

Regulation of Water Service Discharges



An Agency within the Department of the
Environment
www.doeni.gov.uk





Our aim is to protect and conserve the natural and built environment and to promote its appreciation for the benefit of present and future generations.

E-mail: ehsinfo@doeni.gov.uk
Visit: www.ehsni.gov.uk



Printed and Published by
EHS Publishing Unit 2004
04/04.05

Contents

List of Tables:

List of Figures:

Executive Summary	1
Section 1	
Waste Water Treatment Works	3
Section 2	
Compliance with the Urban Waste Water Treatment Directive in 2002 and 2003	8
Section 3	
Collection Systems	11
Section 4	
Water Treatment Works	14
Section 5	
Water Service Audits	15
Section 6	
Pollution Incident Investigation	16
Section 7	
Current and Future Performance	17
Appendix A	19
Appendix B	22
Appendix C	25
Appendix D	26
Appendix E	27
Appendix F	28
Appendix G	29
Glossary	30
References	32

List of Tables:

Table 1:	Summary of Compliance with WWTW Registered Discharge Standards	1
Table 2:	Summary of Compliance for All UWWT Directive WWTW	1
Table 3:	Summary of Compliance for WWTW Discharging to Sensitive Areas	1
Table 4:	Summary of WTW Compliance	2
Table 5:	WWTW Registered Discharge Standard Compliance	4
Table 6:	Dangerous Substance Compliance in 2002 and 2003	4
Table 7:	WWTW with Flow Measuring Facilities	5
Table 8:	WWTW Placed on the Public Register from 1 January 2002	6
Table 9:	Summary of Compliance for all UWWT Directive WWTW	9
Table 10:	Summary of Compliance for WWTW Discharging to Sensitive Areas	9
Table 11:	WWTW non-compliant with the standards of the UWWT Regulations in 2002 and 2003	10
Table 12:	WTW Compliance 1998 to 2003	14

List of Figures

Figure 1:	Summary of WWTW Compliance 1997 to 2003	3
Figure 2:	Percentage Compliance for WWTW in United Kingdom (UK)	7
Figure 3:	Map of WWTW that were required to comply with UWWT Regulations in 2002 and 2003	8
Figure 4:	Substantiated Pollution Incidents 1996-2003	16
Figure 5:	Distribution of Sources of Pollution Arising from Water Service Activities in 2002 and 2003	16

Executive Summary

Environment and Heritage Service (EHS) published the first public Report on the Regulation of Water Service Discharges for the year 2001, in December 2003. This document updates that Report for 2002 and 2003. It demonstrates changes in compliance over that period and provides updated information on capital works schemes that are in progress or have been completed.

Compliance for over 270 Waste Water Treatment Works (WWTW) serving a population equivalent (PE) greater than 250 and the effluents from 25 Water Treatment Works (WTW) is presented.

Compliance with UWWT Regulations

The compliance of WWTW effluent discharges with the UWWT Regulations is shown in **Table 2**.

In 2002 and 2003, 35 discharges qualified under the Regulations. As can be seen in **Table 2**, compliance in 2001 had dropped to 35% largely as a result of a number of additional qualifying works being included, under the Regulations, that did not provide the required level of treatment. Percentage compliance in 2002 and 2003 increased due to the completion of a number of capital works schemes and improvements in Water Service reporting systems.

Table 1: Summary of Compliance with WWTW Registered Discharge Standards

	1997	1998	1999	2000	2001	2002	2003
Number of WWTW on the Public Register	133	134	159	160	268	270	274
Percentage of discharges complying with numeric standards	68%	80%	85%	77%	54%	66%	67%
Percentage of discharges complying with descriptive standards	100%	95%	97%	100%	100%	100%	100%
Overall Compliance with discharge standards	73%	83%	87%	81%	58%	69%	70%

The results of compliance against the requirements of the Urban Waste Water Treatment (UWWT) Regulations (Northern Ireland) 1995 are also included for 35 WWTW that qualified under the Regulations during that period. This Report does not provide details of the regulatory system and readers may wish to refer to the 2001 Report for such information.

Compliance of WWTW with EHS Standards

The results of compliance against the Registered Standards set by EHS and entered into the public register from 1997 to 2003 are set out in **Table 1**.

The results show an improvement in compliance in 2002 and 2003 following the sharp decline observed in 2001. This improvement can be attributed to the Water Service Capital Works Programme (outlined in 2001 Report) and additional minor improvement schemes carried out by Water Service during 2002 and 2003.

Table 2: Summary of Compliance for All UWWT Directive WWTW

Percentage Compliance				
1999	2000	2001	2002	2003
53%	53%	35%	46%	60%

In 2002 and 2003, 14 WWTW serving a PE greater than 10,000 discharged to Sensitive Areas (Eutrophic), and were required to have nutrient removal. Compliance for these WWTW has improved steadily (**Table 3**).

Table 3: Summary of Compliance for WWTW Discharging to Sensitive Areas

Percentage Compliance				
1999	2000	2001	2002	2003
53%	53%	60%	60%	79%

Sewerage Systems

Information on improvements to the sewerage systems (termed collection systems in the Regulations) serving the major towns in Northern Ireland is presented in **Section 3**.

Compliance of WTW with EHS Standards

The compliance of WTW effluents with their EHS Registered Standards is presented for the years 1998 to 2003 in **Table 4**. Compliance has increased from 18% in 1998 to 50% in 2002 but decreased to 44% in 2003. This general improvement is the result of continued investment in new WTW and improved operational control of their waste water discharges.

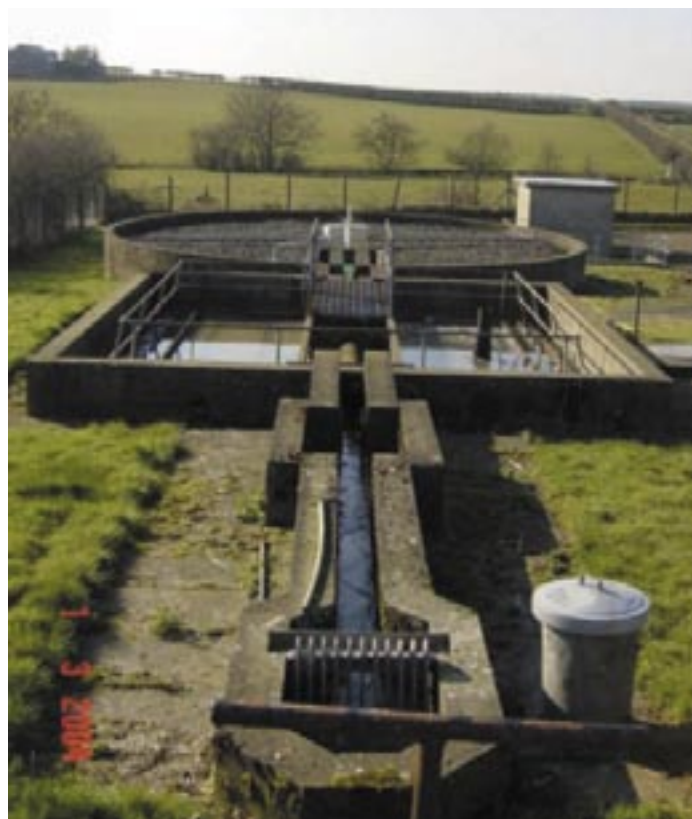
Future WWTW Compliance

The UWWT Regulations require that all WWTW in Northern Ireland shall provide levels of treatment that will adequately protect the waterway to which they discharge (referred to as appropriate treatment) by the end of 2005. To meet this requirement, EHS aims to issue environmental needs standards for all WWTW by 2005 and to place these standards on the public register. It is estimated that there are over 700 WWTW with PEs less than 250 in Northern Ireland that require Registered Standards to be formulated. This work is currently underway.

Meeting the requirements of the UWWT Regulations and national water quality standards will require additional ongoing investment in Water Service capital assets. The financial investment outlined in **Section 7** of the 2001 Report will go some way to improving WWTW compliance in Northern Ireland.

Table 4: Summary of WTW Compliance

	1998	1999	2000	2001	2002	2003
Number of WTW discharges monitored	22	26	24	27	26	27
Percentage of WTW discharges complying	18%	31%	46%	48%	50%	44%



Liscolman WWTW

Waste Water Treatment Works

Compliance 2002 and 2003

Water Service discharges are not subject to control under the Water Order (Northern Ireland) 1999 and therefore do not require consent under this legislation. However, by administrative agreement, Water Service discharges are regulated by similar conditions to those that would apply under the Order. The standards and conditions for each discharge are set out in Registered Standard documents. Compliance with the standards is available on the Public Register. The Public Register currently holds compliance information on 276 WWTW with population equivalents (PE) greater than 250.

This Section summarises the compliance for 2002 and 2003 for those WWTW on the Register and the trends in compliance since 1997 when the Public Register was first established. Compliance against the UWWT Regulations is covered in **Section 2**.

The results of the compliance assessment for the period 1997 to 2003 are summarised in **Table 5** and presented in **Figure 1**.

Figure 1: Summary of WWTW Compliance 1997-2003

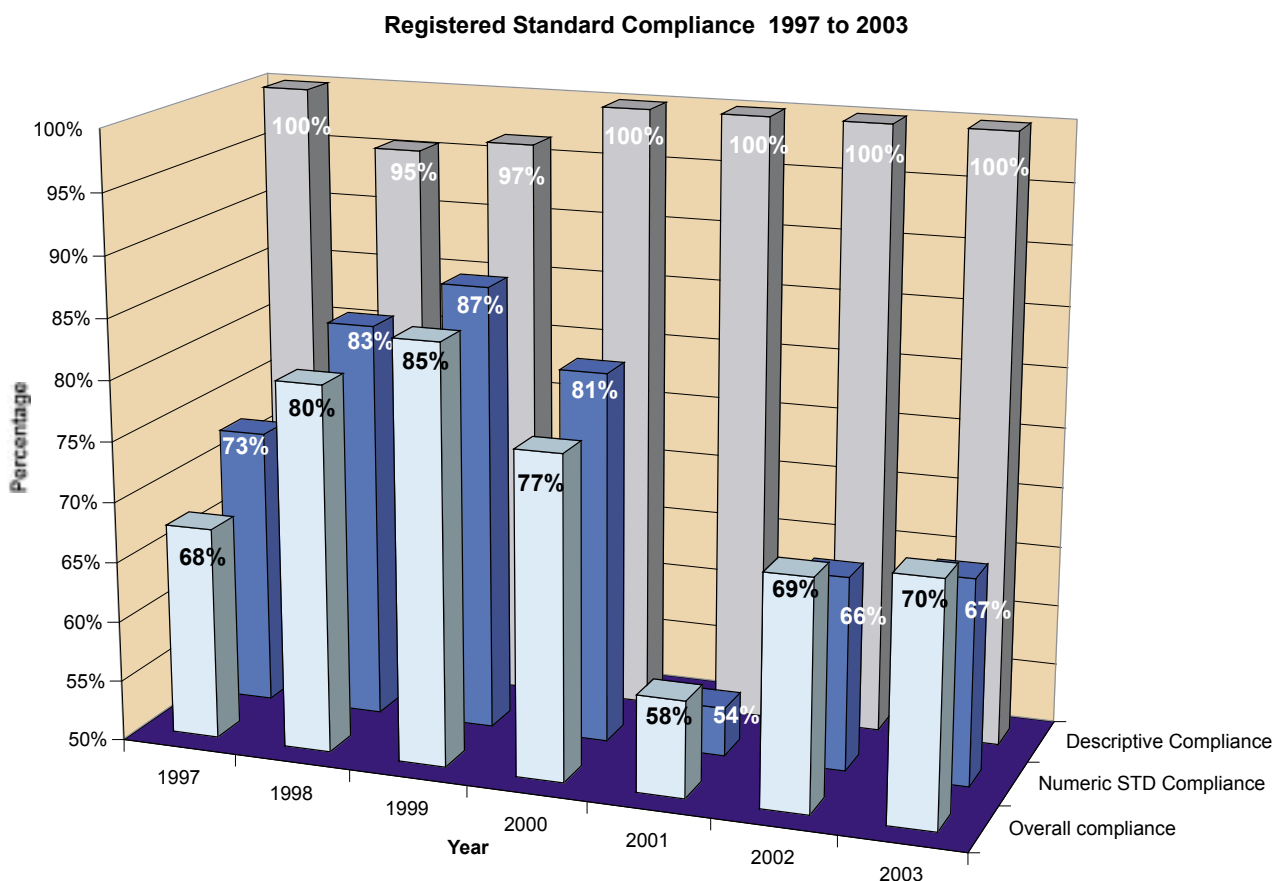


Table 5: WWTW Registered Discharge Standard Compliance

	1997	1998	1999	2000	2001	2002	2003
Number of WWTW discharges on the Public Register	133	134	159	160	268	270	274
Number of discharges with numeric standards	111	112	130	133	247	249	254
Number of discharges complying with numeric standards	75	90	110	102	134	165	171
Percentage of discharges complying with numeric discharge standards	68%	80%	85%	77%	54%	66%	67%
Number of discharges with descriptive standards	22	22	29	27	21	21	21
Number of discharges complying with descriptive standards	22	21	28	27	21	21	21
Total number of compliant WWTW	97	111	138	129	155	186	192
Percentage of discharges complying with descriptive standards	100%	95%	97%	100%	100%	100%	100%
Overall Compliance with discharge standards	73%	83%	87%	81%	58%	69%	70%

Appendices A and B provide further information on the WWTW that were non-compliant with their numeric discharge standards in 2002 and 2003 respectively. The 2001 Report provided specific details on the status of non-compliant works and this information is updated in **Appendix C** of this Report. Where no reference is made to a particular WWTW the comments in the 2001 Report are still relevant.

Dangerous Substances and other Standards

Aghanloo 2 is currently the only WWTW that must comply with dangerous substance parameters, although work is underway to apply these standards to other WWTW with significant trade inputs. **Table 6** summarises compliance against these standards in 2002 and 2003.

Table 6: Dangerous Substance Compliance in 2002 and 2003

Name of WWTW	Standard Compliance*				
	Soluble Chromium mg/l	Soluble Copper mg/l	Soluble Lead mg/l	Soluble Nickel mg/l	Soluble Zinc mg/l
Aghanloo 2		X X	X	X	X

* Standards compliance is absolute, i.e. must be met for all samples.

X Exceedence in 2002

X Exceedence in 2003

Flow data

In 2002 and 2003 Water Service measured and provided a record of the flow received at the major WWTW where flow measurement facilities are in place. This entailed measuring either the inlet flow and/or flow to full treatment. **Table 7** lists the WWTW for which flow measurement data were provided in 2002 and/or 2003.

Water Service is in the process of upgrading existing flow measurement facilities at the works listed in **Table 7**. The majority of this work is scheduled for completion by the end of 2004. In addition as new or upgraded WWTW become operational Water Service will ensure that the flow measurement facilities provided will fully meet EHS requirements.

In response to increasing requests, by EHS, for flow information Water Service is making considerable investment in the provision of adequate flow measurement to ensure compliance with future regulatory requirements.

Table 7: WWTW with Flow Measuring Facilities

WWTW	Inlet	Flow to full treatment
Antrim	✓	
Ballyclare	✓	
Ballymena	✓	✓
Ballymoney	✓	
Ballynacor		✓
Ballyrickard		✓
Banbridge	✓	✓
Belfast	✓	✓
Carrickfergus	✓	
Coleraine	✓	
Cookstown	✓	
Culmore	✓	
Dunmurry		✓
Enniskillen		✓
Glenstall	✓	
Limavady		✓
Lisnaskea		✓
Magherafelt	✓	✓
Moygashel		✓
Newcastle		✓
Newtownbreda		✓
Newtownabbey	✓	✓
New Holland		✓
Newry	✓	✓
Omagh	✓	
Strabane		✓
Tandragee	✓	
Tullagherley	✓	✓

New Registered Standards placed on the Public Register

Table 8: WWTW Placed on the Public Register from 1 January 2002

Name of WWTW	PE	Biochemical Oxygen Demand (BOD) mg/l	Suspended Solids (SS) mg/l	Ammonia (NH4) mg/l	Receiving Water
Ballymagorry	583	50	60		Glenmoran River
Maghery	275	50	90		Blackwater
Annaghmore	265	30	40		Tributary of Torrent River
Lurganare	275	10	20	15	Jerrettespass River

The WWTW listed in **Table 8** that now have a PE between 250 and 1000 were added to the Public Register in 2002.

No additional WWTW were placed on the Register in 2003. As EHS becomes aware of WWTW where

the PE has risen above 250 they will also be placed on the Public Register. In addition, EHS is in the process of determining discharge standards for all WWTW that serve a PE of less than 250. It is planned to place standards for these WWTW on the Public Register from 1 January 2005.



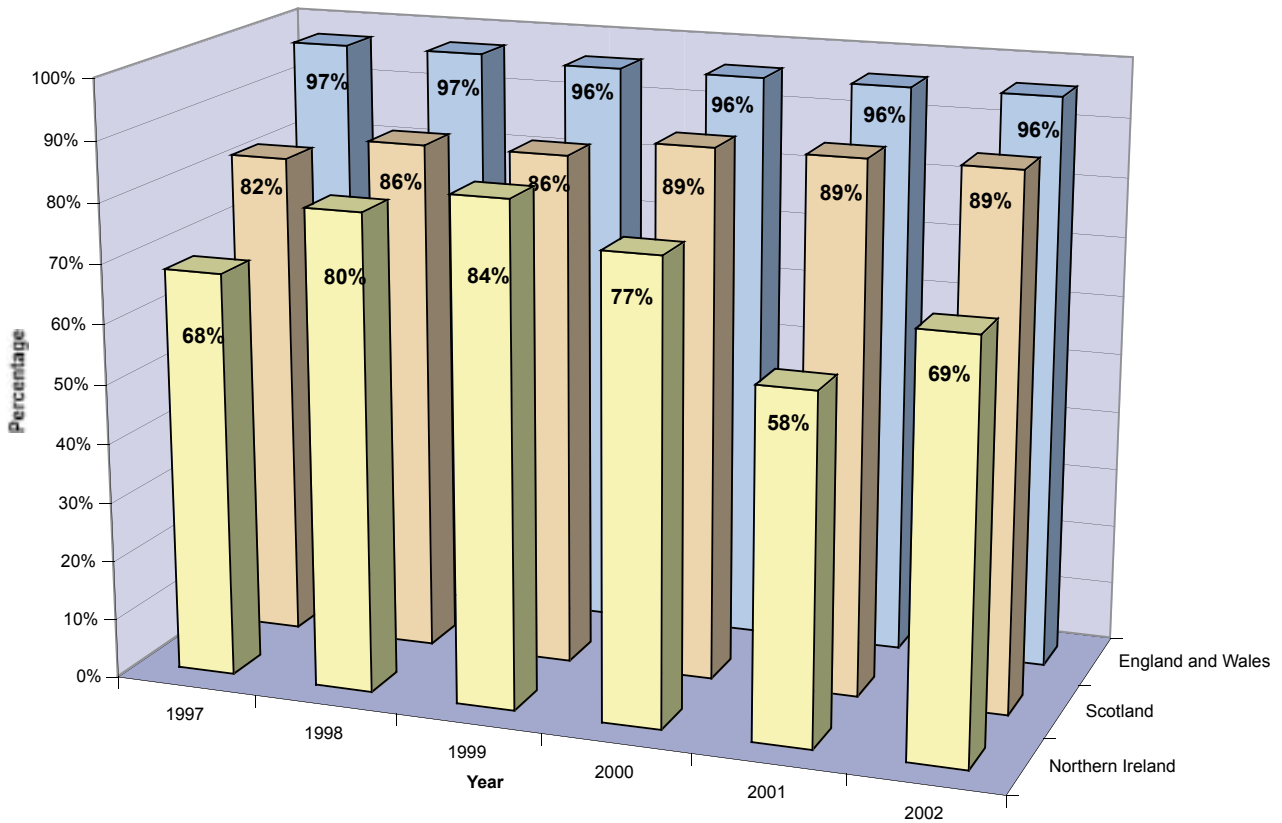
Lurganare WWTW

WWTW Compliance

Figure 2 shows the trends in compliance of WWTW in England and Wales, Scotland and Northern Ireland. It demonstrates that whilst compliance in Northern Ireland remains

significantly lower than in other parts of the UK recent capital schemes and minor works improvements carried out by Water Service have resulted in an increase in compliance since 2001.

Figure 2: Percentage Compliance for WWTW in United Kingdom (UK)



NB Data for England, Wales and Scotland for 2003 was not available at time of print.

Performance Results for 2002 and 2003

The percentage of WWTW complying with the requirements of the UWWT Regulations during 2002 (46%) and 2003 (60%) increased over that 2001 (**Table 9**). Compliance for the WWTW, in Sensitive Areas (Eutrophic), with nutrient removal has also improved (**Table 10**). This improvement can be attributed to capital upgrades and greater compliance with the monitoring requirements of the Regulations. The 2001 Report provided specific details on non-compliant works and this information is updated in **Appendix C** of this Report. Compliant WWTW are listed in **Appendix D**.

This improvement is due, in part, to new WWTW becoming operational.

The remaining WWTW did not comply with the requirements of the Regulations for a variety of reasons, as set out in Table 11.

Reasons for Non-compliance

In general, the reasons for non-compliance in 2002 and 2003 remain the same as in the 2001 report. Several WWTW still do not provide the level of treatment required by the UWWT Regulations (**Appendix E**). New WWTW at Kilkeel and Newry became operational from 2003, reducing the number of WWTW with insufficient treatment to eight. All the remaining WWTW are the subject of capital schemes to provide the required treatment. Table 13 of the 2001 Report provides details and time-scales for these schemes.

The WWTW in **Table 11** did not meet the effluent discharge requirements of the UWWT Regulations in 2002 and 2003 respectively, for the reasons outlined.

Table 9: Summary of Compliance for all UWWT Directive WWTW

Year	1999	2000	2001	2002	2003
Number of discharges	15	15	37	35	35
Percentage compliance	53%	53%	35%	46%	60%

Table 10: Summary of Compliance for WWTW Discharging to Sensitive Areas

Year	1999	2000	2001	2002	2003
Number of discharges	15	15	15	14	14
Percentage compliance	53%	53%	60%	60%	79%

Table 11: WWTW non-compliant with the standards of the UWWT Regulations in 2002 and 2003

WWTW	Standard Compliance					
	Biochemical Oxygen Demand 95%ile Limit (25mg/l)	Biochemical Oxygen Demand Upper Tier (50mg/l)	Chemical Oxygen Demand 95%ile Limit (125mg/l)	Chemical Oxygen Demand Upper Tier (250mg/l)	Total Phosphorus Annual Average	Insufficient samples taken
Ballyclare			X		XX	
Ballymena					X	
Ballymoney (Glenstall)		XX		XX		
Banbridge		X				
Coleraine		X	XX			
Cookstown			X		XX	
Limavady		X				
Moygashel						X
Omagh		XX	XX	X		
Tandragee		X		X	X	

X non-compliance 2002
X non-compliance 2003
 Standard does not apply



New Sequencing Batch Reactor (SBR) at Banbridge

Collection Systems

As outlined in the 2001 Report, EHS and Water Service continue to work together in a number of project working groups to identify and rectify not only unsatisfactory Combined Sewer Overflows (CSOs) but also to rationalise sewer systems and limit the pollution of receiving waters due to storm water overflows.

As part of this process Water Service are continuing to develop Drainage Area Plans (DAPs). DAPs provide information on the location and operation of CSOs within a sewer system. EHS assesses this information using the Guidance note to the UWWT Regulations to determine which CSOs are unsatisfactory and to identify the need to apply Urban Pollution Management (UPM) Manual methodology. Should a UPM study be necessary the information is also

used to determine the level and sophistication of that study. **Appendix F** gives an update of progress in 2002/2003 for DAPs.

By the end of 2003, two UPM studies, Belfast (west Belfast Catchment) and Enniskillen, had been completed and construction had commenced in Enniskillen. An additional seven studies have been agreed in principle. A further 44 studies are part of the ongoing process of consultation between Water Service and EHS. EHS is currently awaiting DAPs for 44 systems that have been included in Water Service's capital works programme. Preliminary fieldwork and data gathering for a number of these proposed plans has taken place but further work will depend on the information obtained from the DAPs. **(Appendix F)**



Sixmile Water at Antrim

BELFAST SEWER SYSTEM – CASE STUDY

The Belfast WWTW is the main works serving the city of Belfast and the west Belfast sewer collection system. In 1994 an hydraulic engineering study of the sewerage system was carried out to address:

- the hydraulic deficiencies in the sewer system;
- the structural condition of critical sewers; and
- the impact of polluting discharges on receiving waters.

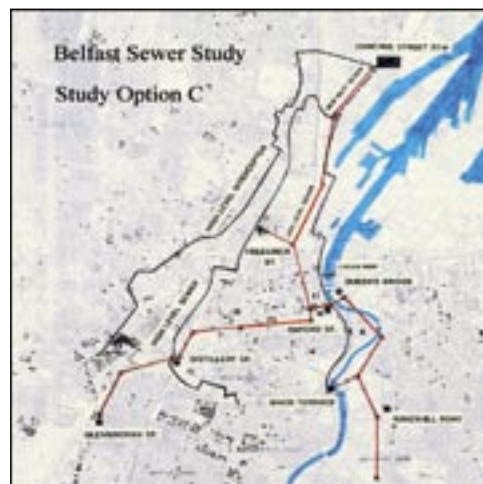
From the 1994 Study the following characteristics were highlighted:



Belfast Sewer Study Area

- 200,000 PE
- 40 km²
- 900 km sewers
- 106 CSOs
- 55 unsatisfactory Combined Sewer Overflows (CSOs)
- 3.7 Mm³ spill/annum
- Lower reaches of Blackstaff River did not meet water quality objectives
- Tidal Lagan did not meet estuarine Class B (in particular DO- 4 mg/l for more than 95% of year)

Using the information from the hydraulic sewer study EHS carried out a detailed water quality assessment of the impact of CSO discharges from the west Belfast sewer system on the Tidal River Lagan and its tributaries.



As a result of this assessment a review of the hydraulic sewer model and a comprehensive Urban Pollution Management (UPM) study was carried out in 1998. As part of the UPM study, a state of the art integrated modelling exercise was undertaken for the Tidal River Lagan, the Blackstaff River and its tributaries. The UPM study was used to assess the proposed solutions against the water quality objectives set by EHS under wet weather conditions and had the following objectives:

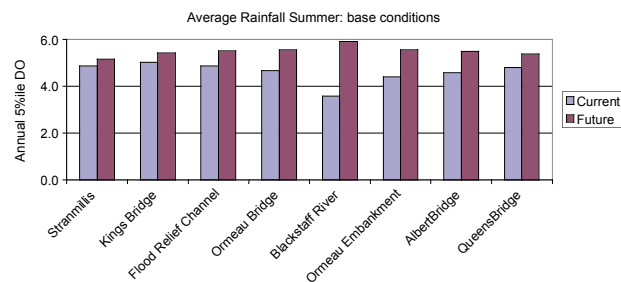
- To make a reliable assessment of the impact of the West Belfast CSO discharges on the Blackstaff River and to determine whether the Blackstaff River will achieve its long term water quality objectives.
- To provide input to the study of the Tidal River Lagan to ensure that it would meet water quality objectives.

THE SOLUTION

Following assessment of a number of possible solutions the preferred options to meet the water quality criteria were modelled in detail.

The modelling confirmed that the best option was the provision of extensive storage tunnels on the west and east banks of the Lagan to collect and store the storm sewage. Once the storm flows have abated the stored storm sewage will be pumped forward to Belfast WWTW for treatment. The modelling also confirmed that:

1. The Blackstaff River should meet its water quality objectives as a result of reduced spills from CSOs and upstream tributaries. The number of CSO spills should be reduced by 68% and the organic loads discharging from CSOs by 87%.
2. Following implementation of the CSO upgrading scheme there should be significant improvement in Dissolved Oxygen concentrations throughout the Tidal River Lagan with the greatest improvement at the confluence with the Blackstaff River.



Water Service is currently in the initial planning and construction phases for this scheme.

Water Treatment Works

The treatment of water at WTW for public supply generates effluents which are often discharged to nearby waterways. As for WWTW EHS sets discharge standards Water Service WTW effluents to protect the receiving water. There were 25 WTW on the Public Register in 2002 and 24 in 2003. During 2002 Ballysallagh Upper and Church Road were out of service and in 2003 standards for discharges from Lough Island Reavy, Conlig

and Derg WTW were placed on the Public Register. In 2003 Ballysallagh Lower and Church Road were out of service. It should also be noted that some WTW have more than one effluent discharge.

Compliance data for 1998 to 2003 show an improvement in compliance up to 2002 with a slight fall for 2003 (**Table 12**).

Table 12: WTW Compliance 1998 to 2003

	1998	1999	2000	2001	2002	2003
Number of discharges monitored	22	26	24	27	26	27
Number of discharges complying	4	8	11	13	13	12
Percentage of discharges complying	18%	31%	46%	48%	50%	44%

Specific details on the compliant and non-compliant discharges for 2002 and 2003 can be found in **Appendix G**.



Fofany Bane WTW

Water Service Audits

Laboratory Audits

As described in the 2001 Report EHS carries out audit checks on Water Service sampling and analysis. During 2002 Southern and Eastern Division Water Service Laboratories were audited.

Both laboratories had recently obtained UKAS accreditation and their quality systems were relatively new. The audit of Southern Division indicated that EHS can have confidence in the data forwarded for compliance purposes and that they are representative of the samples taken. The audit of Eastern Division indicated a number of deficiencies in the way analyses were quality assured prior to UKAS accreditation and these were resolved as part of the accreditation preparation process.

EHS reiterated the three recommendations made in the 2001 Report to both laboratories, i.e. appropriate temperature measurement during sampling, timely BOD, COD and Total Phosphorus analysis and the requirement for weekend sampling for Registered standard compliance. Water Service is seeking to address these recommendations.

Sampling Audits

In 2003 audits on Northern and Western Division UWWT Regulation sampling took place. Northern Division had obtained UKAS accreditation for sampling and had adequate training, procedures and documentation in place.

Western Division sampling had not been externally quality assured. There were no formal procedures or documentation, although the samplers were trained on an informal basis. EHS had no major concerns on the techniques or practices employed but would recommend that UKAS accreditation is obtained for UWWT Regulation sampling.

Pollution Incident Investigation

The Incident Response section of EHS is responsible for investigating and maintaining pollution incidents resulting from unauthorised discharges. This team produces annual Water Pollution Incident and Prosecution Statistics Reports. The data shown in Figure 4 are taken from these reports and show that Water Service continues to contribute to around 20% of pollution incidents annually.

In 2001 there were 305 confirmed pollution incidents attributed to Water Service, this decreased to 200 in 2003. **Figure 5** shows the percentage distribution of the activities undertaken by Water Service which resulted in the pollution incidents attributed to them in 2002 and 2003. While the total number of incidents has decreased the percentage contribution from the various services of pollution remains broadly the same.

Figure 4: Substantiated Pollution Incidents 1996-2003

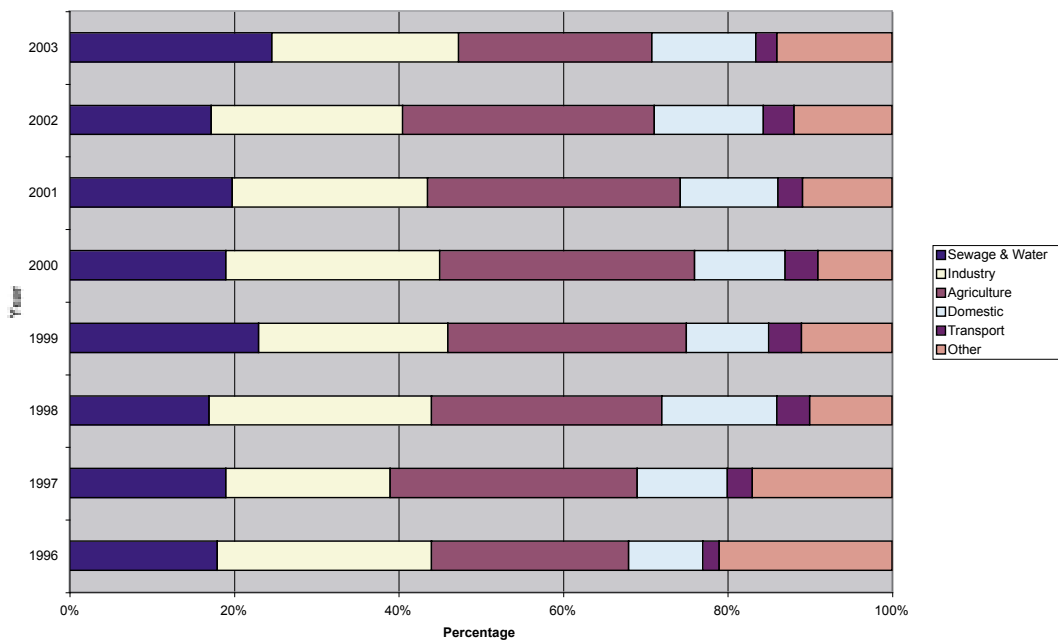
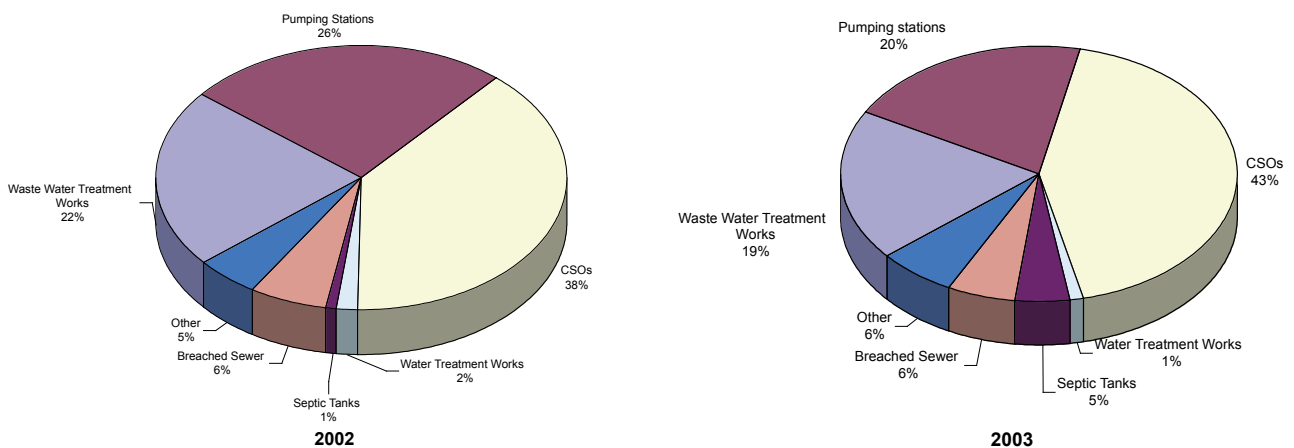


Figure 5: Distribution of Sources of Pollution Arising from Water Service Activities in 2002 and 2003



Current and Future Performance

The regulatory controls in place have been effective in identifying the need for improvement and in targeting investment to increase compliance with statutory European and national environmental standards in order to protect the environment. EHS accepts that there is still much to be done and will continue to strive for higher levels of investment in sewerage infrastructure to deliver water quality standards that are consistent with the rest of the UK and Europe. To this end EHS aims to:

- issue environmental need standards for all WWTW on the Public Register by the end of 2005;
- review the standards of all WWTW to meet the requirements of the UWWT Directive by December 2005;
- place standards for over 700 WWTW with a PE less than 250 on the Public Register by end of 2005; and
- continue to monitor and report on compliance with national and European standards.

Investment in WWTW

The action taken by Government in recent years to both increase the investment in sewerage infrastructure, and to address the long-term status and funding of Water Service, will help to improve compliance in the future. Only with such significant financial investment will Water Service reach the levels of compliance currently achieved in the rest of the UK and Europe. The Department for Regional Development (DRD) is actively addressing this and at present is in the process of delivering a £242 million remedial work programme, which by the end of the 2003/2004 financial year will have invested £50 million on WWTW upgrades. This programme has already resulted in the completion of a number of schemes and significant progress at others as outlined in **Appendix C**. An additional £58 million generated from Public Private Partnership (PPP) will be invested in WWTW upgrades during the period 2007 to 2009.

There will however be an ongoing need to review, maintain and upgrade sewerage infrastructure in Northern Ireland to meet future environmental standards and to continue to serve the needs of present and future development in Northern Ireland in a sustainable manner. There is a clear need to ensure that long-term investment can meet these requirements and in March 2003 Angela Smith MP published a consultation on the Reform of Water and Sewerage Services in Northern Ireland. This consultation followed the announcement by Ian Pearson MP in December 2002 that Northern Ireland's water and sewerage services would become self-financing, and that the current arrangements for delivering these services would be reformed. John Spellar MP, Minister for Regional Development, announced that Water Service would become a Government Owned Company (GoCo) on, or as soon as practicable after 1 April 2006, and that Northern Ireland's water and sewerage services would be self-financing from 2008/09. Water Service and EHS are fully engaged in the process of developing a regulatory system that will take account of the current condition of Water Service's infrastructure while ensuring that the new water GoCo is otherwise subject to the full legislative requirements of the Water (Northern Ireland) Order 1999.

Sewerage Systems

The high proportion of pollution incidents related to the operation of unsatisfactory CSOs (**Figure 5**) demonstrates the importance in ensuring the requirements for sewerage systems under the UWWT Directive are met. It is also important that future investment in urban drainage incorporates the appropriate use of Sustainable Drainage Systems (SuDS) to reduce the amount of surface water entering sewer systems. EHS is in dialogue with Water Service over the use of SuDS in order to contribute to the reduction of diffuse pollution in urban areas and to support sustainable urban growth without compromising water quality.

EHS is actively working with Water Service to agree and implement proposals for sewerage system upgrades and to determine the investment required to upgrade some 109 sewerage systems through ongoing Drainage Area Studies. To date

82 studies are in progress or complete. In the last 5 years £80 million has been invested in sewerage system improvements and Water Service estimate that a further £300 million will be required over the next 10 years. The most significant of these programmes will be the upgrade of the Belfast Sewer system at a cost of £100 million and construction planning is already underway.

Future WTW Compliance

It is anticipated that further improvements in the quality of effluent discharges from WTW will be achieved as these are upgraded to meet the requirements of the EC Drinking Water Directives. To achieve this Water Service plan to invest some £240 million on WTW and distribution system in the next 3 years.

As can be seen from the above investment programmes substantial momentum has been achieved in progressing the improvements necessary to meet both European and national environmental obligations. This momentum must however be maintained to deliver the long-term aim of protecting and conserving the aquatic environment for the benefit of present and future generations.


Summary of WWTW that did not meet their Registered Standard in 2002

Name of WWTW	Standard Compliance 2002								
	Biochemical Oxygen Demand (mg/l)			Suspended Solids (mg/l)			Ammonia (mg/l)		Total Phosphorus (mg/l)
	95%	U/T	% Red	95%	U/T	% Red	95%	U/T	Annual Average
Aghagallon	X			X					
Aghalee				X					
Annaghmore				X					
Annahilt				X					
Ardglass			X			X			
Augher	X								
Ballyclare									X
Ballygawley	X								
Ballygowan				X					
Ballymena (Spencestown)	X			X					
Ballymoney (Glenstall)	X	X		X					
Ballymonie				X					
Ballynahinch		X		X	X				
Ballynure							X		
Banbridge	X	X		X					
Bellaghy				X					
Belleeks (Armagh)	X			X					
Bessbrook	X								
Campsie	X			X					
Carrickfergus	X	X		X					
Carrowdore	X			X					
Castleberg				X					
Clady (L'derry)	X			X					
Clady (Tyrone)	X			X					
Clogh	X			X			X		
Clough	X			X			X		
Coagh	X								
Coleraine	X	X		X					
Cookstown	X			X	X				X
Corkey	X			X					
Crossgar As	X			X					
Crossgar Bf	X								
Cullaville				X					
Culmore	X	X		X					
Derryhale	X								
Derrylin	X			X			X		
Donaghadee	X	X		X					
Dromore (Down)	X								

Name of WWTW	Standard Compliance 2002								
	Biochemical Oxygen Demand (mg/l)			Suspended Solids (mg/l)			Ammonia (mg/l)		Total Phosphorus (mg/l)
	95%	U/T	% Red	95%	U/T	% Red	95%	U/T	Annual Average
Drumaness	X			X					
Drumlough	X			X					
Drumsumn	X			X					
Dundrum	X			X					
Dunloy	X			X			X		
Edenderry	X			X					
Feeny				X					
Glenavy	X								
Glenone	X								
Gravel Hill							X		
Greenisland	X			X					
Hamiltonsbawn				X					
Kilcoo	X			X			X		
Kilkeel	X	X		X					
Killen	X						X		
Killylea				X					
Kircubbin	X								
Larne (Sandy Bay)	X	X		X					
Laurelvale	X								
Lisbarnet	X			X			X		
Lisnaskea		X			X		X		
Loughguile	X			X			X		
Magherafelt				X			X	X	
Magheramason	X								
Mayobridge							X		
Mountfield				X					
Moygashel								X	
Mullaghglass	X			X					
Newry	X	X		X	X				
Newtownabbey	X	X		X					
Omagh	X	X		X	X				
Plumbridge				X					
Portrush	X	X		X					
Raholp	X			X					
Rathfriland	X	X		X	X		X	X	
Scarva	X						X		
Seaforde	X								
Seagoe	X								
Spa							X		
Spamount							X		

Name of WWTW	Standard Compliance 2002								
	Biochemical Oxygen Demand (mg/l)			Suspended Solids (mg/l)			Ammonia (mg/l)		Total Phosphorus (mg/l)
	95%	U/T	% Red	95%	U/T	% Red	95%	U/T	Annual Average
Strabane	X	X		X					
Straid	X						X		
Strangford	X			X					
Swatragh	X						X		
Tandragee	X	X		X	X				X
Tempo	X			X					
Warrenpoint	X			X					
Whiterock	X								

Key:

- X** Non-compliance with standard
-  No standard applies for this parameter
- 95%** 95-percentile standard
- U/T** Upper tier standard
- % Red** Percentage reduction standard
- An Avg** Annual average standard


Summary of WWTW that did not meet their Registered Standard in 2003

Name of WWTW	Standard Compliance 2003								
	Biochemical Oxygen Demand (mg/l)			Suspended Solids (mg/l)			Ammonia (mg/l)		Total Phosphorus (mg/l)
	95%	U/T	% Red	95%	U/T	% Red	95%	U/T	Annual Average
Aghagallon	X			X					
Aghalee	X			X					
Aghanloo 2	X								
Annahilt							X		
Antrim							X	X	
Ardglass			X			X			
Augher	X			X					
Ballinamallard	X			X			X		
Ballyclare									X
Ballymena (Spencestown)	X			X					
Ballymoney (Glenstall)	X	X		X	X				
Ballymonie	X			X					
Ballynahinch				X	X				
Ballyrickard	X	X		X					
Ballystrudder	X			X					
Banbridge	X	X		X					
Bangor	X	X		X					
Belleeks (Armagh)	X			X					
Brookeborough	X								
Campsie	X			X					
Cargan	X								
Carnbane	X			X					
Carrickfergus	X	X		X					
Carrowdore				X					
Clady (L'derry)	X			X					
Clady (Tyrone)	X			X					
Clough	X			X			X		
Coleraine	X	X							
Cookstown	X	X		X					X
Corkey	X			X					
Creagh	X								
Crossgar Bf	X			X					
Cullaville	X			X					
Cullyhanna	X			X					
Culmore	X	X		X					
Derrylin	X			X			X		
Donaghadee	X	X		X					

Name of WWTW	Standard Compliance 2003								
	Biochemical Oxygen Demand (mg/l)			Suspended Solids (mg/l)			Ammonia (mg/l)		Total Phosphorus (mg/l)
	95%	U/T	% Red	95%	U/T	% Red	95%	U/T	Annual Average
Dromore (Down)	X			X					
Drumaness				X					
Drumavalley	X								
Dundrum, Co Down	X			X					
Edenderry, Co Down	X			X					
Fintona	X			X					
Gilford							X		
Glenavy	X								
Glenone	X			X					
Gravel Hill							X		
Irvinestown	X			X					
Kesh	X								
Kilcoo	X			X			X		
Kilkeel									
Killen	X			X			X		
Killough				X					
Killylea				X					
Kinallen	X								
Kircubbin	X								
Larne Sandybay	X	X		X					
Laurelvale	X								
Lenaderg	X			X					
Lisbarnet	X			X			X		
Lisnaskea		X			X				
Loughbrickland	X			X			X		
Loughmacrory		X		X					
Lurganare							X		
Magherafelt							X	X	
Magheramason	X			X					
Mayobridge							X		
Moira				X					
Mountfield				X			X		
Newcastle		X							
Newtownabbey	X	X		X					
Newtownbutler								X	
Omagh	X	X		X					
Portrush	X	X		X					
Raholp	X			X					
Rathfriland	X	X		X	X		X	X	

Name of WWTW	Standard Compliance 2003								
	Biochemical Oxygen Demand (mg/l)			Suspended Solids (mg/l)			Ammonia (mg/l)		Total Phosphorus (mg/l)
	95%	U/T	% Red	95%	U/T	% Red	95%	U/T	Annual Average
Scarva	X			X			X		
Seaforde	X			X					
Sion Mills	X			X					
Spa							X		
Strabane	X	X		X					
Strangford	No results returned								
Tandragee	X	X		X	X				
Whitecross	X			X					

Key:

- X** Non-compliance with standard
-  No standard applies for this parameter
- 95%** 95-percentile standard
- U/T** Upper tier standard
- % Red** Percentage reduction standard
- An Avg** Annual average standard

Updated Status of WWTW March 2004

Name	Details
Ballyclare	The design and build contract was awarded at the end of 2003 and the contractors plan to be on site in June 2004. The new works will incorporate membrane technology.
Ballymena	Construction of Phase II Tullagharley WWTW is largely complete and from March 2004 a portion of the flow to this WWTW has been transferred to the new works. Complete closure of Ballymena WWTW is scheduled for December 2004.
Ballymoney (Glenstall)	Proposals to upgrade this WWTW may be delayed as a result of the possibility of new Sensitive Area (Eutrophic) designations.
Banbridge	The new WWTW became operational in April 2003.
Cookstown	The design and build contract was awarded at the end of 2003 and the contractors plan to be on site in June 2004.
Crossgar	Water Service is in the process of constructing the pumping station that will pump flows to Killyleagh WWTW for treatment.
Fivemiletown	New reed beds have improved effluent quality, however, the works does not nitrify.
Kircubbin	The new membrane WWTW became operational late 2003.
Magherafelt	Diversion of the effluent discharge to the Moyola River is due to take place by mid 2004.
Omagh	New inlet and storm treatment facilities became operational in December 2003.
Rathfriland	Water Service intends to commence construction of a new WWTW in the near future.
Portglenone	Construction commenced on the new WWTW late 2003.
Strabane	The new works became operational late 2003.
Tullagharley	Construction of Phase II Tullagharley WWTW is largely complete. The Contractors are presently refurbishing the existing WWTW and it is likely that complete closure of Ballymena WWTW will have taken place by December 2004.

WWTW compliant with UWWT Regulations in 2002 and 2003

Compliant 2002	Compliant 2003
Antrim	Antrim
Armagh	Armagh
Ballymoney	Ballymena
Ballynacor	Ballymoney
Ballyrickard	Ballynacor
Banbridge	Ballyrickard
Belfast	Belfast
Bullays Hill	Bullays Hill
Dunmurry	Dunmurry
Enniskillen	Enniskillen
Magherafelt	Kilkeel
New Holland	Limavady
Newcastle	Magherafelt
Newtownbreda	Moygashel
Seagoe	New Holland
Tullaghgarley	Newcastle
	Newry
	Newtownbreda
	Seagoe
	Tandragee
	Tullaghgarley

**WWTW not providing the Level of Treatment Required by the UWWT Regulations
in 2002 and 2003**

WWTW	Current Treatment	Required Treatment	Date Required
Bangor (Briggs Rocks)	Preliminary	Secondary	31:12:2000
Ballyclare	Secondary	Tertiary	31:12:1998
Carrickfergus**	Primary	Tertiary	31:12:2004
Cookstown	Secondary	Tertiary	31:12:1998
Culmore	Primary	Secondary	31:12:2000
Donaghadee	None	Secondary	31:12:2000
Kilkeel *	Primary	Secondary	31:12:2000
Larne (Sandy Bay)	None	Secondary	31:12:2000
Newry *	Primary	Secondary	31:12:2000
Newtownabbey**	Partial Secondary	Tertiary	31:12:2004
Portrush	None	Secondary	31:12:2000
Strabane	Primary	Secondary	31:12:2000

* Secondary treatment operational from 2003

** Prior to 31:12:2004 these works were required to provide secondary treatment from 31:12:2000

Status of Drainage Area Plans - December 2003

Agreement Reached	Agreement Reached in Principle	Ongoing *	Due in Future **
Enniskillen	Belfast (Duncrue catchment) Dunmurry Hillsborough Limavady Strabane Moira Seahill/Helen's Bay Ballymoney	Bangor Ballyhalbert Ballywalter Belfast (East) Carrickfergus Cloghy Greencastle Greenisland Greyabbey Lisburn Kircubbin Newtownbreda Portaferry Portavogie Whitehouse Antrim Ballycastle Ballyclare Ballymena Castledawson Coleraine Cookstown Draperstown Maghera Magherafelt Moneymore Portglenone Randalstown Armagh Bessbrook Coalisland Craigavon Gilford Lurgan Magheralin Markethill Portadown Rathfriland Richhill Tandragee Waringstown Warrenpoint Londonderry Omagh	Annahilt Annalong Ardglass Ballycarry Ballystrudder Ballygowan Ballynahinch Ballyrickard Crossgar Donaghadee Downpatrick** Dundrum Kilkeel Killyleagh Newcastle** Millisle Saintfield Upper Falls Whitehead Bellaghy Bushmills Castlerock Garvagh Kilrea Portballintrae Castlewellan** Crossmaglen Dromore (Down)** Dungannon Glenavy Keady Magherry** Ballykelly Castledearg Dungiven Eglinton Fintona Fivemiletown Greysteel Irvinestown Lisnaskea New Buildings Newtownstewart Sion Mills

NB further issues have arisen subsequent to agreement being reached with Dunmurry, Hillsborough, Limavady, Moira and Strabane - mainly concerning works overflows, but also changing flow figures. Further discussion is also ongoing on Belfast, but not in relation to impact study.

* a preliminary DAP plan has been received, (but may not include upgrade proposals)

** underway at time of publication Check do this apply to column or individual works?

Compliant WTW Discharges in 2002 and 2003

2002	2003
Carmoney	Carmoney
Creightons Green	Creightons Green
Dungonnell	Dungonnell
Glenhordial	Glenhordial
Killea	Killea
Killyhevlín	Killyhevlín
Killylane	Killylane
Lough Fea	Lough Fea
Silent Valley	Silent Valley
Caugh Hill	Belleek
Dorisland	Derg
Dunore Settlement Tanks	Seaghan
Forked Bridge Sandwasher	

Non-compliant WTW Discharges 2002 and 2003

2002	2003
Ballinrees	Altmore
Ballysallagh Upper	Ballinrees
Dunore Sludge Beds	Ballysallagh Upper
Forked Bridge RGF	Carron Hill
Lough Cowey	Clay Lake
Belleek	Castor Bay Lagoon
Altmore *	Castor Bay Sandwasher
Castor Bay Lagoon *	Dunore Settlement Tanks
Castor Bay Sandwasher *	Forked Bridge Sandwasher
Ballintemple *	Forked Bridge RGF
Carron Hill *	Lough Cowey
Seaghan *	Conlig
Clay Lake *	Lough Island Reavy
	Ballintemple *

* non-compliant discharges due to insufficient monitoring data

Glossary:

Ammonia/Ammonium (NH ₄)	A chemical found in water often as a result of pollution by sewage effluents. High levels can adversely affect fish.
Biochemical Oxygen Demand (BOD)	A measure of polluting potential - BOD is a measure of the amount of oxygen required by bacteria or algae to break down the organic biodegradable material in sewage or effluent.
Combined Sewer Overflow (CSO)	Channels which act as sewers during normal flow conditions. Under high flow conditions, such as during or after storms, these channels can either direct increased flows to storm-water storage tanks to prevent sewage treatment works being overloaded or to allow storm waste water to flow into surface waters.
Discharge Standard	A standard issued by EHS to permit discharge of effluent to a water body. The standards lay down conditions in order to minimise effects on the receiving water. Registered standards usually specify the location of the discharge and the total volume of effluent permitted together with the appropriate quality conditions, such as the effluent's biochemical demand and where relevant may include suspended solids, ammonia, metals or certain toxic substances.
Effluent	Discharge from a sewage or water treatment works.
Eutrophic	Waters which have been affected by eutrophication.
Eutrophication	Enrichment of waters through the presence of nutrients, especially nitrogen and/or phosphorus compounds, causing accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned.
mg/l	milligrams per litre - a measure of the concentration of a substance in liquid.
Outfall	Sewage discharge point - the structure or pipe that conveys the effluent to the receiving water for discharge.
Percentile Limit	A numeric limit that must be achieved or bettered for at least some stated percentage of time over a specified assessment period. A 95-percentile limit must be met for at least 95-percent of a specified time period, for example, 1 year (see Look-up table).
Population equivalent (PE)	A measure of the organic biodegradable load where a population equivalent (1PE) is equal to a biochemical oxygen demand of 60g of oxygen per day.
Preliminary treatment.	The most basic treatment that sewage can receive: employing screening to remove visible solids and grit removal.

Primary treatment	Treatment of sewage by a physical and/or chemical process involving the settlement of suspended solids, or other processes in which the biochemical oxygen demand of the incoming sewage is reduced by at least 20% before discharge, and total suspended solids of the incoming sewage are reduced by at least 50%.
Public Register	Record of consents and analysis of effluents and waters that are available for inspection by any member of the public. The Register can be viewed at Calvert House, Belfast.
Receiving Water	Body of water receiving effluent.
Secondary Treatment	A higher level of treatment (than provided by primary treatment) of sewage by a process generally involving a biological process followed by clarification or other process, in which the UWWT Directive's treatment standards for biochemical oxygen demand, chemical oxygen demand and suspended solids are respected. Secondary treatment is the normal standard for treatment of discharges under the Regulations.
Sewage Treatment Works / Waste Water Treatment Works	Plant where sewage/waste water is received for treatment.
Sewage (or urban waste water)	Generally a mixture of domestic waste water (from toilets, baths, sinks, and washing machines) with industrial waste water and/or run-off.
Sewage or sewerage collection system	A system of pipes and ducting which collects and transports sewage.
Suspended Solids	Solid matter, including food waste, faeces, condoms and sanitary items found in sewage that can be removed by settlement.
Tertiary or "more stringent" treatment.	A further level of treatment to secondary, involving the removal of specific polluting matter such as: nutrients (nitrogen and/or phosphorus), micro-organisms or toxic substances.
Treatment levels	Sewage is treated to various levels: they are: preliminary, primary, secondary and tertiary. Each level of treatment following preliminary treatment builds on the previous treatment level.
UKAS	United Kingdom Accreditation Service. An accreditation body that ensures that quality standards are met for both analysis and measurement.
Upper Tier Standard	An absolute limit, generally a multiple of the 95-percentile limit, that may be included with the 95-percentile in the discharge standard for sewage treatment works.
Water Treatment Works (WTW)	Plant where a natural water source is treated to provide drinking water for domestic consumption.

References:

Regulation of Water Service Discharges 2001 Report.

The Urban Waste Water Treatment Regulations (Northern Ireland) 1995. Working Document for Dischargers and Regulator. (August 1999)

Regulatory Policy Document for Regulating Water Service. (EHS 2000)

Water Service Business Plan 1998-99.

Water Service Business Plan 1999-2000.

Water Service, Delivering 25 years of service. 1973-1998.

Water Service Corporate/Business Plan 2000-2005

Water Service Corporate/Business Plan 2001-2005.

Water Quality Standards. Investment priorities for Scotland's Water Authorities 2000-2002.

DOE One World Information Sheet. Sewage Collection, Treatment and Disposal in the United Kingdom. (1996).

Sewage Treatment in the UK, UK Implementation of the EC Urban Waste Water Treatment Directive. DEFRA (2002).

Managing the Water Environment in Northern Ireland 2000. EHS 2002.

Water Reform Northern Ireland - The Reform of Water and Sewerage Services in Northern Ireland, A Consultation Document. DRD, March 2003.



Our aim is to protect and conserve the natural and built environment and to promote its appreciation for the benefit of present and future generations.

E-mail: ehsinfo@doeni.gov.uk
Visit: www.ehsni.gov.uk



INVESTOR IN PEOPLE

Printed and Published by
Environment and Heritage Service
Publishing Unit 2003 04\04.05
ISBN 1-905127-08-1