# Comhairle Contae Chorcaí
# Cork County Council

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12th March 2009.

Subject: WWDL Application For Watergrasshill REF NO.D0201-01
Response to Notice issued by EPA in accordance with Regulation 18(3)(b) of the Waste Water Discharge (Authorisation) Regulations 2007 – dated 14th January 2009

Dear Ms O'Callaghan,

I refer to your letter of the 14th January 2009 concerning above. The following is our reply to your request for further information in accordance with Regulation 18(3) (b) dealing in sequence with the points raised:



List of attachments:
1. Revised Non Technical summary,
2. Revised tables -B4/B5/C2/D2
3. Revised Section F
4. Revised Map2 &Map7
5. Accreditation scopes for testing laboratories
6. Draft River Basin Management Plan for SWRBD

*The content of the electronic files is a true copy of the original hard copy submitted to the EPA.*

I trust the above answers the queries you have raised

Yours sincerely,

Valerie Hannon
A/Senior Executive Scientist
Cork County Council

# Regulation 18(3)(b)Reply Dated 10th March 2009

# Watergrasshill & Environs WWDL Agglomeration

# Application Register Number: D0201-01

**Regulation 16 Compliance requirements:**

i. The name of the agglomeration to which the application applies to is Watergrasshill & environs Agglomeration. The name of the agglomeration has been incorporated into the non technical summary.

**Section B – General Information**

i. Estimation of Existing & maximum proposed population equivalent is outlined in the below table:



| Population Equivalent | Existing | Maximum |
|---|---|---|
| Domestic | 1300 | 2150 |
| Commercial | 400 | 600 |
| Trade | 150 | 250 |
| Total | 1850 | 3000 |

**Section C – Infrastructure & Operation**

i. Secondary Discharge
- Frequency – Not available
- Duration – Not Available
- Volumes – Not Available

This classification of the overflow as a Secondary Overflow, should be reclassified as a Stormwater Overflow.

As a result of the reclassification the following drawing is replaced with the drawings in Section B.5

| Withdrawn Drawing | | Replacement Drawing | |
|---|---|---|---|
| Number | Title | Number | Title |
| B4 – Map7 | Location Secondary Discharge SW-02 WGH, Attachment B4- Map 7 | B5- Map 7 | Location Stormwater Overflow Discharge SW-02 WGH, Attachment B5- Map 7 |

ii. Currently the wastewaters overflow to the percolating filters cannot be diverted to the WWTP. To divert the wastewaters back to the WWTP

would involve the construction of a new Storm Holding Tank & associated pipework. Funding in the order of €150,000 would be required to carry this out, currently Funding is not available for this work.

iii. Details of Pumping Stations located with the agglomeration:

There are 2 Nr Pumping Stations located within the Agglomeration of Watergrasshill, which are situated at the following locations:

1. Ard Cashel Housing Estate – Operated by a private developer
2. Priory Court Housing Estate - Operated by a private developer

**Please note that these Pumping Stations are not taking in Charge by Cork County Council, and as such are not the responsibility of Cork County Council**

**Ard Cashel:**

Grid Reference: 176091E, 083942N

This Pumping Station caters for the housing Estate of Ard Cashel

The Pumping Station consists of the following elements:

- The system consists of 2 no: 5.2kw vortex raw sewage pumps with 70mm free passage delivering 20 litres per second @ 10 meters head. The controls operate on a duty/assist regime with alteration of duty pump.
- The system is fitted with a dial out alarm system which alarms on pump chamber high level, power out and pump trip.
- 1 no: 22m³ pump chamber.
  1 no: 32m³ overflow back up chamber with flap valve system

  Total storage: 54m³

- 1 Nr Back up Generator

Please note that there is no discharge pipe or overflow pipe from the Overflow Sump.

**Priory Court**

Grid Reference: 176283E, 083888N

This pumping station caters for the housing estate of Priory Court

The Pumping Station consists of the following elements:

- 1 no: Sump volume 4m$^3$

1 no: Holding Tank of capacity 18m$^3$

Total Storage of 22m$^3$

- 2 Nr Duty / Standby Pumps controlled by automatic floats. Pump duty is 9.0 l/s at 13.22m head. Homa Type pumps, complete with autocouplings, guide rails, lifting chains, top bracket, pipework & valves.

iv. There are no overflows associated with the Private pumping Stations in the agglomeration

v. Pump Details are outlined in Part iii above

vi. In assessing the one stormwater overflow with regard to Section 4 of the DoEH&LG guidance:

1. The overflow does not cause significant visual or aesthetic impact and public complaint
2. The overflow does not cause deterioration in the water quality in the receiving waters
3. The overflow does not give rise to failure in meeting the requirements of the national Regulations on foot of EU Directives (Bathing Waters, etc)
4. The overflow does not operate in dry weather

Based on the assessments above, no further considerations were necessary



**Section E: Laboratory Monitoring & Analysis**

i. Please find scope of accreditation attached as requested and below Matrix of loads for analysis.

http://www.euroenv.ie/cms/publish/about_us/accreditations/MCERT_Accreditation_Soil_Analysis.php

| Parameter | Matrix | Prep Method | Units | LOD | Method | Accredited |
|---|---|---|---|---|---|---|
| Atrazine | Water | Solvent Extraction | ug/L | 0.01 | HPLC | No |
| Simazine | Water | Solvent Extraction | ug/L | 0.01 | HPLC | No |
| Dibromomethane | Water | Headspace | ug/L | 1 | GC-MS | No |
| Toluene | Water | Headspace | ug/L | 0.2 | GC-MS | Yes |
| Xylene | Water | Headspace | ug/L | 0.2 | GC-MS | Yes |
| Metals | | | | | | |
| Arsenic | Water | | ug/L | 0.96 | ICP-MS | Yes |
| Barium | Water | | ug/L | 12.1 | ICP-MS | Yes |
| Boron | Water | | ug/L | 4.2 | ICP-MS | Yes |
| Chromium | Water | | ug/L | 0.93 | ICP-MS | Yes |
| Copper | Water | | ug/L | 0.2 | ICP-MS | Yes |
| Lead | Water | | ug/L | 0.38 | ICP-MS | Yes |
| Nickel | Water | | ug/L | 0.47 | ICP-MS | Yes |
| Zinc | Water | | ug/L | 4.6 | ICP-MS | Yes |
| Cadmium | Water | | ug/L | 0.09 | ICP-MS | Yes |
| Mercury | Water | | ug/L | 0.2 | ICP-MS | Yes |
| Selenium | Water | | ug/L | 0.74 | ICP-MS | Yes |

| | | | | | | |
|---|---|---|---|---|---|---|
| Cyanide | Water | | ug/L | 5 | Colorimetry | No |
| Fluoride | Water | | mg/L | 0.09 | Colorimetry | Yes |
| pH | Water | | pH Units | 0.01 | Electrometry | Yes |
| Conductivity | Water | | uscm-1@ 25ºC | 0.6 | Electrometry | Yes |
| Solids (Total Suspended) | Water | Filtration | mg/L | 3 | Drying @ 104℃ | No |
| Ammonia | Water | | mg/L as N | 0.1 | Colorimetry | Yes |
| BOD | Water | | mg/L | 2 | Electrometry | Yes |
| COD | Water | | mg/L | 5 | Spectrophotometry | Yes |
| Nitrogen (Total) | Water | | mg/L as N | | Calculation | No |
| Nitrite | Water | | mg/L as N | 0.003 | Colorimetry | No |
| Nitrate | Water | | mg/L as N | 0.09 | Colorimetry | No |
| Phosphate (Total) | Water | Digestion | mg/L as P | 0.005 | Colorimetry | Yes |
| Ortho Phosphate | Water | | mg/L as P | 0.006 | Colorimetry | Yes |
| Sulphate | Water | | mg/L as SO4 | 2 | Colorimetry | Yes |
| Total Phenols | Water | Solvent Extraction | ug/L | 0.1 | GC-MS | No |

Attached are Accreditation Certificates

ii. A Composite Sampling Unit is provided on the outlet of the primary discharge.



## Section F: Existing Environment & Impact Discharges

i. The most recent catchments Plan for the receiving water body, the Draft River Basin Management Plan for the South Western River Basin District is attached.

ii. Assessment of discharges from the wastewater treatment plant have been updated to reflect the impacts from the maximum p.e – See Revised Section F

iii. There are no records of formal correspondence with the National Parks and Wildlife Service.

## SECTION A: REVISED NON-TECHNICAL SUMMARY

### The Waste Water Works and the Activities Carried Out Therein

Watergrasshill village is situated on the R639, formerly the N8, just 14km north of Cork City and 8km south of Rathcormack village.

The wastewater treatment plant is designed to cater for the agglomeration named 'Watergrasshill and Environs'.

The wastewater in Watergrasshill is collected in a partially combined foul and separate foul sewerage drainage network. A fully separate storm water system is constructed for the village. Due to the topography of the village a number of pumping stations are located within the village. The Wastewater Treatment Plant site is located approximately 800m northeast of Watergrasshill village in the townland of Meenane. Access to the wastewater treatment plant is via an underpass under the N8 dual carriageway with a height restriction of 3.6m. The site is approximately 0.2 hectare in area.

Wastewater is pumped from two pumping stations which are located in private housing schemes in Mitchelfort townland to the sewer main artery along the main street through the village. The partially separate collection system gravitates from the village to the treatment plant. A new sewer main was recently laid from the school along the new bypass road to the new treatment plant. The new treatment plant was commissioned in 2002 with a design capacity of 3000 PE and currently serves approximately 1600PE.



On entering the plant, an automatic screen firstly removes screenings from the influent at the inlet works. The sewage then enters the pump sump from where it is forwarded to the circular aeration tank (Ø 7.8m). Following the aeration process the effluent enters the 5.3m diameter settling tank. 2 No. 1m diameter sand filtering tanks further treat the effluent after the settling tank. These filters are automatically backwashed by clear effluent when they clog up. From the sand filters the effluent enters the outlet sump. The final effluent is then discharged from the outlet sump via a 300mm Ø outfall pipe to the River Flesk.

Influent in excess of 3DWF overflow to the old treatment works on site prior to discharge to the adjacent river. The old treatment works consists of an Imhoff tank followed by Percolating Filters. The overflow effluent from the percolating filters is discharged to the Rviver Flesk via a 225mmØ outfall pipe.

Sludge is returned from the clarifier to the aeration tank while surplus sludge is forwarded to a small open tank at present for desludging as required. Ferric dosing is in place for phosphorus removal. Cork County Council has recently appointed a contractor for the provision of a Picket Fence Thickener.

Watergrasshill WWTP is operated by Cork County Council. The plant is operated by a caretaker who is on duty from 8.00am to 5.30pm Monday – Saturday.

### The sources of emissions from the waste water works

The pollution load for the 'Watergrasshill and Environs' agglomeration arises from the following areas:

- Domestic population
- Commercial premises

- School & crèches
- Infiltration

The sewerage from all commercial activities is collected via the public sewer and treated in conjunction with the domestic waste at the WWTP.

**The nature and quantities of foreseeable emissions from the waste water works into the receiving aqueous environment as well as identification of significant effects of the emissions on the environment**

The final effluent is discharged to the River Flesk. At design capacity the WWTP will discharge 2,142m3/d.

**The proposed technology and other techniques for preventing or, where this is not possible, reducing emissions from the waste water works**

***Technology***
The WWTP has a sufficient number of standby pumps, automatic sample facilities, etc is provided to ensure continuation of the wastewater treatment.

The treatment works consists of the following elements:
- Inlet Works
- Forward Feed Sump
- Aeration Tank
- Settling Tank
- 2 Nr Sand Filters
- Outfall to Flesk River



***Techniques***
The WWTP shall be operated and managed in accordance with the Performance Management System, developed by the Water Service National Training Group (WSMTG).

**Further measures planned to comply with the general principle of the basic obligations of the operator, i.e., that no significant pollution is caused**

A new Picket Fence Thickener (PFT) is due to be constructed and commissioned for the WWTP. The PFT shall be 6.9m ∅ by 4m high and shall have a capacity of 105$m^3$, which equates to 4 weeks storage of sludge.

The most recent upgrade at the plant was the installation of a 6mm automatic screen at the inlet works.

The recent upgrading of the plant in 2000 and the additional works planned shall ensure that the basic obligations of the operator are being adhered to.

**Measures planned to monitor emissions into the environment**

The Cork County Council Environmental Laboratory carries out sampling of the influent and effluent biannually. Sampling, Monitoring and analysis of the wastewater sludge is also undertaken by the Environmental Laboratory.

The Cork County Council Environmental Department located in Inniscarra takes samples from the River Flesk upstream and downstream of the wastewater

treatment plant approximately 6 times per year. Samples of the influent and effluent are also taken at these times.

The EU Water Framework Directive Monitoring Programme is to be fully operational by the year 2012. This monitoring programme was prepared by the EPA 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). The River Flesk is to have a number of operational monitoring sites under this monitoring programme.

List of Attachments include the following:

- Location Map Scale 1:50,000 Attachment A1 Map 1
- Site Location Map of WWTP & Pumping Station (Revised) Attachment A1 Map 2
- Site Layout Attachment A1 Map 3

## B.4 Revised - Location of Secondary Discharge Point(s)

Give the location of **all** secondary discharge point(s) associated with the waste water works. Please refer to Guidance Note for information on Secondary discharge points.

| | |
|---|---|
| **Type of Discharge** | Not Applicable |
| **Unique Point Code** | Not Applicable |
| **Location** | Not Applicable |
| **Grid ref (6E, 6N)** | Not Applicable |

**Attachment B.4** should contain appropriately scaled drawings / maps (≤A3) of the discharge point(s), including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.5, C.1, D.2, E.3 and F.2.

| **Attachment included** | **Yes** | **No** |
|---|---|---|
| | | √ |

## B.5 Revised - Location of Storm Water Overflow Point(s)

Give the location of **all** storm water overflow point(s) associated with the waste water works.

| | |
|---|---|
| **Type of Discharge** | 225mm diameter outfall pipe from old percolating filters. Open Pipe |
| **Unique Point Code** | SW 2 - WGH |
| **Location** | WWTP Site at Meenane, Watergrasshill |
| **Grid ref (6E, 6N)** | 177253E, 085407N |

**Attachment B.5** should contain appropriately scaled drawings / maps (≤A3) of storm water overflow point(s) associated with the waste water works, including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, C.1, D.2, E.3 and F.2.

| **Attachment included** | **Yes** | **No** |
|---|---|---|
| | | √ |

## C.2 Revised - Outfall Design and Construction

Provide details on the primary discharge point & secondary discharge points and storm overflows to include reference, location, design criteria and construction detail.

*Primary Discharge Point, SW01-Watergrasshill*

| | |
|---|---|
| **Type of Discharge** | 300mm concrete diameter outfall pipe from wastewater treatment plant. Open Pipe |
| **Unique Point Code** | SW01-WGH |
| **Location** | Approximately 850m north of the village centre, off the R639, at the WWTP Site |
| **Grid ref (6E, 6N)** | 177230E, 085422N |

The primary discharge point, SW01-Watergrasshill, is the main outlet from Watergrasshill Wastewater Treatment Plant. The outfall runs in an eastern direction approximately 40m from the outlet manhole across to the river. The point of discharge is a 300mm concrete open pipe, which discharges to an open drain of length of 3m prior to discharge to the river

*Storm water Overflow, SW02-Watergrasshill*

| | |
|---|---|
| **Type of Discharge** | 225mm concrete diameter overflow pipe from inlet works of the wastewater treatment plant. Open Pipe |
| **Unique Point Code** | SW02-Watergrasshill |
| **Location** | Approximately 850m north of the village centre, off the R639, at the WWTP Site |
| **Grid ref (6E, 6N)** | 177253E, 085407N |



The storm water overflow, SW02-Watergrasshill, is a 225mm diameter concrete overflow pipe from the old percolating filters at the wastewater treatment plant. The outfall runs in an eastern direction approximately 10m to the river. The point of discharge is an open pipe.

**Attachment C.2** should contain any supporting documentation on the design and construction of <u>any and all</u> discharge outfalls, including stormwater overflows, from the waste water works.

| **Attachment included** | **Yes** | **No** |
|---|---|---|
| | | √ |

## D.2 Revised - Tabular Data on Discharge Points

Applicants should submit the following information for each discharge point:

**Table D.2:**

| PT_CD | PT_TYPE | LA_NAME | RWB_TYPE | RWB_NAME | DESIGNATION | EASTING | NORTHING |
|---|---|---|---|---|---|---|---|
| SW 1-WGH | Primary | Cork County Council | River | River Flesk | - | 177230 | 085422 |
| SW 2 - WGH | Stormwater Overflow | Cork County Council | River | River Flesk | - | 177253 | 085407 |

An individual record (i.e. row) is required for each discharge point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at www.epa.ie. This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, E.3 and F.2.

## SECTION F: REVISED- EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGE(S)

*Advice on completing this section is provided in the accompanying Guidance Note.*

Detailed information is required to enable the Agency to assess the existing receiving environment. This section requires the provision of information on the ambient environmental conditions within the receiving water(s) upstream and downstream of any discharge(s).

Where development is proposed to be carried out, being development which is of a class for the time being specified under Article 24 (First Schedule) of the Environmental Impact Assessment Regulations, the information on the state of the existing environment should be addressed in the EIS. **In such cases, it will suffice for the purposes of this section to provide adequate cross-references to the relevant sections in the EIS.**

### F.1. Assessment of Impact on Receiving Surface or Ground Water

- Give summary details and an assessment of the impacts of any existing or proposed emissions on the environment, including environmental media other than those into which the emissions are to be made.

- Details of all monitoring of the receiving water should be supplied via the following web based link: http://78.137.160.73/epa_wwd_licensing/. Tables F.1(i)(a) & (b) should be completed for the primary discharge point. Surface water monitoring locations upstream and downstream of the discharge point shall be screened for those substances listed in Tables F.1(i)(a) & (b). Monitoring of surface water shall be carried out at not less than two points, one upstream from the discharge location and one downstream.

- For discharges from secondary discharge points Tables F.1(ii)(a) & (b) should be completed. Furthermore, provide summary details and an assessment of the impacts of any existing or proposed emissions on the surface water or ground (aquifers, soils, sub-soils and rock environment), including any impact on environmental media other than those into which the emissions are to be made.

- Provide details of the extent and type of ground emissions at the works. For larger discharges to groundwaters, e.g., from Integrated Constructed Wetlands, large scale percolation areas, etc., a comprehensive report must be completed which should include, inter alia, topography, meteorological data, water quality, geology, hydrology, and hydrogeology. The latter must in particular present the aquifer classification and vulnerability. The Geological Survey of Ireland Groundwater Protection Scheme Dept of the Environment and Local Government, Geological Survey of Ireland, EPA (1999) methodology should be used for any such classification. This report should also identify all surface water bodies and water wells that may be at risk as a result of the ground discharge.

- Describe the existing environment in terms of water quality with particular reference to environmental quality standards or other legislative standards. Submit a copy of the most recent water quality management plan or catchment management plan in place for the receiving water body.

Give details of any designation under any Council Directive or Regulations that apply in relation to the receiving water.

- Provide a statement as to whether or not emissions of main polluting substances (as defined in the *Dangerous Substances Regulations S.I. No. 12 of 2001*) to water are likely to impair the environment.

- In circumstances where water abstraction points exist downstream of any discharge describe measures to be undertaken to ensure that discharges from the waste water works will not have a significant effect on faecal coliform, salmonella and protozoan pathogen numbers, e.g., Cryptosporidium and Giardia, in the receiving water environment.

- Indicate whether or not emissions from the agglomeration or any plant, methods, processes, operating procedures or other factors which affect such emissions are likely to have a significant effect on –

  (a) a site (until the adoption, in respect of the site, of a decision by the European Commission under Article 21 of Council Directive 92/43/EEC for the purposes of the third paragraph of Article 4(2) of that Directive) —

    (i) notified for the purposes of Regulation 4 of the Natural Habitats Regulations, subject to any amendments made to it by virtue of Regulation 5 of those Regulations,

    (ii) details of which have been transmitted to the Commission in accordance with Regulation 5(4) of the Natural Habitats Regulations, or

    (iii) added by virtue of Regulation 6 of the Natural Habitats Regulations to the list transmitted to the Commission in accordance with Regulation 5(4) of those Regulations,

  (b) a site adopted by the European Commission as a site of Community importance for the purposes of Article 4(2) of Council Directive 92/43/EEC[1] in accordance with the procedures laid down in Article 21 of that Directive,

  (c) a special area of conservation within the meaning of the Natural Habitats Regulations, or

  (d) an area classified pursuant to Article 4(1) or 4(2) of Council Directive 79/409/EEC[2];

  [1]Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ No. L 206, 22.07.1992)

  [2]Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ No. L 103, 25.4.1979)

- Describe, where appropriate, measures for minimising pollution over long distances or in the territory of other states.

- This section should also contain full details of any modelling of discharges from the agglomeration. Full details of the assessment and any other relevant information on the receiving environment should be submitted as **Attachment F.1.**

| **Attachment included** | **Yes** | **No** |
|---|---|---|
| | √ | |

The plant is performing satisfactorily at present and operating within the requirements of the following legislation. There are no improvements planned at present for the Watergrasshill Wastewater Treatment Plant, other than the installation of the Picket Fence Thickener.

***Water Quality Standards***

The Water Framework Directive (WFD) aims to establish an integrated approach to water protection, improvement and sustainable use. In order to achieve the requirements of the WFD, Ireland has been divided into a number or River Basin Districts or management units. The South Western River Basin District (SWRBD) comprises substantially the counties of Cork and Kerry, all of Cork City, and also parts of counties Limerick, South Tipperary and Waterford.

The River Flesk is included in the SWRBD. The overall objectives of the SWRBD project include the following:

- Strengthen compliance with EU Directives and national legislation
- Collect and analyse information to determine water quality and identify possible threats to water status
- Prevent further deterioration and protect/enhance water quality
- Develop a programme of measures to address all significant pressures and sources of impact on aquatic ecosystems and groundwater
- Encourage and facilitate public participation including the maintenance of a project website
- Promote sustainable water use



In order to achieve these objectives the following project tasks have been identified:

- Identify pressures on water bodies and assess risk of not achieving compliance with the Water Framework Directive
- Prepare a Characterisation Report
- Identify Heavily Modified (HMWB) and Artificial Water Bodies (AWB)
- Establish risk to waters from Hazardous Substances
- Establish data management system and GIS
- Prepare programme of measures
- Review of monitoring needs
- Design monitoring programme
- Prepare River Basin Management Strategy
- Assist public participation in the project
- Prepare printed reports
- Assist capacity building

The SWRBD have yet to set water quality standards for the River Flesk under a water quality or catchments management plan. The River Basin Management System currently being developed will include a programme of measures and a River Basin Management Strategy, designed to achieve at least good status for all waters by 2015, and to maintain high status where it exists. Therefore discharges from Watergrasshill Wastewater Treatment Plant cannot cause

deterioration in good water quality under the Water Framework Directive at present.

The River Flesk is not a designated Shellfish area under the Shellfish Waters Regulations, S.I.200 of 1994. The River Bride, into which the River Flesk flows, is also not designated under these regulations.

The River Flesk is not designated a Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988, however the River Bride and River Blackwater are designated Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988.

The River Flesk is not designated a Bathing Water under the Bathing Water Regulations, S.I. 178 of 1998 as amended.

The River Flesk is not a designated Sensitive Area under the Urban Wastewater Treatment Regulations 2001 (S.I. 254 of 2001). The River Blackwater downstream of Mallow Railway to Ballyduff Bridge is a designated Sensitive Area. This is not within 2km of any discharge point from Watergrasshill Watewater Treatment wastewater works.

Water is abstracted at west of Bridesbridge village in the townland of Deerpark, by Conna Regional Water Supply. Approximately 1136$m^3$/d is abstracted form the River Bride.



***Areas of Conservation***

The Department of the Environment, Heritage and Local Government is responsible for the designation of conservation sites in Ireland. It is required under European law and national laws to conserve habitats and species, through designation of conservation areas under Special Areas of Conservation, Natural Heritage Areas and Special Protected Areas.

*Special Areas of Conservation*
Candidate Special Areas of Conservation (cSACs) are protected under the European Union (EU) Habitats Directive (92/43/EEC), as implemented in Ireland by the European Communities (Natural Habitats) Regulations, 1997.

The Blackwater River cSAC (Site Code: 002170) is very large, extending from the tidal estuary of the river at Youghal Co. Cork to the upper tributaries and their flood plains, in Cos. Cork Kerry, Limerick, Tipperary and Waterford, the, including the 3km downstream of discharge area along the River Flesk is a designated Special Area of Conservation.

The cSAC is designated on the basis of the presence of a large number of EU Habitats Directive Annex 1 habitats and Annex 2 species. Many of these are estuarine habitats and species found only in the lower reaches of the River Blackwater, however a number may be present in the River Flesk section of the cSAC including, for example the Annex 1 habitats, 'alluvial wet woodlands', 'floating river vegetation', and 'old oak woodlands'; and the Annex 2 species sea lamprey, river lamprey, brook lamprey, Atlantic salmon, freshwater pearl-mussel and otter.

The Blackwater River Site Synopsis is included in this attachment.

*Natural Heritage Areas*
The River Flesk does not flow through any Natural Heritage Areas (NHA). Natural Heritage Areas are the basic designation for wildlife. An NHA is an area

considered important for the habitats present or which holds species of plants and animals whose habitat needs protection.

Under the Wildlife Amendment Act 2000, NHAs are legally protected from damage from the date they are formally proposed for designation.

*Special Protected Areas*
Special Protection Areas (SPAs) are designated in order to safeguard certain habitats pursuant to EU Directive requirements. The EU Birds Directive (79/409/EEC) requires designation of SPAs for listed rare and vulnerable species, migratory species and wetlands.

No designated special protected areas are located along the River Flesk. There are areas of the River Blackwater that are designated SPAs, however these are located downstream of Fermoy and therefore greater than 2km from all discharge points.

***Receiving Water Quality Requirement***

Water Quality analysis data for the River Flesk was obtained from Cork County Council. The EPA also takes samples from three locations along the River Flesk in the vicinity of the treatment plant. These are located 0.35km downstream of the plant at Condonstown Bridge (d/s of plant), 2.3km downstream at Ballinallig Bridge (d/s of plant), Ballyglissane Bridge 5.35 d/s of plant and at the Br upstream of the confluence of the Flesk and River Bride, approximatlet 9km d/s of plant.



*Table F1-1: Biological Quality Rating for River Flesk – Downstream of Discharge*

| **Sampling Location** | **EPA Biological Quality Rating (Q values)** | | | |
|---|---|---|---|---|
| | **1995 -1997** | **2001 – 2003** | **2006** | **Target** |
| Condonstown Bridge | 3 | 3 | 3 | 3-4 |
| Ballinallig Bridge | 4 | 3-4 | 4 | 4 |
| Ballyglissane Bridge | 4 | 4 | 4 | 4 |
| Br u/p of Confluence of River Bride | 4 | 4 | 4 | 4 |

The Royal Commission in its report on Water Quality Guidelines recommends that *"in all circumstances effluent discharges which are calculated to raise the BOD of the receiving water, outside the mixing zone, by more than 1 mg/l should be discouraged".* The average existing background level for BOD is estimated at 1mg/l. Therefore the receiving water limiting value for BOD for this river is 2mg/l.

The standard water quality requirements for dangerous substances are based on the Water Quality (Dangerous Substances) Regulations 2001.

Hence, the principal receiving water quality requirements are given in Table 3 below: -

*Table F1-2: Receiving Water Quality Limiting Values*

| **Parameter** | **Water Quality Standard (mg/l)** |
|---|---|
| Chromium | 30 |
| Copper | 30 |

| | |
|---|---|
| Lead | 10 |
| Nickel | 50 |
| Zinc | 100 |

***Based on Hardness of receiving waters >100mg/l CaCO3***

***Effluent Standards***

The treated effluent quality requirements shown in the table below are determined with respect to the EC Urban Wastewater Directive, given effect in Irish Law by S.I.254 of 2001.

*Table F1-3: Minimum Effluent Standards based on S.I.254 of 2001 and Recorded Effluent Concentrations*

| **Parameter** | **Effluent Standards (mg/l)** | **Actual Concentrations* (mg/l)** |
|---|---|---|
| Biological Oxygen Demand (BOD) | 25 | 5.6 |
| Suspended Solids (SS) | 35 | 13 |

*Actual Concentration is the average effluent concentrations recorded at the outlet of the WWTP by Cork County Council Wastewater Laboratory during the period Feb '08 to July '08.

From Table 4 above, it is evident that treated effluent from the Watergrasshill wastewater treatment plant is compliant with the quality of effluent standards set out in the above legislation.

***Revised Assimilative Capacity of the Receiving Water based on Maximum Discharge from the WWTP***



a) **Mass Balance Equation for Orthophosphate:**

Median flow of River = 0.375 $m^3$/sec
Median $oPO_4$-P in River (upstream) = 0.05 mg/L

Average volume of discharge = 0.025 $m^3$/sec
Median value for $oPO_4$-P in discharge = 1.075 mg/L

$$C_{final} = \frac{(0.375 \times 0.05) + (0.025 \times 1.075)}{0.375 + 0.025}$$

$C_{final}$ = 0.11 mg/L $oPO_4$-P

The increase in Orthophosphate due to the discharge of Watergrasshill WWTP is 0.51 mg/L.

b) **Mass Balance Equation for BOD:**

Flow of River (95%) = 0.0665 $m^3$/sec
Average BOD in River (upstream) = 1.51 mg/L

Average volume of discharge = 0.025 $m^3$/sec
Average BOD in discharge = 5.63 mg/L

$$C_{final} = \frac{(0.0665 \times 1.51) + (0.025 \times 5.63)}{0.0665 + 0.025}$$

$C_{final}$ = 2.64 mg/L BOD

The increase in BOD due to the discharge of Watergrasshill WWTP is 1.163 mg/L.

c) **Mass Balance Equation for Suspended Solids:**

Flow of River (95%) = 0.0665 $m^3$/sec
Average Suspended Solids in River (upstream) = 5.73mg/L

Average volume of discharge = 0.025$m^3$/sec
Average Suspended Solids in discharge = 13mg/L

$$C_{final} = \frac{(0.0665 \times 5.73) + (0.025 \times 13)}{0.0665 + 0.025}$$

$C_{final}$ = 7.71 mg/L Suspended Solids



The increase in Suspended Solids due to the discharge of Watergrasshill WWTP is 1.98 mg/L.

d) **Mass Balance Equation for Total Phosphate:**

50% Median flow of River = 0.375 $m^3$/sec
Median $TPO_4$-P in River (upstream) = 0.2 mg/L

Average volume of discharge = 0.025 $m^3$/sec
Median $TPO_4$-P in discharge = 1.355 mg/L

$$C_{final} = \frac{(.375 \times 0.2) + (0.025 \times 1.355)}{0.375 + 0.025}$$

$C_{final}$ = 0.27 mg/L $TPO_4$-P

The increase in Total Phosphate due to the discharge of Watergrasshill WWTP is 70 $\mu$g/L.

e) **Mass Balance Equation for Total Nitrogen:**

Flow of River (95%) = 0.0665 $m^3$/sec
Average Total Nitrogen in River (upstream) = 3.61 mg/L

Average volume of discharge = 0.025 $m^3$/sec
Average Total Nitrogen in discharge = 27 mg/L

$$C_{final} = \frac{(0.0665 \times 3.61) + (0.025 \times 27)}{0.0665 + 0.025}$$

$C_{final}$ = 10.00 mg/L Total Nitrogen

The increase in Total Nitrogen due to the discharge of Watergrasshill WWTP is 7.77 mg/L.



f) **Mass Balance Equation for Sulphate:**

Flow of River (95%) = 0.0665 $m^3$/sec
Average Sulphate in River (upstream) = 30 mg/L

Average volume of discharge = 0.025 $m^3$/sec
Average Sulphate of discharge = 38.7 mg/L

Average Sulphate in River (downstream) = 30 mg/L

$$C_{final} = \frac{(0.0665 \times 30) + (0.025 \times 38.7)}{0.0665 + 0.025}$$

$C_{final}$ = 32.38 mg/L Sulphate

The increase in Sulphate due to the discharge of Watergrasshill WWTP is 2.38 mg/L.

g) **Mass Balance Equation for Ammonia-N:**

Flow of River (95%) = 0.0665 $m^3$/sec
Average Ammonia-N in River (upstream) = 0.29 mg/L

Average volume of discharge = 0.025 $m^3$/sec
Average Ammonia-N in discharge = 0.07 mg/L

Average Ammonia-N in River (downstream) = 0.42 mg/L

$$C_{final} = \frac{(0.0665 \times 0.29) + (0.025 \times 0.07)}{0.0665 + 0.025}$$

$C_{final}$ = 0.23 mg/L Ammonia

Assimilative Capacity Calculations were not performed for the following parameters, as the substances were below the limit of detection in the upstream samples, in the discharge samples and in the downstream samples:

(a) Chromium
(b) Copper
(c) Lead
(d) Nickel
(e) Cadmium
(f) Barium
(g) Boron
(h) Zinc
(i) Fluoride



***Discharges in proximity of Wastewater Works***

Water quality analysis data presented in Tables 5 & 6 below was recorded by Cork County Council wastewater laboratory and covers a sampling period from April 2008 to July 2008.

Also discharging to the River Flesk, downstream of the WWTP, is effluent from Kepak IPPC No. PO 595-01. The activities undertaken at the Kepak facility include the Slaughter of animals in installations where the capacity exceeds 1500.

*Table F1-5: Upstream Water Quality*

| **Parameter** | **Upstream Monitoring Station** | | | | |
|---|---|---|---|---|---|
| | **03/04/08** | **04/06/08** | **12/06/08** | **10/07/08** | **17/07/08** |
| Ph | - | 7.3 | - | - | 7.4 |
| BOD | <1.0 | 1.51 | 1.5 | - | <1.0 |
| SS | 3 | 11 | 6 | 3 | 6 |
| Ammonia | <0.1 | <0.1 | 0.2 | - | <0.1 |
| Ortho- | <0.05 | <0.05 | <0.05 | 0.06 | <0.05 |

| | | | | | |
|---|---|---|---|---|---|
| Phosphate | | | | | |

*Table F1-6: Downstream Water Quality*

| **Parameter** | **Downstream Monitoring Station** | | | | |
|---|---|---|---|---|---|
| | **03/04/08** | **04/06/08** | **12/06/08** | **10/07/08** | **17/07/08** |
| Ph | - | 7.3 | - | - | 7.3 |
| BOD | 1.31 | <1 | 2.97 | - | <1.0 |
| SS | 3 | 8 | 8 | 3 | 6 |
| Ammonia | <0.1 | <0.1 | 0.2 | - | <0.1 |
| Ortho-Phosphate | <0.05 | <0.05 | <0.41 | 0.1 | <0.05 |

The data in the above tables confirms the wastewater discharge has little effect on the overall river quality given adequate flow in the river and dispersion time.

## F.2 Tabular Data on Drinking Water Abstraction Point(s)

Applicants should submit the following information for each downstream or downgradient drinking water abstraction point. The zone of contribution for the abstraction point should be delineated and any potential risks from the waste water discharge to the water quality at that abstraction point identified.

| **ABS_CD** | **AGG_SERVED** | **ABS_VOL** | **PT_CD** | **DIS_DS** | **EASTING** | **NORTHING** | **VERIFIED** |
|---|---|---|---|---|---|---|---|
| Abstraction Code | Conna Reginal Water Supply | 1136 $m^3$/day | Point Code Provide label ID's | 12Km | 184559 | 091382 | Y = GPS used N = GPS not used |

**Note:** Attach any risk assessment that may have been carried out in relation to the abstraction point(s) listed.



The effluent from the primary and secondary discharge points are discharged to the River Flesk. The River Flesk joins the River Bride approximately 8km downstream of the discharge point of the WWTP. 3km further downstream of the River Bride, Conna Regional Water Supply abstracts water. Approximately 1,136$m^3$/day is abstracted from the River Bride and treated at Conna Regional Water Treatment Plant.

An individual record (i.e. row) is required for each abstraction point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at www.epa.ie. This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, D.2 and E.3.

**Attachment F.2** should contain any supporting information.

Attachment F.2 includes

- Cryptosporidium Risk Assessment for Conna Regional
- Agglomeration for Conna Regional Distribution Network.

## REVISED - ANNEX 1: TABLES / ATTACHMENT

| Attachment | Description | Status |
|---|---|---|
| A1 Map 1 | 1:50,000 Location Map | Original |
| A1 Map 2 | Site Location of WWTP & Pumping Stations | Revised |
| A1 Map 3 | Site Layout | Original |
| B1 Map 4 | Agglomeration | Original |
| B2 Map 5 | Location of Waste Water Treatment Plant | Original |
| B3 Map 6 | Location of Primary Discharge Point SW01 WGH | Original |
| B4 Map 7 | Location of Secondary Discharge Point SW01 WGH | Withdrawn |
| B4 Map 7 | Location of Storm Water Overflow Point SW01 WGH | New Drawing |
| B5 | Not Applicable | Original |
| B6 | Part VIII Planning | Original |
| B7 | Not Applicable | Original |
| B8 Map 8 | Location of Site Notice | Original |
| B8 | Notice & Advertisement | Original |
| B10 | WSIP Programme | Original |
| B 11 | Not Applicable | Original |
| B 12 | Not Applicable | Original |
| C1 Map 9 | Wastewater Treatment Plant | Original |
| C1 Drg 1 | Schematic of Wastewater Treatment Plant | Original |
| C2 | Not Applicable | Original |
| D1 | Influent Results | Original |
| Section D2 | Discharge Points | Original |
| E2 | | Original |
| Section E3 | Monitoring & Sampling Points | Original |
| E4 | | Original |
| F1 | Laboratory Test Results<br>SAC Blackwater River Site Synopsis | Original |
| F2 Map 10 | Agglomeration Map for Conna Regional Water Supply Network | Original |
| F2 | Conna Regional Water Abstraction Results<br>Conna Regional Cryptosporidium Risk Assessment<br>Abstraction Points | Original |
| G1 | SAC Blackwater River Site Synopsis<br>WSIP Programme | Original |
| G2 | WSIP Programme<br>Laboratory Test Results | Original |
| G3 | WSIP Programme | Original |
| G4 | Not Applicable | Original |

Waste Water
Treatment Plant

Ard Castle
Pumping Station
176091E, 083942N

Priory Court
Pumping Station
176283E ,083888N



## NOTES

1. Dimensions are not to be scaled from drawing.
   For any discrepancies found consult with the design office.
2. This drawing is to be read in conjunction with the Specification.
3. This drawing is to be read in conjunction with all other contract drawings.

| No. | Date | Drwn | Surv | Chkd | Revision Description |
|---|---|---|---|---|---|
| | | | | | |

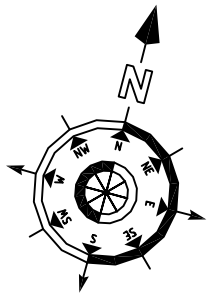
Cork County Council,
Northern Division.

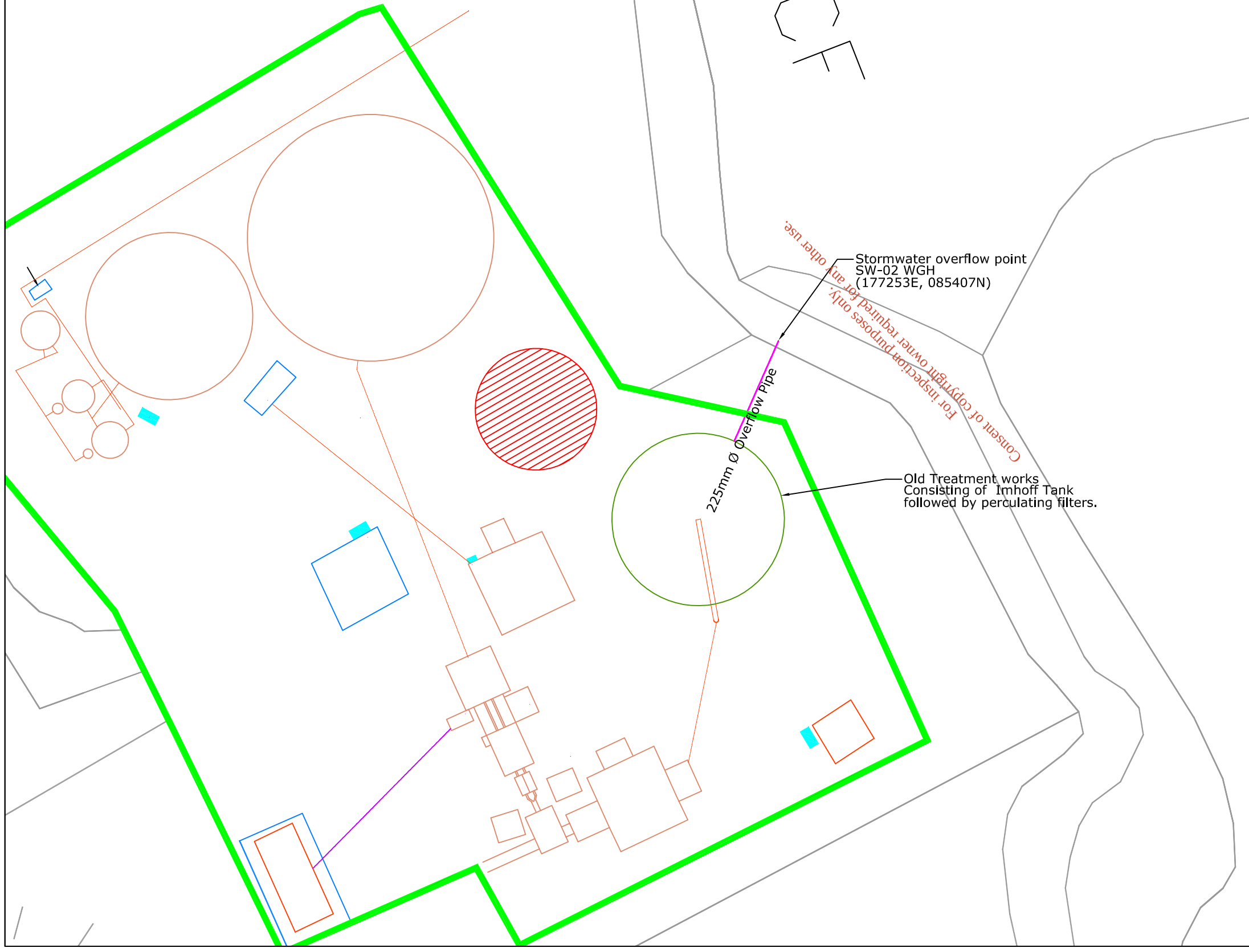
N. O'KEEFFE, B.E.,
A/COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Watergrasshill & Environs
Wastewater Discharge
Licence Application

Drawing Title:
Site Location of W.W.T.P
& Pumping Stations
(Attachment A1 - Map 2)

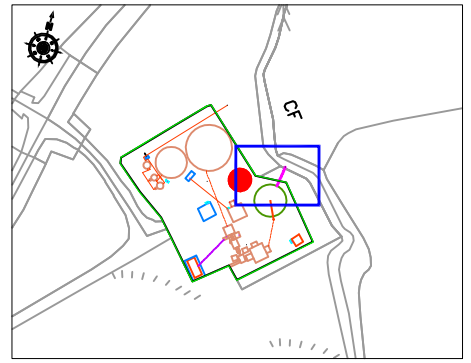
| Scales: | Surveyed by: | Drawn by: |
|---|---|---|
| 1:5000 @ A3 | D.L. | D.L. |
| **Designed by:** | **Checked by:** | **Date:** |
| F.J. | F.C. | August 2008 |
| **Drawing number:** | | **Rev:** |
| A1 - Map 2 | | - |




## NOTES

1. Dimensions are not to be scaled from drawing.
   For any discrepancies found consult with the design office.
2. This drawing is to be read in conjunction with the Specification.
3. This drawing is to be read in conjunction with all other contract drawings.




KEY PLAN

| No. | Date | Drwn | Surv | Chkd | Revision Description |
|---|---|---|---|---|---|
| | | | | | |

Cork County Council,
Northern Division.

N. O'KEEFFE, B.E.,
A/COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Watergrasshill & Environs
Wastewater Discharge
Licence Application

Drawing Title:
Location of stormwater overflow point
SW - 02 WGH
Attachment B5 - Map 7

| Scales: | Surveyed by: | Drawn by: |
|---|---|---|
| 1:250 @ A3 | D.L. | D.L. |
| **Designed by:** | **Checked by:** | **Date:** |
| F.J. | F.C. | August 2008 |
| **Drawing number:** | | **Rev:** |
| B5 - Map 7 | | - |

Irish National Accreditation Board

# Accreditation Certificate

## Cork County Council

Wastewater Testing Laboratory, Inniscarra, Co. Cork

**Testing Laboratory**

Registration number: **016T**

is accredited by the Irish National Accreditation Board (INAB) to undertake testing as detailed in the Schedule bearing the Registration Number detailed above, in compliance with the International Standard **ISO/IEC 17025:2005 2nd Edition** *"General Requirements for the Competence of Testing and Calibration Laboratories"* ***(This Certificate must be read in conjunction with the Annexed Schedule of Accreditation)***



Date of award of accreditation: **01:10:2002**
Date of last renewal of accreditation: **20:09:2007**
Expiry date of this certificate of accreditation: **01:10:2012**

This Accreditation shall remain in force until further notice subject to continuing compliance with INAB accreditation criteria, ISO/IEC 17025 and any further requirements specified by the Irish National Accreditation Board.

**Manager:** Tom Dempsey — Mr Tom Dempsey

**Chairperson:** Máire C Walsh — Dr Máire Walsh

Issued on 23 June 2008

Organisations are subject to annual surveillance and are re-assessed every five years. The renewal date on this Certificate confirms the latest date of renewal of accreditation. To confirm the validity of this Certificate, please contact the Irish National Accreditation Board.
The INAB is a signatory of the European co-operation for Accreditation (EA) Testing Multilateral Agreement (MLA) and the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
*Tel* +353 1 607 3003 *Fax* +353 1 607 3109
*E-mail* inab@inab.ie *Web* www.inab.ie

# Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.016T

(Annex to Accreditation Certificate)

Permanent Laboratory:
**Category A**

## CORK COUNTY COUNCIL



### Chemistry Testing Laboratory

| | |
|---|---|
| *Initial Registration Date :* | 25-April-1991 |
| *Postal Address:* | Waste Water Laboratory |
| *(Address of other locations* | Inniscarra |
| *as they apply)* | Co. Cork |
| *Telephone:* | +353 (21) 4532700 |
| *Fax:* | +353 (21) 4532777 |
| *E-mail:* | |
| *Contact Name:* | Ms M Cherry |
| *Facilities:* | Normally not available for Public testing |

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
Tel +353 1 607 3003 Fax +353 1 607 3109
E-mail inab@inab.ie Web www.inab.ie

# Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.016T

Permanent Laboratory:
**Category A**

**THE IRISH NATIONAL ACCREDITATION BOARD (INAB) is the Irish body for the accreditation of organisations including laboratories.**

**Laboratory accreditation is available to testing and calibration facilities operated by manufacturing organisations, government departments, educational institutions and commercial testing/calibration services. Indeed, any organisation involved in testing, measurement or calibration in any area of technology can seek accreditation for the work it is undertaking.**

**Each accredited laboratory has been assessed by skilled specialist assessors and found to meet criteria which are in compliance with ISO/IEC 17025 or ISO/IEC 15189 (medical laboratories). Frequent audits, together with periodic inter-laboratory test programmes, ensure that these standards of operation are maintained.**



## Testing and Calibration Categories:

**Category A:** Permanent laboratory calibration and testing where the laboratory is erected on a fixed location for a period expected to be greater than three years.

**Category B:** Site calibration and testing that is performed by staff sent out on site by a permanent laboratory that is accredited by the Irish National Accreditation Board.

**Category C:** Site calibration and testing that is performed in a site/mobile laboratory or by staff sent out by such a laboratory, the operation of which is the responsibility of a permanent laboratory accredited by the Irish National Accreditation Board.

**Category D:** Site calibration and testing that is performed on site by individuals and organisations that do not have a permanent calibration/testing laboratory. Testing may be performed using

(a) portable test equipment
(b) a site laboratory
(c) a mobile laboratory or
(d) equipment from a mobile or site laboratory

## Standard Specification or Test Procedure Used:

The standard specification or test procedure that is accredited is the issue that is current on the date of the most recent visit, unless otherwise stated.

## Glossary of Terms

**Facilities:**

| | |
|---|---|
| **Public calibration/testing service:** | Commercial operations which actively seek work from others. |
| **Conditionally available for public calibration/testing:** | Established for another primary purpose but, more commonly than not, is available for outside work. |
| **Normally not available for public calibration/testing:** | Unavailable for public calibration/testing more often than not. |

**Laboratory users wishing to obtain assurance that calibration or test results are reliable and carried out to the Irish National Accreditation Board criteria should insist on receiving an accredited calibration certificate or test report. Users should contact the laboratory directly to ensure that this scope of accreditation is current. INAB will, on request, verify the status and scope.**

# Scope of Accreditation

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.016T

## Cork County Council

### Chemical Testing Laboratory

Permanent Laboratory:

**Category A**

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|---|
| **766** | **Waters** | Chemical analysis: | Documented in-house methods based on Standard Methods for the Examination of Water & Wastewater 21 st Edition APHA (See Note 1) |
| .01 | Waters for domestic purposes *Surface and ground waters* | Biochemical Oxygen Demand<br>2 - 145,000 mg/l | CP No. 1 Membrane electrode |
| | | pH<br>2 - 12 | CP No. 5 Electrometry |
| | | Suspended Solids<br>0.5 - 17,500 mg/l | CP No. 3 Gravimetric |
| | | Chemical Oxygen Demand<br>21 - 135 mg/l<br>120 - 670,000 mg/l | CP No. 6 Reflux - colourmetric method |
| | | Total phosphorus<br>0.2 - 5,300 mg/l | US-EPA Approved method/HACH Method CP No.20 |
| | | Ammonia<br>0.1 - 1,000 mg/l $NH_3$ - N | Documented in-house method CP22 by Konelab based on Method for the Examination of Waters and Associated Material HMSO:1981 |

# Scope of Accreditation

## Cork County Council

### Chemical Testing Laboratory

Permanent Laboratory:

**Category A**

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|---|
| **766** | **Waters** | | |
| .01 | Waters for domestic purposes *Surface and ground waters* | Orthophosphate as P (Konelab)<br>Range: 0.005-1.00 mg O-PO4 P/L<br>High Range: 1000 mg O-PO4 P/L<br>Method Detection Limit: 0.02 mg O-PO4 P/L | CP No. 23 Ascorbic Acid Method |
| | | Chloride (Konelab)<br>Range: 25-250 mg/L Cl-<br>High Range Conc.: 86,000 mg/L Cl-<br>Method Detection Limit: 25 mg/L Cl- | CP No. 24 Ferricyanide Method |
| | | Sulphate (Konelab)<br>Range: 30-250 mg/L SO4/L<br>High Range Conc.: 35,000 mg/L SO4/L<br>Method Detection Limit: 30 mg SO4/L | CP No. 25 Documented in-house method by Konelab based on method for the examination of waters and waste waters and associated material HMSO: 1981 |

# Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.016T

## Cork County Council

### Chemical Testing Laboratory

Permanent Laboratory:
**Category A**

| INAB Classification number (P9) Materials/products tested | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|
| **766 Waters** | Chemical analysis | Documented in-house methods based on Standard Methods for the Examination of Water& Wastewater 21 st Edition APHA (See Note 1) |
| .05 Trade Wastes<br>*Industrial effluents*<br>*Urban Wastewater*<br>*Municipal Wastewater* | Biochemical Oxygen Demand<br>2 - 145,000 mg/l | CP No. 1 Membrane electrode |
| | pH<br>2 - 12 | CP No. 5 Electrometry |
| | Suspended Solids<br>0.5 - 7,500 mg/l | CP No. 3 Gravimetric |
| | Chemical Oxygen Demand<br>21 - 135 mg/l<br>120 - 670,000 mg/l | CP No. 6 Reflux - colourmetric method |
| | Total phosphorus<br>0.2 - 5,300 mg/l | US-EPA Approved method/HACH Method CP No.20 |
| | Ammonia<br>0.1 - 1,000 mg/l NH3-N | Documented in-house method CP22 by Konelab based on Method for the Examination of Waters and Associated Material HMSO: 1981. |

*Notes*
*1. APHA American Public Health Association, USA, 21st Edition*

# Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.016T

## Cork County Council

### Chemical Testing Laboratory

Permanent Laboratory:
**Category A**

| INAB Classification number (P9) Materials/products tested | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|
| **766 Waters**<br><br>.05 Trade Wastes<br>*Industrial effluents*<br>*Urban Wastewater*<br>*Municipal Wastewater* | Chemical analysis | Documented in-house methods based on Standard Methods for the Examination of Water& Wastewater 21 st Edition APHA (See Note 1)<br>CP No. 1 Membrane electrode |
| | Orthophosphate as P (Konelab)<br>Range: 0.005 - 1.00 mg O-PO4 P/L<br>High Range: 1000 mg O-PO4 P/L<br>Method Detection Limit: 0.02 mg O-PO4 P/L | CP No. 23 Ascorbic Acid Method |
| | Chloride (Konelab)<br>Range: 25-250 mg/L Cl-<br>High Range Conc.: 86,600 mg /L Cl-<br>Method Detection Limit: 25mg / L Cl- | CP No. 24 Ferricyanide Method |
| | Sulphate (Konelab))<br>Range: 30-250 mg/L SO4 /L<br>High Range Conc.: 35,000 mg/L SO4 /L<br>Method Detection Limit: 30 mg SO4 /L | CP No. 25 Documented in-house method by Konelab based on method for the examination of waters and waste waters and associated material HMSO: 1981 |

*Notes*
*1. APHA American Public Health Association, USA, 21st Edition*

Irish National Accreditation Board

# Accreditation Certificate

## Environmental Laboratory Services Ltd

Acorn Business Campus, Mahon Industrial Park, Blackrock, Cork

### Chemical Testing Laboratory

Registration number: **111T**

is accredited by the Irish National Accreditation Board (INAB) to undertake testing as detailed in the Schedule bearing the Registration Number detailed above, in compliance with the International Standard **ISO/IEC 17025:2005 2nd Edition** *"General Requirements for the Competence of Testing and Calibration Laboratories"* ***(This Certificate must be read in conjunction with the Annexed Schedule of Accreditation)***



Date of award of accreditation: **21:01:2003**
Date of last renewal of accreditation: **09:11:2007**
Expiry date of this certificate of accreditation: **09:11:2012**

This Accreditation shall remain in force until further notice subject to continuing compliance with INAB accreditation criteria, ISO/IEC 17025 and any further requirements specified by the Irish National Accreditation Board.

**Manager:** Tom Dempsey — Mr Tom Dempsey

**Chairperson:** Máire C Walsh — Dr Máire Walsh

Issued on 09 Nov 2007

Organisations are subject to annual surveillance and are re-assessed every five years. The renewal date on this Certificate confirms the latest date of renewal of accreditation. To confirm the validity of this Certificate, please contact the Irish National Accreditation Board.
The INAB is a signatory of the European co-operation for Accreditation (EA) Testing Multilateral Agreement (MLA) and the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
*Tel* +353 1 607 3003 *Fax* +353 1 607 3109
*E-mail* inab@inab.ie *Web* www.inab.ie

# Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

(Annex to Accreditation Certificate)

Permanent Laboratory:

**Category A**

## ENVIRONMENTAL LABORATORY SERVICES LTD

### Chemical Testing Laboratory

| | |
|---|---|
| *Initial Registration Date :* | **9-December-1999** |
| *Postal Address:* | Acorn Business Campus |
| *(Address of other locations* | Mahon Industrial Park |
| *as they apply)* | Blackrock |
| | Cork |
| *Telephone:* | +353 (0) 214536141 |
| *Fax:* | +353 (0) 214536149 |
| *E-mail:* | |
| *Contact Name:* | Mr Brendan Murray |
| *Facilities:* | Public testing service |

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
Tel +353 1 607 3003 Fax +353 1 607 3109
E-mail inab@inab.ie Web www.inab.ie

# Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO. 111T

Permanent Laboratory:
**Category A**

**THE IRISH NATIONAL ACCREDITATION BOARD (INAB) is the Irish body for the accreditation of organisations including laboratories.**

**Laboratory accreditation is available to testing and calibration facilities operated by manufacturing organisations, government departments, educational institutions and commercial testing/calibration services. Indeed, any organisation involved in testing, measurement or calibration in any area of technology can seek accreditation for the work it is undertaking.**

**Each accredited laboratory has been assessed by skilled specialist assessors and found to meet criteria which are in compliance with ISO/IEC 17025 or ISO/IEC 15189 (medical laboratories). Frequent audits, together with periodic inter-laboratory test programmes, ensure that these standards of operation are maintained.**



Testing and Calibration Categories:

**Category A:** Permanent laboratory calibration and testing where the laboratory is erected on a fixed location for a period expected to be greater than three years.

**Category B:** Site calibration and testing that is performed by staff sent out on site by a permanent laboratory that is accredited by the Irish National Accreditation Board.

**Category C:** Site calibration and testing that is performed in a site/mobile laboratory or by staff sent out by such a laboratory, the operation of which is the responsibility of a permanent laboratory accredited by the Irish National Accreditation Board.

**Category D:** Site calibration and testing that is performed on site by individuals and organisations that do not have a permanent calibration/testing laboratory. Testing may be performed using

(a) portable test equipment
(b) a site laboratory
(c) a mobile laboratory or
(d) equipment from a mobile or site laboratory

## Standard Specification or Test Procedure Used:

The standard specification or test procedure that is accredited is the issue that is current on the date of the most recent visit, unless otherwise stated.

## Glossary of Terms

**Facilities:**

**Public calibration/testing service:** Commercial operations which actively seek work from others.

**Conditionally available for public calibration/testing:** Established for another primary purpose but, more commonly than not, is available for outside work.

**Normally not available for public calibration/testing:** Unavailable for public calibration/testing more often than not.

**Laboratory users wishing to obtain assurance that calibration or test results are reliable and carried out to the Irish National Accreditation Board criteria should insist on receiving an accredited calibration certificate or test report. Users should contact the laboratory directly to ensure that this scope of accreditation is current. INAB will, on request, verify the status and scope.**

# Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

## Environmental Laboratory Services Ltd

Permanent Laboratory:

**Category A**

## Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | | Standard specifications Equipment/techniques used |
|---|---|---|---|---|
| | | | | Documented in-house method: |
| **766** | **Waters** | | | |
| .01 | Waters for potable and domestic purposes | COD | 8-1500 mg/l | TM 00010, closed Reflux Colorimectric |
| | | pH | 4-10 pH units | EW138 pH Titralab Electrometric Measurement |
| .99 | Other waters | | | |
| | *Ground water* | Orthophosphate | 0.009-1.0 mg/l P | EW007 Phosphate by Autoanalyser Spectrophotometry |
| | *Surface water* | | | |
| | *Waste water* | Ammonia /Ammonium | 0.007 - 1mg/l N | EW0C3 Ammonia by Autoanalyser Spectrophotometry |
| | | Chloride | 2.7-250 mg/l Cl | EW015 Chloride by Autoanalyser Spectrophotometry |
| | | Nitrate | 0.12-50 mg/l N | EW034 Nitrate by Autoanalyser Spectrophotometry |
| | | Nitrite | 0.013-1 mg/l N | EW035 Nitrite by Autoanalyser Spectrophotometry |

# Scope of Accreditation

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## Environmental Laboratory Services Ltd

Permanent Laboratory:
**Category A**

## Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|---|
| **766** | **Waters** | | |
| .01 | Water for potable and domestic purposes | Total Hardness 3-330 mg/l $CaCO_3$ | EM099 Determination of Total Hardness |
| | | Suspended Solids 1-1000 mg/l | EW013 Suspended Solids by Gravimetric Analysis |
| .99 | Other waters | | |
| | *Ground water* | Total Dissolved Solids 1-1000 mg/l | EW046 Total Dissolved Solids at 180C |
| | *Surface water* | | |
| | | Total Oxidised Nitrogen 0.2 to 51 mg/l N | EW051 Total Oxidised Nitrogen by Calculation |
| | | Colour 2.5-50mg/l Pt/Co | EW021 Colour by Autoanalyser Spectrophotometry |
| | | Conductivity 5 to 5000µ s/cm | EW042 Conductivity Measurement |
| | | Sulphate 1 to 250mg/l $SO_4$ | EW015 Sulphate by Autoanalyser Spectrometry |
| | | Dissolved Oxygen 1 to 10 mg/l | EW043 Dissolved Oxygen Measurement |
| | | Bromate 1 to 50µg/l $BRO_3$ | EW137 Ion Chromatography |

# Scope of Accreditation

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## Environmental Laboratory Services Ltd

Permanent Laboratory:
**Category A**

## Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|---|
| **766** | **Waters** | | |
| .01 | Water for potable and domestic purposes | Total Phosphorous<br>0.03 - 1 mg/L P | EW 002<br>Autoanalyser by Spectrometry' |
| .99 | Other waters<br><br>*Ground water*<br>*Surface water*<br>*Wastewater* | Total Nitrogen<br>1.0 - 150 mg/L N | EW 022<br>Autoanalyser by Spectrometry |

# Scope of Accreditation

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

## Environmental Laboratory Services Ltd

Permanent Laboratory:

**Category A**

### Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | | Standard specifications Equipment/techniques used |
|---|---|---|---|---|
| **766** | **Waters** | | | Documented In-house method: EM 130 Metals by ICP-MS |
| .01 | Waters for potable and domestic purposes | Aluminium | 5.0-500 µg/l | |
| | | Antimony | 0.1-10 µg/l | |
| | | Arsenic | 0.2-20 µg/l | |
| .99 | Other waters | Boron | 0.02-2 mg/l | |
| | | Cadmium | 0.1-10 µg/l | |
| | *Ground water* | Chromium | 1.0-100 µg/l | |
| | *Surface water* | Copper | 3-4000 µg/l | |
| | | Iron | 5.0-500 µg/l | |
| | | Lead | 0.3-30 µg/l | |
| | | Manganese | 1.0-100 µg/l | |
| | | Mercury | 0.02-2µg/l | |
| | | Nickel | 0.5-50 µg/l | |
| | | Selenium | 0.2-20 µg/l | |
| | | Sodium | 0.5-50mg/l | |
| | | Barium | 1.0-100 µg/l | |
| | | Calcium | 1.0-100mg/l | |
| | | Cobalt | 1.0-100 µg/l | |
| | | Magnesium | 0.3-20mg/l | |
| | | Molybdenum | 1.0-100 µg/l | |
| | | Potassium | 0.2-20mg/l | |
| | | Strontium | 1.0-100 µg/l | |
| | | Tin | 1.0-100 µg/l | |
| | | Vanadium | 1.0-100 µg/l | |
| | | Zinc | 1.0-100 µg/l | |

# Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

## Environmental Laboratory Services Ltd

Permanent Laboratory:

**Category A**

### Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | Standard specifications Equipment/techniques used |
|---|---|---|---|
| **766** | **Waters** | Benzene 0.1-35 µg/l | EO 025 Determination of volatile organic carbons in water by purge and trap GC/MS |
| | | 1.2Dichloroethane 0.1-35 µg/l | |
| .01 | Waters for potable and domestic purposes | Tetrachloroethene 0.1-35 µg/l | |
| | | Trichloroethene 0.1-35 µg/l | |
| .99 | Other waters<br>*Ground water*<br>*Surface water* | Chloroform 1.0-150 µg/l | EO 025 Determination of volatile organic carbons in water by purge and trap GC/MS<br>EO 025 Determination of volatile organic carbons in water by purge and trap GC/MS |
| | | Bromoform 1.0-35 µg/l | |
| | | Dibromochloromethane 1.0-35µg/l | |
| | | Bromodichloromethane 2.0-35 µg/l | |
| | | Bromomethane 0.5-35 µg/l | |
| | | Ethyl Ether/Diethyl Ether 0.5-35 µg/l | |
| | | 11 Dichloroethene 0.5-35 µg/l | |
| | | Iodomethane/Mehyl Iodide 0.5-35 µg/l | |
| | | Carbon Disulphide 0.5-35 µg/l | |
| | | Allyl Chloride 0.5-35 µg/l | |
| | | Methylene Chloride/DCM 5.0-35 µg/l | |
| | | 2-Propenenitrile/Acrylonitrile 2.0-35 µg/l | |
| | | Chlormethyl Cyanide/Chloroacetonitrile 0.5-35µg/l | |
| | | Hexachlorobutadiene 0.5-35µg/l | |
| | | Trans-1,2 Dichloroethene 0.5-35 µg/l | |
| | | MtBE 0.5-35 µg/l | |
| | | 11 Dichloroethane 0.5-35 µg/l | |
| | | 22 Dichloropropane 0.5-35 µg/l | |
| | | Cis-12 Dichloroethene 0.5-35 µg/l | |
| | | Methyl Acrylate 5.0-35 µg/l | |
| | | Bromochloromethane 0.5-35 µg/l | |

# Scope of Accreditation

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

## Environmental Laboratory Services Ltd

Permanent Laboratory:
**Category A**

## Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | | Standard specifications Equipment/techniques used |
|---|---|---|---|---|
| **766** | **Waters** | | | Documented In-house method: EO 025 Determination of volatile organic carbons in water by purge and trap GC/MS |
| .01 | Waters for potable and domestic purposes | Tetrahydrofuran | 5.0-35 µg/l | |
| | | 111 Trichloroethane | 0.5-35µg/l | |
| | | 1-Chlorobutane | 0.5-35 µg/l | |
| .99 | Other waters | Carbon Tetrachloride | 0.5-35 µg/l | |
| | | 11 Dichloropropene | 0.5-35 µg/l | |
| | *Ground Water* | 12 Dichloropropane | 0.5.35 µg/l | |
| | *Surface Water* | Dibromomethane | 0.5-35 µg/l | |
| | | Methyl Methacrylate | 0.5-35 µg/l | |
| | | 13 Dichloropropene, cis | 2.0-35 µg/l | |
| | | MIBK/4 Methyl 2 Pentanone | 2.0-35 µg/l | |
| | | Toluene | 0.5-35 µg/l | |
| | | 13 Dichloropropene, trans | 2.0-35 µg/l | |
| | | Ethyl Methacrylate | 2.0-35 µg/l | |
| | | 112 Trichloroethane | 0.5-35 µg/l | |
| | | 13 Dichloropropane | 0.5-35 µg/l | |
| | | 2 Hexanone | 1.0-35 µg/l | |
| | | 12 Dibromoethane | 0.5-35 µg/l | |
| | | Chlorobenzene | 0.5-35 µg/l | |
| | | 1112 Tetrachloroethane | 2.0-35 µg/l | |
| | | Ethyl Benzene | 0.5-35 µg/l | |
| | | m & p Xylene | 0.5-35 µg/l | |
| | | O Xylene | 0.5-35 µg/l | |
| | | Stryene | 2.0-35 µg/l | |
| | | Isopropyl Benzene | 0.5-35 µg/l | |
| | | Bromobenzene | 0.5-35 µg/l | |
| | | 1122 Tetrachloroethane | 0.5-35 µg/l | |

# Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO. 111T

## Environmental Laboratory Services Ltd

Permanent Laboratory:
**Category A**

### Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | | Standard specifications Equipment/techniques used |
|---|---|---|---|---|
| **766** | **Waters** | | | Documented In-house Methods: |
| .01 | Water for potable and domestic purposes | 123 Trichloropropane | 2.0-35 µg/l | EO 025 Determination of volatile organic carbons in water by purge and trap GC/MS |
| | | Propyl Benzene | 0.5-35 µg/l | |
| | | 2-Chlorotoluene | 0.5-35 µg/l | |
| .99 | Other waters | 4 Chlorotoluene | 0.5-35 µg/l | |
| | | 135 Trimethylbenzene | 0.5-35 µg/l | |
| | *Ground water* | Tert Butyl Benzene | 0.5-35 µg/l | |
| | *Surface water* | 124 Trimethylbenzene | 0.5-35 µg/l | |
| | *Waste water* | Sec Butyl Benzene | 0.5-35 µg/l | |
| | | 13 Dichlorobenzene | 0.5-35 µg/l | |
| | | P Isopropyltoluene | 0.5-35 µg/l | |
| | | 14 Dichlorobenzene | 0.5-35 µg/l | |
| | | 12 Dichlorobenzene | 0.5-35 µg/l | |
| | | N Butyl Benzene | 0.5-35 µg/l | |
| | | Hexachloroethane | 5.0-35 µg/l | |
| | | 12 Dibromo 3 Chloropropane | 2.0-35 µg/l | |
| | | 124 Trichlorobenzene | 0.5-35 µg/l | |
| | | 123 Trichlorobenzene | 0.5-35 µg/l | |



| | | PAH | Range | |
|---|---|---|---|---|
| **766** | **Waters** | | | Documented In-house method: |
| .01 | Water for potable and domestic purposes | Acenaphthene | 0.01to .2 µg/l | EO129 SPE, GC-MS |
| | | Benzo (a) Anthracene | 0.01 to .2 µg/l | |
| | | Benzo (a) Pyrene | 0.01 to .2 µg/l | |
| | | Benzo (b) Fluoranthene | 0.01 to .2 µg/l | |
| .99 | Other waters | Benzo (ghi) Perylene | 0.01 to .2 µg/l | |
| | | Benzo (k) Flurоranthene | 0.01 to .02µg/l | |
| | *Ground water* | Chrysene | 0.01 to .2 µg/l | |
| | *Surface water* | Dibenzo (ah) Anthracene | 0.01 to .2 µg/l | |
| | | Fluroranthene | 0.01 to .2 µg/ | |

# Scope of Accreditation

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| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | | Standard specifications Equipment/techniques used |
|---|---|---|---|---|
| **766** | **Waters** | | | Documented In-house method: EO129 SPE, GC-MS |
| | | **PAH** | **Range** | |
| .01 | Water for potable and domestic purposes | Fluorene | 0.01 to .2 µg/l | |
| | | Indeno (123-cd) Pyrene | 0.01 to .2µg/l | |
| | | Phenanthrene | 0.01 to .2 µg/l | |
| .99 | Other waters | Pyrene | 0.01 to .2 µg/l | |
| | | **Acid Herbicides** | **Range** | |
| | *Ground water* | 2,4,5- T H | 0.01 to .2 µg/l | |
| | *Surface water* | 2,4 - D H | 0.01 to .2 µg/l | |
| | | 2,4 - DB H | 0.01 to .2 µg/l | |
| | | MCPA H | 0.01 to .2 µg/l | |
| | | Picloram H | 0.01 to .2 µg/l | |
| | | **Organophosphorus Pesticides** | **Range** | |
| | | Famphur OP | 0.01 to .2 µg/l | |
| | | Methyl Parathion OP | 0.01 to .2 µg/l | |
| | | Parathion OP | 0.01 to .2 µg/l | |
| | | Thionazin OP | 0.01 to .2 µg/l | |
| | | **Organochlorine Pesticides** | **Range** | |
| | | Aldrin OC | 0.01 to .2 µg/l | |
| | | BHC Alpha isomer OC | 0.01 to .2 µg/l | |
| | | BHC Beta isomer OC | 0.01 to .2 µg/l | |
| | | BHC Delta isomer OC | 0.01 to .2 µg/l | |
| | | Dieldrin OC | 0.01 to .2 µg/l | |
| | | Endosulphan Alpha isomer OC | 0.01 to .2 µg/l | |
| | | Endosulphan Beta OC | 0.01 to .2 µg/l | |
| | | Endosulphan Sulphate OC | 0.01 to .2 µg/l | |

# Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

## Environmental Laboratory Services Ltd

Permanent Laboratory:

**Category A**

## Chemical Testing Laboratory

| INAB Classification number (P9) Materials/products tested | | Type of test/properties measured Range of measurement | | Standard specifications Equipment/techniques used |
|---|---|---|---|---|
| **766** | **Waters** | **Organochlorine Pesticides** | **Range** | Documented In-house method: EO 129 SPE, GC-MS |
| .01 | Water for potable and domestic purposes | Endrin OC | 0.01 to .2 µg/l | |
| | | Heptachlor Epoxide OC | 0.01 to .2 µg/l | |
| | | Heptachlor OC | 0.01 to .2 µg/l | |
| .99 | Other waters | Lindane OC | 0.01 to .2 µg/l | |
| | | P,P'DDE OC | 0.01 to .2 µg/l | |
| | *Ground water* | P,P'DDD OC | 0.01 to .2 µg/l | |
| | *Surface water* | P,P'DDT OC | 0.01 to .2 µg/l | |

## Finbarr J Jones

**From:** Finbarr J Jones
**Sent:** 05 March 2009 14:01
**To:** 'Sam Crowley'
**Subject:** RE: 20090305 - 2095 - Site Lighting at Ballynoe WWTP

Sam,

The locations listed are ok.

Any update on fencing?

Regards

***Finbarr Jones,***
***Resident Executive Engineer,***
***Water Services Investment Programme,***
***Cork County Council,***
***William O'Brien Buildings,***
***Annabella,***
***Mallow,***
***Co Cork.***

*Internal Tel: 3251*
*External Tel: 022-30451*
*Fax: 022-21983*
*Email: finbarrj.jones@corkcoco.ie*



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**From:** Sam Crowley [mailto:SCrowley@response-group.ie]
**Sent:** 05 March 2009 12:47
**To:** Finbarr J Jones
**Subject:** 20090305 - 2095 - Site Lighting at Ballynoe WWTP

Finbarr,

We will provide a light on the exterior of the control building and on the bridge of the clarifier. We will also provide lampposts at the inlet works and at the outlet flume.

Please indicate if you are satisfied with this.
Regards,

**Sam Crowley**
Project Engineer

Response Engineering Ltd **– a Response Group Company**
Railway Rd, Charleville, Co Cork, Ireland (registered office)
Tel: **+353 (0)63 33400** Mob: **+353 (0) 86 8528902** Fax: **+353 (0)63 33401**
Email: **scrowley@response-group.ie** Web: **www.response-group.ie** Location map
Incorporated in Ireland Company No. 292095

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# water matters

"Help us plan!"

south western river basin district

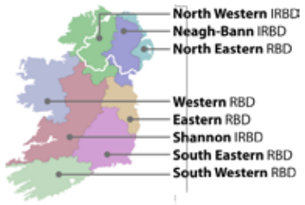
## Draft River Basin Management Plan for the South Western River Basin District

*December 2008*

## Managing the waters of the South West

The European Union Water Framework Directive was adopted in 2000. It requires governments to manage all of their waters: rivers, canals, lakes, reservoirs, groundwaters, protected areas (including wetlands and other water dependent ecosystems), estuaries and coastal waters. Member states must ensure that their waters achieve at least good status by 2015 and that their status doesn't deteriorate.

The Directive requires the preparation of a management plan for all of the waters in an area called a River Basin District (RBD). Some 400 river basins on the island of Ireland have been grouped and assigned to a total of eight RBDs. One of these RBDs lies wholly in Northern Ireland, three are International RBDs and four lie wholly in Ireland, one of which is the South Western District.




This document is the draft of the management plan for the South Western River Basin District (SWRBD) produced in accordance with the requirements of the Water Framework Directive. It is issued by the county councils of Cork, Kerry, Waterford, Limerick and South Tipperary and Cork City Council.

## Investigation, planning and consultation

The responsibility for implementation of the Water Framework Directive falls mainly on statutory authorities. Since 2000, we have been working on implementation and have met all of the Directive's deadlines. We have made administrative arrangements for cooperation and are considering establishing a river basin management unit to support and coordinate future work.

We have delineated all the river, canal, lake, reservoir, estuary and coastal waters and groundwaters in the district, collected information about their physical characteristics, investigated the uses made of the waters and the pressures on them and set up new monitoring programmes so that we can identify their current status.

We have also examined a wide range of existing legislation — on land use planning, conservation, water services provision and pollution control and prevention — to see how those controls can be integrated within the river basin management plan.

We have actively sought people's views at every stage of the implementation process. Management plans are considered by the District's Advisory Council, which consists of representatives from local authorities (County, City and Town Councillors), community and stakeholder groups (agriculture, angling, industry and non-governmental organisations). We produced a series of consultation documents including the booklet on significant water management issues ***Water Matters – Have Your Say***! The significant issues were discussed with interest groups and local authorities and at a series of public consultation evenings in 2007.

The next stage of consultation is to get your views on the draft of the District's management plan. That is the purpose of this document.

## Invitation to comment

It is really important that you consider this draft plan and how it will affect you. This document provides an overview of the planning process and the proposed objectives and programme of measures. You may think that the actions are not practical, too strict or too lenient — or perhaps you have additional suggestions. If so, this is your chance to ***help us plan***!

We are seeking your views on the following:

- Proposed objectives - what is your view about our proposals to designate heavily modified and artificial waters and extend deadlines or set likely less stringent objectives for certain waters? Are these proposals appropriate? Have we missed something important?
- Proposed action plan. Are these proposals appropriate? Have we missed something important?
- The register of plans and programmes. Is it complete? Have we missed some important plans or programmes?
- Action themes. Have we addressed all the themes? Have we missed something important?

Please send your comments and views before 22 June 2009 to:

Seán Ó'Breasail
South Western River Basin District Project
Cork County Council
Environment Department
Inniscarra
Co Cork
Sean.OBreasail@CorkCoCo.ie

Early responses would be appreciated to allow more time to clarify and resolve issues that may arise.

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

## The South Western RBD: a brief overview

The South Western River Basin District covers about one sixth of the country with a land 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.

### People

The largest urban area is Cork City but there are also several large towns. The growing population is putting demand on the systems that deliver drinking water and treat wastewater and is also creating development demand throughout the district.

Agriculture and tourism are the most important activities in the South Western 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 District the landscape is dominated by mountains, natural grasslands and peatlands.


Map 1 - South Western River Basin District



## Waters

### Surface waters

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 20 lakes in the district that are over 50 hectares in area. The largest lakes are Lough Leane in County Kerry and Carrigadrohid and Inniscarra in County Cork. Inniscarra is the largest source of drinking water in County Cork. Marine Waters include Cork Harbour, where the Lee, Glashaboy and Owenboy rivers flow into the sea. The Maine, Flesk and Laune flow into the sea at Dingle Bay. The district contains much of Cork's and Kerry's coastlines. The district has a coastline of over 1,800 km along the Atlantic Ocean and Celtic Sea.

### Groundwaters

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.

### Heavily modified waters

Some surface waters in the District have been substantially changed (heavily modified is the term used) for such uses as navigation (for example ports), water storage, public drinking water supply, flood defence or land drainage. Carrigadrohid and Inniscarra Reservoirs, the Lower Lee Estuary, Lough Mahon and Cork Harbour are heavily modified. Other waters are man-made (artificial), of which there is only one in the district, Lismore Canal. The benefits from such modifications need to be retained, so these waters are subject to a different set of standards.

### Protected areas

While all of our waters are important, some areas require greater protection because they contain sensitive habitats or wildlife species. Other areas are protected because of their beneficial uses or the need to protect human health including drinking water sources, shellfish growing areas and bathing areas. All of the areas requiring special protection in the South Western District have been identified, mapped and listed in a register of protected areas (available from 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.

### Further information

Much of the detailed information behind this plan has been incorporated into a computer-based interactive plan tool where it can be mapped and viewed geographically (www.wfdireland.ie).

You can also download background documents from www.wfdireland.ie. They provide in-depth information about planning aspects including pressures, status, economic analysis, public participation arrangements, competent authorities and related plans and programmes.

## Next steps

This is a draft of the management plan to cover the six-year period from 2009 until 2015 (any remaining issues or new problems will be tackled in two further six-year plans, 2015–2021 and 2021–2027). The document shows, step by step, what we have done, what we have learned and what we propose to do. Our approach was structured: find out the issues, decide what action to take and make a plan.

The final version of this plan must be adopted by all local authorities in the district and will come into effect at the end of 2009. Before then, we want your comments, views and suggestions, which we will consider and address in revising this draft to produce the final version. Our contact details are at the beginning and end of this document.







## STEP 1 - What are our key water issues?

We needed to know our key water management issues so that we could develop appropriate solutions. In June 2007 a consultation booklet called ***Water Matters – Have Your Say!*** (which you can download from www.wfdireland.ie) set out the main challenges to managing waters sustainably in the South Western District. The key water issues included:

**Point and diffuse sources of pollution:**
Wastewater and industrial discharges
Landfills, quarries, mines and contaminated lands
Agriculture
Wastewater from unsewered properties
Forestry
Dangerous substances & chemical pollution

**Physical modifications:** Including channel dredging, culverts, weirs, boat movements and floodplain demand

**Abstractions:** Including drinking water and industrial supplies

**Locally focussed and future issues:**
Climate change
Aquaculture
Alien species
Protecting high quality areas
Eutrophication of estuaries and lakes

The ***Water Matters – Have Your Say!*** booklet provided:

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

This section of the draft plan summarises the main comments made during consultations and the topics discussed in the ***Water Matters – Have Your Say!*** booklet. Under each topic we highlight what the public and interested parties said during consultations and confirm that these comments have helped to develop our draft management plan by feeding into our proposed action plan. We have also included climate change, aquaculture and eutrophication of estuaries & lakes in response to comments received.

If you want to learn more about the pressures and impacts on our waters, you can read about our technical studies and research in background documents, which set out the latest information on our key water pressures and the actions that we could take to protect or restore the waters in the South Western District. (www.wfdireland.ie). The details of the measures we propose are covered in Step 9 of this document.

Note that the list that follows is necessarily abbreviated: it focuses on the potential problems rather than on the benefits we gain from such activities as forestry, agriculture or aquaculture. Our background documents provide a more rounded picture.

# Point and diffuse sources of pollution

## Wastewater and industrial discharges

Participants' concerns

Treatment plants that are non-compliant with urban wastewater treatment standards must be upgraded and adequate wastewater treatment infrastructure should be put in place before permitting development.

**Background**

Urban sewers carry wastewater to treatment plants from homes and industrial or commercial sources, as well as storm water from roads, roofs and recreational areas. Pollutants include nutrients, bacteria, organic materials and dangerous substances from homes and industries, metals and hydrocarbons from vehicle exhausts and pesticides from parks, golf courses and gardens. The wastewater is treated, to remove many pollutants, then discharged to surface waters or, occasionally, to groundwater.

**Possible effects**

Inadequately treated effluents and spills or leakage from sewerage networks can cause unacceptable levels of pollutants in receiving waters, damaging water quality and downstream uses (for example bathing waters, shellfish waters or waters supporting sensitive species). Urban runoff can be contaminated with pollutants (typically nutrients, organic materials, pathogens, metals and hydrocarbons) which can impact surface and groundwater quality as direct discharges, overflows from sewer networks, leaking from defective underground pipes or seepage from containment areas.

**Action plan**

Wastewater discharges will be subject to Environmental Protection Agency authorisation and will have to comply with the Urban Wastewater Treatment Directive. Wastewater facilities will be upgraded on a prioritised basis. Information will be gathered on the water quality impact of urban runoff and overflows and codes of good practice for sewer operation and maintenance will be developed and implemented.

## Landfills, quarries, mines and contaminated lands

Participants' concerns

Timescales should be set for characterisation and remediation of contaminated land.

Participants highlighted increased risks of saltwater infiltration from quarries near the coast in Carrigtwohill County Cork.

**Background**

Residues or waste products from previous activities at these sites may have seeped into the ground and continue to threaten groundwater and surface waters.
Our knowledge of these sites is incomplete and is being updated to assess the scale of this problem.

**Possible effects**

Pollutants (mainly metals and fuel) may travel through groundwaters and enter surface waters, affecting their quality, damaging aquatic plants and animals and impairing water uses. At some quarry sites, the water table is lowered; that can affect nearby wetland areas, and the transfer of groundwater to surface waters can change water chemistry.

**Action plan**

Specific measures will be taken to address contaminated lands, both historic and current mines and extraction sites.

## Agriculture

Participants' concerns

The agricultural sector felt that the Good Agricultural Practice Regulations adequately represented farmers' contribution to the achievement of good water status. However, environmental groups expressed concern that the regulations may not fully address nutrient enrichment in specific areas.
Participants also recommended that the use of bio-digestors for the disposal of slurry should be encouraged and funded.

**Background**

Nutrients (phosphorus and nitrogen) can be carried into waters from farmyards, from manure store leaks or from fields treated with nutrient-rich organic and chemical fertilisers.
Animal slurry/manure and silage effluent can cause organic pollution: Ireland's latest water quality report shows 31% of the recorded incidents of river pollution and 28% of fish kills can be attributed to agriculture. A recent Environmental Protection Agency drinking water report shows widespread contamination of smaller rural water supplies from agricultural sources.

**Possible effects**

Nutrients enrich water, accelerating plant growth and thus disturbing the balance of aquatic plants and animals and affecting water quality. This eutrophication is the most widespread threat to our water quality.
The breakdown of organic material uses up oxygen that aquatic plants and animals need to survive, and suspended solids and ammonia can cause fish kills (although such kills have reduced in number). Slurry can also contaminate drinking water with bacteria, parasites and viruses.

**Action plan**

Review and strengthen enforcement actions in support of the Good Agricultural Practice Regulations. Additional supplementary measures may emerge following the review during 2009 of the National Action Programme established under these regulations. These measures could for example include solutions such as the use of bio-digestors.





## Wastewater from unsewered properties

Participants' concerns

Controls are required to ensure that new developments install treatment systems appropriate to geology and soil conditions. There should be a clear responsibility on owners to maintain their systems to an appropriate standard.

**Background**

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.

**Possible effects**

If these systems are not working properly, nutrients, organic material, chemicals and bacteria may seep from wastewater into groundwater, contaminating nearby drinking water wells or damaging the quality of receiving rivers, lakes or marine waters.

**Action plan**

Strengthen controls on new development. Identify sensitive areas where inspection, maintenance and remedial action will be taken to address impacts from existing on-site systems.

## Forestry

Participants' concerns

The 1946 Forestry Act's mandatory requirement to replant irrespective of whether the soil is suitable or not should be amended. Clearfelling should be restricted with strict controls on coup sizes in sensitive areas.

Participants believed that private forestry companies within the South Western District are not obliged to meet the principles of sustainable forest management.

**Background**

Acidification: forest canopies can capture sulphur and nitrogen compounds from the atmosphere; rain becomes more acidic as it passes through the canopies to the ground below. Forestry activities can introduce extra nutrients. Road-making and stream-crossing can cause erosion and sediment loss on susceptible soils. Flow pattern changes: the amount of water reaching the soil surface is reduced by evaporation of water intercepted by the canopy. Pesticides may be applied incorrectly.

**Possible effects**

Acidification may worsen the chemical balance of receiving waters. In naturally nutrient-poor areas, nutrient enrichment can lead to problems such as algal growth. Mobile sediments may reduce water quality or damage sensitive areas. Clearfelling of forests may change flow patterns. Incorrect application of pesticides may contaminate waters.

**Action plan**

Strengthen forestry legislation, protocols and codes of practice. Identify sensitive areas where remedial action will be taken to address impacts from afforestation. Note that all activities related to forestry (including private forestry) must comply with the Irish Forest Standard, the first principle of which is sustainable forestry management.

## Dangerous substances

Participants' concerns

There should be a public education awareness programme on the proper use and disposal of household chemicals. This could include clearer labelling of more environmentally friendly products.

Sheep dips containing synthetic pyrethroids should be suspended or banned and the use of pour-on treatments encouraged.

**Background**

A wide range of chemicals, which may be toxic to people, plants and animals and are harmful to our water environment, are contained in many everyday products used in households, industry, forestry, agriculture, construction sites and water/wastewater treatment works. Run-off from roads and urban areas can also contain dangerous substances from motor vehicle emissions.

**Possible effects**

Some dangerous substances can be toxic to aquatic plants and animals at levels equivalent to a teaspoonful dissolved in an average swimming pool. They can persist in our waters and their sediments and slowly build up in the bodies of aquatic organisms, poisoning them and causing problems higher up the food chain or interfering with their natural breeding processes.

**Action plan**

Organise a dangerous substances education campaign. Control substance authorisations and monitor the environmental effects of dangerous substances (including sheep dips).

# Physical modifications

## Physical modifications

Participants' concerns

A comprehensive registration and authorisation system is needed to control physical modifications, with a structured programme to rehabilitate previously drained rivers. Building is putting increasing pressure on floodplains.

**Background**

We have physically modified many of our waters for water supply, recreation, transport, flood protection, hydropower, aquaculture and land drainage.
Physical modifications can impact physical form either directly by affecting habitats or indirectly by changing natural processes, altering plant and animal communities by reducing their variety or numbers.

**Possible effects**

Drained rivers need a mix of pools and shallow riffles and variation of flow patterns, to provide habitats for fish. Migratory fish need to access upstream spawning areas; bridges or weirs can restrict access and reduce spawning success and thus population numbers. Hard structures like ports and harbours can replace or reduce natural habitat. Land drainage, overgrazing, deforestation and cattle access can have an indirect effect, changing how much and how fast water drains off the land, resulting in increased risk of property flooding.

**Action plan**

A new national control system for physical modifications is required. Rivers where enhancement or investigation is needed to address historical modifications are identified.

# Abstractions

## Abstractions

Participants' concerns

The cumulative impact of abstractions needs to be addressed. Low flow records should be used to determine acceptable abstraction limits.Leakage from existing infrastructure should be addressed. Concern has been raised about the capacity of water supplies in the South Western District. The rapid pace of development is leading to shortage in some areas: for example, in 1995 the Owennacurra river in East Cork ran dry due to excessive abstraction of water by municipal and industrial activities.

**Background**

We use large amounts of water each day in homes, in agriculture, in industry and in recreation. All of that water has to be treated to a high standard to remove impurities and make it fit for consumption. The vast majority of our abstractions are currently sustainable, but population growth and climate change may mean that some areas will experience a reduction in the available water resource in the future.

**Possible effects**

Too much abstraction reduces flow in springs and rivers and causes lower water levels in lakes, wetlands and wells. This can make water supplies unsustainable and adversely affect aquatic plants and animals and wetland areas. In extreme cases river beds may dry up, lake shores can become exposed and, in coastal areas, salt water may seep into groundwater.

**Action plan**

Set up a modern national abstraction control system for surface and groundwaters, based on sustainable abstraction levels that take full account of the sensitivity of the waters from which water is abstracted.
Action on leakage reduction is addressed under measures to ensure sustainable water use; waters where historical abstractions need to be investigated and addressed are also identified.

# Locally focussed and future issues

## Climate change

Participants' concerns

River basin management plans should be proofed against climate change, with more emphasis given to climate change impacts and adaptation.

**Background**

The specific impacts of climate change are difficult to predict, but it is likely that these changes may add to water management challenges in the future.

**Possible effects**

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

**Action plan**

Measures have been assessed for climate change adaptation using European Union recommendations. A Strategic Environmental Assessment is being undertaken to assess the wider environmental impacts of this plan including climate change issues.



## Aquaculture

Participants' concerns

Aquaculture should be considered as a separate issue rather than being included with diffuse and morphology activities.

Participants were concerned about the potential impacts of both fish farming and harvesting shellfish by dredging.

**Background**

Mussels, pacific and native oysters, clams and scallops are the main shellfish species farmed in Ireland, with salmon and rainbow trout the principal finfish. Mussel farming is particularly prominent in the West Cork area in Bantry Bay, Glengarrif and Roaringwater Bay.

**Possible effects**

Aquaculture can affect water quality, physical habitat, biodiversity and indigenous species populations. Finfish farming can cause increased nutrient loading and organic pollution around cages, use of authorised chemicals and medicines to control disease and infection of wild fish with sea lice is also a potential pollution concern. Shellfish harvesting can have morphological impacts.

**Action plan**

Strengthen national aquaculture controls. During 2008 the responsibility for shellfish pollution reduction plans and designation of additional shellfish areas transferred to the Department of the Environment, Heritage and Local Government. Shellfish cultivation licensing was strengthened by proposed quality standards under the Department of Agriculture, Fisheries and Food.

## Invasive alien species

Participants' concerns

The ornamental plant and animal trade should be regulated.
The recommendations from the national invasive species study should be implemented and resourced on an all island basis.

**Background**

The Environmental Protection Agency has major concerns about eight aquatic species of non-native animals or plants that have successfully established themselves in our aquatic and fringing habitats and are damaging our natural flora and fauna. Four of these have now been found in the South Western District; i.e. Dace, Japanese Seaweed, Water Fern and Nuttall's Waterweed

**Possible effects**

There is growing evidence that invasive alien species pose a major threat to our diversity of native plants and animals: for example by preying on them, out-competing for habitat or food, altering habitat or introducing pathogens or parasites.

**Action plan**

Prohibit the introduction of species that may be detrimental to native species. Support the ongoing national study of the nature and extent of alien invasive species, their impacts and potential control measures.

## Protecting high quality areas

Participants' concerns

High quality areas have gradually declined since the 1970s when water quality monitoring began and our objective now is to prevent any further deterioration.

Protected areas must, without exception, achieve good or high status to support their designations, with specific targets for protection of priority species.

**Background**

High quality areas include rivers, lakes, estuarine and coastal areas little affected by human activity; which are still near natural or pristine conditions, supporting a naturally diverse mix of aquatic wildlife. In addition, there are other designated special areas which are specifically protected under legislation: drinking waters, bathing waters, shellfish waters and areas designated for special habitats and species (Special Areas of Conservation and Special Protection Areas).

**Possible effects**

The deterioration or loss of high quality and protected areas is often due to their sensitivity to land use changes in surrounding catchments, such as agriculture, forestry, peat harvesting and rural development activities.

**Action plan**

Prioritise the protection of such areas. Identify nature conservation actions including favourable conservation conditions for designated freshwater pearl mussel populations.

## Eutrophication in our lakes and estuaries

Participants' concerns

Within the South Western District a number of lakes and estuaries have been seriously affected by eutrophication. Particular concerns were raised with respect to the eutrophication of the Argideen Estuary.

| | |
|---|---|
| Background | In 1997 a major algal bloom occurred in Lough Leane, Co. Kerry. Euthrophication was also identified in a number of Estuaries in the South Western District between 2001 and 2005 These included the lower Blackwater Estuary, Owenacurra Estuary, Upper and Lower Bandon Estuary and Argideen Estuary in Cork. |
| Possible effects | 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. |
| Action plan | All water bodies affected by eutrophication in the SWRBD have been included in the National Water Framework Directive Monitoring Programme. Measures to address the possible causes of eutrophication have been identified elsewhere in this report. These may include; reviewing and strengthening enforcement actions in support of the Good Agricultural Practice Regulations; development controls and on-site wastewater treatment system inspection, maintenance and remedial programmes; prioritising wastewater collection and treatment facility upgrades. |





## STEP 2 - What is the status of our waters?

We have classified our **surface waters** according to their ecological status and chemical status; and our **groundwater** on a system that combines chemical and quantitative status. In accordance with the Water Framework Directive, the classification schemes identify **status classes**, which indicate how much human activity has impacted on our waters. Surface waters are classified as high, good, moderate, poor or bad. Groundwaters are classified as good or poor.

Our key water issues helped us to pick the locations and parameters to monitor. We developed and consulted on a new monitoring programme during 2006. This monitoring system was put in place in early 2007 and the data collected has been used to classify the status of our waters. The main results so far are that:

- 53% of Surface Water Bodies (Rivers, lakes, estuaries and coastal) are classified as good or high status.
- 45% of Surface Water Bodies are classified as less than good status.
- 2% of surface water bodies (9% of estuaries and 44% of coastal water bodies) have yet to be classified.
- Of the seven river water bodies monitored for priority substances so far, all have good chemical status.
- 93% of our groundwater bodies have good combined status and 7% are currently poor status.

More details follow, with a brief account of how we determine the status of our waters.

### Surface water ecological status

The ecological status of natural surface waters falls into one of five classes: high, good, moderate, poor or bad.

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

Table 1 Surface water ecological status/potential in the South Western District

| Surface Water Category | High | Good | Moderate | Poor | Bad | Yet to be Determined |
|---|---|---|---|---|---|---|
| River and canals | | | | | | |
| number (% of total) | 167 (19%) | 305 (34%) | 353 (40%) | 60 (7%) | 0 (0%) | 0 (0%) |
| length km (% of total) | 659 (28%) | 1,035 (44%) | 604 (26%) | 41 (2%) | 0 (0%) | 0 (0%) |
| Lakes and reservoirs | | | | | | |
| number (% of total) | 52 (58%) | 21 (23%) | 17 (19%) | 0 (0%) | 0 (0%) | 0 (0%) |
| area km$^2$ (% of total) | 13 (18%) | 8 (10%) | 52 (71%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Estuaries | | | | | | |
| number (% of total) | 3 (7%) | 3 (7%) | 33 (77%) | 0 (0%) | 0 (0%) | 4 (9%) |
| area km$^2$ (% of total) | 17 (10%) | 73 (44%) | 76 (46%) | 0 (0%) | 0 (0%) | 0.2 (0.1%) |
| Coastal | | | | | | |
| number (% of total) | 3 (11%) | 5 (19%) | 7 (26%) | 0 (0%) | 0 (0%) | 12 (44%) |
| area km$^2$ (% of total) | 218 (6%) | 151 (4%) | 28 (1%) | 0 (0%) | 0 (0%) | 3,192 (89%) |

The surface water ecological classification combines three factors:

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

## Biology

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

### Table 2 Aquatic plants and animals in the surface water biology classifcation system

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

## Supporting water quality conditions

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

- **general conditions** are assessed by measuring oxygen, nutrients, transparency (water clarity), temperature, acid status and salinity; together, they describe the general physico-chemical status of surface waters.
- the levels of **specific pollutants**, chemical pollutants including metals, pesticides and hydrocarbon compounds of local relevance in Ireland.
- the levels or concentrations of these physico-chemical parameters and specific pollutants are compared to environmental quality standards set to protect the health of our aquatic plants and animals.

## Supporting hydrology and morphology

Hydrology conditions need to be adequate to support a healthy mix of plants and animals, and are measured by recording river flow, lake level and tidal patterns. Morphology (or physical condition), which again must be able to support a healthy mix of plants and animals, is assessed by surveying channel, substrate and bed shape and physical conditions.



## Surface water chemical status

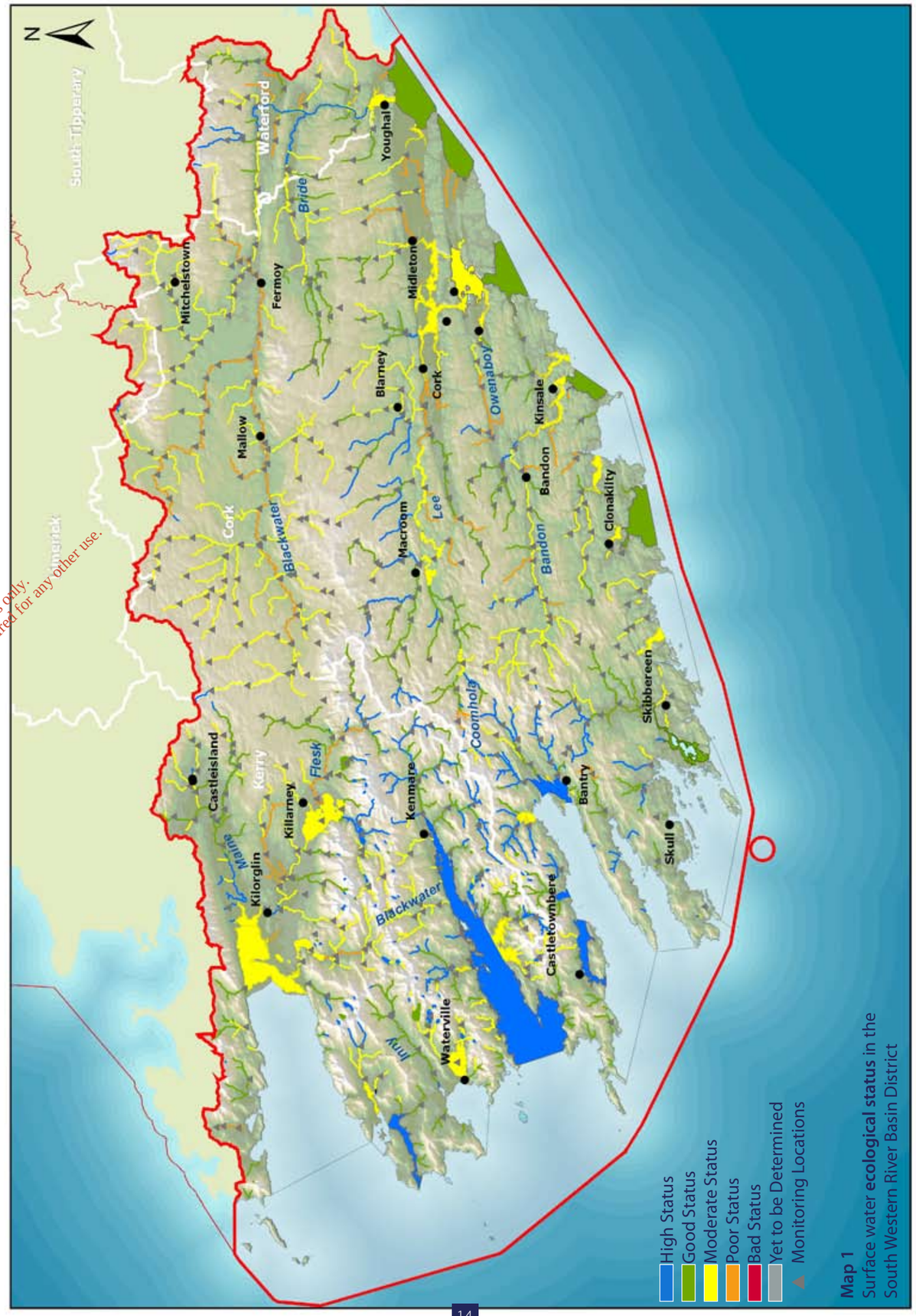
There are two classes for the chemical status of surface waters: good or fail.

### Table 3 Surface water chemical status in the South Western District

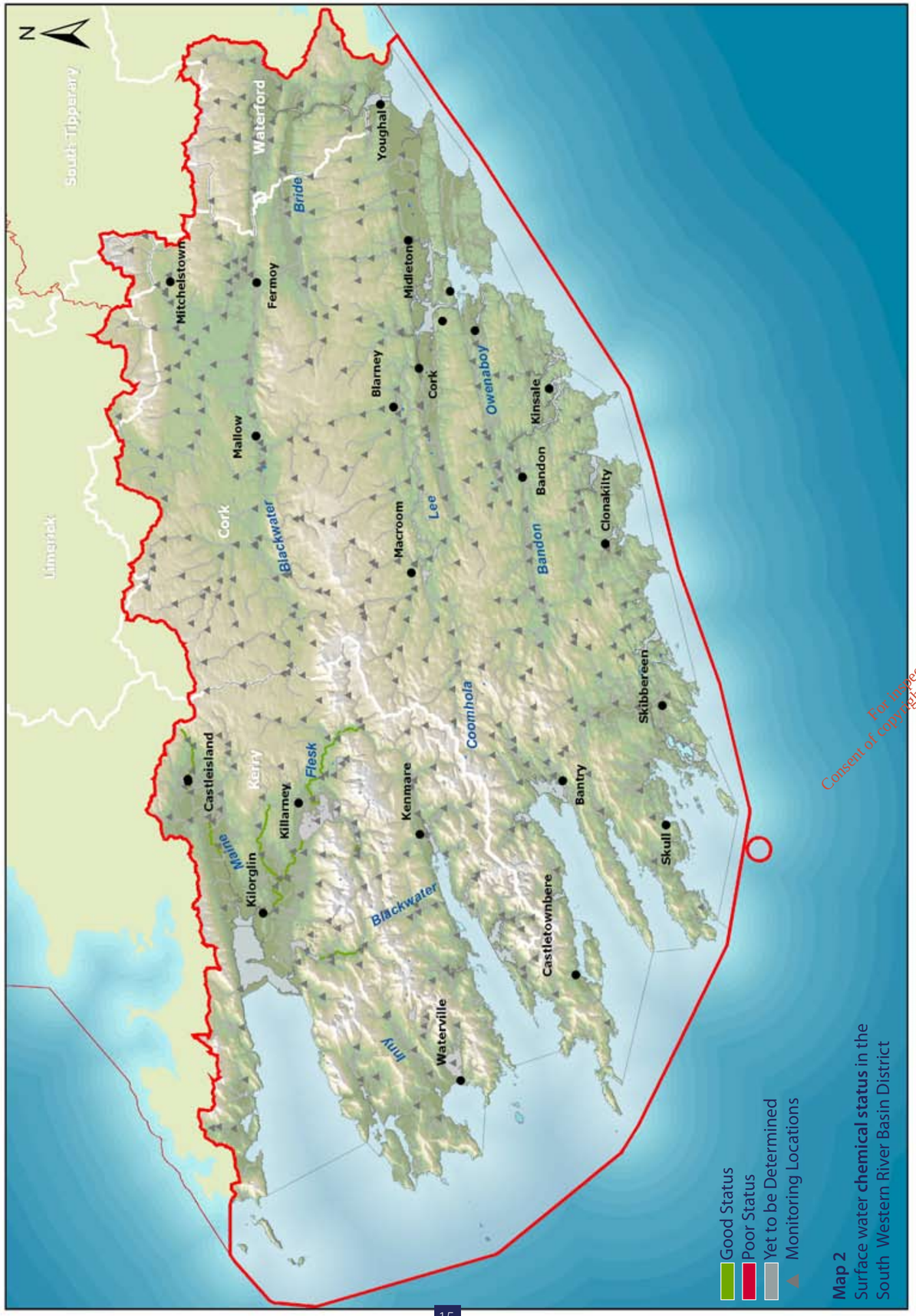
| Surface Water Category | Good | Fail | Yet to be Determined |
|---|---|---|---|
| River and canals<br>number (% of total)<br>length km (% of total) | <br>7 (23%)<br>83 (16%) | <br>0 (0%)<br>0 (0%) | <br>23 (77%)<br>450 (84%) |
| Lakes and reservoirs<br>number (% of total)<br>area km² (% of total) | <br>0 (0%)<br>0 (0%) | <br>0 (0%)<br>0 (0%) | <br>7 (100%)<br>29 (100%) |
| Estuaries<br>number (% of total)<br>area km² (% of total) | <br>0 (0%)<br>0 (0%) | <br>0 (0%)<br>0 (0%) | <br>43 (100%)<br>167 (100%) |
| Coastal<br>number (% of total)<br>area km² (% of total) | <br>0 (0%)<br>0 (0%) | <br>1 (4%)<br>28 (1%) | <br>26 (96%)<br>3,561 (99%) |

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






**Map 1** Surface water **ecological status** in the South Western River Basin District




**Map 2**
Surface water **chemical status** in the South Western River Basin District



## Groundwater

Groundwaters are classified as either good or poor status.

### Table 4 Groundwater status in the South Western District

| Groundwater | Good | Poor |
|---|---|---|
| **Chemical Status**<br>number (% of total)<br>area km² (% of total) | <br>79 (94%)<br>10,961 (97%) | <br>5 (6%)<br>329 (3%) |
| **Quantitative Status**<br>number (% of total)<br>area km² (% of total) | <br>83 (99%)<br>11,261 (99.7%) | <br>1 (1%)<br>29 (0.3%) |
| **Combined Status**<br>number (% of total)<br>area km² (% of total) | <br>78 (93%)<br>103,932 (97%) | <br>6 (7%)<br>357 (3%) |

The groundwater classification scheme measures water quantity and chemical status. Groundwater chemical status is described by general components and certain pollutants and parameters, in particular conductivity. The thresholds set for groundwater quantity and quality are derived from the standards required to support the plants and animals in surface waters and wetlands and for human consumption.

## Protected Areas

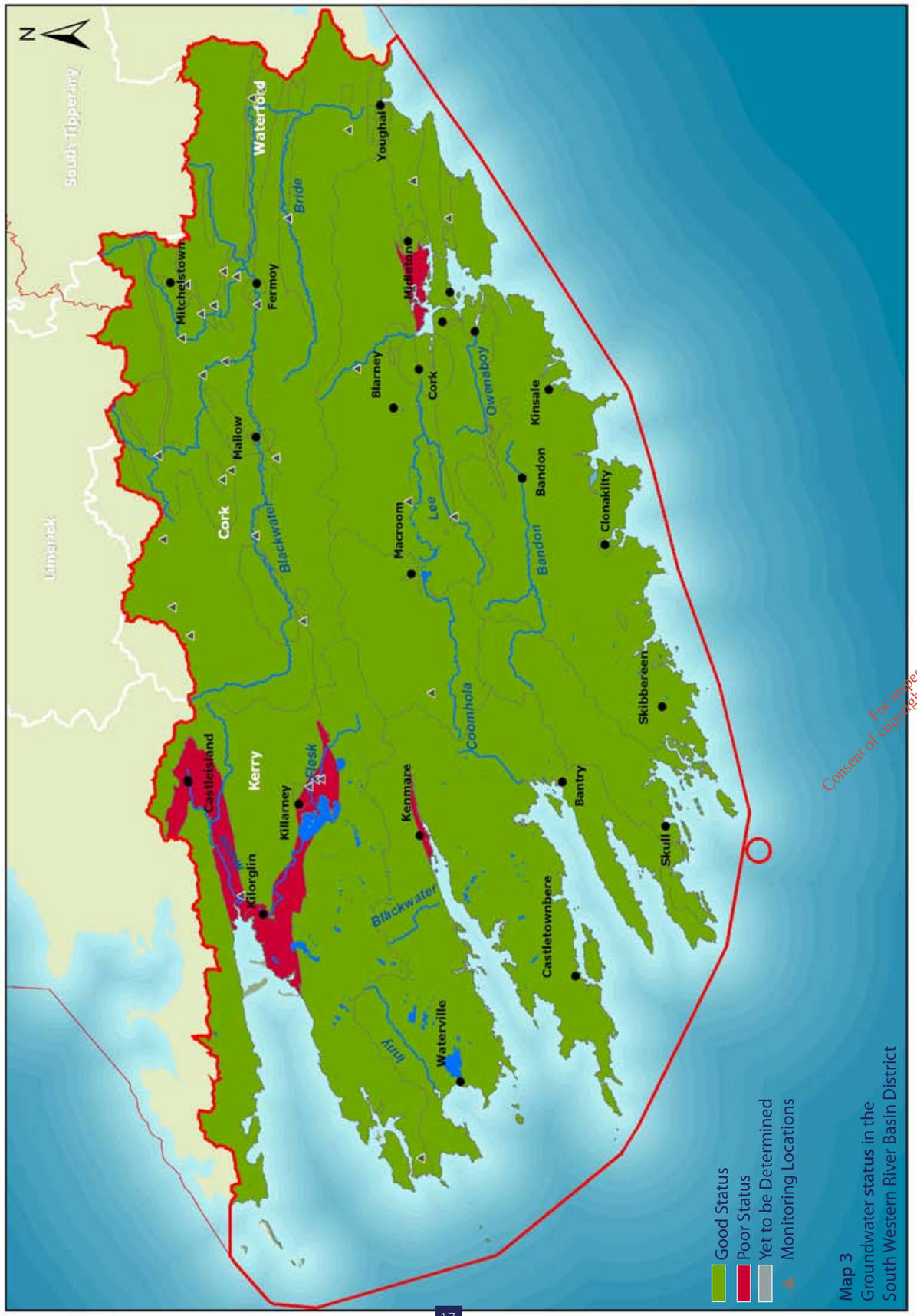
Protected areas can have stricter status standards: they must, without exception, achieve standards relevant to their designation which may be stricter than good or high status. Measures are required for protected sites failing to achieve their standards which aim to improve environmental conditions sufficiently to support achieving their objectives.

Bathing waters failing mandatory standards have resulted in assignment of moderate ecological status in these waters. Similarly failure of shellfish waters standards has been reflected in status.

Sites which are not currently achieving favourable conservation status have resulted in assignment of moderate ecological status in these waters. The South Western District contains nine river catchments with Natura 2000 sites designated for the protection of freshwater pearl mussel (*Margaritifera margaritifera*). This represents over one third of such protected sites nationally. Many of these populations are not reproducing due to unfavourable conditions thought to be water quality related and all are considered to be in unfavourable conservation status. Work is ongoing to identify the exact causes, and their sources, and to propose appropriate measures. Waters have been classified as moderate status where they contain the freshwater pearl mussel populations for which a Natura 2000 site was designated and where these populations are not at favourable conservation status. Many of these waters (48 in the South Western District) would otherwise have been classified as good or high status if the more stringent objectives for the freshwater pearl mussel did not apply.


Freshwater Pearl Mussel Bed: Dr Eugene Ross

A small number of other rivers, lakes, coastal lagoons and aquatic ecosystems (fens or turloughs) have been identified through expert opinion as being at unfavourable conservation status. The status of these waters has also been downgraded to moderate. In addition there are protected areas with less than good ecological status which is the minimum requirement for all waters.




**Map 3** Groundwater **status** in the South Western River Basin District





## How we determine the status of our waters

The Water Framework Directive's classification process has helped us to improve our understanding of the status of our waters. In 2007, we began more comprehensive monitoring of our waters to provide data for new classification schemes. Monitoring information is collected by the Environmental Protection Agency, Central Fisheries Board, Marine Institute, Office of Public Works, National Parks and Wildlife Service, Waterways Ireland and local authorities. The Environmental Protection Agency is responsible for assessing this monitoring data and assigning ecological, chemical and overall status to Ireland's surface waters and groundwaters using the newly developed biological classification systems and new chemical and physico-chemical standards.

This draft plan presents the status of the waters in the South Western District using our new systems and monitoring information for the first time. These early results are based on all available ecological data including those arising from the first year of the new monitoring programmes; they reflect our best current understanding of status. However, we expect this to improve over time as monitoring data, and the scientific tools used to interpret it, expand and improve. Over time, we can build a picture of changes in our waters: decline due to problems or improvement as a result of actions taken. The classification systems will help us to plan the actions needed to protect or improve waters and, in due course, to show how our waters have benefited.

These new classification systems are more rigorous than previous systems; firstly measuring the impacts of more human activities can result in less waters being classified as satisfactory; and secondly failure of a single biological or chemical standard or supporting element can downgrade the overall status of the waters. The Environmental Protection Agency is confident that the new status assignment correctly reflects the condition of our waters.

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

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

Details of the monitoring programme, new classification standards and status setting process for surface and groundwaters are available in our background documents (www.wfdireland.ie). More information about the condition of the District's waters is available in our background documents and the detailed status of individual rivers, canals, lakes, reservoirs, marine waters or groundwaters can be viewed using our interactive map (www.wfdireland.ie).

## STEP 3 – What do we plan to achieve?

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

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

Within this draft plan, we have to expand and apply those objectives. We have to take account of our water issues (Step 1), the current status of those waters (Step 2), and the need to promote sustainable uses of our waters.

In the following sections of this draft plan (Steps 4–7) we set out the planning process. We identify mandatory (**basic**) measures that the Water Framework Directive stipulates we must take and predict how far they will take us towards meeting our objectives. Then we consider possible additional (**supplementary**) measures, which may be necessary when the basic measures alone are not sufficient to achieve our objectives. These basic and supplementary measures address our key water issues forming the basis for future management of our waters. In some limited cases, even after considering every possible measure, we may have to redefine our core objectives because of technical, economic, environmental or recovery timescale constraints.

The outcome of this process is a proposed set of revised and expanded objectives (Step 8) and an accompanying action plan (Step 9) for the South Western District.

## The core objectives

Because there are some differences in the way the core objectives relate to different waters, a little more detail may be useful.

### Achieve protected areas objectives

Some waters require greater protection (including drinking, bathing and shellfish waters, nutrient sensitive areas, protected habitats and species). Protected areas must achieve standards relevant to their designation which may be stricter than good or high status. For example, designated bathing waters have to meet strict water quality standards for bacteria to protect human health **in addition to** meeting the standards that apply to all other waters. Similarly, designated waters containing protected species like the freshwater pearl mussel must achieve their favourable conservation status so that populations can thrive.

Our primary core objective is therefore to ensure that the waters supporting our protected areas are protected and where necessary improved. In the South Western District the following protected waters need to be restored to good status:

- - nine designated freshwater pearl mussel populations that are not at favourable conservation status.
- - 16% rivers, 18% lakes and 6% marine waters which support protected interests (drinking waters, salmonid areas, shellfish areas, nutrient sensitive areas, special areas of conservation and special protection areas) are below good status and need to be improved to enable these waters to support their special interests.

There are a series of targeted measures proposed in this draft plan which aim to support protected areas in meeting their stricter standards by 2015.



### Prevent deterioration

For surface waters, the core objective is to:

- prevent deterioration, and in particular maintain high or good status.

For groundwaters, the core objective is to:

- limit pollution inputs and prevent deterioration.

The classification results for the South Western District show that 53% of our surface water bodies and 93% of our groundwater bodies already meet good or better standards. We must ensure that we continue to manage these waters to protect them from deterioration. We are confident that implementation of the measures in this draft plan will prevent deterioration in these waters.

### Restore good status

Here, the core objective for surface waters is to:

- improve waters where necessary in order to achieve at least good status.

For groundwaters, the core objectives are to:

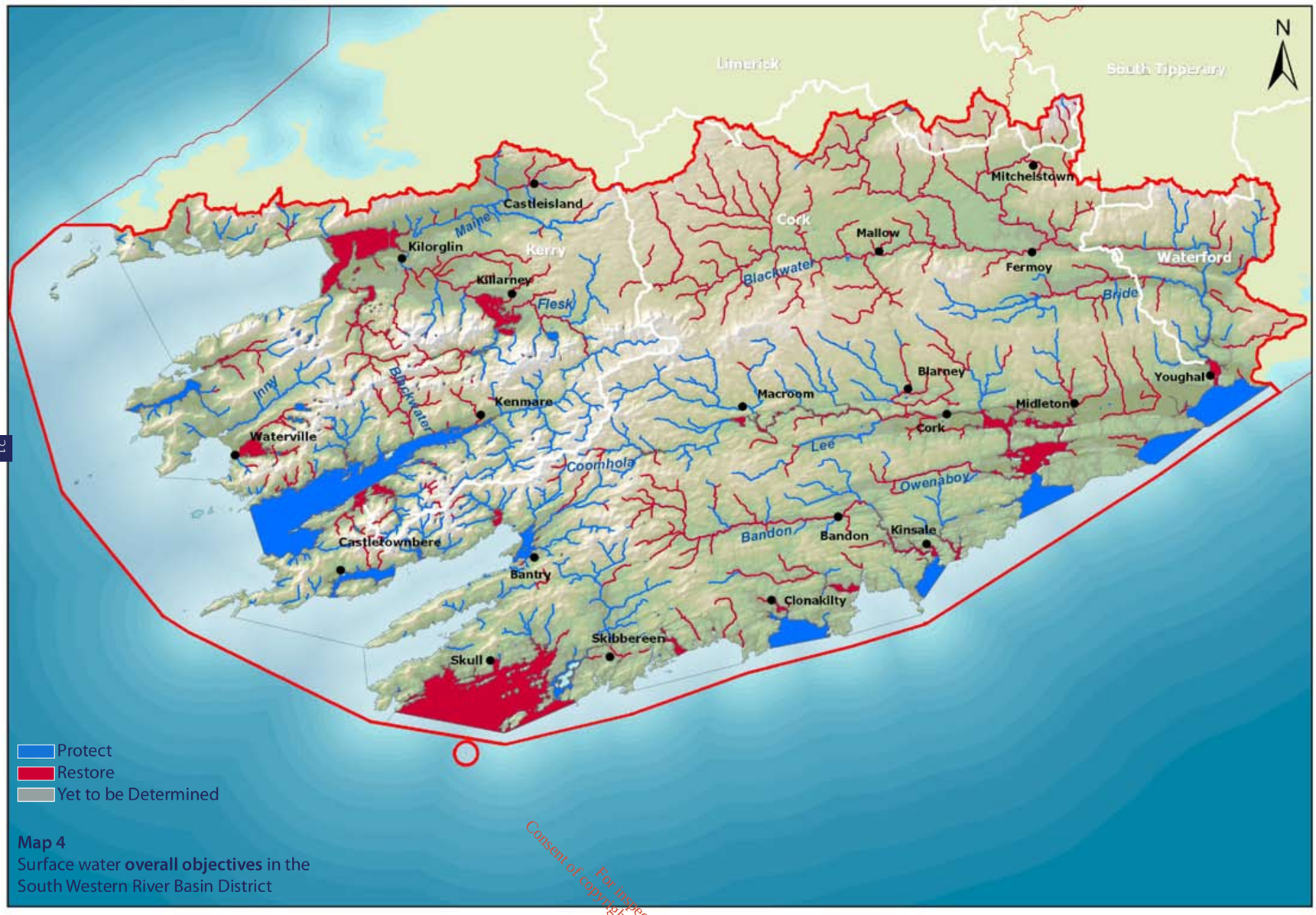
- improve quantity and chemical quality where necessary to achieve good status,
- reverse increasing pollution trends.

The classification results for the South Western District show that 45% of surface water bodies and 7% of our groundwater bodies are currently below good status.Sometimes there is a single cause, but often several different factors are at fault. We must restore these waters to at least good status where it is technically feasible and not disproportionately expensive to do so. The measures proposed in this draft plan aim to improve most of these waters by 2015, but some waters will take longer to reach their target.

### Reduce chemical pollution

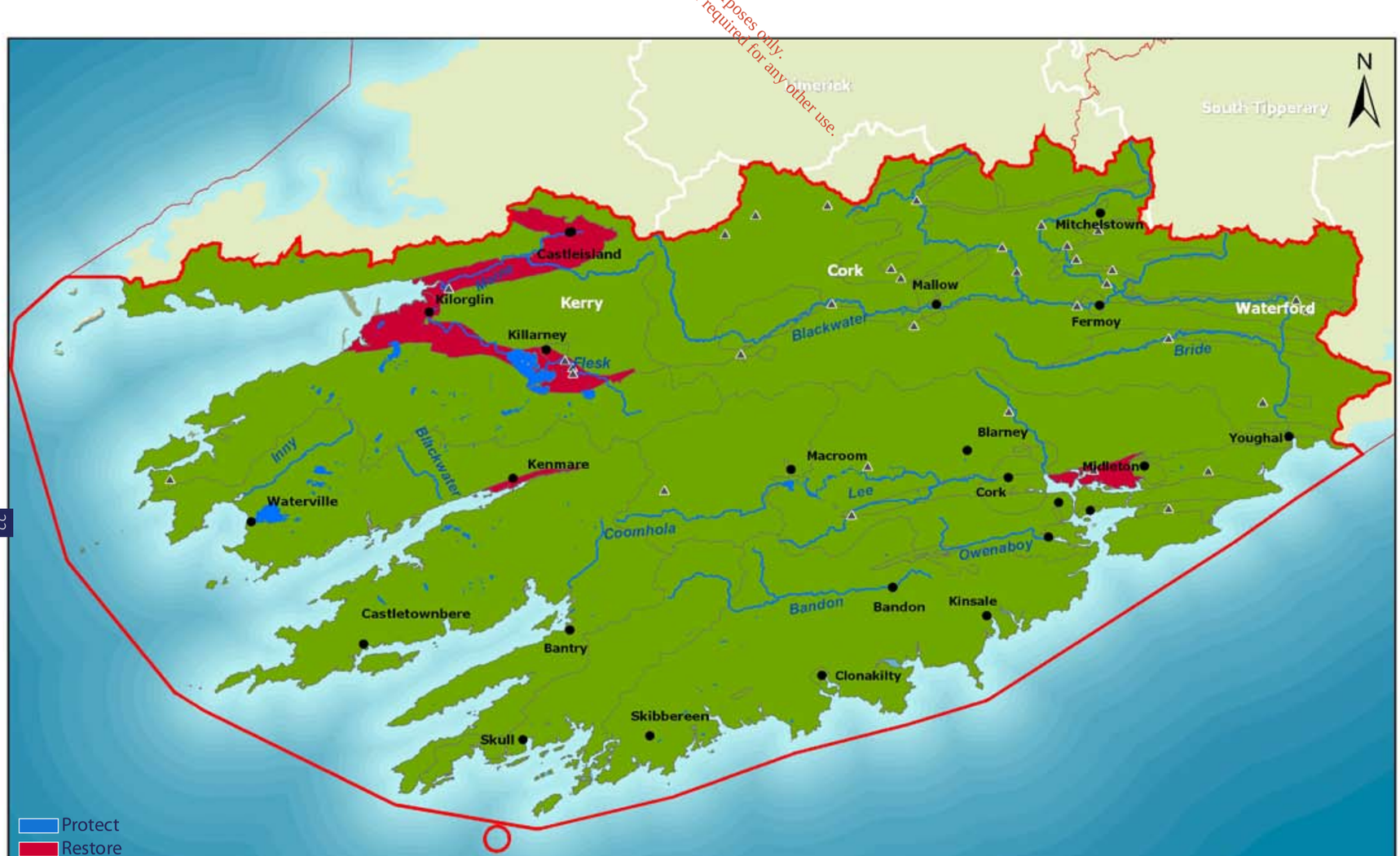
The core objective is to progressively reduce chemical pollution of surface waters.

A new monitoring programme for chemical substances in surface waters is currently being carried out across the country but is incomplete. Based on the information available to date, all seven river water sites monitored in the South Western District pass chemical status. Limited chemical data in marine waters have also identified potential status failures in one coastal water (Cork Harbour) in the South Western District. The source of this pollution will have to be investigated to determine what can be done to restore the chemical status of this water body.




**Map 4**
Surface water **overall objectives** in the South Western River Basin District






**Map 5**
Groundwater **overall objectives** in the South Western River Basin District

## STEP 4 - What measures must we take?

The methods we use in pursuing our core objectives (Step 3) are called **measures.** A measure includes both:

- the mechanism for ensuring that action is taken, for example a regulation or management agreement, and
- the action itself, such as treating wastewater before it is discharged to waters.

There are two types of measures:

- **basic measures** are required by law and apply to all waters. They are covered in Steps 4 and 5
- **supplementary measures** can be considered in waters if basic measures won't achieve our objectives. They are covered in Steps 6 and 7.

The basic measures themselves fall into two categories:

- the implementation of **eleven key EU Directives** on water protection
- the implementation of **other stipulated measures**.

| The 11 key EU Directives |
|---|
| Bathing waters |
| Birds |
| Habitats |
| Drinking waters |
| Major accidents |
| Environmental impact assessment |
| Sewage sludge |
| Urban wastewater treatment |
| Plant protection products |
| Nitrates |
| Integrated pollution prevention control |

| Other stipulated measures |
|---|
| Cost recovery for water use |
| Promotion of efficient and sustainable water use |
| Protection of drinking water sources |
| Control of abstraction and impoundment |
| Control of point source discharges |
| Control of diffuse source discharges |
| Authorisation of discharges to groundwaters |
| Control of priority substances |
| Controls on physical modifications to surface waters |
| Controls on other activities impacting on water status |
| Prevention or reduction of the impact of accidental pollution incidents |

There follows an account of each of these measures and the existing and new plans and programmes for implementing the measures. Then, in Step 5, we consider the extent to which the basic measures will contribute to achieving our core objectives and addressing our key issues.

There is more detail in our background documents (available at www.wfdireland.ie).

## Basic measures: the 11 key EU Directives

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



### Bathing waters

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

### Birds and Habitats

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

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

### Drinking Waters

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

### Major accidents

National regulations, made in 2006, concern the control of major hazards involving dangerous substances. The Health and Safety Authority must organise a system of inspections or other suitable control measures for relevant establishments. Internal and external emergency plans prepared by operators and the local competent authority, addressing the risks posed by relevant installations, must take full account of objectives established for nearby waters in river basin plans.

### Environmental impact Assessment

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

## Sewage Sludge

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

## Urban Wastewater Treatment

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

## Plant protection products

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

## Nitrates

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

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

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

Technical guidance and training on agricultural pollution inspections are currently being developed under the supervision of the Water Services National Training Group to ensure consistent and effective enforcement nationwide. Teagasc commenced mini-catchment work in 2008 to review the effectiveness of the current National Action Programme. The outputs from the monitoring of water quality, farm practices and representative mini-catchments will be critical to demonstrating the effectiveness of the action programme and will determine the modifications (if any) needed to





the programme during its review process. The current programme will be reviewed in 2009 and, where appropriate, adjustments will be introduced in the second 4-year action programme starting in 2010.

## Integrated Pollution Prevention Control

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

# Basic measures: other stipulated measures

In addition to measures under existing directives, other mandatory measures must also be implemented. Existing regulatory controls are not yet sufficient to deliver the improved protection for all waters envisaged by the Water Framework Directive. In fact, new **daughter directives** for groundwaters and dangerous substances are being brought forward at European level setting out comprehensive objectives for waters. Consequently, basic measures also include existing and added national measures including pollution controls, new systems of authorisation plus general binding rules to address these water protection topics which are stipulated within the Water Framework Directive.

## Cost recovery for water use and promotion of efficient and sustainable water use

Member States must adopt a cost recovery system to ensure that water pricing policies act as incentives towards efficient water usage. This means recovery of an adequate cost contribution for water services from the main user groups, including industry, agriculture and households, in line with the **polluter pays principle.** Ireland's National Water Pricing Policy Framework requires charging of non-domestic customers for water and wastewater services to recover the full costs of providing such services. To implement this policy fairly and efficiently, all non-domestic supplies will have water meters installed by the end of 2008. The policy also provides for recovery of domestic capital cost from the Exchequer and domestic operational costs through the Local Government Fund. The Directive also requires measures to promote efficient and sustainable water use. This is being supported by programmes such as the national water conservation programme, implemented under the Water Service Investment Programme.

## Protection of drinking water sources

Drinking water sources must be protected to strengthen compliance with the drinking waters directive. This applies to all groundwaters and surface waters that are used, or may be used in the future, as a source of drinking water for more than 50 people, or where the rate of abstraction is above 10 cubic metres a day. Deterioration in the quality of these waters must be avoided to reduce the treatment needed to make the water suitable for drinking under the standards of the drinking water directive. Government policy is currently being reviewed with a view to applying **safeguard zones** where there is an identified need to protect individual drinking water sources. A water safety plan approach, based on risk assessment, operational monitoring and effective management, may be adopted to ensure drinking water is safe and secure.

## Abstraction and impoundment control

Member States must have controls for significant surface water and groundwater abstractions and surface water impoundments. Ireland's abstraction laws need to be updated to protect waters adequately, with a modern system of registration or prior authorisation for significant water supplies. The Department of the Environment, Heritage and Local Government will propose new regulations creating a single registration and authorisation system. Authorisations will apply to surface waters and groundwaters and may be risk-based including registration of all abstractions above a specified abstraction threshold, general binding rules, notification or licensing depending on the river size and existing or proposed abstraction volume for rivers, and notification or licensing depending on the existing or proposed volume of abstraction from lakes and groundwaters.

## Point source and diffuse source discharges control

Licensing is required for point source discharges liable to cause pollution. Controls may include prohibition on the entry of pollutants into water, prior authorisation or registration based on general binding rules laying down pollutant emission controls. Ireland already has comprehensive national regulatory legislation in place to deal with point source discharges. In addition to regulation of major industry under the Integrated Pollution Prevention and Control system, local authorities license all other small scale industrial and commercial premises that discharge to waters under the Water Pollution Acts. Wastewater Discharge Regulations were made in 2007, providing for authorisation of discharges to receiving waters from local authority wastewater treatment works and collection systems by the Environmental Protection Agency. In the case of discharges from smaller sewage systems, certificates apply instead of licences.

For **diffuse sources of pollution** such as agriculture, forestry, unsewered properties and dangerous substances, the Directive also requires measures to prevent or control pollutant input:

- Ireland's *Good Agricultural Practice for Protection of Waters Regulations* provide statutory support to protect waters against pollution from agricultural sources; they also give further effect to EU Directives on nitrates, dangerous substances, waste management and groundwater.
- forestry replanting is controlled under the *Forestry Act* and *Aerial Fertilisation Regulations* are also in place. Main commercial foresters operate under non-legally-binding codes of good practice which are linked to financial incentives regulated by the Forest Service. Ireland's strategic plan for forestry sets out Sustainable Forest Management provisions and includes the development of a National Forestry Standard, Codes of Good Forest Practice and a suite of environmental guidelines. In addition, all public sector and some private forestry companies have voluntary management plans.
- authorisation for unsewered properties is required under the *Planning and Development Acts*. In addition, the recent *Water Services Act* places a duty of care on owners to ensure that their on-site systems do not to cause a risk to human health or the environment, or nuisance through odour.
- proposed Environmental Objectives Regulations, due to be made in early 2009 will strengthen controls on dangerous substances for surface waters. These require local authorities to prepare inventories of emissions, discharges and losses of pollutants for the river basin district. The inventories are to be prepared and published for the first time by June 2011.

There are also existing powers to regulate point and diffuse pollution under Ireland's legislation on water pollution, environmental protection, waste management, fisheries, foreshore, petroleum and minerals development, dumping at sea, planning and development and energy. This legislation provides for control of other discharges such as landfills, quarries, mines and contaminated lands. Strengthened landfill regulation, under consideration by the Department of the Environment, Heritage and Local Government, requires local authorities to identify, risk assess and if necessary remediate closed landfill sites in compliance with the Environmental Protection Agency's *Landfill Code of Practice Guidelines* under the *Waste Management Act*.

These regulation systems for point and diffuse sources are supported through a series of Irish pollution reduction plans and programmes that are either already in place, or will be introduced shortly to support the Water Framework Directive. These include the Integrated Pollution Prevention Control licensing programme for major industry, local authority Programmes of Discharge Authorisations, Shellfish Waters Pollution Reduction Plans and Bathing Waters Management Plans. New Pollution Reduction Plans are being prepared for each of Ireland's 63 new or existing designated shellfish waters in order to meet the quality standards set by the Quality of Shellfish Water Regulations. Additional controls for point and diffuse source discharges are, or will be, further addressed through Ireland's land use and spatial planning system (including regional guidelines, county development and local areas plans), conservation plans for Natura 2000 sites, water service strategic plans, sludge management, major accident emergency, flood risk management and forest management plans. These plans are further detailed in Step 8.

## Authorisation of discharges to groundwaters

Measures to protect groundwater must prohibit direct discharge of pollutants and require prior authorisation of reinjection of waters for specific activities (such as dewatering for mining or construction, exploration for oils and injection for storage of gas). Construction or civil engineering works that could influence the water table require authorisation and general binding rules. Ireland's Wastewater Discharge (Authorisation) Regulations prohibit discharge of certain dangerous substances to groundwater; they also provide controls for discharges of other substances by water services authorities by way of Environmental Protection Agency licences. Additional regulatory requirements and further guidance will be incorporated into Irish controls under Groundwater Environmental Objectives Regulations to be made in 2009 when transposing the Groundwater Directive. The new regulations will set criteria for status and trends and require measures to prevent or limit inputs of pollutants into groundwaters.

## Priority substances control

Measures are required to eliminate pollution of surface waters by 33 priority substances and 8 other pollutants. Measures must aim to progressively reduce pollution from priority substances and cease or phase out emissions, discharges and losses of priority hazardous substances. This requirement will be transposed into Surface Waters Environmental Objectives Regulations due to be made in 2009. These regulations require local authorities to collaborate in preparing inventories of emissions, discharges and losses of priority substances and priority hazardous substances for the river basin district. The inventories are to be prepared and published for the first time by June 2011. A pollution reduction plan for priority substances, which also addresses the need to cease or phase out discharges, losses or emissions of priority hazardous substances, is to be prepared and published for the first time by June 2012. In addition, information is being collected on the usage, loss and discharge of dangerous substances through compliance with European initiatives such as Registration, Evaluation and Authorisation of Chemicals (REACH) and European Pollutant Release and Transfer Register (EPRTR).

## Controls on physical modifications to surface waters

Member States must ensure that the physical condition of surface waters supports ecological standards. Controls can take the form of prior authorisation or registration based on general binding rules. Ireland's existing planning and development controls and marine licensing systems provide a general level of control for new development. The Department of the Environment, Heritage and Local Government is considering the introduction of new regulations to control physical modifications to surface waters; these regulations may involve an authorisation system. The system may be risk-based: low-risk works may be simply registered while higher-risk works would be subjected to more detailed assessment and more prescriptive licences.

## Controls on other activities impacting on water status

Measures must be put in place to deal with any other identified significant adverse impacts on water status. Controls can include prior authorisation or registration based on general binding rules.

The most significant activity identified so far is intrusion by certain invasive alien species, which are non-native plants or animals that successfully establish themselves in our aquatic and fringing habitats and damage our natural flora and fauna. There is growing evidence that they pose a major threat to the natural diversity of native plants and animals: for example by preying on them, out-competing for habitat or food, altering habitat or introducing pathogens or parasites. The Environmental Protection Agency has identified eight aquatic species of main concern in Ireland. The Department of the Environment, Heritage and Local Government is considering introducing regulations under the Wildlife Act to prohibit the possession or introduction of any species of wild bird, wild animal or wild flora that may be detrimental to native species.

## Prevention or reduction of the impact of accidental pollution incidents

Member States must have measures to prevent significant losses of pollutants from technical installations and to prevent or reduce the impact of accidental pollution incidents (for example floods). These measures include systems to detect or give warning of events and, in the case of accidents, include all appropriate measures to reduce the risk to aquatic ecosystems. In addition to Ireland's measures under the Major Accidents Directive, which include emergency plans, a *Framework for Major Emergency Management* was published by the Office of Emergency Planning in 2006. The framework sets out the arrangements by which the principal response agencies (local authorities, An Garda Siochána and the Health Service Executive) will work together for large-scale incident management. Major emergencies include, among other things, severe weather, flooding, chemical spills, transport accidents (air, sea, rail or road) and accidents or major pollution incidents at sea. The framework provides for the protection, support and welfare of the public. Effective arrangements to ensure public safety in times of emergency also help to safeguard the environment, economy, infrastructure and property.

## STEP 5 – What will basic measures achieve?

The basic (mandatory) measures identified in Step 4 form the basis of national policy for the protection and restoration of all waters. A key part of the District's management plan is to ensure that those measures are fully implemented.

But we must also decide whether those measures will be adequate to achieve our core objectives:

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

And we want to know whether they will be adequate to deal with the key water issues:

| | |
|---|---|
| **Point and diffuse sources of pollution**<br>Wastewater and industrial discharges<br>Landfills, quarries, mines and contaminated lands<br>Agriculture<br>Wastewater from unsewered properties<br>Forestry<br>Dangerous substances & chemical pollution | **Physical modifications** Including channel dredging, culverts, weirs, boat movements and floodplain demand<br><br>**Abstractions** Including drinking water and industrial supplies<br><br>**Locally focussed and future issues**<br>These are addressed by supplementary rather than basic measures (Steps 6–7). |

If the basic measures are not adequate to achieve the core objectives and tackle the key water issues, then we will need to consider adopting supplementary measures to get the job done.

We have assessed the effects of the ongoing basic measures, as well as the likely effects of the strengthened and new basic measures that are due to be implemented in our waters. Ireland's three most recent triennial water quality surveys have detected the early signs of improvement in our water quality resulting from the basic measures already being implemented, in particular capital investment and improved working practices. We have concluded that the basic measures:

- should be adequate to achieve protected areas objectives
- should be adequate to prevent deterioration
- will contribute significantly to restoring good status, but supplementary measures will be needed to restore waters significantly impacted by the key water issues (point and diffuse sources, physical modifications and abstractions)
- will contribute significantly to reducing chemical pollution, but supplementary measures will be needed. Measures that tackle dangerous substances will also reduce chemical pollution.

Our assessments and conclusions are outlined below; for more detail see (www.wfdireland.ie).

## Will the basic measures achieve our core objectives?

The four core objectives are:

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

### Achieve protected areas objectives

Our core objective is to ensure that the status of waters supporting our protected areas is protected and where necessary improved by 2015. The basic measures for bathing waters, habitats, birds, nutrient sensitive, shellfish and drinking waters provide specific protection for these waters. In addition, these basic measures also establish and prioritise standards of treatment or discharge to protect these areas. For example, the level of treatment for a wastewater discharge into a bathing area must be sufficient to meet bathing waters bacterial standards, which could mean higher treatment than is required under the Urban Wastewater Treatment Directive.





In terms of status, waters that contain protected areas that are currently of high and good status and that are achieving their protected area objectives must have their status protected.

In the South Western District, there are no unsatisfactory bathing waters. Bathing waters management plans will ensure appropriate management continues under the basic measures. Similarly shellfish pollution reduction programmes will ensure appropriate management of designated waters.

Ireland is said to support up to 46% of the known populations of the freshwater pearl mussel (*Margaritifera margaritifera*) within the European Union. The survival of the freshwater pearl mussel is under threat and many of the populations are not reproducing and will ultimately disappear if action is not taken. Nationally 27 populations in 19 Natura 2000 sites have been designated for protection. Nine of these sites are in the South Western District. The deterioration in water quality is suspected as being the cause of their decline and work is underway to determine the most appropriate measures to reverse this. The waters that contain the freshwater pearl mussel populations for which a Natura 2000 site were designated and where these populations are not at favourable conservation status have been classified as being of moderate status. These sites require improvement. However, it is not known if the full implementation of the existing legislative measures will be sufficient to restore good status. New regulations defining surface water objectives for the freshwater pearl mussel will require measures to be implemented with the aim of ensuring that these designated areas achieve favourable conservation status. Pilot Freshwater Pearl Mussel Sub-basin Plans are being developed for consultation as a priority action under the Habitats Directive. When complete these will be available at www.wfdireland.ie.

A further 16% rivers, 18% lakes, and 6% of marine waters that support other protected uses (shellfish areas, drinking waters, salmonid areas, shellfish areas, nutrient-sensitive areas, special areas of conservation and special protected areas) are not achieving good ecological status, which is the minimum requirement for all waters. The plans and programmes under basic measures will include the measures needed to restore the status of all of these waters.

**The full and effective implementation of basic measures should be adequate to achieve environmental conditions that support protected area objectives.**

### Prevent deterioration

The classification results for the South Western District show that 53% of our surface water bodies and 93% of our groundwater bodies already meet good or better standards. Our core objective for these currently satisfactory waters (which do not contain protected areas) is to ensure that we continue to protect them from deterioration.

The suite of basic measures provides for an improved comprehensive system of control for all future developments. This will be achieved by ensuring that the Water Framework Directive's objectives will be integrated into all of Ireland's planning and development and authorisation systems; addressing all future activities and pressures underpinning the objective of no deterioration.

**Basic measures will adequately protect waters against deterioration, thus ensuring that high and good status areas will continue to be protected and that there is no further deterioration in moderate, poor or bad status waters by 2015.**

### Restore good status

Our core objective for waters that are less than good status is to restore them to at least good status by 2015, where it is technically feasible and not disproportionately expensive to do so (some waters will take longer to reach their target).

The key basic measures focusing on restoring water status are Ireland's Good Agricultural Practice for Protection of Waters Regulations, urban wastewater treatment controls and Integrated Pollution Prevention Control licensing and the suite of other controls for point and diffuse source discharges.

33% of our surface water and 7% our groundwater bodies that do not contain protected interests currently fail the required status standards. We undertook an expert review of the evidence of improvements achieved in our recent water quality surveys and of the likely effect of the full suite of basic measures. Based on that, we expect all our waters to

have improving trends in status as a result. Improvement will occur at a faster rate than the current improvement trends so that by 2015:

- the majority of surface waters that are currently of moderate quality will be restored to good status
- there will also be improvements in most poor waters to moderate status
- many of our poor groundwaters will also have improved.

However, some surface waters and groundwaters will not reach good status until after the second or third plans (that is by 2021 or 2027) because of the time it takes to reverse pollution trends and restore these waters. Waters that have been significantly impacted by pollution, or are predicted to be impacted in future, may need supplementary measures to help restore them. In relation to physical modifications and abstractions, the impact of historic schemes will also need to be considered for supplementary measures.

**Basic measures will play a very important part in restoring moderate, poor or bad waters to good status by 2015; however, supplementary measures may be needed to address certain impacts.**

## Reduce chemical pollution

A further core objective is to reduce chemical pollution and in particular address any failures of chemical pollution status. The limited information available to date from our new chemical monitoring programme suggests that few surface waters are likely to fail due to chemical pollution.

Reducing chemical pollution will be largely controlled through existing and new discharge authorisation systems, and in particular by measures taken against dangerous substances. Some discharges may require supplementary measures such as more stringent effluent treatment to meet new environmental quality standards.

**Supplementary measures may be needed to control dangerous substances discharge, emission or loss in order to reduce pollution from chemical substances.**

## Will the basic measures tackle our key water issues?

The following summary sets out for each of our key water issues:

- any shortfalls that exist in the current level of basic measures implementation;
- what actions will be taken to strengthen compliance and add to basic measures;
- where supplementary measures may be needed to restore impacted waters.

### Point and diffuse sources: wastewater and industrial discharges

Within the South Western District, treatment plants are reported to receive a combined domestic and trade loading equivalent to a population of 730,000 persons with licensed discharges from commercial and industrial activities accounting for an additional 115,000 persons equivalent. Such discharges can, in certain circumstances, put the receiving waters at risk of not achieving their water quality objectives. A detailed risk assessment identified the waters in the South Western District at risk from these discharges.

Table 5 Urban and industrial discharges risk assessment results in the South Western District

| | Rivers | Estuaries | Coastal Waters |
|---|---|---|---|
| Total Number | 885 | 20 | 18 |
| Number Receiving Urban and Industrial Discharges | 111 | 20 | 18 |
| Number At Risk from Urban and Industrial Discharges | 58 | 11 | 5 |

The most recent Environmental Protection Agency information identified substantial national improvements since 1996 but found that, at the end of 2006, there were still shortfalls in compliance with basic measures under the Urban Wastewater Treatment Regulations:

- 28 urban agglomerations out of 158 requiring secondary treatment did not have adequate treatment systems
- effluent was being discharged at 115 locations with either no treatment or inappropriate treatment – with most of the untreated effluents discharging to marine waters
- 56% of all plants, including 84% of the smaller plants (for populations below 2000), did not comply with emission limits or monitoring requirements.

A national study carried out to review the monitoring and management of urban wastewater treatment plants identified a deficit of information. The capacity of many wastewater treatment plants is not certain and the impacts on the receiving waters have not been monitored to the extent required. Many wastewater treatment plants do not have the basic flow monitoring and sampling equipment to quantify pollution loading to and from plants and some that do are not implementing a calibration and maintenance programme. This lack of information due to failure to comply with the Urban Wastewater Treatment Regulation's monitoring requirements makes it impossible to confidently quantify problems, establish actions or to plan development within catchments, leading to lack of public confidence in the ability of local authorities to manage water services assets. A concerted effort is needed to gather the required information by fully complying with monitoring requirements. The information gathered will better inform the stakeholders of the impacts of point source discharges and will enable the identification of the appropriate measures to be implemented.

In the South Western District there are 24 agglomerations with a population equivalent above 500 that do not have secondary treatment and 25 treatment plants with monitoring information gaps.

The recent introduction of the Urban Wastewater Discharge (Authorisation) Regulations requires that urban wastewater discharges be authorised by the Environmental Protection Agency. Larger villages and towns, with population equivalents of over 500, must be licensed; smaller agglomerations need certificates of authorisation which are issued only if there is full compliance with the Urban Wastewater Treatment Regulations. The regulations also require that water services authorities prepare Water Services Strategic Plans, prioritising upgrades under funded programmes. It is proposed that the Water Services Investment Programme and the Rural Water Programme be realigned to target and prioritise the upgrades required to improve compliance with these basic measures.

The following local authority and EPA actions support full implementation of basic measures:

- Measures for improved management:
  - Keep register of plant capacity and update annually.
  - Install facilities to monitor influent loads and effluent discharges in accordance with Environmental Protection Agency 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.
- Optimise treatment plant performance by the implementation of a performance management system.
- Revise existing Water Pollution Act industrial licence conditions and reduce allowable pollution loading.
- Review existing Industrial Pollution Prevention Control licence conditions and reduce allowable pollution load.
- Investigate contributions to the collection system from unlicensed discharges.
- Investigate contributions to the collection system of specific substances known to impact ecological status resulting from licensed and unlicensed discharges and issue or revise licences to reduce or remove such specific substances in the discharge.
- Upgrade plant to increase capacity where necessary.
- Upgrade plant to provide nutrient removal treatment where necessary.

While full compliance with regulations controlling urban wastewater treatment and discharges will contribute significantly towards eliminating water quality problems from urban wastewater discharges, some discharges may require additional, more stringent treatment. These are discharges — nutrient, organic or chemically polluted (for example by metals) — that affect quality because, even after the regulations have been complied with, the receiving waters cannot dilute the wastewater sufficiently to meet new environmental quality standards set under the Water Framework Directive.

Ireland's major industrial activities are regulated by the Environmental Protection Agency under the Integrated Pollution Prevention and Control Regulations. Of 420 such operational industries, approximately 170 discharge to water. The most recent Environmental Protection Agency report on the performance of Integrated Pollution Prevention and Control industries (2006) found 16 licensees to be non-compliant.

Other industrial and commercial premises that discharge to waters and sewers are licensed by local authorities under the Water Pollution Acts and recently the Water Services Act. Under this system, 1,090 commercial and industrial discharges to sewer and 1,120 direct discharges to water have been licensed. Audit of industrial licence compliance has determined that licence conditions are often confined to nutrient and organic parameters and few small industries monitor their discharges. Ireland's Water Services National Training Group is developing discharge licensing guidance, procedures and training for local authorities to ensure consistency and compliance with the new Surface Water Environmental Objectives Regulations.

Strengthened enforcement actions under these existing point source authorisation systems, as part of the implementation of the river basin management plan, will greatly improve compliance shortfalls. However, review of industrial licences may necessitate supplementary measures for some discharges in order to meet new environmental quality standards set under the Water Framework Directive.

Nationally, there are 388 waters which are less than good status and are impacted by point source discharges, (318 impacted by urban wastewater treatment plants and 131 impacted by industrial discharges – some waters are impacted by both). There are 54 such waters in the South Western District. Many of these point sources relate to discharges from treatment plants which are scheduled for investment in the current Water Services Investment Programme. This investment will improve the status of the receiving waters and the number of waters at risk from point source discharges will reduce to 282. Of this number 173 contain protected areas. Future investment programmes concerning urban wastewater treatment plants and reviews of industrial discharge licences will target these areas such that the impact from point source discharges is reduced to allow the receiving waters to achieve good status. The full implementation of the basic measures should result in further improvements in all waters impacted by point source discharges.

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

Ireland's waste management, fisheries, foreshore, petroleum and minerals development, dumping at sea, planning and development and energy regulatory systems also provide controls for point source discharges such as landfills, quarries, mines and contaminated lands. Strengthening of controls in relation to landfills will also support point source basic measures.

Such activities can, in certain circumstances, put the receiving groundwaters at risk of not achieving their water quality objectives. Our knowledge of these sites is not complete. An assessment in the South Western District estimated the risk and status impacts associated with these sites:

### Table 6 Landfills, quarries, mines, contaminated lands and urban areas risk assessment and status results in the South Western District

| | Landfill | | Quarry | | Mine | | Contaminated Land | | Urban Area | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Confidence* | | *Confidence* | | *Confidence* | | *Confidence* | | *Confidence* | |
| | *High* | *Low* | *High* | *Low* | *High* | *Low* | *High* | *Low* | *High* | *Low* |
| National groundwaters at risk | 0 | 122 | 0 | 5 | 5 | 2 | 23 | 15 | 9 | 59 |
| Groundwaters at risk in the South Western District | 0 | 17 | 0 | 1 | 0 | 0 | 5 | 2 | 0 | 7 |
| Groundwaters at poor status in the South Western District | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

Supplementary measures entail further investigations of quarries and landfills and assessment of site-specific remediation schemes or closure plans required to restore status in some waters impacted by mines or contaminated/urban sites.

## Point and diffuse sources: agriculture

The *Good Agricultural Practice for the Protection of Waters Regulations* support protection of Ireland's waters from nutrient inputs arising from agricultural activities. Ireland's current National Action Programme under this legislation operates from 2006 to 2009, being phased in to give farmers time to undertake the required actions, with a view to achieving full compliance with the nitrates regulations at the earliest practicable date.

The Programme includes controls on minimum storage requirements for livestock manure, nutrient and land management actions to prevent or reduce water pollution and monitors indicators of compliance such as reductions in farm nutrient surplus (taking account of animal numbers, fertiliser sales and animal feeds: there has been a marked decline in fertiliser sales and animal numbers in recent years).

A Farm Waste Management Scheme, introduced in 2006, will provide grants to farmers to meet their slurry storage requirements; nationally €1.1 billion will be invested in slurry storage by the end of 2008. Over 35,000 farmers availed of this scheme, representing between one quarter and one third of all farms with slurry storage requirements.

It is the responsibility of individual farmers to ensure that they are compliant with the *Good Agricultural Practice Regulations*. The Department of Agriculture, Fisheries and Food carry out farm inspections to ensure cross-compliance between agricultural and environmental policy. Local authorities must also undertake pollution control farm inspection and where necessary enforcement. A recent survey of local authority inspections prepared by the South Western District concluded that:

- there is significant variation in the number of inspections being carried out by different local authorities;
- a high proportion of farms (31%) targeted for inspection were non-compliant; however very few of these were reported to the Department of Agriculture, Fisheries and Food;
- there is wide variety in the systems in use to record farm inspections.

It is important that surveys are coordinated and provide a comprehensive assessment of compliance by targeting priority areas. The proposed update of the Good Agricultural Practice Regulations in 2009 will strengthen roles of the enforcement agencies. Technical guidance, procedures and training on agricultural pollution inspections is currently being developed under the supervision of Ireland's Water Services National Training Group to ensure consistent and effective enforcement nationwide.

Teagasc began representative mini-catchment studies in 2007 to review the effectiveness of the current National Action Programme in achieving the objectives of the Water Framework Directive. The first results from this study will be available during 2009. The Environmental Protection Agency water quality surveys and local authority farm inspection data will also be used to assess the programme's effectiveness.

The implementation of the *Good Agricultural Practice Regulations* is still being phased in so it is not yet possible to measure their effectiveness. While full compliance with the *Good Agricultural Practice Regulations* and other basic measures will contribute significantly towards eliminating water quality problems from agriculture, additional, more stringent, measures may be required in some instances. This will be determined by assessment of compliance and effectiveness information by the Department of the Environment, Heritage and Local Government in consultation with the Department of Agriculture, Fisheries and Food and other relevant parties in 2009. If this, or subsequent reviews determine that certain areas will not reach good status, supplementary measures (for example more sensitive farming practices) may need to be introduced in those areas. For example:

- karst limestone areas with shallow soils, such as in parts of County Clare and County Galway , where groundwaters are most vulnerable to seepage of pollutants from agriculture
- areas with heavy soils.

## Point and diffuse sources: wastewater from unsewered properties

Ireland's National Census Report of 2006 indicates that some 418,000 housing units (28% of all housing) are not connected to sewer systems and rely on on-site systems for treating their domestic effluent. An effective on-site wastewater system requires regular maintenance, and must be properly located in a setting that will not give rise to hydraulic issues (such as ponding) and that provides a fully functional percolation area. Poorly constructed or maintained systems can threaten surface waters and groundwaters. Such systems can lead to contamination of drinking waters if they are within the zones of contribution of Ireland's 200,000 wells and springs serving as public and private water supplies. Due to their location in vulnerable areas, an estimated 25,460 septic tanks are identified as potentially having an impact on groundwaters and 118,111 on surface waters. A detailed risk assessment identified the waters in the South Western District at risk from on-site systems:

Table 7 Unsewered properties risk assessment results in the South Western District

| | Rivers | Groundwaters |
|---|---|---|
| Total Number | 885 | 84 |
| Number (with abstractions) at risk from On-site Systems | 30 (3%) | 34 (43%) |
| Number of On-site Systems in at risk areas | 4,870 | 4,500 |

The regulations on construction of on-site wastewater systems have varied over time and have been applied differently in different locations in the country. Surveys reveal that a significant proportion of systems were installed before the current (more exacting) standards were introduced and that regular tank de-sludging is often neglected. Sample inspections show that most systems are below current standards and that a significant minority are located in unsuitable soils, which may represent a serious risk of contaminating nearby waters. In some cases planning permission conditions are not complied with.

Local authorities grant permission for unsewered systems in Ireland under the *Local Government Planning and Development Acts*. In addition, a duty of care is placed on the system's owner under the *Water Services Act*. The Environmental Protection Agency issues guidance on the assessment of sites; publication of an updated version of the guidance for single-house treatment systems is imminent. Special management issues arise in the case of large clusters of houses and commercial developments discharging to a single percolation area. Updated guidance will be prepared for such developments by the Environmental Protection Agency. Critical to ensuring good governance is a consistent approach to the planning process, site evaluation and assessment, use of guidance and certification of approved systems on installation.

The key question is whether ground conditions are suitable. The hydrology of soils, subsoils and geology varies significantly throughout Ireland and hence the extent of treatment likely to be achieved also varies. While guidance has been provided by the Environmental Protection Agency and the Geological Survey of Ireland, additional measures are required to assist with unsewered system regulation, monitoring and enforcement actions. Supplementary measures have been prepared to support existing legislative measures using a risk assessment procedure to identify and target actions in areas potentially impacted by existing on-site systems and also to guide future decision making on new developments. A key factor is to have a consistent framework to the control of on-site wastewater systems across the country.

## Point and diffuse sources: forestry

Ireland's recent National Forestry Inventory shows that forest now occupies 10% of the total land area, 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. A typical forest lifecycle for conifer plantations is 40 years; that for broadleaves is longer.

Research into forestry and waters has continued since the 1980s and the findings have been integrated into Forest Service guidance and codes of practice. Whereas 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:

- acidification of waters arising from the presence of closed canopy forest stands on peat soils overlying igneous/metamorphic (granites) and sedimentary (old red sandstone) rocks. There is a similar but less significant problem on podsolic and lithozolic soils on sedimentary rock. Forest stands on well drained acid mineral soils do not appear to exert an acidification effect. Some 4.75% of the national stocked area is located in acid settings that can exert an acidifying effect on waters
- nutrient enrichment and sedimentation impacts arising from forestry operations (mainly 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. 1% of the national forest stands are located in such settings.
- pesticide use was not presently identified as being a significant impact associated with the forestry sector.

The research also indicated that the 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 have drainage networks directly connected to the river networks and were generally planted right down to the stream edge. The research studies also highlighted the complex nature of the interaction between forest, forestry activities and water and identified areas where further research would be required.





Forestry in Ireland is controlled under the *Forestry Act* 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 *Forestry Act*, is currently being drafted. Recently introduced *Aerial Fertilisation Regulations* are also basic measures controlling diffuse pollution in forests. In addition Forest Service's new guidelines relating to forestry and the impact on freshwater pearl mussel requirements support basic measures to ensure protection of this species under the *Habitats Directive*.

Potential acidification impacts occur largely in upland areas of river catchments, through the presence of existing forestry on certain acid geologies. A decision support system has been developed to determine the significance of such impact enabling a suite of measures reducing impact to be applied to these areas. Forest nutrient potential impacts and potential impacts from the use of pesticides are operationally related and are controlled through guidance documents and codes of practice. The Forest Service guidance and codes of good practice will be updated to reflect more recent research findings and to incorporate more stringent supplementary measures. These measures will lead to a significant reduction in the potential impact from forests and forestry practice on the aquatic environment.

## Point and diffuse sources: dangerous substances & chemical pollution

New surface water and groundwater environmental objectives regulations will strengthen Ireland's controls for dangerous substances discharges. These regulations will develop pollution reduction programmes and require Ireland's licensing authorities to review all industrial and wastewater permits to ensure that the emission limits aim to achieve new water quality standards. These reviews may require supplementary measures, such as infrastructure and operation improvements, to reduce emissions from some industries, treatment facilities or other point source discharges. Likewise, review of diffuse source pollution reduction programmes may also necessitate additional supplementary measures for diffuse sources such as more stringent binding rules.

Measures to control dangerous substances will help us to meet our third objective, of restoring good status, but they will also meet our fourth, of reducing chemical pollution.

## Physical modifications

New national monitoring and research, undertaken over the last two years, has determined the key morphology pressures acting on Ireland's rivers, lakes and marine waters:

- 15% of rivers have been arterially drained in the past, mainly to improve agricultural land (8% of the rivers in the South Western District have been drained).
- a recent pilot study in the Nore catchment identified additional barriers which represent potential risks and require further investigation. 28 artificial structures (weirs, culverts or bridge aprons) have been identified as potential barriers to fish migration. A protocol to assess artificial barriers was also developed.
- 140 river stretches (less than 3% nationally) have been identified by experts as impacted by overgrazing. To date, none have been identified in the South Western District.
- initial monitoring results indicate that approximately 20% of targeted river survey sites are impacted by physical modifications
- major ports, harbours and associated activities are the key marine morphology pressure
- around 2% of Ireland's shoreline is reinforced or protected using man-made structures with 3% embanked.

A new system of prior authorisation for engineering activities on surface waters will be introduced. Whilst this new authorisation system will control future physical modification pressures, additional measures may be needed to restore good status to waters impacted by historical morphological schemes. Restoration schemes should be considered where status surveys confirm that morphological pressure is the cause of moderate, poor or bad ecological status.

## Abstractions

The Water Framework Directive requires a control regime of surface and groundwater abstractions and of surface water impoundments in Ireland's waters. National research, undertaken over the last two years, has determined the key issues in relation to abstractions on Ireland's rivers, lakes, and groundwaters:

- data on the presence, location and volume of surface and groundwater abstractions needs to be improved (in particular groundwater abstraction and consumptive usage are not captured by existing records in local authorities)
- 87% of the river stretches in Ireland do not have a known abstraction
- of the 531 river stretches with known abstractions, 45% are likely to be affected by over-abstraction. In the South

Western District there are 12 rivers at risk and 37 probably at risk.
- slightly less than 10% of the lakes are likely to be affected by over-abstraction. In the South Western District there are 8 lakes at risk.
- groundwater resources are generally in good condition (nationally 99% of groundwaters have good quantitative status) and only a few abstraction schemes have been identified that may be considered as non-sustainable. These involve either one or a combination of public supply, mining, and quarry dewatering schemes.

A new prior authorisation of abstraction and impoundment activities will be introduced. The technical guidance, prepared as part of a national study on abstraction pressures, defines risk-based thresholds whereby different levels of technical assessment are needed depending on proposed rates of abstraction and locations relative to sensitive receptors. Whilst this new authorisation system will control future abstraction and impoundment pressures, additional measures may be needed to restore good status to waters impacted by existing abstractions. Remediation schemes should be considered where studies confirm that abstraction pressure is the cause of moderate, poor or bad ecological status.



## STEP 6 - What supplementary measures can we take?

At Step 5, we concluded that the basic measures:
- should be adequate to achieve protected areas objectives
- should be adequate to prevent deterioration
- will contribute significantly to restoring good status, but supplementary measures will be needed to restore some waters significantly impacted by our key water issues and also to focus on the local issues highlighted at District level.
- will contribute significantly to reducing chemical pollution, but supplementary measures will be needed.

Technical studies and consultations have established that national supplementary measures are also needed where some further work is necessary to investigate or research problems or where education campaigns are necessary to explain the water management issues facing us, the problems they pose and the solutions needed. That gives us this list of issues for which we may need supplementary measures:

| | |
|---|---|
| **Point and diffuse sources of pollution**<br>Wastewater and industrial discharges<br>Landfills, quarries, mines and contaminated lands<br>Agriculture<br>Wastewater from unsewered properties<br>Forestry<br>Dangerous substances & chemical pollution | **Physical modifications** |
| | **Abstractions** |
| | **Locally focussed and future issues**<br>Climate change<br>Aquaculture<br>Alien species<br>Protecting high quality areas<br>Eutrophication of estuaries & lakes |
| | **Research and education** |

For any one issue, we may be able to identify several alternative supplementary measures that are technically feasible. The chosen combination of supplementary measures must be the most cost-effective and the total cost must not be significantly greater than the benefits gained. Furthermore, the supplementary measures must be environmentally sustainable.

The full programme of technically feasible supplementary measures is set out in our background document (www.wfdireland.ie). The document describes alternative supplementary measures for each of our key water issues, whether they are new or existing measures and whether they could apply in targeted waters or across all waters in the District.

After a short account of the criteria for selecting supplementary measures, we present a brief account of the possible measures for each issue.

## Selecting supplementary measures

The range of supplementary measures available to us - to restore waters, target pollution and meet our research and education needs - has been identified by a series of technical studies; you can read about them in the background documents on (www.wfdireland.ie).

We are already undertaking certain supplementary measures such as agricultural environmental protection schemes and implementation of a suite of forestry good practice guidelines. Other examples of possible supplementary measures are codes of practice, voluntary agreements, demand reduction and rehabilitation programmes and legal, administrative and economic instruments.

## Are they technically feasible?

Supplementary measures have to be technically feasible, which means they must ensure that waters achieve their objectives. It may not be technically feasible to solve every problem straight away, or even within the next three planning cycles, if:

- no technical solution is available or
- it takes longer to fix the problem than there is time available or
- practical constraints prevent implementation of the solution until a certain date or
- the cause of an impact is unknown so a the solution cannot be identified.

## Are they cost-effective?

The combination of supplementary measures must be the most cost-effective. Furthermore the cost of these combinations of measures must not be significantly greater than the benefits gained. Economic tests of supplementary measures involve these steps:

- assess the status of the waters against the target status to determine the gap that needs to be closed by measures
- consider how much of the status gap will remain after the basic measures have been fully implemented
- determine the key issues acting on the waters
- screen the technically feasible measures relating to these key pressures; this shortlisting recognises that not every solution is appropriate in all waters
- for each shortlisted measure, estimate cost and effectiveness (that is when and how much of the remaining status gap will be closed)
- formulate combinations of measures that together will achieve the target status. In some cases a single measure may suffice, but in general strategies will combine measures addressing more than one issue
- determine the most sustainable combinations of supplementary measures that will minimise impacts on the wider environment
- determine the most cost-effective combination of supplementary measures
- select the most effective combination of supplementary measures taking account of sustainability and cost-effectiveness.

Supplementary measures may be phased or deferred if:

- there is no technically feasible solution or there is low certainty that there is a problem to solve
- the measures are not cost-effective or are disproportionately expensive
- implementation of the measures, before a certain date, would not be in line with the polluter pays principle.

Economic guidance and our economic characterisation baseline report are available with our background documents (www.wfdireland.ie). Further economic assessment of disproportionate costs will be undertaken in parallel with consultations during 2009 to refine the programme of measures.

## Are they environmentally sustainable?

The impacts of the supplementary measures on the wider environment have to be considered to ensure that they are sustainable. To determine this, a Strategic Environmental Assessment has been applied in parallel with the preparation of this draft plan (www.wfdireland.ie).

## The range of supplementary measures

The supplementary measures identified by our technical studies and considered in our draft plan are all judged to be technically feasible. The measures considered range from reducing the pressure at source (for example reducing nutrient loading on a wastewater treatment facility) through remediation by technical or engineering solutions (for example providing treatment upgrades) to relocation of the pressure (for example selecting a different discharge location).

Local authorities have considered this comprehensive range of possible supplementary measures and used the economic guidance to propose the measures that follow.

# Tackling the issues

The issues for which supplementary measures may be needed are:

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





## Point and diffuse sources: wastewater and industrial discharges

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

Technical studies commissioned by local authorities on point source discharges identified wastewater treatment plants and industrial discharges in the South Western District which may require supplementary measures:

- 51 urban wastewater treatment plants lack capacity to cater for the projected future increase in population within the catchment area of the plant. Limiting development, additional controls on licensed discharges and public awareness campaigns could be considered as possible supplementary measures.
- 19 treatment plants and 13 industrial discharges are discharging to waters where the available dilutions are considered insufficient to meet water quality objectives. Possible supplementary measures include further investigations to confirm assimilative capacity, reduction in wastewater treatment plant loading, applying a higher standard of treatment or relocating the point of discharge.
- 36 urban wastewater treatment plants and 9 industrial discharges are discharging to protected areas classified as less than good status. Supplementary measures could include initiating research to determine the impact of the discharge or applying a higher standard of treatment such as ultra-violet disinfection or filtration.

A suite of supplementary measures has been identified which should be considered for waters where the basic measures may not be sufficient to achieve the core objectives. More than one measure may apply to a point source. The total number of waters for which supplementary measures will be necessary is 388 nationally and 54 in the South Western District.

The number of waters where each of these supplementary measures need to be considered nationally and in the South Western District are as follows:

### Table 8 Urban and industrial discharges supplementary measures nationally and in the South Western District

| Code | Supplementary Measure | National Numbers | South Western District |
|---|---|---|---|
| **Reduce** | | | |
| **S1** | Measures intended to reduce loading to the treatment plant:<br>- Limit or cease the direct importation of polluting matter (for example liquid wastes, landfill leachate, sludges).<br>- Investigate the extent of use and impact of under-sink food waste disintegrators and take appropriate actions.<br>- Investigate fats/oils/grease influent concentrations and take actions to reduce FOG entering the collection system. | 218 | 40 |
| **S2** | Impose development controls where there is, or is likely to be in the future, insufficient capacity at treatment plants. | 331 | 50 |
| **S3** | Initiate investigations into characteristics of treated wastewater for parameters not presently required to be monitored under the urban wastewater treatment directive. | 198 | 22 |
| **S4** | Initiate research to verify risk assessment results and determine the impact of the discharge. | 331 | 35 |
| **S5** | Use decision making tools in point source discharge management. | 180 | 12 |

| | | | |
|---|---|---|---|
| **Remediate** | | | |
| **S6** | Where necessary to achieve water quality objectives install secondary treatment at smaller plants where this level of treatment would not otherwise be required under the urban wastewater treatment regulations. | 7 | 1 |
| **S7** | Apply a higher standard of treatment (stricter emission controls) where necessary. | 249 | 22 |
| **S8** | Upgrade the plant to remove specific substances known to impact on water quality status | 198 | 22 |
| **S9** | Install ultra-violet or similar type treatment. | 7 | 1 |
| **Relocate** | | | |
| **S10** | Relocate the point of discharge. | 249 | 22 |

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

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

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

Further investigation of landfill and quarry risks is needed before measures can be identified. Where investigations have identified waters impacted by mines or contaminated sites and associated urban areas, supplementary measures in the form of site-specific remediation schemes or closure plans are required to restore status. The supplementary measures to remediate these existing sites typically include pollution containment measures and monitoring requirements. The following sites have been identified as impacting status with assessment of appropriate remediation schemes required in the SWRBD:

- Contaminated lands/urban areas – an industrial area in Cork in the South Western District.



## Point and diffuse sources: agriculture

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

The review may identify new measures required at national level or measures targeted in some sensitive areas. If national measures are required, updated national regulation may reflect these as basic measures. If catchment specific measures are identified, these will be built into river basin management plans as supplementary measures.

Possible supplementary measures may include:

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



## Point and diffuse sources: wastewater from unsewered properties

The proposed supplementary measures to support existing legislative measures include:

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

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

Technical studies commissioned by local authorities estimate that the following on-site systems supplementary measures are required for numbers of on-site systems discharging to surface waters and groundwaters nationally and in the South Western District:

### Table 9 Unsewered properties supplementary measures nationally and in the South Western District

| Code | Supplementary Measure | National Numbers | South Western District |
|---|---|---|---|
| **Reduce** | | | |
| **S1** | Amend Building Regulations<br>• Code of Practice for single houses<br>• Code of Practice for large systems<br>• Certification of the construction of on-site wastewater treatment systems and percolation areas/polishing filters. | All | All |
| **S2** | Establish:<br>• Certified national panel of experts for site investigation and certification of installed systems. A second panel of hydrogeologists is required for clusters and large systems.<br>• National group for formulating polices and coordination of consistent approach.<br>• A technical advice section or advisory group to coordinate and give advice on emerging and innovative technologies<br>• Installation and maintenance training by FAS. | All | All |
| **S3** | For new developments:<br>• At planning assessment stage, apply the GIS risk mapping / decision support system and codes of practice<br>• Notice to planning authority required immediately prior to the installation of on-site effluent treatment systems including percolation areas and polishing filters. | All | All |
| **Remediate** | | | |
| **S4** | Inspect existing systems in prioritised locations:<br>• Use the GIS risk mapping / decision support system to prioritise locations to be targeted in a programme of inspections and maintenance<br>• Use a database and action tracking system | 118,111 km$^2$ surface water<br>25,460 km$^2$ groundwater | 4,870 km$^2$ surface water<br>4,500 km$^2$ groundwater |
| **S5** | Enforce requirements for percolation | 35,433 km$^2$ surface water<br>25,460 km$^2$ groundwater | 1,461 km$^2$ surface water<br>1,350 km$^2$ groundwater |
| **S6** | Enforce requirements for de-sludging | All | All |
| **Relocate** | | | |
| **S7** | Consider connection to municipal systems | Where feasible | Where feasible |

## Point and diffuse sources: forestry

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

A suite of supplementary measures has been identified which should be considered for waters where the basic measures may not be sufficient to achieve the core objectives. More than one measure may apply to a forest source. Nationally the number of waters requiring remediation measures is: 89 acidification measures, 245 eutrophication measures and 308 sedimentation measures have been proposed (38, 79 and 83 measures respectively in the South Western District).

The number of waters where each of these supplementary measures need to be considered nationally and in the South Western District are as follows:

### Table 10 Forestry supplementary measures nationally and in the South Western District

| Code | Supplementary Measure | National Numbers | South Western District |
|---|---|---|---|
| **Reduce** | | | |
| **S1** | Management Instruments - Ensure regulations and guidance are cross referenced and revised to incorporate proposed measures. | All | All |
| **S2** | Acidification - Avoid or limit (to below critical thresholds) afforestation on 1st and 2nd order stream catchments in acid sensitive catchments | All | All |
| **S3** | Acidification - Revise the Acidification Protocol to ensure actual minimum alkalinities are detected (i.e. ensure sampling under high flow conditions) and revise boundary conditions for afforestation in acid sensitive areas. | All | All |
| **S4** | Eutrophication and Sedimentation - Avoid or limit forest cover on peat sites | All | All |
| **S5** | Eutrophication and Sedimentation -Change the tree species mix (e.g. broadleaves) on replanting | All | All |
| **S6** | Eutrophication and Sedimentation - Limiting felling coup size | All | All |
| **S7** | Eutrophication and Sedimentation - Establish new forest structures on older plantation sites (including riparian zones, drainage layouts, species mix, open areas) | All | All |
| **S8** | Hydromorphology - Audit existing drainage networks in forest catchments | All | All |
| **S9** | Pesticide Use - Reduce pesticide usage | All | All |
| **S10** | Pesticide Use - Pre-dip trees in nurseries prior to planting out | All | All |
| **S11** | Pesticide Use - Maintain registers of pesticide use | All | All |
| **Remediate** | | | |
| **S12** | Acidification - Restructure existing forests to include open space and structural diversity through age classes and species mix, including broadleaves | 89 | 38 |
| **S13** | Acidification - Mitigate acid impacts symptomatically using basic material (e.g. limestone or sand liming) | 89 | 38 |
| **S14** | Acidification - Manage catchment drainage to increase residence times and soil wetting, including no drainage installation in some areas | 89 | 38 |
| **S15** | Acidification - Implement measures to increase stream production – for example with native woodland in riparian zones. | 89 | 38 |
| **S16** | Eutrophication - Establish riparian zone management prior to clearfelling | 245 | 79 |
| **S17** | Eutrophication and Sedimentation - Enhance sediment control | 245 | 79 |
| **S18** | Eutrophication - Manage catchment drainage to increase residence times and soil wetting, including no drainage in some locations | 245 | 79 |
| **S16** | Sedimentation - Establish riparian zone management prior to clearfelling | 308 | 83 |
| **S17** | Sedimentation - Enhance sediment control | 308 | 83 |
| **S18** | Sedimentation - Manage catchment drainage to increase residence times and soil wetting, including no drainage in some locations | 308 | 83 |
| **S19** | Hydromorphology - Enhance drainage network management – minimise drainage in peat soils | All | All |
| **S20** | Pesticide Use - Develop biological control methods | All | All |





## Point and diffuse sources: dangerous substances & chemical pollution

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

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

## Physical modifications

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

Technical studies estimate that the following number of waters where physical modification supplementary measures are required nationally and in the South Western District:

### Table 11 Physical modifications supplementary measures nationally and in the South Western District

| Code | Supplementary Measure | National Numbers | South Western District |
|---|---|---|---|
| Reduce | | | |
| S1 | Code of Practice | All | 885 |
| S2 | Support voluntary initiatives | All | 885 |
| Remediate | | | |
| S3 | Channelisation impact remediation schemes | 11 | 0 |
| S4 | Channelisation investigation | 529 | 8 |
| S5 | Over-grazing remediation | 142 | 0 |
| S7 | Impassable barriers investigation | 4,507 | 885 |

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

## Abstractions

Technical studies have shown that habitat for salmonid fish in Irish rivers can be reduced by abstractions. 19 river stretches were assessed nationally using a model called PHABSIM. Generally, the effects are more significant in smaller rivers than in larger rivers. This research has been piloted and suggests that minimum instream flow requirements are needed to protect fisheries habitat.

The scientific understanding of the consequences of abstractions pressures on lake ecology is not well developed. Potential impacts of abstractions to the ecological health of a lake are related to physical changes in the lake's water level and/or flushing rate. Abstractions can increase water level fluctuation by increasing drawdown in a lake on a seasonal basis; lower lake levels could impact shallow littoral zones by exposing them to wave action and desiccation. These, in turn, can affect wetlands and sensitive species including spawning of fish such as the Arctic char and pike and the presence of Chara. A field assessment of 20 representative lakes (8 in South Western District) was carried out to ground-truth and verify data, to examine evidence of any effects of abstractions and lastly to help choose lakes suitable for future water level monitoring.

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

Over abstraction of groundwater resources can reduce baseflow to rivers and lakes, and can impact on the environmental supporting conditions for groundwater dependent ecosystems (wetland areas). While groundwater resources are generally in a good condition in Ireland, growing demands require that controls be implemented for future abstractions.

Further possible supplementary measures include:

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

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

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

- daily abstracted volumes
- groundwater level monitoring near sensitive receptors;
- environmental supporting conditions of wetlands;
- additional hydrometric stations in small (less than 20 $km^2$) catchments
- daily water levels in lakes with existing abstractions suspected as causing an impact or for future abstractions above a certain threshold
- effects of abstractions on lake ecology
- determination of instream flow needs for rivers outside the central plain region (by modelling with the PHABSIM program).

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





## Locally focussed and future issues

Possible supplementary measures generally necessitate focussed management and enforcement actions that will be coordinated at District level via the South Western District's local authorities. They include:

- climate change: all measures have been assessed to ensure that the plan adequately considers the potential impacts of climatic change
- aquaculture: proposing national standards, designating additional sites and developing shellfish pollution reduction plans
- invasive alien species: supporting measures being developed by the national alien species study and local investigations at District level
- protecting high quality areas developing national guidance on favourable conservation status, introducing a web-based register of designated sites and supporting voluntary initiatives (nature conservation projects) at District level
- eutrophication of lakes and estuaries: focused local management plans including programmes of measures.

## Research

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

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

## Education

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

## STEP 7 - What will supplementary measures achieve?

So far in the planning process, basic measures have been identified and supplementary measures have been selected on the basis of technical feasibility, economic considerations and wider environmental impacts. Basic and selected supplementary measures together will ensure that, for most of our waters, we will achieve the following by 2015:

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

Supplementary measures focus on the objectives of restoring status and reducing chemical pollution. As well as addressing our objectives, basic and supplementary measures together will also address our key water issues.

Step 7 begins, then, by reviewing what supplementary measures will achieve. That achievement, added to what the basic measures will have achieved, will show the total progress expected by 2015.

However, we have to allow for the nature or uses of certain artificial or heavily modified waters, or to take account of new physical modifications or sustainable developments. Furthermore, in some impacted surface waters or groundwaters it will take several years before objectives are achieved.

When there are such technical, economic, environmental or recovery constraints, we redefine core objectives by setting **alternative objectives** for the waters in question. Improvements may be phased over further river basin planning cycles if these constraints mean we can't meet objectives within the first river basin planning cycle. We look in a little more detail at the circumstances in which alternative objectives might be required; then at Step 8 we apply the principles in setting alternative objectives for the South Western District.

Note that in all cases where alternative objectives apply, all actions that are technically feasible and not disproportionately expensive should still be taken to reach the best status possible. And alternative objectives cannot be set for protected areas, all of which must, by 2015, achieve the core objectives and the more stringent standards that support protected areas.

Further information can be found on (www.wfdireland.ie).



## What we expect supplementary measures to achieve

The issues for which we considered that supplementary measures might be needed were:

| | |
|---|---|
| **Point and diffuse sources of pollution**<br>Wastewater and industrial discharges<br>Landfills, quarries, mines and contaminated lands<br>Agriculture<br>Wastewater from unsewered properties<br>Forestry<br>Dangerous substances & chemical pollution | **Physical modifications** |
| | **Abstractions** |
| | **Locally focussed and future issues**<br>Climate change<br>Aquaculture<br>Alien species<br>Protecting high quality areas<br>Eutrophication of estuaries & lakes |
| | **Research and education** |

### Point and diffuse sources: wastewater and industrial discharges

The actions outlined in Step 6 would be expected to result in restoration of all waters where urban wastewater treatment plants and/or licensed industrial discharges are the primary cause of failure to achieve good status. However further actions may follow from industrial license reviews.

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

The actions outlined at Step 6 would be expected to result in the restoration of one of the currently impacted groundwaters to good status in the South Western District.

### Point and diffuse sources: agriculture

As supplementary measures will not be decided until after the review of the National Action Programme in 2009, it is not possible to estimate what status benefits further measures would bring. However, it should be noted that various studies and surveys, including Teagasc's National Farm Surveys and a targeted catchment study for the Clarianna area, have provided evidence of the benefit of certain agri-environmental actions.

### Point and diffuse sources: wastewater from unsewered properties

The actions outlined at Step 6 would be expected to result in restoration of a further 229 currently impacted waters to good status nationally.

### Point and diffuse sources: forestry

Given the diversity of forested locations, potential impact from forests and forestry operations varies significantly. A suite of measures are proposed for each site as appropriate. Nationally 89 acidification measures, 245 eutrophication measures and 308 sedimentation measures have been proposed and would be expected to restore 89 waters to good status and protect a further 271. Research into the effectiveness of these measures is critical.

### Point and diffuse sources: dangerous substances & chemical pollution

As supplementary measures will not be decided until after the review of wastewater and industrial licences, it is not possible to estimate what status benefits further measures would bring. Measures taken against dangerous substances will also reduce chemical pollution.

### Physical modifications

The actions outlined at Step 6 would be expected to result in restoration of a further 153 currently impacted waters to good status nationally (however none of these are in the South Western District). Further improvements would come in waters where status impacts are confirmed by investigations.

### Abstractions

As supplementary measures will not be decided until after detailed abstraction investigations, it is not possible to estimate what status benefits further measures would bring.

### Locally focussed and future issues

The actions outlined in Step 6 will increase the focus management and enforcement actions on locally important issues. These actions will be coordinated at District level via the South Western District's public authorities group.

## Research

The actions outlined at Step 6 will further our understanding of problems and status impacts and help to direct further water management activities.

## Education

The actions outlined at Step 6 will help to raise awareness of water management issues, letting people make more informed decisions about their activities and how these can have an effect on water status. The awareness programme will also help to gain support for the actions in the river basin management plan.

# Alternative objectives – heavily modified waters and artificial waters

Some surface waters have been substantially changed in character to allow uses such as navigation, water storage, public supply, flood defence and land drainage. To recognise that the benefits from such modifications need to be retained, these waters are designated as heavily modified. The same reasoning applies to artificial waters (for example canals) created for human activities.

Heavily modified and artificial waters are expected to achieve good ecological potential, which recognises their important uses while making sure that ecology is protected or improved as far as possible. The designation of, and standards for, artificial and heavily modified waters were established using a detailed screening process.

Further information is available in our artificial and heavily modified background document (www.wfdireland.ie).

We have set the objective that all of these waters will meet good ecological potential standards by 2015; we have included in our action plan the investigations and mitigation measures needed to achieve that. Assessment of further candidate waters for designation may be undertaken before the plan in finalised.

# Alternative objectives – new modifications or development

Alternative objectives can also be set for waters where it is known that a new modification or development, requiring tailored objectives, will take place during the plan. Such development proposals must have over-riding social and economic benefits and new developments must still allow waters to achieve good status. Proposals have to be assessed on a case by case basis and have to satisfy a series of tests of sustainability. Options have to be examined, such as alternative locations and different scales or designs, to ensure that all practicable steps are taken to mitigate adverse impacts. However, in the South Western District, no such physical modifications or sustainable developments have been proposed.

# Alternative objectives – timescales

We expect to achieve our first two core objectives (achieve environmental conditions suitable to support protected areas and prevent deterioration) in full by 2015. Alternative objective timescales are considered only for non protected waters where the combination of basic and supplementary measures will not fully achieve the other two objectives: restoring good status and reducing chemical pollution (in cases where our key water issues are causing problems).

In most cases, the alternative objective is an extension of the timescale for achieving the core objectives. The extension is usually of one planning cycle (that is six years, to 2021) but may be of two cycles (to 2027). If the objective cannot be met by then, a less stringent objective is set which means that the waters won't achieve good status before 2027.

Technical, economic, environmental or recovery constraints that may mean an extended timescale is required: The time to reach good status may also have to be extended where we need longer to investigate problems to gain a better understanding of how to tackle them.

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





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

## Point and diffuse sources: wastewater and industrial discharges

There are rivers where further investigation is needed to provide scientific evidence concerning the impact of point source discharges and to identify the most appropriate measure. In these cases deadlines will be extended by one cycle. Further actions will be identified for industries following license review which will be completed by 2012. Objectives should be revised during the first planning cycle once solutions are established.

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

Where substantial impact has taken place (for example groundwaters below urban areas or polluted by historical contaminated lands or mining activities), recovery takes many years and the objectives may be either extended by one or more cycles or a less stringent objective set . We have proposed a small number of likely less stringent objectives for mine impacted sites as the timescales and costs of restoring these groundwaters will probably extend beyond 2027. More detailed economic tests will be applied to confirm these likely less stringent objectives.

## Point and diffuse sources: agriculture

In some areas it is expected that it will take time for soil nutrient levels to reduce after changing agricultural practices (for example lowering stock levels or fertilizer application rates) and therefore nutrient losses to waters may persist. The timescale to achieve the objectives in these areas of heavy gley and wet soils should be extended by one cycle.

## Point and diffuse sources: wastewater from unsewered properties

Where investigation of pathogens risks to surface waters from on-site system remediation works is required, objectives should be extended by one cycle.

## Point and diffuse sources: forestry

Investigation of the effectiveness of acidification measures is required. Consequently the objective timescale is extended by two cycles in waters at risk from this impact to allow investigations to take place.

## Point and diffuse sources: dangerous substances & chemical pollution

Pollution reduction programmes will be put in place by 2012 to help restore waters and reduce chemical pollution. However, where chemical pollution problems have been identified, resulting supplementary measures will take time to investigate and implement. Where appropriate, objectives should be extended by one cycle.

## Physical modifications

It will take at least one cycle for status to recover after rehabilitation works, so deadlines should be extended by one cycle in these waters. There are gaps in our knowledge of the status of certain waters experiencing morphological pressures, and of the fish that are key indicators of morphological status. We have recommended investigations of the natural condition of these waters and of the technical feasibility of measures before overall status, objectives and measures are decided. If these waters are impacted by morphological pressures but there are no technically feasible measures, alternative objectives may have to be considered.

## Abstractions

There are also gaps in our knowledge of the status of certain waters experiencing abstraction pressures. Further studies and investigations have been recommended in waters at risk from these pressures. The rate of recovery in lake and river systems varies depending on the previous effects and measure implemented. Simple measures, like setting and maintaining a minimum instream flow, will benefit most organisms quite quickly, except for rebuilding natural salmon populations which could take many years. Similarly, lakes whose shorelines have become denuded may require active (as opposed to letting natural processes take their time) restoration including wetland plants or restocking and rebuilding fish populations (for example in char lakes). It may take at least one cycle for status to recover after remediation works. The requirements for extended deadlines should be re-examined following the investigations of flow requirements

## Locally focussed and future issues

The actions identified to focus on these issues within the District are all expected to be effective within the first cycle.

## Research & Education

These actions will not directly result in alternative objectives being set for any waters.

Table 12 Overview of alternative timescales (Nationally and in the South Western District)

| Key Issue | 2015 | 2021 | 2027 or likely LSO cases |
|---|---|---|---|
| Wastewater | Majority of waters | Nationally 46 rivers where investigations are in place by 2015 (2 in the South Western District). | |
| Industrial discharges | Majority of waters | Nationally 52 rivers where investigations are in place by 2015 (1 in the South Western District). | |
| Landfills, quarries, mines and contaminated lands | Majority of waters | Majority of waters | Nationally 5 groundwaters at risk from mine impacts (these will be tested during 2009 as likely less stringent objectives) |
| Agriculture | Majority of waters | Nationally 19 rivers where recovery timescales are longer (gley soils with agricultural pressures and elevated soil nutrients) (None in the South Western District). | |
| Wastewater from unsewered properties | Majority of waters | Nationally 173 rivers where investigations of pathogen losses to surface waters are in place by 2015 (13 in the South Western District). | |
| Forestry | Majority of waters | Majority of waters | Nationally 25 rivers where investigation of acidification measures is required (15 in the South Western District). |
| Dangerous substances & chemical pollution | Majority of waters | Nationally 3 rivers where investigations are in place by 2015 (None in the South Western District). | |
| Physical modifications | Majority of waters | Nationally 23 rivers where remediation schemes are in place by 2015 (None in the South Western District). | |
| Abstractions | Majority of waters | | |



## STEP 8 - What are our objectives in the South Western District?

We have examined the effects of applying the basic measures and selected the most cost-effective combination of supplementary measures - measures that are technically feasible, environmentally sustainable and economically justified. At Step 7 we discussed the possibility that, in some waters, the combination of basic and supplementary measures might not be adequate or that investigations and recovery would take longer than one cycle: alternative objectives might be needed for those waters.

At Step 8 we show the combined results of the process so far, applying the principles in setting objectives for the waters of the South Western District:

- we show the proportions of each water type (rivers and canals, lakes and reservoirs, estuaries, coastal waters, groundwater) for which we expect to achieve the **core objectives** in full
- we also show the proportions for which we recommend **alternative objectives**, with extended timescales or less stringent objectives.

Local authorities are responsible for proposing the objectives in the draft river basin management plan. This section highlights the waters where exemptions are proposed and also summarises the overall environmental objectives proposed in the South Western District.

We are seeking your views on these proposed objectives. What is your view about our proposals to:

- designate heavily modified and artificial waters?
- extend deadlines or set likely less stringent objectives for certain waters?

Are these proposals appropriate? Have we missed something important?

## Core objectives: full achievement

Our core objectives are:

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

Objectives have been established for all waters in the South Western District.

### Achieve protected areas objectives

Our core objective is to ensure that the status of waters supporting our protected areas is protected and (where necessary) improved by 2015. These waters require greater protection because they contain rare and vulnerable habitats or wildlife or because of their beneficial uses or the need to protect human health. They include drinking water sources, shellfish water areas, bathing areas, nutrient-sensitive areas and nature conservation sites.

In one case only, time extensions have been permitted for investigations in protected areas. This relates to potential localised on-site system pathogen impacts in protected waters only where the protected area will not be impaired (that is the extension excludes protected drinking waters).

Large transitional and coastal waters can contain small protected areas. In some cases the discharges to these waters will not impact on their protected areas because of the remoteness of the discharge from protected areas and the large dilutions available. Therefore, the impact of these discharges will be investigated to determine the appropriate levels of treatment. This will not impact on the objective of achieving protected area objectives and no time extension has been set.

We have been taking measures to ensure we achieve the objectives for these protected areas for many years. Further actions considered necessary to strengthen the implementation of the basic measures are outlined at Step 9 of this draft plan.

## Prevent deterioration

For surface waters, our core objective is to prevent deterioration, and in particular maintain high or good status; for groundwaters, the core objective is to limit pollution inputs and prevent deterioration.

For our surface waters and for groundwaters that already meet good or better standards, we are confident that the strengthened basic measures in this plan will provide sufficient protection to enable these waters to maintain their satisfactory condition beyond 2015.

## Restore good status

Our core objective for surface waters and groundwaters that are less than good status is to restore them to at least good status by 2015, where it is feasible and not disproportionately expensive to do so (some waters will take longer to reach their target).

We have considered basic and supplementary measures to restore these waters to at least good status by 2015; most of them will be restored by 2015. However, alternative objectives (extended deadlines, likely less stringent objectives) have been applied in some limited circumstances.

## Reduce chemical pollution

Our core objective for surface waters is to progressively reduce chemical pollution. For most waters, the objective is expected to be achieved by 2015, but in some waters we need to investigate the sources of dangerous substances and to develop appropriate measures accordingly. Measures taken against dangerous substances will also reduce chemical pollution.

# Alternative objectives - heavily modified waters and artificial waters

There are six artificial (one) or heavily modified (five) surface waters in the South Western District.

The artificial waters are:

- 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.

The heavily modified waters are:

- 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 km2 whilst Inniscarra's area is 4.9 km2. 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 km2. 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 km2. 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 km2. 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 13 Heavily Modified and Artificial Waters

| | Rivers and Canals length km² (%) | Lakes and Reservoirs area km² (%) | Estuaries area km² (%) | Coastal area km² (%) |
|---|---|---|---|---|
| Artificial Waters | 2.3 (<0.1%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Heavily Modified Waters | 0 (0%) | 11 (15%) | 13 (8%) | 28 (0.8%) |

Assessment of further candidate waters for designation may be undertaken before the plan in finalised.

# Alternative objectives - timescales

For some waters, we do not expect to be able to restore good status fully by 2015. These are waters that do not support protected areas and that are currently at less than good status. In most of those cases, we are proposing extended deadlines, but in a few cases we propose less stringent objectives where it is likely that application of disproportionate costs tests early in 2009 will confirm this assessment.

The extended deadlines relate mainly to waters where further investigations are required for impacts from on-site systems, wastewater and industrial discharges; afforestation acidification measures and chemical status failures. Similarly extensions have been proposed for some waters where recovery from agricultural nutrient losses or morphology enhancement will take several years to recover. A small number of likely less stringent objectives have been proposed to some waters impacted by mine discharges or contaminated land/urban impacts.

### Table 14 Alternative objectives

| | Rivers and Canals Number (%) | Lakes and Reservoirs Number (%) | Estuaries Number (%) | Coastal Number (%) | Groundwaters Number (%) |
|---|---|---|---|---|---|
| Extended Deadline to 2021 | 15 (1.7%) | 0 (0%) | 0 (0%) | 0 (0%) | - |
| Extended Deadline to 2027 | 15 (1.7%) | 0 (0%) | 0 (0%) | 0 (0%) | - |
| Likely Less Stringent Objective | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | - |
| Total as % of All Waters | 1.4% | 0% | 0% | 0% | - |

# The overall picture

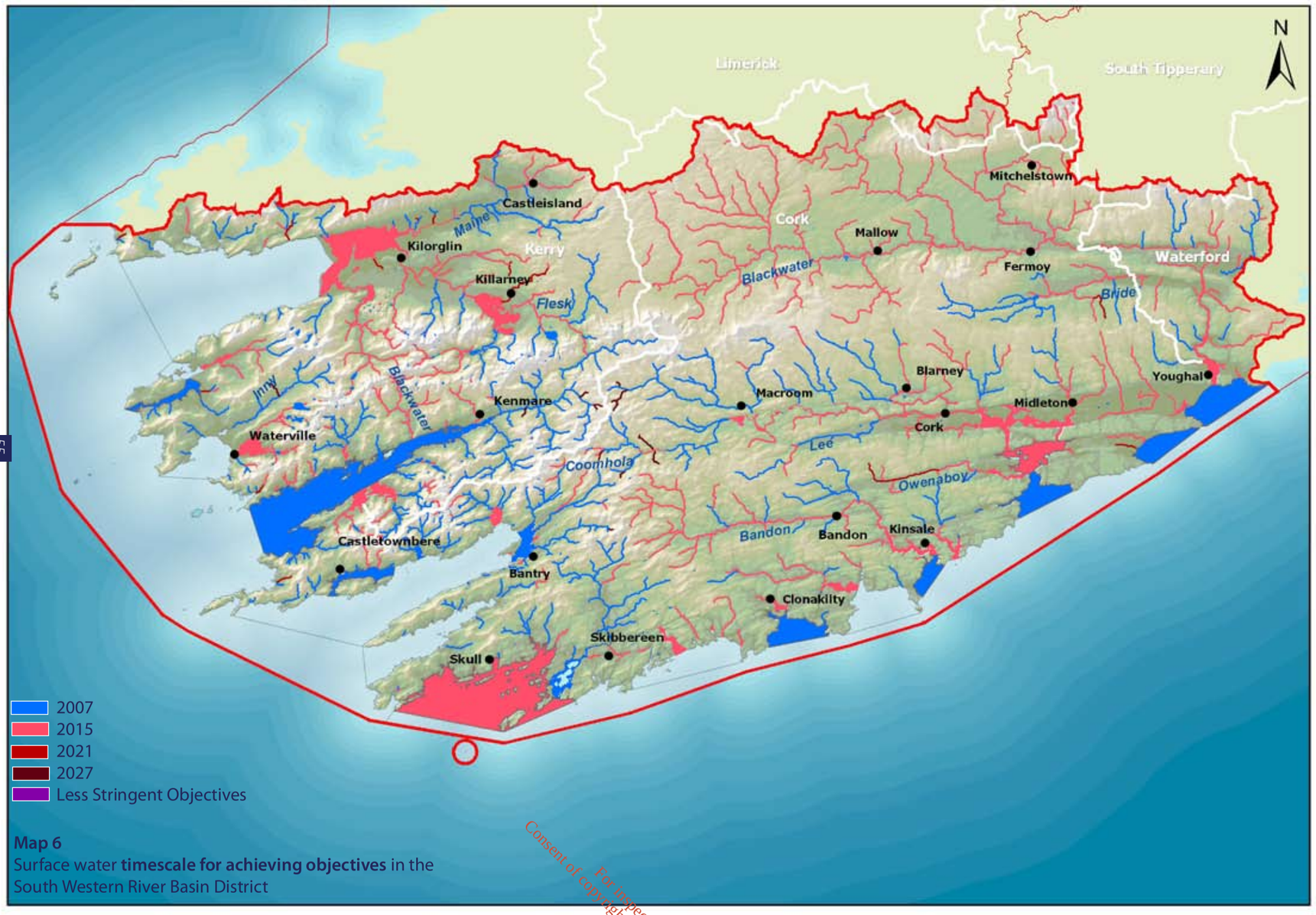
Table 15 summarises the target timescales established for the South Western District's surface waters and groundwaters. We believe that, by implementing the measures proposed in this draft plan, we will be able to achieve the objectives in 98% of our river waters and, 100% in our lakes, marine and groundwaters by 2015. Further improvements may be achieved during the second and third river basin plans.

### Table 15 Timescale for Achieving Surface Water and Groundwater Objectives

| | Rivers and Canals Number (%) | Lakes and Reservoirs Number (%) | Estuaries Number (%) | Coastal Number (%) | Groundwaters Number (%) |
|---|---|---|---|---|---|
| Objective Achieved 2007 | 454 (51%) | 73 (81%) | 6 (14%) | 8 (30%) | - |
| Objective Achieved 2015 | 855 (97%) | 90 (100%) | 43 (100%) | 27 (100%) | - |
| Objective Achieved 2021 | 870 (99%) | 90 (100%) | 43 (100%) | 27 (100%) | - |
| Objective Achieved 2027 | 885 (100%) | 90 (100%) | 43 (100%) | 27 (100%) | - |
| Likely Less Stringent Objective | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | - |

Graphs 1 – 5 illustrate how we expect the trends in status to improve for rivers and canals, lakes and reservoirs, marine waters and groundwaters over the Water Framework Directive management cycles. A summary of the environmental objectives for the surface waters and groundwaters in the South Western District is provided in maps 6 and 7.

More information is available in our objectives background document and our web-based interactive map (www.wfdireland.ie).



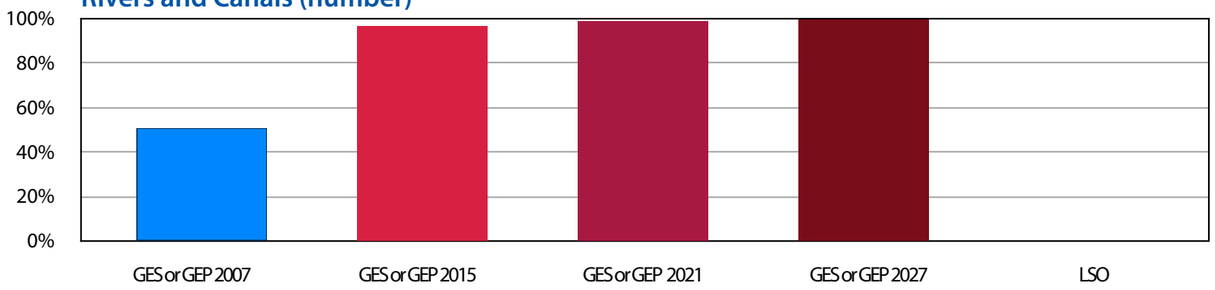

**Map 6**
Surface water **timescale for achieving objectives** in the South Western River Basin District



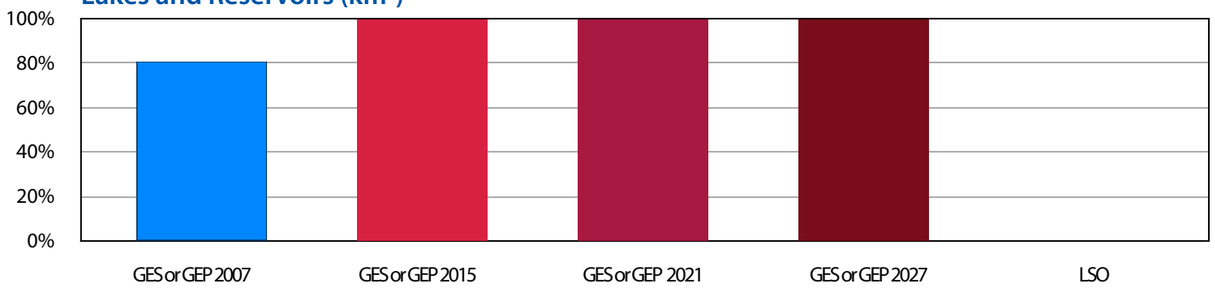



**Map 7**
Groundwater **timescale for achieving objectives** in the South Western River Basin District

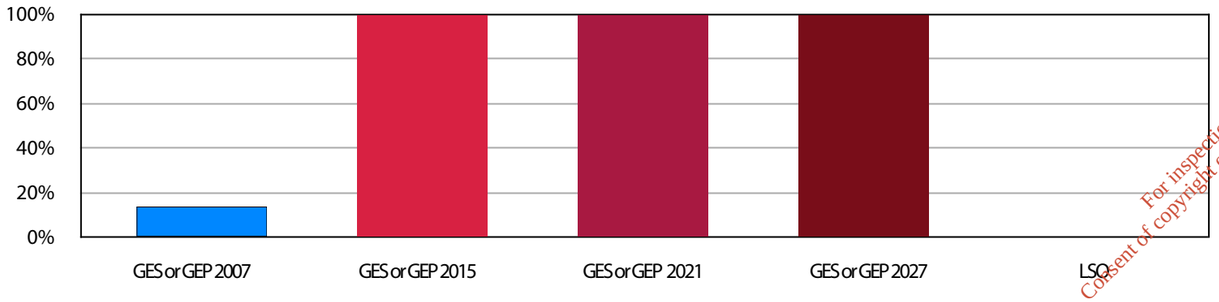
## Rivers and Canals (number)



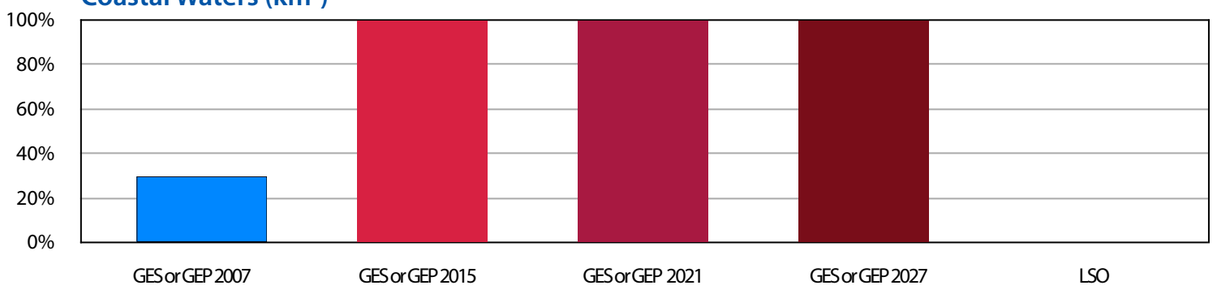

## Lakes and Reservoirs (km²)




## Estuaries (km²)




## Coastal Waters (km²)








# STEP 9 - Our Action Plan for the South Western District

The outcome of this planning process is a tailored action plan for the South Western District, a plan that has been proposed by the District's local authorities.

This actions plan sets out the basic measures plus the most cost-effective combination of selected supplementary measures. Ireland's suite of basic measures has strengthened existing laws with new and updated controls and with supporting plans and programmes. Technical studies and monitoring programmes have identified the waters where supplementary measures need to be focused for maximum benefit.

The proposed measures and their supporting actions for the South Western District are summarised in this Step. The action plan identifies:

- what the measure is,
- where and when it will be taken and
- who will take action.

Our interactive map (www.wfdireland.ie) shows proposed objectives and measures for individual rivers and canals, lakes and reservoirs, coastal and estuarine waters and groundwaters.

We are seeking your views on this proposed action plan.
Are these proposals appropriate?
Have we missed something important?

We have also looked outwards in this Step at how the river basin plan relates to broader planning issues and action themes.

Firstly, following from the summary of water protection measures in Step 4, we have identified all relevant legislation along with corresponding implementing plans and programmes in the South Western District. We have highlighted the integration of river basin plans with land use planning, climate change and wider environmental issues.

A register of the water protection plans and programmes that will influence and gradually align with our river basin management plan is presented in our links to plans and programmes background document at (www.wfdireland.ie).

We are seeking your views on this register.
Is it complete?
Have we missed some important plans or programmes?

Secondly, we have revisited the wider action themes identified during public participation events and consultations to test whether this draft action programme addresses these themes:

- joined-up thinking
- resources to improve response to water problems
- use of economic tools
- education and awareness campaigns
- political commitment
- public participation.

We are seeking your views on our action themes.
Have we addressed all the themes?
Have we missed something important?

## COORDINATION/SUPPORT ACTIONS/INSTRUMENTS

| What will happen | Who Leads | When and Where |
|---|---|---|
| Align river basin plans with other plans and programmes:<br>• Land use and spatial plans<br>• Conservation plans<br>• Water Services Strategic Plans<br>• 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<br>• Sludge Management Plans<br>• Major Accident Emergency Plans<br>• Forest Management Plans<br>• Heritage Plans<br>• Forthcoming Flood Risk Management Plans | Public authorities | 2009 – 2015<br>National |
| Implement Water Framework Directive obligations<br>• secure resources for enforcement and plan implementation and update | DEHLG, Local Authorities and other public authorities | 2009 – 2015<br>Whole RBD |
| Implement Water Framework Directive obligations<br>• coordination and reporting to Europe | EPA | 2009 – 2015<br>National |
| Coordinate plan implementation via a staffed River Basin District Unit | Local Authorities | 2009 – 2015<br>Whole RBD |
| Support ongoing public participation and River Basin District advisory council | Local Authorities | 2009 – 2015<br>Whole RBD |
| **RESEARCH AND EDUCATION** | | |
| Public awareness and targeted education campaigns | DEHLG | 2009 – 2015<br>National |
| National research campaign including:<br>• Characterise effluents and leachates, determine the effectiveness of forestry measures, establish natural background levels, establish links between ecology and morphology and ecological flow requirements. Investigation of the ecological potential of heavily modified waters and chemical pollution. | EPA | 2009 – 2015<br>National |





## BASIC MEASURES

| What will happen | Who Leads | When and Where |
|---|---|---|
| **BATHING WATERS DIRECTIVE** | | |
| Actions: Quality of Bathing Waters Regulations: | | 2009 – 2015<br>Designated Sites |
| • Identify bodies of water used as bathing areas. Undertake bathing water monitoring programmes. Adhere to bathing water quality standards. Classify Bathing Waters. Develop Bathing Water Profiles. Investigate causes of pollution potentially affecting Bathing Waters. Develop Bathing Waters Management Plans with active involvement from users of the bathing areas. Increase provision of information on quality and management of bathing areas to the public. Report annually to the EPA with respect to bathing water identification, monitoring and assessment. | Local Authorities | |
| • Report annually to the Commission with respect to bathing water identification. Where necessary, provide advice, recommendations and directions with respect to bathing waters. | EPA | |
| • Where necessary, provide general policy directions with respect to bathing waters. | DEHLG | |
| **BIRDS AND HABITATS DIRECTIVES** | | |
| Actions: Natural Habitats Regulations: | | 2009 – 2015<br>Designated Sites |
| • Include all water-dependant species and habitats in the WFD Register of Protected Areas. Ensure that appropriate assessment is carried out in relation to activities which are likely to impact on designated sites. Manage land use planning and development activities within and upstream of designated areas in such a way as to allow achievement of conservation objectives. Where necessary, enter into management agreements with owners, occupiers or lessees of land within or adjacent to designated sites e.g. Farm Plans. | Local Authorities | |
| • Ensure that appropriate assessment is carried out before granting licences to operations/planning permission to developments that are likely to have a significant impact on designated sites. | Local Authorities, EPA, An Bord Pleanála | |
| • Implement Freshwater Pearl Mussel Sub-basin Plans. Incorporate the protection of designated sites in all plans and programmes e.g. development plans. Where necessary, control damaging activities within and outside designated sites that are likely to impact on designated sites. | All public authorities | |
| • Designate sites hosting habitats and species of European importance for inclusion in the Natura 2000 network. Establish monitoring and surveillance programmes. Develop conservation measures within management plans to ensure that designated sites meet favourable conservation status. Where necessary, regulate damaging activities within and outside that are likely to impact on designated sites. Require owners, occupiers or users to restore land where an operation or activity has impacted on a designated site. License dealers of listed fauna. Prohibit purchase, sale or damage of listed flora. Introduce measures necessary to protect listed flora and fauna. Establish a system to monitor the incidental capture of listed fauna and undertake research and conservation measures as required. Introduce measures to ensure that the allowable taking of listed flora and fauna will allow the achievement of favourable conservation status. Where necessary, introduce derogations to allow non-compliance with the Regulations as long as favourable conservation status is maintained. Report on implementation to the Commission every 6 years. Introduce compensatory measures to ensure the coherence of the network of designated sites if damaging activities are allowed to go ahead. Promote research, education and information supply. Reintroduce native species where research shows it would benefit conservation status. | NPWS, DEHLG | |
| **DRINKING WATER DIRECTIVE** | | |
| Actions: Drinking Water Regulations: (see also Protection of Drinking Water Sources) | | 2009 – 2015<br>Designated Sites |
| • Ensure compliance with the Regulations. Issue guidelines on monitoring, implementation, enforcement and remedial actions if required. | EPA | |

| | | |
|---|---|---|
| • Prohibit water supplies considered to pose a potential danger to human health. | Local Authorities, HSE | |
| • Monitor drinking water quality to ensure that drinking water meets the quality standards in the Regulations. Ensure that action is taken in relation to non-compliances due to water distribution systems in commercial or public premises. Ensure that action is taken in relation to non-compliances due to water distribution systems in private premises. Maintain a register of water supplies and records of monitoring. Facilitate public access to information. Audit water supplies. Immediately investigate non-compliances. Inform consumers of non-compliances and remedial actions. Introduce measures where water supplies pose a potential danger to human health having regard to the risks associated with interruption of supply or restriction of use. Prepare Action Programmes where the quality of water does not meet the required standards. Require persons responsible for pollution to prepare and implement Action Plans to prevent and mitigate pollution. Ensure that any measures introduced under the Regulations do not allow deterioration in drinking water quality. | Local Authorities | |
| Actions: Water Services Act: | | |
| • Facilitate the provision of safe and efficient water services and water service infrastructure. Supervise and monitor the performance of water services authorities and issue guidelines where necessary. Plan and supervise the investment programme for water services under the Water Services Investment Programme. Issue compliance notices specifying corrective actions in the event of non-compliances with the Act. Develop detailed guidance on the preparation of Water Services Strategic Plans under the guidance of a technical sub-group of the Water Services National Training Group. | DEHLG | |
| • Take account of all other relevant principles, plans, programmes, strategies, guidelines, codes of practice and regulations. | DEHLG, Local Authorities, EPA | |
| • Provide water services for domestic and non-domestic requirements. Take measures necessary to adhere to drinking water standards. Ensure that no measure will have the effect of allowing any deterioration in drinking water quality or increase in pollution of waters used for the provision of drinking waters. Establish monitoring programmes and maintain water services records. Communicate derogations and non-compliances with drinking water standards to the population concerned along with reasons, actions and advice. Supervise provision of water services by other parties. Prohibit or restrict a water supply that poses a potential threat to human health or the environment. Require remedial actions to be taken where there is a potential threat to human health or the environment. Require owners of premises to undertake works on their internal distribution systems to ensure that drinking water standards are met. Prohibit or restrict certain water uses if there is a deficiency of supply. Monitor both public and private supplies to ensure compliance. Prepare and implement Water Services Strategic Plans with measures to meet the requirements of the Act while supporting proper planning and sustainable development. Review and revise Water Services Strategic Plans every 6 years. Implement the Rural Water Programme to ensure water supplies in rural areas. | Local Authorities | |
| • Implement licensing system for the Group Water Scheme sector. | Local Authorities | |
| • Monitor compliance with drinking water standards and enforce compliance. Issue advice, directions, guidance or recommendations to water services authorities as necessary. | EPA | |
| **MAJOR ACCIDENTS AND EMERGENCY DIRECTIVE** | | |
| Actions: Control of Major Accident Hazards Involving Dangerous Substances Regulations: | | 2009 – 2015 Qualifying Sites |
| • Prepare on-site emergency plan identifying major accident hazards and specifying measures to be taken to prevent major accidents and to limit their potential consequences. | Manufacturers | |
| • On notification of activities prepare off-site Emergency Plans for action outside the establishment in relation to possible major accidents. Enter into agreements with operators to take action to inform the public in the event of an accident. | Local Authorities | |
| • Require written notification of activities involving the use or storage of specified dangerous substances at least 3 months before commencement of the activity. Require operators to demonstrate safe operation and storage at their establishments. Organise system of inspections or other measures of control for relevant establishments. Supply information on major accidents to public authorities. Require operators to investigate their operations in the event of major accidents. | DETE | |
| Actions: Planning and Development Act: | | |
| • Ensure that adequate controls are in place for relevant new developments. | Local Authorities | |
| **ENVIRONMENTAL IMPACT ASSESSMENT DIRECTIVE** | | |
| Actions: Environmental Impact Assessment Regulations: | | 2009 – 2015 National |
| • Require certain developments, either by the private or public sector, to prepare Environmental Impact Assessments for consideration before planning permission is granted (taking account of WFD objectives). Make Environmental Impact Assessments available. | Local Authorities | |
| • Provide guidance on the preparation of Environmental Impacts Statements. | EPA | |
| **SEWAGE SLUDGE DIRECTIVE** | | |
| Actions: Use of Sewage Sludge in Agriculture Regulations: | | 2009 – 2015 National |
| • Supervise the supply and use of 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 available to the public. Regularly provide users with the results of sludge analysis. Ensure adherence to the code of practice in relation to the use of biosolids in agriculture. | Local Authorities | |
| • Issue recommendations to Local Authorities regarding their duties under the Regulations. | DEHLG | |
| Actions: Waste Management Act: | DAFF | |
| • Ensure enforcement of the Act. | | |
| • Prepare Sludge Management Plans for the management of wastewater sludge taking full account of the water quality objectives established in river basin management plans. Licence waste operators. Require measures to be taken in relation to the holding, recovery or disposal of waste in order to prevent of limit environmental pollution, where necessary. Request land owners to prepare nutrient management plans, where necessary. | Local Authorities | |
| **URBAN WASTEWATER TREATMENT DIRECTIVE** | | |
| Actions: Urban Wastewater Treatment Regulations: | | 2009 – 2015 National |
| • Provide collection systems and treatments plants to meet the requirements in the Regulations. Meet more stringent requirements with respect to quality of receiving waters as specified in other Directives. Design, construct, operate and maintain treatment plants to ensure sufficient performance, taking seasonal variations of load into account. Choose discharge points so as to minimise impact on the environment. Monitor effluent discharges. Take all steps necessary to ensure compliance with the water quality objectives established in river basin management plans. Ensure that sewage sludge can be disposed of safely. | Local Authorities | |
| Actions: Water Services Act: | | |
| • Plan and supervise provision of wastewater services under the Water Services Investment Programme. Supervise and monitor the performance of water services authorities. Prepare and implement Water Services Strategic Plans to support sustainable provision of wastewater services. | Local Authorities | |

## PLANT PROTECTION PRODUCTS DIRECTIVE

| | | |
|---|---|---|
| Actions: Authorisation, Placing on the Market, Use & Control of Plant Protection Products Regulations: | | 2009 – 2015<br>National |
| • Authorise plant protection produces for use or sale subject to controls in relation to the nature of the products themselves, plus their packaging and labelling. Search, inspect, seize, retain and remove substances where non-compliances are found and cancel authorisations as required. | Pesticide Control Service | |
| • Prepare an annual list of plant protection products authorised in the State. | DEHLG | |
| • Notify the DEHLG of all new information on potentially dangerous effects of authorised plant protection products on human or animal health, the environment or groundwater. Provide notification of import and export of plant protection products. | Relevant persons | |

## NITRATES DIRECTIVE

| | | |
|---|---|---|
| Actions: Good Agricultural Practice for the Protection of Waters: | | 2009 – 2015<br>National |
| • Develop a National Action Programme in consultation with all interested parties. Ensure implementation of the National Action Programme. | DEHLG | |
| • Undertake monitoring and evaluation programmes in relation to farm practices to determine the effectiveness of measures. Maintain a register of all farm holdings to be available to the EPA and Local Authorities. | DAFF | |
| • Issue reports on implementation to the DEHLG every four years. Carry out monitoring as necessary for the purposes of the Regulations. Provide recommendations and direction to Local Authorities with respect to monitoring, inspections and measures to be introduced for the purposes of the Regulations. | EPA | |
| • 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 as necessary for the purposes of enforcing the Regulations and coordinate with other farm inspection programmes. Maintain a register of farm inspections. | Local Authorities | |
| • Grant derogation from nitrogen application limit (170 kg/ha/yr) up to a maximum of 250 (kg/ha/yr) to applicant land owners where strict specified conditions are met. Carry out mini-catchments studies to demonstrate the effectiveness of the National Action Programme. | DAFF, EPA | |

## INTEGRATED POLLUTION PREVENTION CONTROL DIRECTIVE

| | | |
|---|---|---|
| Actions: EPA Acts and Licensing Regulations: | | 2009 – 2015<br>National |
| • Ensure that operators of certain industrial and agricultural installations obtain IPPC licences in relation to their activities. Set license conditions based on BAT. (Best Available Techniques) Take account of all relevant plans, policies, objections, EIAs and submissions when considering a licence application. Enforce licence conditions including monitoring. Maintain a register of licences and make available to the Commission and to the public. Undertake reporting as necessary. Undertake reviews of existing licences periodically (taking account of WFD objectives). | EPA | |
| • Give consent to discharges from IPPC operations to sewers. | Local Authorities, EPA | |

## COST RECOVERY FOR WATER USE AND PROMOTION OF EFFICIENT AND SUSTAINABLE WATER USE

| | | |
|---|---|---|
| Actions: National Water Pricing Policy Framework: | | 2009 – 2015<br>National |
| • Charge non-domestic customers for water and waste water services. Ensure that all non-domestic supplies are metered by the end of 2008. | Local Authorities | |
| • Cover domestic capital costs from the Exchequer. Cover domestic operational costs through the Local Government Fund. | Local Authorities, DEHLG | |
| Actions: National Water Conservation (Leakage Reduction) Programme: | | |
| • 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. | Local Authorities | |
| • Provide project-specific funding designed to meet specific leakage reduction targets. | DEHLG | |
| Actions: Water Services Act: | | |
| • Facilitate the provision of efficient water services. | DEHLG | |
| • Meter and charge non-domestic customers for water services. Rehabilitate and repair water works. Develop Water Services Strategic Plans to achieve the objectives of the Act and support proper planning and sustainable development. | Local Authorities | |
| • Ensure that water distribution systems are in a fit state and free from leaks. | Premise owner/occupier | |

## PROTECTION OF DRINKING WATER SOURCES

| | | |
|---|---|---|
| Actions required: (see also Drinking Waters Directive) | | 2009 – 2015<br>Proposed Designated Sites |
| • 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 > 10m3 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. Adopt a water safety plan approach i.e.. risk assessment, effective operational monitoring and effective management. Consider the designation of safeguard zones around current and future abstractions under the Drinking Water Regulations. | DEHLG | |

## ABSTRACTION AND IMPOUNDMENTS

| | | |
|---|---|---|
| Actions required: abstractions and impoundments | | 2012 – 2015<br>National |
| • Develop new abstraction regulations to update and extend existing abstraction legislation creating a registration and authorisation system for abstractions and impoundments. | DEHLG | |
| Actions: Water Pollution Acts: | | |
| • Maintain registers of abstractions and make available to the public. | Local Authorities | |

## POINT SOURCE & DIFFUSE SOURCE DISCHARGES

| | | |
|---|---|---|
| Actions: Water Pollution Acts and regulations: | | 2009 – 2015<br>National |
| • License discharges to surface waters and sewers from small scale industrial and commercial sources. Review licences at intervals of not less than 3 years. Keep registers of discharge licences and make them available to the public. | Local Authorities | |
| • 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, NPWS | |
| • Notify Local Authorities of accidental discharges and spillages of polluting materials which enter, or are likely to enter, waters. | Relevant persons | |

| | | |
|---|---|---|
| Other 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 Environmental Protection Agency 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 | |
| • Optimise treatment plant performance by the implementation of a performance management system. | Local Authorities | |
| • Revise existing Water Pollution Act industrial licence conditions and reduce allowable pollution loading. | Local Authorities | |
| • Review existing Industrial Pollution Prevention Control licence conditions and reduce allowable pollution load. | Local Authorities | |
| • Investigate contributions to the collection system from unlicensed discharges. | Local Authorities | |
| • Investigate contributions to the collection system of specific substances known to impact ecological status resulting from licensed and unlicensed discharges and issue or revise licences to reduce or remove such specific substances in the discharge. | Local Authorities | |
| • Upgrade plant to increase capacity where necessary. | Local Authorities | |
| • Upgrade plant to provide nutrient removal treatment where necessary. | Local Authorities | |
| Actions: Wastewater Discharge Authorisation Regulations: | | |
| • License large Local Authority WWTPs and certify smaller WWTPs and all associated outfalls, CSOs etc. as specified in the Regulations (taking account of WFD objectives). Review licences at intervals not less than 3 years. Enforce compliance with WWTP licensing conditions. Maintain a register of WWTP licences and certificates and make available on request. Inform other relevant public authorities when an application or review is received. | EPA | |
| Actions: Water Services Act: | | |
| • 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. | Premise owner/occupier | |
| Actions: Minerals Development Act: | | |
| • Grant Prospecting Licences for exploration of specified minerals in specified areas subject to conditions. Grant Minerals or Mining Licences with respect to State owned minerals. Grant Mining Permissions to work substances in small quantities. Grant Unworked Minerals Licences with respect to unworked minerals. Grant Preservation of support orders to the purpose of securing sufficient support for buildings, may impose restrictions on mining. Securely fence off abandoned State owned mines to prevent accidents. | DETE | |
| Actions: Energy Act: | | |
| • 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. | Local Authorities, DCENR | |
| Actions: Planning and Development Act (unsewered systems) | | |
| • Permit on-site waste water treatment systems subject to site suitability assessment. | Local Authorities. | |





| | | |
|---|---|---|
| Other actions: Unsewered Systems: | | |
| • Amend Building Regulations to give effect to new codes of practice for single houses and large systems. | DEHLG | |
| Actions: Forestry Act, grant support system and Aerial Fertilisation Regulations: | | |
| • Regulate forestry. Promote forestry with financial incentives. License forestry activity and where necessary, attach additional conditions in sensitive areas. | Forest Service | |
| • Encourage sustainable, commercial, afforestation. Ensure that participants comply with guidance and codes of practice. | Forest Service | |
| • Grant aerial fertilisation licences with conditions, insert new conditions, revoke licences or refuse an application. Inform the appropriate local authority, fisheries board and River Basin District if it appears that a proposed application might have significant effects in relation to water quality. Carry out investigation to enable granting, refusal or to revoke an aerial fertilisation licence. Carry out investigation to ascertain adherence to an aerial fertilisation licence, guidelines and good forest practice. | Forest Service | |
| Actions: Strategic Plan for the Development of Forestry: | | |
| • Adhere to Forest Management Plans and ensure that Irish forestry practice conforms to the principles of sustainable forest management. | All stakeholders | |
| • Ensure implementation of the National Forestry Standard. Ensure adherence to the code of best forest practice. | Forest Service | |
| Actions: Shellfish Waters Regulations: | Local Authorities | |
| • Ensure that designated shellfish water areas conform with quality standards. Undertake monitoring programmes and maintain records in relation to shellfish waters. Establish Action Programmes to ensure conformity with quality standards including all necessary steps. | | |
| • Investigate the reasons for non-conformity with the quality standards. | Local Authorities, DEHLG | |
| Actions: Environmental Objectives (Surface Water) Regulations: | | |
| • Ensure surface water bodies comply with the Environmental quality standards set out in the regulations. Establish appropriate measures to achieve the environmental objectives and quality standards set out. Consult, co-operate and liaise with other public authorities within the river basin district where appropriate to co-ordinate compliance. | Public Authorities | |
| • Set out emission limits when authorising discharges to water that aim to achieve the environmental objectives taking account of emissions controls based on BAT and best environmental practice. Review existing licences to take into account the new environmental quality standards. | Local Authorities , EPA | |
| • Prepare programmes for the examination and review of authorisation under relevant Acts. Prepare programmes for the monitoring and inspection of farmyard installations to verify compliance. | DEHLG | |
| • Classify waters based on the results of a monitoring programme and make it available in GIS. Assign a status of less than good where environmental objectives for a protected area are not met. | EPA | |
| • Establish an inventory of emissions discharges and losses of priority substances, priority hazardous substances and other pollutants and publish a summary of the inventory. Direct other public authorities to collect and transfer data required. Prepare guidance on the development of inventories. 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 for the RBD | |
| • Establish a National Implementation Committee to provide oversight of the preparation of the inventories and the pollution reduction plans. | DEHLG | |

| | | |
|---|---|---|
| **AUTHORISATION OF DISCHARGES TO GROUNDWATERS** | | |
| Actions required: groundwater discharges | | 2009 – 2015<br>National |
| • Transposition of the Groundwater Directive including a general prohibition on direct discharges of pollutants into groundwater except where they are subject to a specified system of prior authorisation and provided the discharges don't compromise the achievement of the objectives established for that body of groundwater. | DEHLG | |
| Actions: Wastewater Discharge Authorisation Regulations: | | |
| • Authorisation of Local Authority WWTPs effluent discharges discharging to groundwater. | EPA, Local Authorities | |
| **PRIORITY SUBSTANCES** | | |
| Actions: Chemicals Act: | | 2009 – 2015<br>National |
| • 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 > 1 tonne. | Manufacturers or importers of chemicals | |
| Actions: European Pollutant Release and Transfer Register Regulations: | | |
| • 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 | |
| Actions: Environmental Objectives (Surface Water) Regulations: | | |
| • 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. Establish and inventory of emissions discharges and losses of priority substances, priority hazardous substances and other pollutants and publish a summary of the inventory. Direct other public authorities to collect and transfer data required. | Coordinating Local Authority for the RBD | |
| • Prepare guidance on the development of inventories. | EPA | |
| • Establish a National Implementation Committee to provide oversight of the preparation of the inventories and the pollution reduction plans. | DEHLG | |
| **PHYSICAL MODIFICATIONS** | | |
| Actions required: physical modifications: | | 2009 – 2015<br>National |
| • Develop new morphology regulations creating a registration and authorisation system. | DEHLG | |
| Actions: Planning and Development Act: | | |
| • Consider the morphological implications of developments as part of the planning process. | Local Authorities | |





| | | |
|---|---|---|
| **OTHER ACTIVITIES IMPACTING ON WATER STATUS** | | |
| Actions required: alien species: | | 2009 – 2015<br>National |
| • 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. | These actions are under consideration by DEHLG | |
| **PREVENTION OR REDUCTION OF THE IMPACT OF ACCIDENTAL POLLUTION INCIDENTS** | | |
| Actions: Framework of Major Emergency Management | | 2009 – 2015<br>National |
| • Prepare Major Emergency Plans with supporting plans, procedures, arrangements and initiate major emergency development programme for the implementation of the Major Emergency Plans. Carry out risk assessments, mitigate risk, promote resilience and review annually in respect to major emergencies. Co-ordinate the inter-agency aspects of major emergency preparedness and management in assigned regions. Review site and event specific emergency plans. | Local Authorities, An Garda Síochána, HSE | |
| • Ensure and promote implementation of the Framework. | Dept of Justice, Equality & Law Reform, Dept of Health & Children, DEHLG | |

## SUPPLEMENTARY MEASURES

| Options under consideration | Who Leads | When and Where |
|---|---|---|
| **POINT AND DIFFUSE SOURCES: WASTEWATER** | | |
| Measures intended to reduce loading to the treatment plant:<br>- Limit or cease the direct importation of polluting matter (e.g. liquid wastes, landfill leachate, sludges).<br>- Investigate the extent of use and impact of under-sink food waste disintegrators and take appropriate actions.<br>- Investigate fats/oils/grease influent concentrations and take actions to reduce FOG entering the collection system. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Impose development controls where there is, or is likely to be in the future, insufficient capacity at treatment plants. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Initiate investigations into characteristics of treated wastewater for parameters not presently required to be monitored under the urban wastewater treatment directive. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Initiate research to verify risk assessment results and determine the impact of the discharge. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Use decision making tools in point source discharge management. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Where necessary to achieve water quality objectives install secondary treatment at smaller plants where this level of treatment would not otherwise be required under the urban wastewater treatment regulations. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Apply a higher standard of treatment (stricter emission controls) where necessary. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Upgrade the plant to remove specific substances known to impact on water quality status | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Install ultra-violet, disinfection, filtration or similar type treatment. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Relocate the point of discharge. | Local authorities | 2009 – 2015<br>Prioritised Sites |
| Additional measures to be determined following assessment of urban areas | Local authorities, EPA | 2012 – 2015<br>Prioritised Sites |
| **POINT AND DIFFUSE SOURCES: INDUSTRIAL DISCHARGES** | | |
| To be determined following review of industrial licences | Local authorities, EPA | 2012 – 2015<br>Prioritised Sites |
| **POINT AND DIFFUSE SOURCES: LANDFILLS, QUARRIES, MINES & CONTAMINATED LANDS** | | |
| Further investigation of quarries and landfills and assessment of remediation schemes for mines and contaminated/urban sites | Local authorities, GSI, EPA | 2009 – 2015<br>Prioritised Sites |
| **POINT AND DIFFUSE SOURCES: AGRICULTURE** | | |
| To be determined following review of the Nitrates Action Plan | DEHLG in consultation with DAFF and other parties | 2009 – 2015<br>National |
| **POINT AND DIFFUSE SOURCES: WASTEWATER FROM UNSEWERED PROPERTIES** | | |
| Amend Building Regulations<br>Code of Practice for single houses<br>Code of Practice for large systems<br>Certification of the construction of on-site wastewater treatment systems and percolation areas/polishing filters. | DEHLG, Local Authorities | 2009 – 2012<br>National |
| Establish:<br>Certified national panel of experts for site investigation and certification of installed systems. A second panel of hydrogeologists is required for clusters and large systems.<br>National group for formulating polices and coordination of consistent approach.<br>A technical advice section or advisory group to coordinate and give advice on emerging and innovative technologies.<br>Installation and maintenance training by FAS | Local authorities | 2009 – 2015<br>National |
| For new developments:<br>At planning assessment stage, apply the GIS risk mapping / decision support system and codes of practice<br>Notice to planning authority required immediately prior to the installation of on-site effluent treatment systems including percolation areas and polishing filters. | Local authorities | 2009 – 2015<br>National |
| Inspect existing systems in prioritised locations:<br>Use the GIS risk mapping / decision support system to prioritise locations to be targeted in a programme of inspections and maintenance<br>Use a database and action tracking system | Local authorities | 2009 – 2015<br>National |
| Enforce requirements for percolation | Local authorities | 2009 – 2015<br>National |
| Enforce requirements for de-sludging | Local authorities | 2009 – 2015<br>National |
| Consider connection to municipal systems | Local authorities | 2009 – 2015<br>National |
| **POINT AND DIFFUSE SOURCES: FORESTRY** | | |
| Management Instruments - Ensure regulations and guidance are cross referenced and revised to incorporate proposed measures. | Forest Service | 2009 – 2012<br>National |
| Acidification - Avoid or limit (to below critical thresholds) afforestation on 1st and 2nd order stream catchments in acid sensitive catchments | Forest Service | 2009 – 2015<br>Prioritised Sites |
| Acidification - Restructure existing forests to include open space and structural diversity through age classes and species mix, including broadleaves | Forest Service | 2009 – 2015<br>Prioritised Sites |
| Acidification - Revise the Acidification Protocol to ensure actual minimum alkalinities are detected (that is ensure sampling under high flow conditions) and revise boundary conditions for afforestation in acid sensitive areas. | Forest Service | 2009 – 2015<br>Prioritised Sites |

| | | |
|---|---|---|
| Eutrophication and Sedimentation - Avoid or limit forest cover on peat sites | Forest Service | 2009 – 2015 Prioritised Sites |
| Eutrophication and Sedimentation -Change the tree species mix (for example broadleaves) on replanting | Forest Service | 2009 – 2015 Prioritised Sites |
| Eutrophication and Sedimentation - Limiting felling coup size | Forest Service | 2009 – 2015 Prioritised Sites |
| Eutrophication and Sedimentation - Establish new forest structures on older plantation sites (including riparian zones, drainage layouts, species mix, open areas) | Forest Service | 2009 – 2015 Prioritised Sites |
| Hydromorphology - Audit existing drainage networks in forest catchments | Forest Service | 2009 – 2015 Prioritised Sites |
| Pesticide Use - Reduce pesticide usage | Forest Service, Pesticide Control Service | 2009 – 2015 Prioritised Sites |
| Pesticide Use - Pre-dip trees in nurseries prior to planting out | Forest Service | 2009 – 2015 Prioritised Sites |
| Pesticide Use - Maintain registers of pesticide use | Forest Service, Pesticide Control Service | 2009 – 2015 National |
| Acidification - Mitigate acid impacts symptomatically using basic material (e.g. limestone or sand liming) | Forest Service | 2009 – 2015 Prioritised Sites |
| Acidification - Manage catchment drainage to increase residence times and soil wetting, including no drainage installation in some areas | Forest Service | 2009 – 2015 Prioritised Sites |
| Acidification - Implement measures to increase stream production – for example with native woodland in riparian zones. | Forest Service | 2009 – 2015 Prioritised Sites |
| Eutrophication and Sedimentation - Establish riparian zone management prior to clearfelling | Forest Service | 2009 – 2015 Prioritised Sites |
| Eutrophication and Sedimentation - Enhance sediment control | Forest Service | 2009 – 2015 Prioritised Sites |
| Eutrophication and Sedimentation - Manage catchment drainage to increase residence times and soil wetting, including no drainage in some locations | Forest Service | 2009 – 2015 Prioritised Sites |
| Hydromorphology - Enhance drainage network management – minimise drainage in peat soils | Forest Service | 2009 – 2015 Prioritised Sites |
| Pesticide Use - Develop biological control methods | Forest Service | 2009 – 2015 National |
| **POINT AND DIFFUSE SOURCES: DANGEROUS SUBSTANCES & CHEMICAL POLLUTION** | | |
| To be determined following review of wastewater and industrial licences | Local authorities, EPA | 2009 – 2015 Prioritised Sites |



| | | |
|---|---|---|
| **PHYSICAL MODIFICATIONS** | | |
| Code of Practice | Competent authority to be designated | 2009 – 2015 National |
| Support voluntary initiatives | Local Authorities | 2009 – 2015 Prioritised Sites |
| Chanelisation impact remediation schemes | Office of Public Works, Drainage Authorities | 2009 – 2015 Prioritised Sites |
| Channelisation investigation | Central Fisheries Board | 2009 – 2015 Prioritised Sites |
| Over-grazing remediation | DAFF | 2009 – 2015 Prioritised Sites |
| Impassable barriers remediation schemes | Local Authorities | 2009 – 2015 Prioritised Sites |
| Impassable barriers investigation | Local Authorities, Central Fisheries Board | 2009 – 2015 Prioritised Sites |
| **ABSTRACTIONS** | | |
| To be determined following further investigation enabling review or setting of compensation flow requirements and selection of the appropriate supplementary measures on a site specific basis | DEHLG | 2009 – 2015 Prioritised Sites |
| **LOCALLY FOCUSSED AND FUTURE ISSUES** | | |
| Climate change: all measures have been assessed to ensure that the plan adequately considers the potential impacts of climatic change | DEHLG, EPA | 2009 – 2015 National |
| Aquaculture: proposing national standards, designating additional sites and developing shellfish pollution reduction plans | DEHLG | 2009 – 2015 Designated Sites |
| Invasive alien species: supporting measures being developed by the national alien species study and local investigations at District level | NPWS, Local authorities | 2009 – 2015 National |
| Protecting high quality areas developing national guidance on favourable conservation status, introducing a web-based register of designated sites and supporting voluntary initiatives (nature conservation projects) at District level | NPWS, Local authorities | 2009 – 2015 Designated Sites |
| Eutrophication of lakes and estuaries: focused local management plans including programmes of measures | | |

## Integrating this plan with other plans and programmes

Our river basin management objectives can only be achieved if plans and programmes in other water protection policy areas are coordinated and integrated. Other relevant plans and programmes include:

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

The relationship between river basin management plans and other water protection plans and programmes is two-way. Each must influence the others' objectives. For example, this coordinated approach could mean prioritising investment (under the Water Services Investment Programme) to eliminate known impacts on protected habitats (for example a Special Area of Conservation) where wastewater discharges are inadequately treated. The Department of the Environment, Heritage and Local Government will provide guidance on preparing Water Services Strategic Plans which will prioritise upgrades under the Water Services Investment Programme.

The problems that our waters face today may worsen in the future. River basin management gives us an opportunity to plan a long-term programme of water improvement. River basin management plans have strong links to the **land use** planning process as many pressures, such as population growth, development demand and land use changes will increase as our economy continues to grow. In addition, we must consider the possible impacts of **climate change**. We have used the best information available about population growth, development predictions and climate change assessment when proposing the measures in this draft plan. We must also consider the river basin plan in the context of the **wider environment** to ensure its overall sustainability and in the context of forthcoming plans in particular **flood risk management** planning.

### Land use planning

The impacts of future development on waters will be mitigated by properly incorporating the objectives established in this plan into development plans so that they will ensure sustainable development. At strategic level Ireland's National Spatial Strategy alongside 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 posed by future developments must be subject to Strategic Environmental Assessment when preparing statutory development plans:

- regional planning guidelines
- development plans and local area plans and
- planning schemes in respect of strategic development zones.

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

The first river basin management plans will be adopted by local authorities, after public consultation, in 2009 and reviewed every six years thereafter. All regional planning guidelines will be reviewed by 2010 and every six years thereafter. All development plans and local plans must 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.

### Planning for climate change

Our plan must be adaptable to changing conditions resulting from climate change which could affect the condition of our waters and the success of the measures we are proposing. We are trying to ensure that our measures are sustainable into the future by taking account of potential changes (in temperature, sea-level rise, floods and droughts).

The impacts of climate change are difficult to predict, consequently the proposed measures are not fully 'climate-proofed' but, in accordance with EU guidance, they have been 'climate checked' against present knowledge on the subject.





The assessment of the consequences of climate change for this draft plan and programme of measures, which was prepared by the Western River Basin District, is available in our climate change background document (www.wfdireland.ie).

The current predictions for Ireland indicate that climate issues may be relatively significant for measures related to:

- protected areas,
- abstractions, and
- physical modifications to river and marine morphology.

The assessment also highlighted some considerations for point source discharges and diffuse landuse pressures (such as agriculture, forestry and unsewered systems), whereas sensitivity for dangerous substances pressures is likely to be low. The study concluded that the programme of measures is sufficiently flexible and adaptable to potential future climate change, in terms of temperature, storm surge, floods and droughts.

### Planning for the wider environment

While river basin management plans will have a positive effect on the water environment, their impact on other aspects of the environment, for example air quality, needs to be assessed. A screening study concluded that the plans and their measures needed to be subjected to Strategic Environmental Assessment, a system that integrates plans and programmes with wider environmental considerations in order to provide a high level of protection of the environment. Strategic Environmental Assessment must be applied to plans and programmes that set the framework for future development consent for projects.

A scoping study (available on www.wfdireland.ie) was undertaken in 2007 during the development and consultations on the significant water management issues booklet ***Water Matters – Have Your Say!*** It identified the areas of the wider environment where the impacts of the plan and measures would need to be considered; scoping consultations helped to identify environmental issues that should be considered in developing detailed measures. While the programme of measures and draft plan were being developed, the Strategic Environmental Assessment reviewed the technically feasible measures to ensure that they were environmentally acceptable. The assessment identified any positive or negative impacts on other issues including biodiversity, flora and fauna, human health and population, air quality, climatic factors, soil, material assets, cultural heritage and landscape. The assessment refined the programme of measures by developing possible mitigations.

Strategic assessment was undertaken of over 90 measures with less than 10 identified as having a possible overall negative impact on other aspects of the environment (for example cultural heritage or air quality). Mitigation measures, such as undertaking more detailed assessment at design stage, were recommended for 80% of the measures assessed (including all of those with potential negative impacts).

The wider environmental impacts of the objectives and programme of measures proposed in this draft plan are presented in an independent Environmental Report which is also available via our website (www.wfdireland.ie).

The environmental report reviews the effect of the proposed actions, including any impacts on climate change, providing the following information:

- Introduction: background to the District and strategic environmental assessment
- Methodology: guidance and key steps in the strategic environmental assessment process including links to appropriate assessment under the Habitats Directive
- Description of the draft plan: current situation, planning steps and priorities
- Consultation: scoping, environmental assessment and environmental report phases
- Baseline environment: current state of the environment, relevant environmental problems and evolution of the environment in the absence of the plan
- Policies, plans and programmes: review of relevant water management controls
- Strategic environmental objectives, targets and indicators: development of objectives, targets and indicators
- Alternatives
- Assessments
- Mitigation and monitoring.

Comments on the draft plan and environmental report will help to refine the plan and programme of measures. In 2009 a Strategic Environmental Assessment Statement will accompany the final river basin management plan. It will confirm whether the plan has been correctly assessed and will demonstrate how the strategic environmental process has integrated wider environmental concerns.

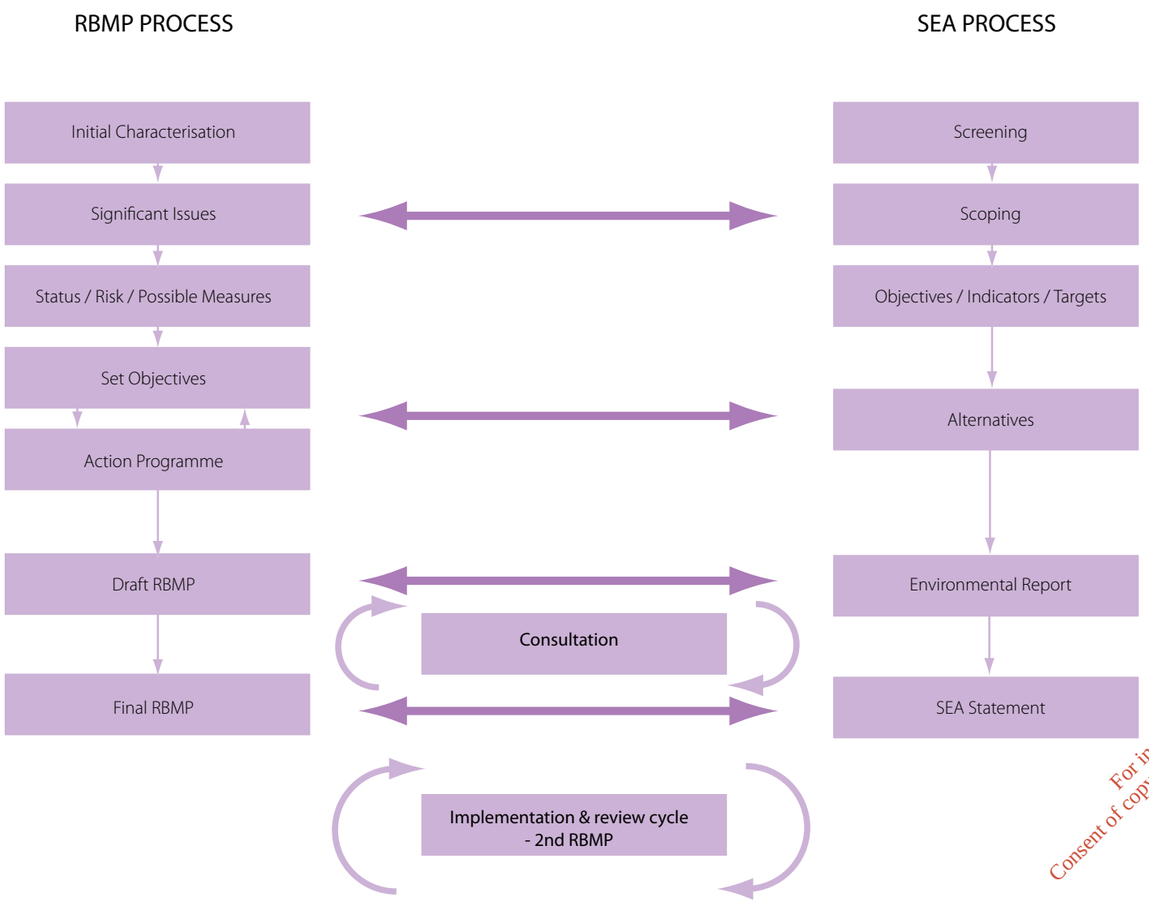



Figure 1 Integration between river basin planning and strategic environmental assessment

## Flood Risk Management Plans

The report of Ireland's Flood Policy Review Group, approved by Government in 2004, set out a new policy on the management of flood risks. This included the preparation of catchment-based Flood Risk Management Plans that will set out the long-term strategy and a prioritised set of measures for managing flood risks, both structural and non-structural. The development of such plans is also a requirement of the Floods Directive, which came into force in November 2007, with transposition required by November 2009. Implementation of the Water Framework Directive and the Floods Directive must be coordinated, with certain aspects of their implementation based on consistent information.



## Action themes

Early consultations with the South Western District's public participation and authorities groups recommended action themes to overcome the shortcomings in current water management. The themes (joined-up thinking, resources, economics, education and politics) were set out in our ***Water Matters – Have Your Say!*** booklet. During recent consultations, participants reiterated those action themes and also expressed concern about public participation. In this section of the draft plan we show how our proposed action plan, and the arrangements that have been put in place to support river basin planning, will address those action themes.

### Joined-up thinking

Participants gave examples of new development allowed ahead of infrastructure, noting the need to integrate spatial plans with river basin plans. The Department of the Environment, Heritage and Local Government will address this by issuing specific guidance on aligning river basin and development planning processes. Both types of plan will influence each other to ensure sustainable development is achieved. In addition public authorities will continue to work together through a coordinated river basin management unit to implement the river basin plan in a joined-up manner.

### Resources to improve response to water problems

There was widespread concern about resource limitations, particularly in local authorities, and the need to secure adequate resources and funding to enforce existing controls and to implement the plan. The responsible government authorities in Ireland have so far successfully met all the Water Framework Directive's early milestones and are among the Member States showing the highest level of compliance to date. This success has been largely due to substantial government investment, through river basin district projects and commitment of public authority resources. Resources to strengthen enforcement of existing controls, for example extra funding for the Environmental Protection Agency's enforcement team, have already been secured. The plan will ensure that local authority activities (such as water quality surveys, farm and on-site systems inspections) are targeted to optimum effect.

### Use of economic tools

A number of public participants stated that water charging should be introduced for all users and queried whether grants for upgrading on-site systems and installing alternative water sources would be available. All non-domestic customers are charged for water and wastewater services; domestic costs are recovered via the local government fund. This is in line with the **polluter pays** principle and is permitted under the Water Framework Directive. In 2008, the Programme for Government also set out a commitment to introduce a scheme of grant support for the replacement and upgrade of septic tanks older than fifteen years with newer systems. Details of the scheme are being developed.

### Education and awareness campaigns

Participants noted the general public's lack of awareness of water's value and called for a campaign on water and its importance. As part of our action programme, consideration will be given to developing an awareness campaign and to implementing targeted education programmes.

### Political commitment

The need for political support to underpin the ethos and commitment to the Water Framework Directive was expressed from the very start of consultations about the Directive. Ireland's efforts and success to date and the ongoing resourcing, funding, administrative and legislative commitments demonstrate that water is a key environmental priority. In addition, the adoption of the first river basin management plan, in 2009, will affirm the commitment of the local authorities in the South Western District to sustainable water management.

### Public participation

Several participants stated that effective public participation is essential for successful water management. Public participation is one of the Water Framework Directive's requirements but, even if it wasn't, it would be sensible; local stakeholders often know local problems best and can suggest practical solutions. To encourage active involvement, public participation and authorities groups have been established in the South Western District. Efforts to encourage public participation will be strengthened during the consultations on the draft plan, as it is important to help individuals and stakeholders to buy in to the river basin planning process.

## What happens next?

There is still some important work to complete before this river basin management plan is adopted. This will include some further technical and scientific planning work as well as recording, assessing and, where appropriate, taking on board comments received during consultations on the draft plan and strategic environmental assessment.

| Date | Milestone |
|---|---|
| 22nd December 2008 | Publication of draft river basin management plan |
| 22nd June 2009 | End of statutory consultation |
| 22nd December 2009 | Publication of river basin management plan |
| December 2009 – 2015 | First 6 year planning cycle |

### 2009

Between now and finalising the first plan, four strands of activity will be occurring at the same time:
- finalising programmes of measures and action plans
- strengthening environmental enforcement activities
- assessing environmental impacts
- the consultation process, of which this document is a part.

### Finalising programmes of measures and action plans

During 2009 the Environmental Protection Agency will update its interim status assessments to include the most recent monitoring results. In addition, any further environmental standards (for example new flow standards or fish classification schemes) or protected area designations brought forward between the draft and final plans will also be incorporated in the plan.

There are two particular issues for which measures will be further progressed and incorporated into the first river basin management plan. The sub-basin plans for freshwater pearl mussel protected areas will be developed and further consulted on during 2009. In addition the review of the Good Agricultural Practice Regulations during 2009 will form the basis for considering any additional supplementary measures that may be required for agriculture. Local authorities will also undertake more detailed assessment of the costs and effectiveness of the proposed measures and will apply forthcoming economic guidance on disproportionate costs to fine-tune supplementary measures and ensure that the cost of these measures is not significantly greater than the benefits gained.

Any changes resulting from updates to status, standards, designations or measures will be reflected in updated objectives and measures where necessary. Differences between the draft and final plans will be highlighted and consulted on before the final plan is adopted.

### Strengthening environmental enforcement activities

The river basin management plan requires public authorities to work together to achieve the Water Framework Directive's objectives. Relevant public authorities are responsible for the implementation of the detailed action programme and the Environmental Protection Agency has a supervisory role in relation to these public authorities.

Local authorities use a strategic and systematic approach to enforcement through the production of environmental inspection plans in line with the European Union's Recommendation on Minimum Criteria for Environmental Inspections. The purpose of these inspections is to check and promote compliance with relevant national and EU environmental legal requirements and to monitor the impact of controlled installations on the environment. The inspection plan's scope encompasses all local authority environmental inspections (waste, water and air) across a range of industrial sectors including agriculture. The inspection plan should direct inspection time and resources based on defined priorities and should be based on environmental risk.



Inspection plans produced by the relevant public authorities must:
- define the time period and geographical area to which the plan relates;
- define specific sites or types of installations covered by the plan;
- include a programme for routine environmental inspections;
- include procedures for dealing with complaints, accidents and incidents;
- provide a means to coordinate actions with other Public Authorities; and
- define the mechanism for revision of the plan.

Site visits made under the inspection plan must be recorded in a report which provides findings on the compliance status of the facility or activity being visited and draws conclusions on further actions required. These actions may include enforcement proceedings, a requirement for a new or revised licence or a requirement for additional inspections. On completion of an inspection report, the authority should communicate the conclusions of the report to the operator of the activity.

The integration of inspection and enforcement activities provides for:
- more efficient management of common resources,
- meeting international requirements through improved co-ordination with other authorities,
- more coherent resource planning,
- a means of collating and disseminating enforcement effort locally and nationally.

To ensure integration of river basin management plans and inspection plans, each authority should take account of the river basin management plan and its programme of measures and other departmental plans when preparing their inspection plan. Each authority should explicitly state a high level commitment to the implementation of the plan and the appropriate Directors of Service from each local authority in the District should collectively agree the priorities and targets set out in the inspection plan and internalise these objectives and targets within their own local authority.

These inspection plans should set out the inspection and enforcement activities to implement:
- the Good Agricultural Practice Regulations,
- drinking and aquifer source protection,
- discharge authorisations to waters and sewers,
- the relevant pollution reduction programmes,
- protection of sensitive areas or protected areas, such as designated freshwater pearl mussel populations, designated bathing waters and shellfish waters,
- other inspections to maintain and improve water quality objectives.

However not all measures from the river basin management plan are applicable to the inspection plans, for example upgrading of Wastewater Treatment Plants, and planning development controls fall outside of the scope of the inspection plan.

### Assessing environmental impacts

While river basin management plans will have a positive effect on the water environment, their impact on other aspects of the environment, for example air quality or climate change, will be subject to a Strategic Environmental Assessment.

The wider environmental impacts of the objectives and programme of measures proposed in this draft plan are presented in an independent Environmental Report which is available via our website (www.wfdireland.ie).

Consultations on the Environmental Report will run in parallel to the draft plan consultations; a Strategic Environmental Assessment statement will be published alongside the finalised river basin management plan in December 2009.

### The consultation process

This first river basin management plan will be adopted and come into effect in 2009; after a six-month period of consultation. Consultation activities will include a variety of meetings, briefings and information sessions. Once the plan and programme of measures are adopted, they become legal requirements. The plan will have an effect on every individual in the South Western District. The change that just one person can make can help to improve our waters.

## 2009 – 2015 Implementing the management plan

Coordinated implementation of the Directive in the South Western District has been facilitated by Ireland's National Development Plan. The task of implementing the management plans will fall, mainly, to the statutory authorities. In the case of the South Western District, it is envisaged that a unit will be set up by Cork County Council to coordinate the work of the statutory authorities.

In Ireland, implementation of the river basin management plans will be coordinated by a National Implementation Group, established by the Department of the Environment, Heritage and Local Government and involving representatives from public authorities responsible for plan delivery.

## More information online

The Department of the Environment, Heritage and Local Government has produced guidance for making river basin management plans. It is available with our background documents if you want to read more about it (www.wfdireland.ie).

The following series of public participation documents have encouraged interested parties to have their say regarding various aspects of the implementation process to date:

- "A Future For Our Waters", summary characterisation report published by the SWRBD.
- "Timetable and Work Programme for Making a River Basin Management Plan for the South Western River Basin District"
- "Water Matters – Have Your Say", consultation on the significant water management issues published by the SWRBD
- Digest of responses to "Water Matters – Have Your Say"
- Draft Environmental Quality Standards published by the EPA
- Strategic Environmental Assessment scoping report

These documents, along with a series of other background documents published both nationally and by the South Western District to facilitate understanding of the Water Framework Directive, can be found at www.wfdireland.ie.

These background documents include technical studies into our key water issues, our register of protected areas, and documents detailing monitoring programmes and status development, economics, objectives, programmes of measures, links to plans and programmes, climate change and Strategic Environmental Assessment.

A list of the South Western District's relevant authorities and stakeholders can also be found at www.wfdireland.ie. Our interactive webmap viewing tool can also be accessed at www.wfdireland.ie.

## Making comments

It is really important that you consider this draft plan and how it will affect you. This document has given an overview of the planning process and the proposed objectives and programme of measures. You may think that the actions are not practical, too strict or too lenient - or perhaps we have missed something that would be helpful. If so, this is your chance to ***help us plan!***

Please send your comments and views before 22 June 2009 to:


Seán Ó'Breasail
South Western River Basin District Project
Cork County Council
Environment Department
Inniscarra
Co Cork
Sean.OBreasail@CorkCoCo.ie


Early responses would be appreciated to allow more time to clarify and resolve issues that may arise.

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

## Public participation

As well as giving your views on the proposals in this document, you might like to participate in other aspects of the implementation of the Water Framework Directive. This management plan needs local support.

To encourage participation in making and implementing management plans, stakeholder groups have been established. Ireland set up an Advisory Council for each river basin district containing councillors, community representatives and stakeholders. The Advisory Council generally meets three or four times per year. These groups have already contributed knowledge, expertise and views that have helped in preparing this draft plan. A full list of participants is available on www.swrbd.ie.

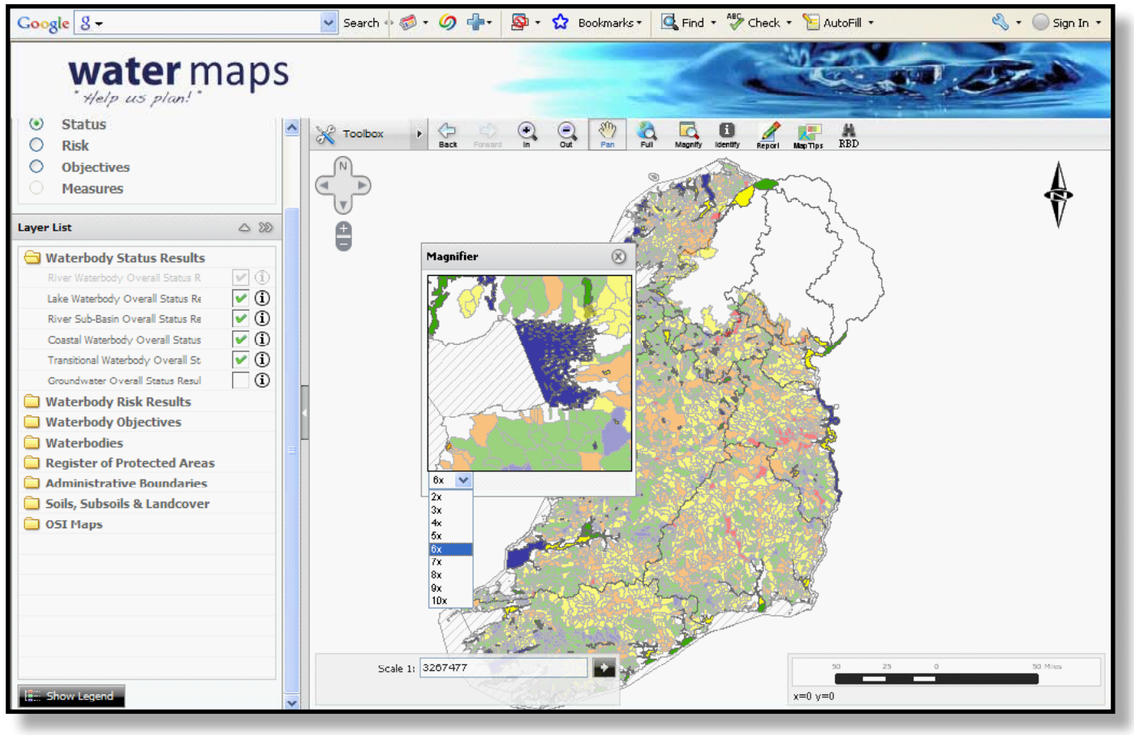
All Advisory Council members from the different river basin districts have an opportunity to discuss and disseminate ideas and information at a National Advisory Council Conference, usually held in September each year. Representatives from the equivalent authorities and stakeholder groups in Northern Ireland are also invited to the National Conference and the participation groups for international districts.

There are also voluntary groups that you can join. SWAN (Sustainable Water Network) is an umbrella network of 32 of Ireland's leading national and local environmental organisations working together on the Water Framework Directive. SWAN believes that identifying and highlighting the social and economic benefits of clean, well protected rivers, lakes, marine and ground waters is key to meeting the Directive's targets. In addition to ongoing awareness-raising work, SWAN co-hosted the 2008 National Advisory Council conference 'Valuing Our Waters – The Benefits of Clean Water to the Community' with Carlow County Council and the South Western District and will launch its website www.swanireland.ie in 2009, as a 'one-stop-shop' to raise awareness about all things related to Ireland's water heritage.

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

All of our background documents can be viewed at www.wfdireland.ie.

You can also access our interactive 'Water Maps' tool to view proposed objectives and measures for our waters.





south western

NDP
National Development Plan 2007 - 2013

**Cork** County Council | **Cork** City Council | **Kerry** County Council
**Limerick** County Council | **South Tipperary** County Council | **Waterford** County Council