freshwater Morphology, Marine Morphology and National Summary Programme of Measures background documents.		
Investigate the ecological potential of heavily modified waters and implement identified mitigation measures.	Relevant public	2009–2015

What	Who leads	When & where
	authorities	Prioritised sites
OTHER ACTIVITIES IMPACTING ON WATER STATUS		
Alien species: Introduce new regulations under the Wildlife Act to control introduction or possession of any species of flora or fauna which may be detrimental to native species.	DEHLG	2009–2015 National
PREVENTION OR REDUCTION OF THE IMPACT OF ACCIDENTAL POLLUTION INCIDENTS		
Framework of Major Emergency Management **Purpose:** framework for emergency preparedness and response capability identifying hazards and risk to society, the economy, but also the environment including our natural water resource. **Relevant actions:** Prepare Major Emergency Plans with supporting plans, procedures and arrangements. Initiate a major emergency development programme for the implementation of the Major Emergency Plans. Co-ordinate the inter-agency aspects of major emergency preparedness and management in assigned regions. Ensure and promote implementation of the Framework.	Local authorities, An Garda Síochána, HSE Dept of Justice, Equality & Law Reform, Dept of Health & Children, DEHLG	2009–2015 National
OTHER ISSUES		
Climate change: all measures have been assessed to ensure that the plan adequately considers the potential impacts of climatic change (see Chapter 6) – this will be reviewed as climate change information improves.	DEHLG, EPA	2009–2015 National
Invasive alien species: support measures being developed by the national alien species study (conducted by QUERCUS) and local investigations at district level	DEHLG-NPWS, local authorities	2009–2015 National
Cruising and boating: enforce pump-out control and speed restrictions at district level.	Waterways Ireland, local authorities	2009–2015 Prioritised sites
Eutrophication of lakes and estuaries: Focused local management plans including programmes of measures.	DEHLG, EPA, DEHLG-NPWS, local authorities	2009–2015 National