

**Attachment F.1**

**Assessment of Impact on  
Receiving Water**

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## **F.1 ASSESSMENT OF IMPACT ON RECEIVING WATER**

### **F.1.1 Environmental Impacts**

There are no known significant effects arising from the direct discharge of treated effluent from the WWW serving the Rosemount Agglomeration to the receiving groundwater.

### **F.1.2 Monitoring of Receiving Water**

Details of all monitoring of the receiving water can be seen at Attachment E.2. There is one discharge point from the WWW serving the Rosemount Agglomeration and that is the primary discharge point. The primary discharge point corresponds to the percolation bed serving the WWTP.

### **F.1.3 Secondary Discharge Points**

There are no secondary discharge points serving the Rosemount Agglomeration.

### **F.1.4 Water Quality**

The WWW discharges through the primary discharge point to groundwater. The associated percolation bed is located close to the Glennamought River. Reference to the Lower Lee Owenboy WMUAP shows the Glennamought River indicated as being of "moderate" overall status with an overall objective of "restore". A copy of the Lower Lee Owenboy WMUAP can be seen at Attachment F.1.

A draft river basin management plan has been prepared for the SWRBD. A copy of this report can be seen at Attachment F.1.

### **F.1.5 Dangerous Substances**

The Dangerous Substances Regulations S.I. No. 12 of 2001 set out the main polluting substances, such as pesticides, solvents and metals, which are likely to impair the environment.

The waste water in the Rosemount Agglomeration is domestic in nature. It is therefore unlikely to have significant quantities of dangerous substances.

The main polluting substances emitted from the WWW serving the Rosemount Agglomeration are BOD, SS and nutrients.

### **F.1.6 Downstream Water Abstraction Points**

There are no drinking water abstraction points downstream of the WWW.

### **F.1.7 Effect of Emissions**

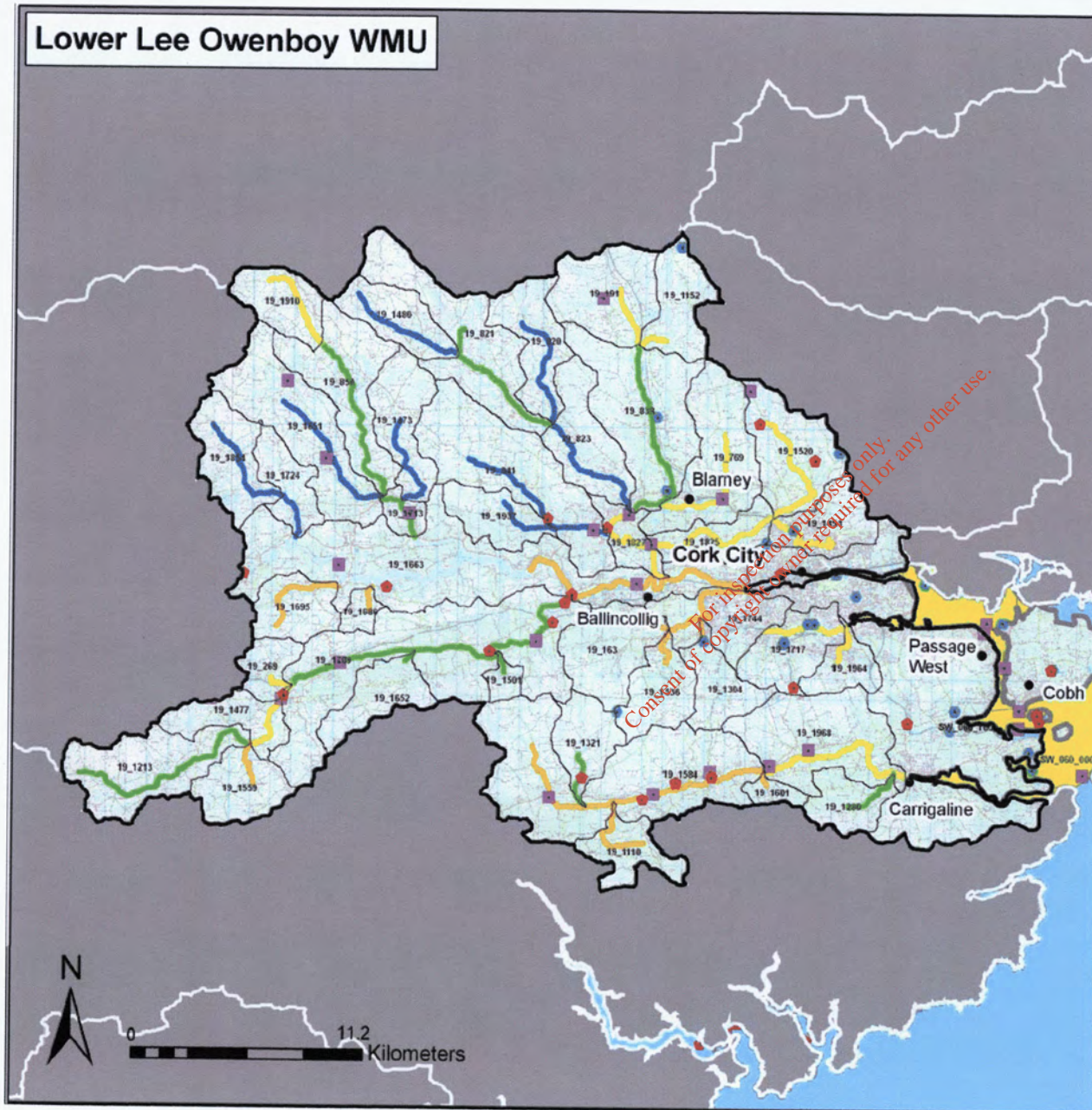
Emissions from the Rosemount Agglomeration, or any plant, methods, processes, operating procedures or other factors which affect such emissions, are not likely to have a significant effect on the following:

- 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) 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;
- 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), details of which have been transmitted to the Commission in accordance with Regulation 5(4) of the Natural Habitats Regulations;
- 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) 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;
- 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 in accordance with the procedures laid down in Article 21 of that Directive,
- A special area of conservation within the meaning of the Natural Habitats Regulations;
- An area classified pursuant to Article 4(1) or 4(2) of Council Directive 79/409/EEC.

#### **F.1.8 Modelling of Discharges**

Modelling of discharges from the Rosemount Agglomeration has not been undertaken.

# Lower Lee Owenboy Water Management Unit Action Plan

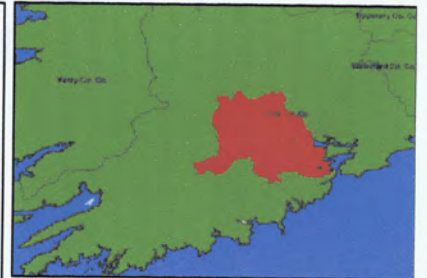


**Legend**

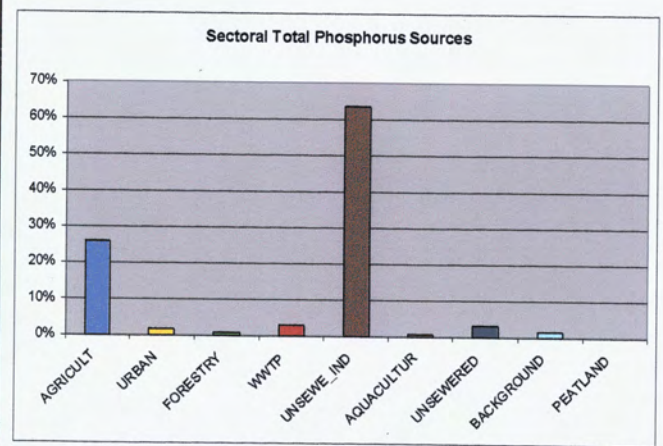
- Water Body 19\_XXXX
- Waste Water Treatment Plant
- EPA Licensed Facility
- Local Authority Licensed Facility

**Status**

- High
- Good
- Moderate
- Poor
- Bad
- Unassigned



Name	Lower Lee Owenboy Water management Unit
Area	845km <sup>2</sup>
River Basin District	SWRBD
Main Counties	Cork
Protected Areas	2 surface drinking water: Inniscarra Reservoir and Lee River 1 UWWTD - Lower Lee Estuary.



# Lower Lee Owenboy Water Management Unit Action Plan

STATUS/IMPACTS	
Overall status	There are 43 river water bodies in this WMU - 9 High, 10 Good, 13 Moderate, 11 Poor Status.
Status elements	2 Poor water bodies are dictated by Q Score, and 2 are dictated by Fish Status. 3 moderate water bodies are dictated by Q score and 3 are dictated by Physchem. Both Q and Physchem and Good / High for the good/high status water bodies that have been monitored. Lake status is dictated by macrophytes, chlorophyll and fish.
Possible Impacts - EPA Water Quality	<p>AUGHNABOY (CORK) – SW_19_1584            2005 – With deterioration, to slightly polluted condition, recorded at the lowermost location (0300) in August 2005 the overall quality reverted to 1999 status.            2008 – Good ecological quality at the only scheduled sampling location. .            Status of WB 2009: Poor status dictated by Q score (physchem high).</p> <p>BLARNEY – SW_19_769            2008 – Good quality recorded in successive surveys - prior to 2005 had been less than satisfactory. .            Status of WB 2009: Moderate status dictated by PHYSCHEM.</p> <p>BRIDE (LEE) – SW_19_1213; SW_19_1477; SW_19_1709            2008 – Satisfactory throughout with high ecological quality at three of the sites. Significant improvement was recorded at Crookstown (0610) where high ecological quality was recorded but the hydromorphological condition of the site was only moderate. Some artificial siltation was recorded along right-hand margin of river at the final location (1600) but overall quality was satisfactory. .            SW_19_1213 Status of WB 2009: Good status dictated by Q score.            SW_19_1477 Status of WB 2009: Moderate status dictated by physchem status            SW_19_1709 Status of WB 2009: Good status dictated by Q score.</p> <p>SHOURNAGH – SW_19_821; SW_19_823; SW_19_1827            2005 - No change. Continuing mostly satisfactory but again slightly polluted at Tower Bridge            2008 - Satisfactory throughout with high status at two of the locations.            SW_19_821 Status of WB 2009: Good status dictated by Q score.            SW_19_823 Status of WB 2009: High status dictated by Q score.            SW_19_1827 Status of WB 2009: Moderate status dictated by Q score.</p> <p>DRIPSEY – SW_19_1910; SW_19_850; SW_19_1713            2001 - Satisfactory apart from uppermost location (0010) where large crops of filamentous algae were recorded downstream of forestry plantation.            2005- No change since previous survey. Satisfactory except at upper location (0010) where again slightly polluted.            2008 - No change with good quality at two of the three locations and the uppermost one continuing in high status.            SW_19_1910 Status of WB 2009: Moderate status dictated by Q score.            SW_19_850 Status of WB 2009: Good status dictated by Q score            SW_19_1713 Status of WB 2009: Good status dictated by Q score</p> <p>LEE (CORK) – SW_19_1663            2001- No significant change. Satisfactory apart from Inishcarra Bridge (0600) where again highly eutrophic. The protected pearl mussel has apparently become scarce in the river in the past two decades.            2005- Major disruption to fauna at first location, upstream of Gouganebarra Lake (0010), where salmonid parr and other age classes had been killed. The pH of the water was 10.66 on the day, outside the limit of tolerance for these fish, which resulted from concreting work on a small bridge upstream of the sampling site. Further downstream the water quality status was the same as that of the previous survey with highly eutrophic conditions again recorded at Inishcarra Bridge (0600).            2008- Satisfactory apart from at Inishcarra Bridge where again poor ecological quality was recorded.            SW_19_1663 Status of WB 2009: Poor status dictated by Q score</p> <p>MARTIN – SW_19_838; SW_19_191            2001 - No change since last survey with the first and final location (0100, 0600) again unsatisfactory due respectively to moderate and slight pollution effects. The sources of the pollution are suspected to be agricultural at the former and domestic (Blarney) at the latter.            2005- Satisfactory throughout, for only the second time since surveys began in 1971, following improvements in condition at the uppermost (0100) and lowermost(0600) locations.            2008 - Satisfactory apart from uppermost location where only moderate status. .            SW_19_838 Status of WB 2009: Good status dictated by Q score and physchem            SW_19_191 Status of WB 2009: Moderate status dictated by Q score</p> <p>OWENBOY (CORK) – SW_19_1321; SW_19_1584; SW_19_1968            2005 - Deterioration, to moderately polluted conditions, at two locations (0200, 0600) since previous survey in 2003. Continuing slightly polluted at lowermost location (1400).            2008 - Continuing with only moderate ecological quality at final location but otherwise satisfactory with good status.            SW_19_1321 Status of WB 2009: Good status, dictated by Q score            SW_19_1584 Status of WB 2009: Poor status dictated by Q score            SW_19_1968 Status of WB 2009: Moderate status dictated by Q score</p>

# Lower Lee Owenboy Water Management Unit Action Plan

PRESSURES/RISKS	
Nutrient sources	Main source of TP is from unsewered industry (64%) and agriculture (26%).
Point pressures	<p>24 WWTP - ghabullogue, Ballincollig New WWTP, Ballinhassig, Ballygarvan, Blarney/Tower WWTP, Cloghroe WWTP, Cloughduv, Coachford WWTP, Crookstown, Crossbarry, Dripsey WWTP, Five Mile Bridge, Grenagh, Half Way, Kerrypike, Killeens, Killumney, Rylane, Whitechurch, Carrigrenan, Cobh, North Cobh, Passage/Monkstown, Ringaskiddy;</p> <p>2 WTP (Inniscarra Pws, Lee Rd. Water Works);</p> <p>10 Section4s - John A. Wood Ltd., John A. Wood Ltd., John A. Wood Ltd., Classis Pit (1), Road Provinces Ltd, Dawn Dairies Ltd., ESB Carrigadrohid, Fermoy Fish, Guy Company Ltd., Westside Motors (Cork), William and Mona Kirby;</p> <p>7 IPPC's - Dulux Paints, Irish Oxygen Co, ESB, Dynea Ireland, Wexport Ltd, Cognis Ireland, Smithkline Beecham Ltd,</p> <p>1 contaminated IPPC sites True Temper Limited.</p>
	<p>Carrigrenan - Discharge to nutrient sensitive area</p> <p>Ballincollig New WWTP - Insufficient existing capacity, non-compliant effluent standard</p> <p>Ballincollig New WWTP - Insufficient existing capacity, evidence of impact, not a protected area</p> <p>Ballygarvan - Insufficient future (2015) assimilative capacity (BOD), discharge not to a protected area</p> <p>Blarney/Tower WWTP - Insufficient future (2015) assimilative capacity (BOD), discharge not to a protected area</p> <p>Blarney/Tower WWTP - Sufficient existing capacity of treatment plant, evidence of impact, discharge not to protected area</p> <p>Cloghroe WWTP - Non-compliant frequency of monitoring or non-compliant effluent standard where sufficient capacity is available</p> <p>Cloghroe WWTP - Insufficient future (2015) assimilative capacity (BOD), discharge not to a protected area</p> <p>Coachford WWTP - Insufficient existing capacity of treatment plant, no evidence of impact, not a protected area</p> <p>Coachford WWTP - Insufficient future (2015) assimilative capacity (BOD), discharge not to a protected area</p> <p>Cobh - PE &gt;2,000, discharge to non-coastal water, no secondary treatment or PE &gt; 10,000, discharge to coastal water, no secondary treatment</p> <p>Cobh - Discharge to nutrient sensitive area</p> <p>Cobh - Insufficient existing capacity, no evidence of impact, discharge to a protected area</p> <p>Crookstown - Insufficient existing capacity of treatment plant, no evidence of impact, not a protected area</p> <p>Crossbarry - Sufficient existing capacity of treatment plant, evidence of impact, discharge not to protected area</p> <p>Dripsey WWTP - Non-compliant frequency of monitoring or non-compliant effluent standard where sufficient capacity is available</p> <p>Grenagh - Insufficient existing assimilative capacity (BOD), no evidence of impact, not a protected area</p> <p>Kerrypike - Insufficient existing capacity of treatment plant, no evidence of impact, not a protected area</p> <p>Killeens - Insufficient existing capacity, evidence of impact, not a protected area</p> <p>Killeens - Insufficient existing assimilative capacity (BOD), evidence of impact, not a protected area</p> <p>Killumney - Insufficient existing capacity of treatment plant, no evidence of impact, not a protected area</p> <p>Passage/Monkstown - PE &gt;2,000, discharge to non-coastal water, no secondary treatment or PE &gt; 10,000, discharge to coastal water, no secondary treatment</p> <p>Passage/Monkstown - Insufficient existing capacity, no evidence of impact, discharge to a protected area</p> <p>Ringaskiddy - Insufficient existing capacity, no evidence of impact, discharge to a protected area</p> <p>Whitechurch - Insufficient future (2015) capacity, discharge not to a protected area</p> <p>Road Provinces Ltd Section 4 - 2 Risks - d/s Q value is &lt;4 within 3km of outfall and deterioration in upstream to downstream Q value where the distance between Q stations is &lt;3km.</p> <p>ESB Carrigadrohid Section4 - 2 Risks - Existing and future insufficient assim capacity for BOD.</p>

PRESSURES/RISKS	
Quarries, Mines & Landfills	14 quarries and 5 landfills. 1 WB at risk from 2 quarries - SW_19_1663
Agriculture	39 WBs at risk - SW_19_1520, SW_19_769, SW_19_1827, SW_19_1709, SW_19_1304, SW_19_1321, SW_19_1110, SW_19_1744, SW_19_1968, SW_19_1601, SW_19_163, SW_19_1451, SW_19_1964, SW_19_1825, SW_19_1717, SW_19_820, SW_19_191, SW_19_1652, SW_19_841, SW_19_1473, SW_19_838, SW_19_1480, SW_19_850, SW_19_823, SW_19_1713, SW_19_1663, SW_19_1213, SW_19_1477, SW_19_821, SW_19_1651, SW_19_1501, SW_19_1536, SW_19_1559, SW_19_269, SW_19_1686, SW_19_1280, SW_19_1584, SW_19_1695, SW_19_1937.
On-site systems	There are 15217 septic tanks in this WMU. No water bodies at Risk
Forestry	None at risk
Dangerous substances	None at risk
Morphology	3 WBs at risk - SW_19_1663, SW_19_1744, SW_19_1825 - Water Regulation and Impoundments - Inniscarra Reservoir is a HMWB
Abstractions	1 WB at risk - SW_19_1663
Other	

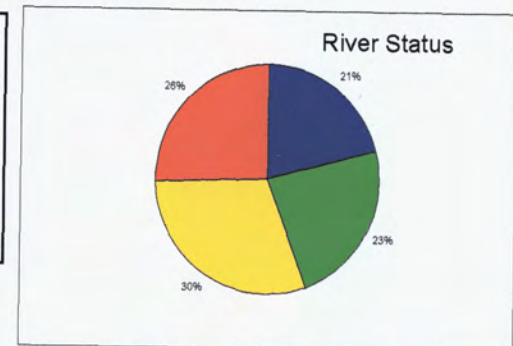
# Lower Lee Ownboy Water Management Unit Action Plan

SELECTED ACTION PROGRAMME	
NB All relevant basic measures and general supplementary measures/surveys apply	
Point Sources	<p>Carrigenan - Priority1 - Provide nutrient removal. - 2012</p> <p>Ballincollig New WWTP - Priority1 - Increase capacity of treatment plant. - 2012</p> <p>Ballincollig New WWTP - Priority2 - Increase capacity of treatment plant. - 2015</p> <p>Ballygarvan - Priority3 - Limit future development so that the capacity of the treatment plant is not exceeded. - 2010</p> <p>Blarney/Tower WWTP - Priority3 - Limit future development so that the capacity of the treatment plant is not exceeded. - 2010</p> <p>Blarney/Tower WWTP - Priority3 - Investigate the operation of combined sewer overflows in the sewer network. - 2015</p> <p>Cloghroe WWTP - Priority1 - Improve operation and management. - 2012</p> <p>Cloghroe WWTP - Priority3 - Limit future development so that the capacity of the treatment plant is not exceeded. - 2010</p> <p>Coachford WWTP - Priority3 - Investigate the need for increase in capacity of treatment plant. - 2015</p> <p>Coachford WWTP - Priority3 - Limit future development so that the capacity of the treatment plant is not exceeded. - 2010</p> <p>Cobh - Priority1 - Provide secondary treatment. - 2012</p> <p>Cobh - Priority1 - Provide nutrient removal. - 2012</p> <p>Cobh - Priority2 - Investigate the need for increase in capacity of treatment plant. - 2012</p> <p>Crookstown - Priority3 - Investigate the need for increase in capacity of treatment plant. - 2015</p> <p>Crossbarry - Priority3 - Investigate the operation of combined sewer overflows in the sewer network. - 2015</p> <p>Dripsey WWTP - Priority1 - Improve operation and management. - 2012</p> <p>Grenagh - Priority3 - Investigate the need for tertiary treatment or for the relocation of the outfall. - 2015</p> <p>Kerrypike - Priority3 - Investigate the need for increase in capacity of treatment plant. - 2015</p> <p>Killeens - Priority2 - Increase capacity of treatment plant. - 2015</p> <p>Killeens - Priority2 - Provide tertiary treatment or relocate outfall. - 2015</p> <p>Kilumney - Priority3 - Investigate the need for increase in capacity of treatment plant. - 2015</p> <p>Passage/Monkstown - Priority1 - Provide secondary treatment. - 2012</p> <p>Passage/Monkstown - Priority2 - Investigate the need for increase in capacity of treatment plant. - 2012</p> <p>Ringaskiddy - Priority2 - Investigate the need for increase in capacity of treatment plant. - 2012</p> <p>Whitechurch - Priority3 - Limit future development so that the capacity of the treatment plant is not exceeded. - 2010</p> <p>Road Provinces Ltd Section 4 - 2 Risks - Measures in addition to basic measures apply including license review</p> <p>ESB Carrigadrohid Section4 - Measures in addition to basic measures apply including license review</p>
Diffuse Sources	AGRICULTURE - Good Agricultural Practice Regulations and Enforcement
Other	Protection of drinking water, abstraction control and future licensing.

OBJECTIVES		
Good status 2015	status	Protect 19 waterbodies. Restore 24 waterbodies – deadline to be confirmed.
Alternative Objectives		1 Extension for MIR (2021) - SW_19_1584

**Lake Status** – There is 1 lake in this WB. It has moderate status and was monitored (Inniscarra Reservoir).

**Transitional Status** – There are 4 transitional water bodies - Lee Estuary; Cork Harbour; Lee (Cork) Estuary Lower, and Lee (Cork) Estuary Upper. These are all moderate status.



# Lower Lee Owenboy Water Management Unit Action Plan

Member State Code	Monitored Y (extrapolated N)	Biological Elements				Supporting Elements			Ecological Status	Chemical Status	Protected Areas				Status	Objectives	
		Macroinvertebrates (Q)	Freshwater Pearl Mussel	Fish	Phytoplankton Diatoms	Morphology	Specific Pollutants	Physico-Chemical			Special Area of Conservation	Special Protection Area	Nutrient Sensitive Water	Overall Status	Objective	Objective date	
SW_19_820	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					High	Protect	2015	
SW_19_191	Y	Good	n/a	n/a	n/a	n/a	n/a	Good	Good					Moderate	Restore		
SW_19_1652	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					Good	Protect	2015	
SW_19_841	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					High	Protect	2015	
SW_19_1473	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					High	Protect	2015	
SW_19_1854	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					High	Protect	2015	
SW_19_1520	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					Moderate	Restore		
SW_19_769	Y	Good	n/a	n/a	n/a	n/a	n/a	Moderate	Good					Moderate	Restore		
SW_19_838	Y	Good	n/a	n/a	n/a	n/a	n/a	Good	Good					Good	Protect	2015	
SW_19_1480	Y	n/a	n/a	High	n/a	n/a	n/a		High					High	Protect	2015	
SW_19_850	Y	Good	n/a	n/a	n/a	n/a	n/a	High	Good					Good	Protect	2015	
SW_19_823	Y	High	n/a	n/a	n/a	n/a	n/a		High					High	Protect	2015	
SW_19_1827	Y	Moderate	n/a	n/a	n/a	n/a	n/a	Moderate	Moderate					Moderate	Restore		
SW_19_1713	Y	Good	n/a	n/a	n/a	n/a	n/a	Good	Good					Good	Protect	2015	
SW_19_1663	Y	Poor	n/a	n/a	n/a	n/a	n/a	High	Poor					Poor	Restore		
SW_19_1910	Y	Moderate	n/a	n/a	n/a	n/a	n/a	Good	Moderate					Moderate	Restore		
SW_19_1213	Y	Good	n/a	n/a	n/a	n/a	n/a		Good					Good	Protect	2015	
SW_19_1724	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					High	Protect	2015	
SW_19_1152	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a					Moderate	Restore		
SW_19_1477	Y	Poor	n/a	n/a	n/a	n/a	n/a	Moderate	Poor					Moderate	Restore		

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# Lower Lee Oponboy Water Management Unit Action Plan

Member State Code	Monitored Y (extrapolated N)	Biological Elements				Supporting Elements			Ecological Status	Chemical Status	Protected Areas					Status	Objectives	
		Macroinvertebrates (Q)	Freshwater Pearl Mussel	Fish	Phytoplankton Diatoms	Morphology	Specific Pollutants	Physico-Chemical			Special Area of Conservation	Special Protection Area	Nutrient Sensitive Water	Overall Status	Objective	Objective date		
SW_19_1709	Y	Good	n/a	n/a	n/a	n/a	n/a	High	Good						Good	Protect	2015	
SW_19_1304	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_1321	Y	Poor	n/a	n/a	n/a	n/a	n/a	High	Poor						Good	Protect	2015	
SW_19_821	Y	Good	n/a	n/a	n/a	n/a	n/a		Good						Good	Protect	2015	
SW_19_1651	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						High	Protect	2015	
SW_19_1110	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_1501	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Good	Protect	2015	
SW_19_1536	Y	n/a	n/a	Poor	n/a	n/a	n/a		Poor						Poor	Restore		
SW_19_1559	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_1744	Y	n/a	n/a	Poor	n/a	n/a	n/a		Poor						Poor	Restore		
SW_19_1968	Y	Moderate	n/a	n/a	n/a	n/a	n/a	High	Moderate						Moderate	Restore		
SW_19_1601	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_163	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_269	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Moderate	Restore		
SW_19_1686	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_1280	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Good	Protect	2015	
SW_19_1584	Y	Poor	n/a	n/a	n/a	n/a	n/a	High	Poor						Poor	Restore		
SW_19_1451	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Moderate	Restore		
SW_19_1964	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Moderate	Restore		
SW_19_1695	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Poor	Restore		
SW_19_1825	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Moderate	Restore		
SW_19_1717	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						Moderate	Restore		
SW_19_1937	N	n/a	n/a	n/a	n/a	n/a	n/a		n/a						High	Protect	2015	

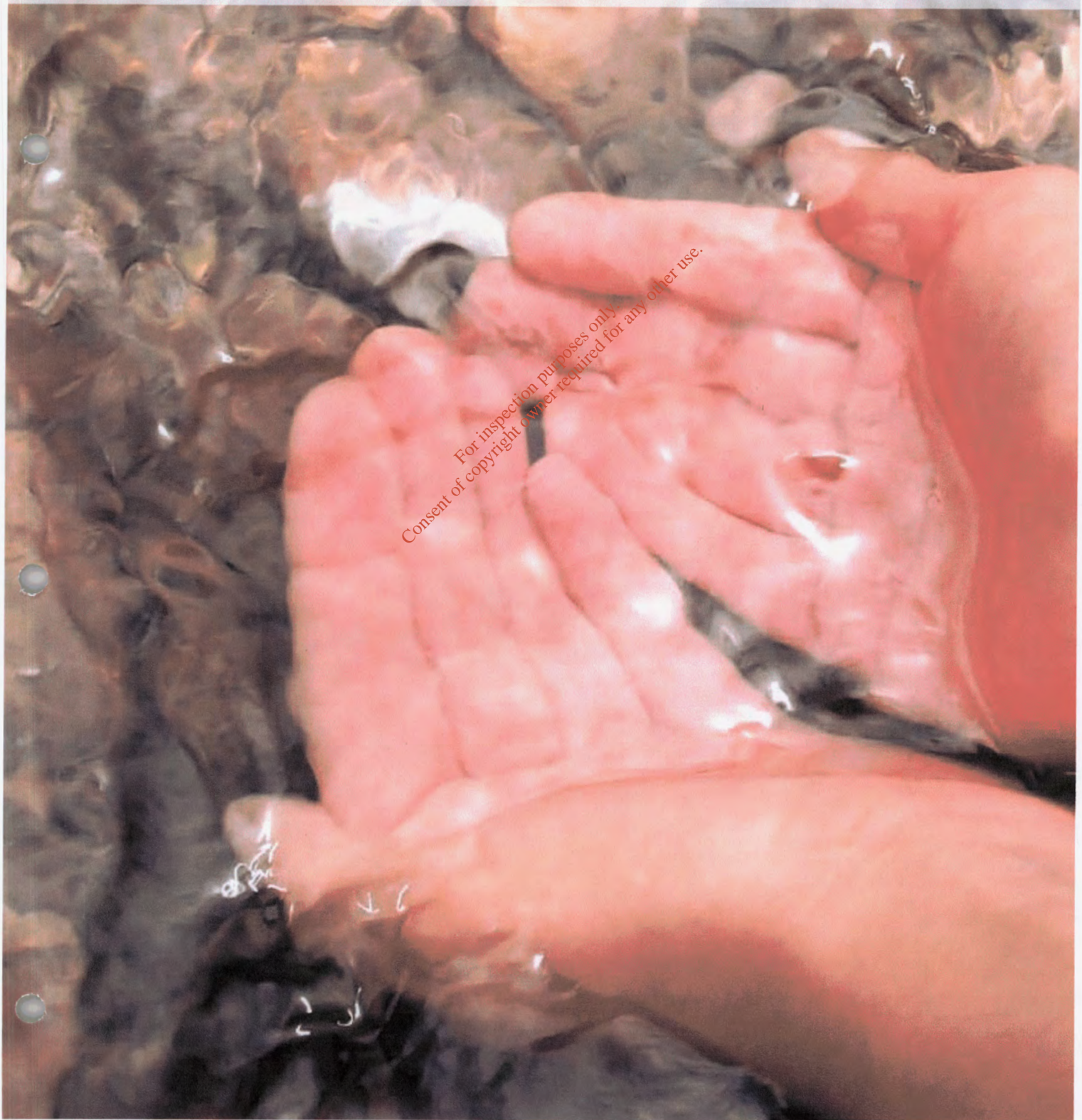
# water matters

*"Help us plan!"*



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

December 2008



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## 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 Councilors), 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@CorkCo.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](http://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<sup>2</sup> and a further 4,000 km<sup>2</sup> 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](http://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](http://www.wfdireland.ie)).

 You can also download background documents from [www.wfdireland.ie](http://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	Question	Page
1	<b>What are our key water issues?</b>  We investigated which water issues are causing problems, what actions we could take to solve them and where we should focus these actions.	6
2	<b>What is the status of our waters?</b>  Comprehensive monitoring programmes established the condition of our waters; identifying where they are satisfactory and where they must be improved.	12
3	<b>What do we plan to achieve?</b>  We identified sustainable objectives for our waters.	19
4	<b>What measures must we take?</b>  The Water Framework Directive stipulates mandatory measures known as basic measures. We identified actions under these measures, setting out existing and new plans and programmes to ensure full and effective implementation.	23
5	<b>What will basic measures achieve?</b>  We assessed how effective mandatory measures will be in meeting our objectives and have identified cases where extra effort may be needed to improve our waters.	27
6	<b>What further measures can we take?</b>  We identified supplementary measures for the cases where the mandatory measures alone would not be sufficient to achieve our objectives.	38
7	<b>What will supplementary measures achieve?</b>  We assessed whether the combination of measures would achieve our objectives and how long it would take.	47
8	<b>What are our objectives in the South Western District?</b>  We outlined the objectives we plan to achieve and specified where extended timescales or lower objectives would be necessary.	52
9	<b>What is our action plan for the South Western District?</b>  The outcome of this planning process is a tailored action plan for the South Western District. We proposed a detailed suite of measures setting out what, where and when actions are needed and who will do them.	58

## 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](http://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](http://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.



1

What are our key water issues?

2

What is the status of our waters?

3

What do we plan to achieve?

4

What measures must we take?

5

What will basic measures achieve?

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What further measures can we take?

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What will supplementary measures achieve?

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What is our action plan for the South Western District?

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## 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).

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## 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 water 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, Glengarriff 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

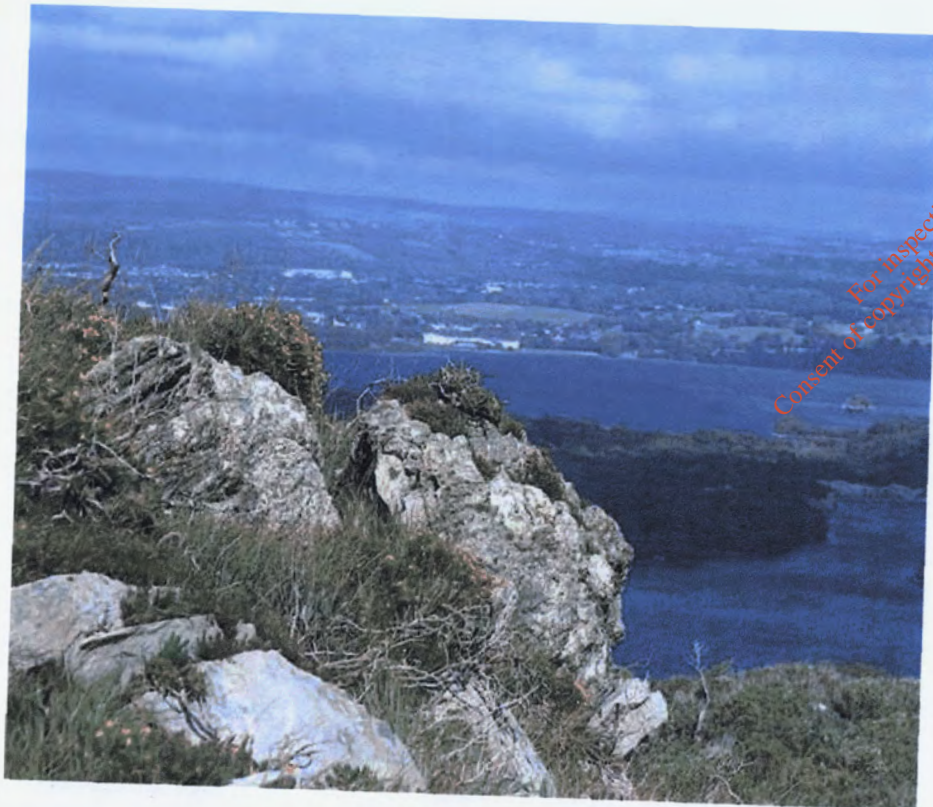
In 1997 a major algal bloom occurred in Lough Leane, Co. Kerry. Eutrophication was also identified in a number of Estuaries in the South Western District between 2001 and 2005. These included the lower Blackwater Estuary, Owenacurra Estuary, Upper and Lower Bandon Estuary and Argideen Estuary in Cork.

### 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
<b>River and canals</b>						
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%)
<b>Lakes and reservoirs</b>						
number (% of total)	52 (58%)	21 (23%)	17 (19%)	0 (0%)	0 (0%)	0 (0%)
area km <sup>2</sup> (% of total)	13 (18%)	8 (10%)	52 (71%)	0 (0%)	0 (0%)	0 (0%)
<b>Estuaries</b>						
number (% of total)	3 (7%)	3 (7%)	33 (77%)	0 (0%)	0 (0%)	4 (9%)
area km <sup>2</sup> (% of total)	17 (10%)	73 (44%)	76 (46%)	0 (0%)	0 (0%)	0.2 (0.1%)
<b>Coastal</b>						
number (% of total)	3 (11%)	5 (19%)	7 (26%)	0 (0%)	0 (0%)	12 (44%)
area km <sup>2</sup> (% 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).

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## 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 classification system

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

## 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.

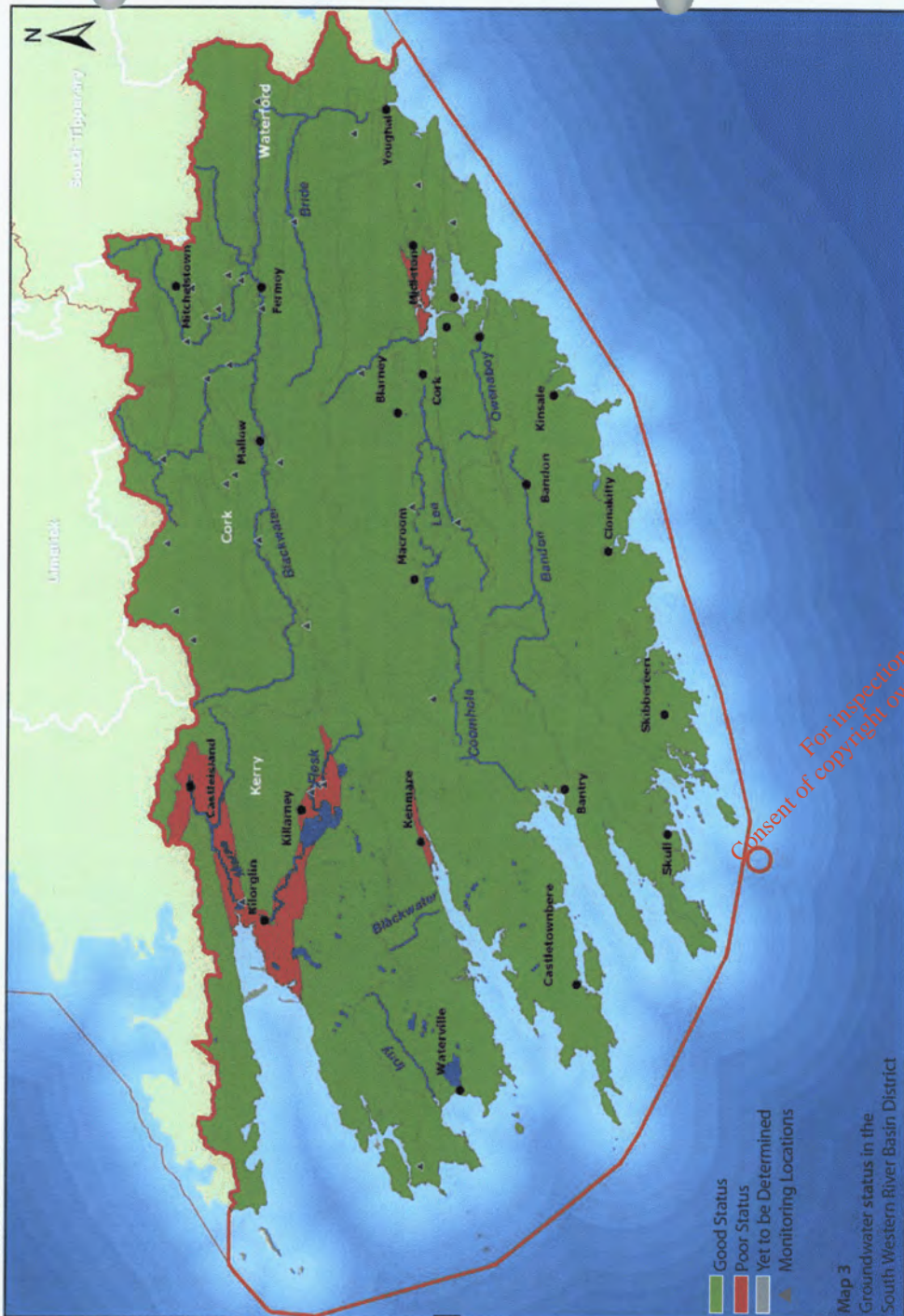
Table 3 Surface water chemical status in the South Western District

Surface Water Category	Good	Fail	Yet to be Determined
<b>River and canals</b>			
number (% of total)	7 (23%)	0 (0%)	23 (77%)
length km (% of total)	83 (16%)	0 (0%)	450 (84%)
<b>Lakes and reservoirs</b>			
number (% of total)	0 (0%)	0 (0%)	7 (100%)
area km <sup>2</sup> (% of total)	0 (0%)	0 (0%)	29 (100%)
<b>Estuaries</b>			
number (% of total)	0 (0%)	0 (0%)	43 (100%)
area km <sup>2</sup> (% of total)	0 (0%)	0 (0%)	167 (100%)
<b>Coastal</b>			
number (% of total)	0 (0%)	1 (4%)	26 (96%)
area km <sup>2</sup> (% of total)	0 (0%)	28 (1%)	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.







### 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.

**i** 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](http://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](http://www.wfdireland.ie)).



1

What are our key water issues?

### 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.

2

What is the status of our waters?

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.

3

What do we plan to achieve?

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.

4

What measures must we take?

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.

5

What will basic measures achieve?

#### 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.

6

What further measures can we take?

#### 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.

7

What are supplementary measures achieve?

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.

8

What are our objectives in the South Western District?

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.

9

What is our action plan for the South Western District?

#### 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.

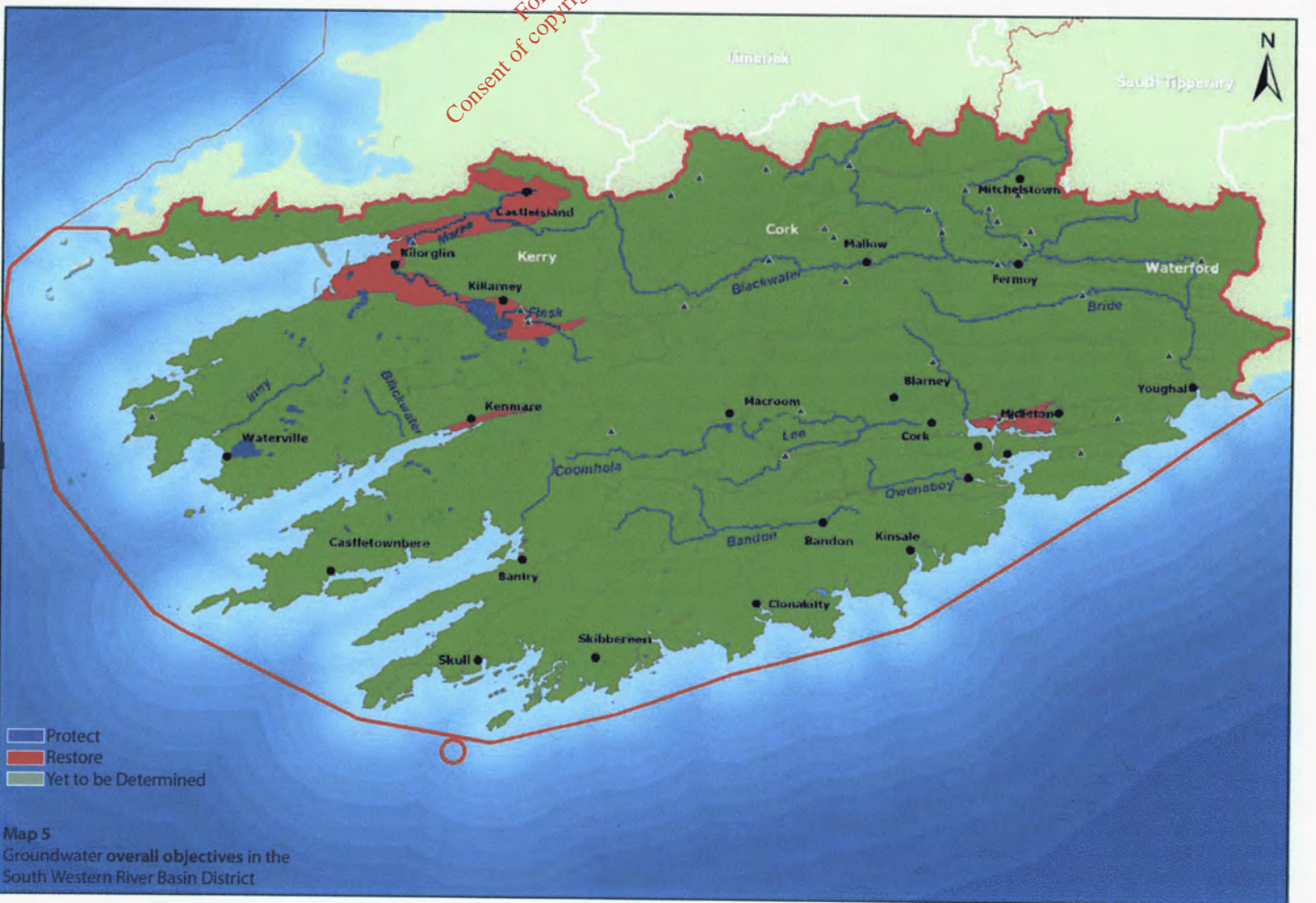
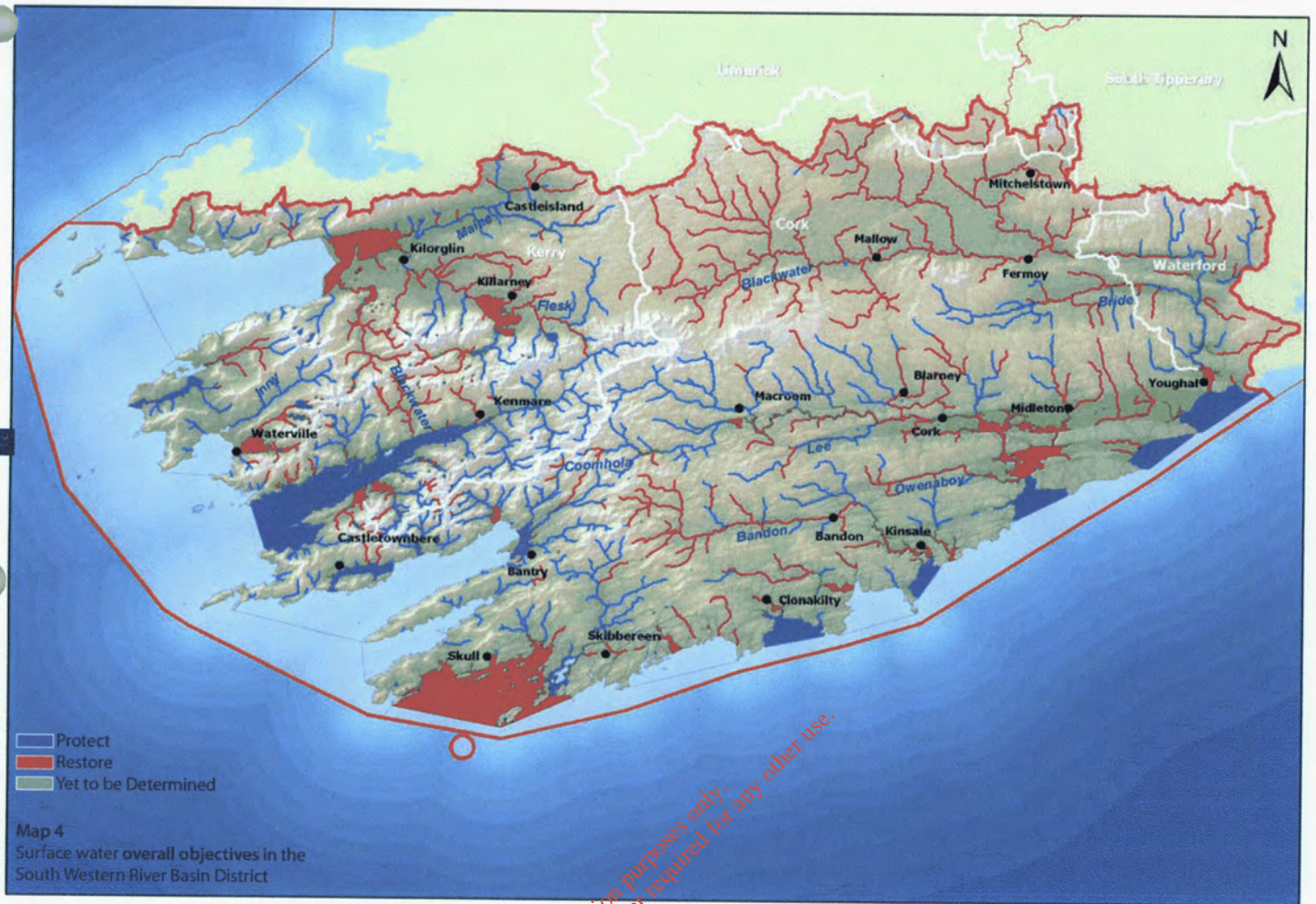
#### Reduce chemical pollution

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.



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1 What are our key water issues?

2 What is the status of our waters?

3 What do we plan to achieve?

4 What measures must we take?

5 What will basic measures achieve?

6 What further measures can we take?

7 What will supplementary measures achieve?

8 What are our objectives in the South Western District?

9 What is our action plan for the South Western 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	Other stipulated measures
Bathing waters	Cost recovery for water use
Birds	Promotion of efficient and sustainable water use
Habitats	Protection of drinking water sources
Drinking waters	Control of abstraction and impoundment
Major accidents	Control of point source discharges
Environmental impact assessment	Control of diffuse source discharges
Sewage sludge	Authorisation of discharges to groundwaters
Urban wastewater treatment	Control of priority substances
Plant protection products	Controls on physical modifications to surface waters
Nitrates	Controls on other activities impacting on water status
Integrated pollution prevention control	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](http://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 Síochána 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.



1  
What are our key water issues?

## 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.

2  
What is the status of our waters?

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

<b>Point and diffuse sources of pollution</b> Wastewater and industrial discharges Landfills, quarries, mines and contaminated lands Agriculture Wastewater from unsewered properties Forestry Dangerous substances & chemical pollution	<b>Physical modifications</b> including channel dredging, culverts, weirs, boat movements and floodplain demand  <b>Abstractions</b> including drinking water and industrial supplies  <b>Locally focussed and future issues</b> These are addressed by supplementary rather than basic measures (Steps 6–7).
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3  
What do we plan to achieve?

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.

4  
What measures must we take?

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.

5  
What will basic measures achieve?

**i** Our assessments and conclusions are outlined below; for more detail see ([www.wfdireland.ie](http://www.wfdireland.ie)).

6  
What further measures can we take?

## 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.

7  
What will supplementary measures achieve?

## 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.

8  
What are our objectives in the South Western District?

9  
What is our action plan for the South Western District?

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](http://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

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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
<b>Total Number</b>	885	20	18
<b>Number Receiving Urban and Industrial Discharges</b>	111	20	18
<b>Number At Risk from Urban and Industrial Discharges</b>	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.

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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 podsollic 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



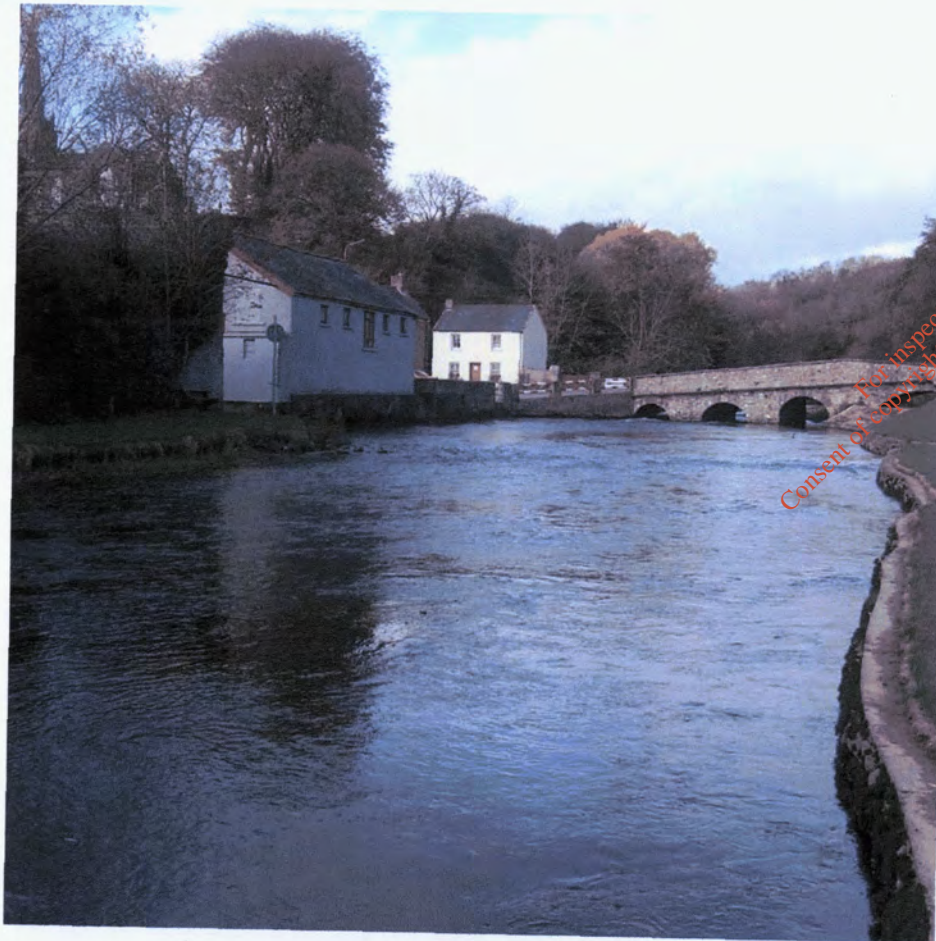
The Water Framework Directive requires a control regime of surface and groundwater abstractions and of surface water impoundments in Ireland's waters. National research, undertaken over the last two years, has determined the key issues in relation to abstractions on Ireland's rivers, lakes, and groundwaters:

- 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:

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

- i** The full programme of technically feasible supplementary measures is set out in our background document ([www.wfdireland.ie](http://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

- i** 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](http://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.

- 1 What are our key water issues?
- 2 What is the status of our waters?
- 3 What do we plan to achieve?
- 4 What measures must we take?
- 5 What will basic measures achieve?
- 6 What further measures can we take?
- 7 What will supplementary measures achieve?
- 8 What are our objectives in the South Western District?
- 9 What is our action plan for the South Western District?

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