2014 Northern Ireland Water Management Facts & Figures

2014 Northern Ireland
Water Management
Facts & Figures

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White Rocks

Water is an essential natural resource and plays a vital role in maintaining biodiversity, our health and social welfare and our economic development.

Our rivers, lakes, estuaries, seas and groundwater provide water to sustain many of our core social and economic activities, and also provide drinking water for our population. This publication provides a handy reference to the facts and figures on the condition of Northern Ireland's inland and marine waters, compliance with industrial and waste water discharge standards and pollution incident reporting.

Lough Erne

There are over 15,000km of rivers and streams in Northern Ireland, of which approximately one third are monitored annually. Monitoring is carried out routinely against national standards for the Water Framework Directive (WFD). Approaching a quarter (22 %) of monitored river water bodies are of at least a good standard.

Full details of classification are available at — www.doeni.gov.uk/niea/wfd

WFD requires NIEA and other government departments to protect the status of waters from deterioration and where practicable, to restore waters to good status.

The level of compliance for rivers designated as salmonid and cyprinid under the EC Freshwater Fish Directive has increased in 2012, with the designated salmonid river length falling to its lowest compliance failure level.

Lakes are a significant source of drinking water supplies. Lough Neagh and Upper and Lower Lough Erne make up over 90 % of the total area of lakes greater than 50 hectares in Northern Ireland. There are 21 lakes currently monitored in Northern Ireland, of which 3 achieved a good standard in 2012.

Groundwater is currently of a high quality, with 65 of Northern Ireland's 67 groundwater bodies at good status following Water Framework Directive quantitative and qualitative classification. Of all groundwater sites that were monitored for nitrate (NO_3) in 2012, 98 % had an

annual mean concentration of less than 25 mg NO_3/l. Effluent discharges to our water environment can affect its quality and come from many different sources such as commercial and industrial premises, wastewater and water treatment works and private dwellings.

These discharges are controlled by the Department of the Environment through the granting of consents and permits under the Water (NI) Order 1999 and the Pollution Prevention and Control Regulations (NI) 2003. Industrial discharge quality has improved in recent years, with compliance rates in 2012 of 79 % and 90 % for private sewage and trade effluent respectively.

Compliance of Waste Water Treatment Works against the numeric conditions of their Water Order (WO) consent is a key performance indicator (KPI) for the water utility sector and has continued to improve since 2007 having reached 93 % in 2011 and remained at that level in 2012. Drinking water quality compliance remains at over 99 %.

Water pollution incidents are investigated by NIEA. In 2012, 1,986 incidents were reported to NIEA, of which 1,175 were substantiated as having an impact on the water quality of the receiving waterway. Of these 17 % were considered to be of high or medium severity. To facilitate the reporting of water pollution, NIEA operate the Water Pollution Hotline.

Bathing water quality is measured against mandatory and guideline standards. In 2013, all of the 23 beaches

monitored in Northern Ireland met the EC Bathing Water Directive mandatory standards. Overall status of marine water bodies is also measured, and this accounts for both the ecological and chemical status of each water body. Almost 80 % of marine water bodies around Northern Ireland's shores are classified as high or good, with the remaining water body areas being classified as moderate. Monitoring of shellfish waters also occurs, with a total of six out of nine designated shellfish waters complying with the guideline coliform standards in 2012. In recent years there have been no exceedances of any relevant Water Framework Directive environmental quality standards.

Glenarm

Fishing in the River Roe

Section 1

River Quality

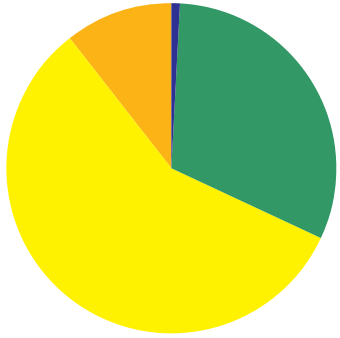
- The river water body classification has been produced using the results from WFD quality elements. Overall classification utilises a combination of biological, chemical and hydromorphological quality elements including macroinvertebrates, pH and ammonia to assign status of river quality in one of five classes from 'high' through to 'bad'.
- WFD requires NIEA to protect the status of water bodies from deterioration and, where necessary and practicable, to restore water bodies to good status.
- The environmental objectives established in the river basin plans set the water status to be achieved for surface water bodies for each six year planning cycle starting from 2009.
- In 2012, 22 % of NI river water bodies were classified as 'high' or 'good' quality, similar to the proportions in 2010 and 2011 (22 % and 23 % respectively).

Figure 1 (2012)

Water Framework Directive Overall Classification (% river water bodies)

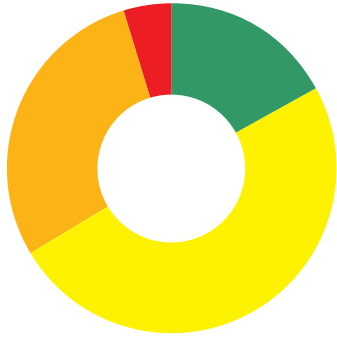
North West

- High - 1.0
- Good - 31.1
- Moderate - 57.4
- Poor - 10.5
- Bad - 0.0



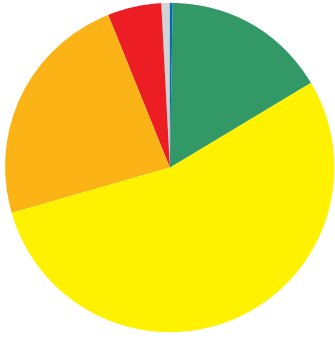
North East

- High - 0.0
- Good - 17.1
- Moderate - 49.5
- Poor - 28.8
- Bad - 4.5



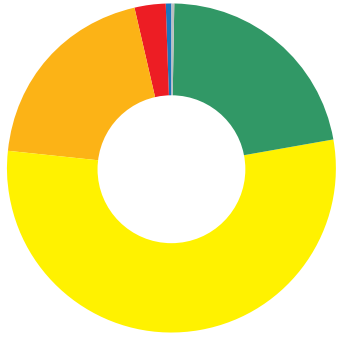
Neagh Bann

- High - 0.4
- Good - 16.1
- Moderate - 54.1
- Poor - 23.5
- Bad - 5.1
- No Data - 0.8



All Northern Ireland

- High - 0.5
- Good - 21.7
- Moderate - 54.4
- Poor - 19.8
- Bad - 3.1
- No Data - 0.3



River basins (or catchments) have been assigned to River Basin Districts (RBD) which serve as the administrative areas for coordinated water management.

Table 1

Water Framework Directive Overall Classification (River Water Bodies 2012)

	North West (% rwbs)			
	2009	2010	2011	2012
High	1.4	2.4	0.0	1.0
Good	34.4	28.7	30.1	31.1
Moderate	49.8	57.4	56.9	57.4
Poor	12.4	10.5	12.5	10.5
Bad	1.9	1.0	0.5	0.0
No Data	0.0	0.0	0.0	0.0

	North East (% rwbs)			
	2009	2010	2011	2012
High	1.8	1.8	0.0	0.0
Good	16.2	13.5	16.2	17.1
Moderate	47.7	47.7	43.2	49.5
Poor	27.0	30.6	35.2	28.8
Bad	7.2	6.3	5.4	4.5
No Data	0.0	0.0	0.0	0.0

	Neagh Bann (% rwbs)			
	2009	2010	2011	2012
High	0.4	1.6	0.8	0.4
Good	19.6	15.3	19.6	16.1
Moderate	39.6	44.7	46.7	54.1
Poor	33.7	32.2	26.6	23.5
Bad	6.3	5.5	5.5	5.1
No Data	0.4	0.8	0.8	0.8

	All Northern Ireland (% rwbs)			
	2009	2010	2011	2012
High	1.0	1.9	0.4	0.5
Good	24.3	19.8	22.8	21.7
Moderate	44.9	49.9	49.7	54.4
Poor	24.7	24.0	23.1	19.8
Bad	4.9	4.0	3.7	3.1
No Data	0.2	0.3	0.3	0.3

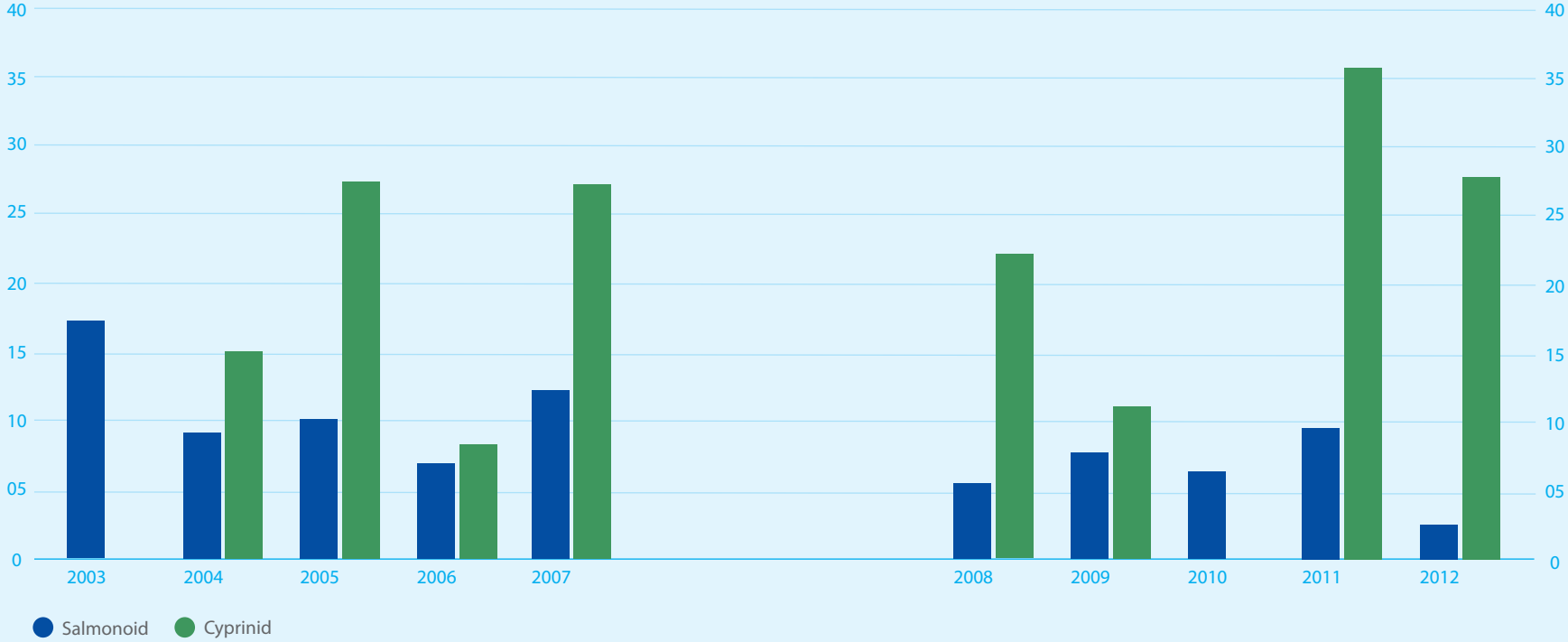
Annalong River & Slieve Lamagan

Section 2

Chemical River Quality

- The Freshwater Fish Directive requires the designation of waters needing protection or improvement in order to support fish life. They are divided into two categories: suitable for salmonids (salmon & trout) and suitable for cyprinids (coarse fish).
- The length of designated rivers in Northern Ireland increased from almost 1,200km in 2003 to just less than 4,300km in 2004. This is made up of 4,154km of salmonid rivers and 126km of cyprinid. These rivers are monitored and compliance is measured against water quality standards set by the Directive.
- The majority of cyprinid rivers were re-designated as salmonid at the start of 2004 and around 100km of new river lengths were designated as cyprinid. This led to an increase in the percentage failure recorded for cyprinids (although the overall river length of cyprinid designations is low).
- In 2012, 2.8 % of salmonid river length failed to meet the standards set by the Directive, compared to 9.4 % failure rate recorded in 2004 and 9.6 % failure rate in 2011. The standards set by the Directive were not met by 27.6 % of cyprinid river length in 2012 compared to the 15.1 % of river length failure recorded in 2004. However it should be noted that due to the overall river length of cyprinid designations being low a fail in a small length of cyprinid river could result in a large percentage fail being recorded.

Figure 2 Freshwater Fish Directive compliance failure summary (2003 - 2012)



% River Length

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Salmonid	17.9	9.4	10.1	7.6	13.2	5.7	7.7	6.3	9.6	2.8
Cyprinid	0.0	15.1	27.0	8.0	27.0	22.0	12.7	0.0	36.7	27.6

Lower Lough Erne

Section 3

Lake Quality

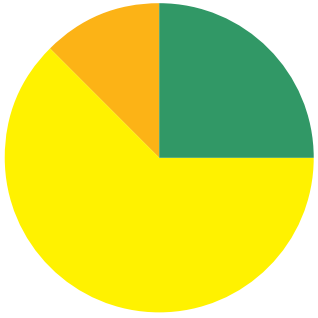
- The Water Framework Directive requires NIEA to classify the 'surface water status' of Northern Ireland's lake water bodies.
- There are 21 lake water bodies in Northern Ireland, that is lakes with an area of greater than 50 ha.
- There are five classes for ecological status; 'high', 'good', 'moderate', 'poor' and 'bad'. Overall ecological staus of a water body is determined by the lower of a water body's 'ecological status' and its 'chemical status'. Status is based on a number of parameters including macrophytes, photoplankton, phytobenthos, total phosphorus, chlorophyll and dissolved oxygen.
- In 2012, three of the 21 lake water bodies in Northern Ireland are classified as 'good' status and 18 lake water bodies are classified as less than 'good' status. In 2011, two more lake water bodies were classified as 'good' than in 2012; however, one more lake water body was classified as 'poor' in 2011 than in 2012. These year on year changes, between 2011 and 2012, are reflected by an increase in water bodies classified as 'moderate'.

Figure 3 (2012)

Water Framework Directive Overall
Classification (Number of Lake Water Bodies)

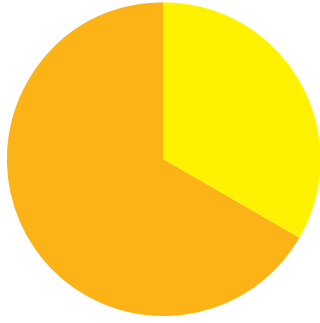
North West

- High - 0
- Good - 2
- Moderate - 5
- Poor - 1
- Bad - 0



North East

- High - 0
- Good - 0
- Moderate - 1
- Poor - 2
- Bad - 0



Neagh Bann

- High - 0
- Good - 1
- Moderate - 3
- Poor - 3
- Bad - 3

All Northern Ireland

- High - 0
- Good - 3
- Moderate - 9
- Poor - 6
- Bad - 3

Table 3

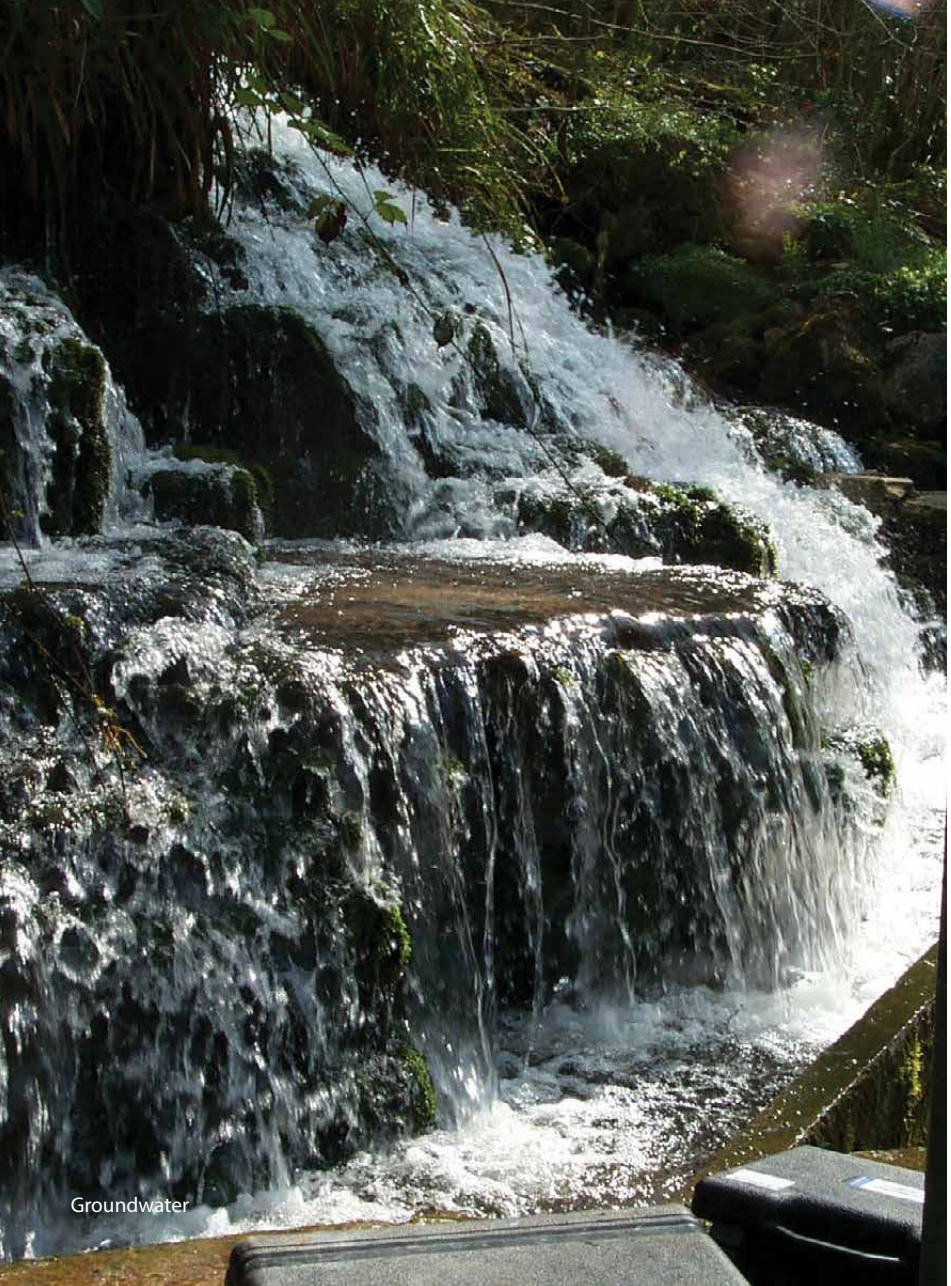
Water Framework Directive Overall Classification (Lake Water Bodies 2012)

	North West
	Number of Lake Water Bodies
	2012
High	0
Good	2
Moderate	5
Poor	1
Bad	0

	Neagh Bann
	Number of Lake Water Bodies
	2012
High	0
Good	1
Moderate	3
Poor	3
Bad	3

	North East
	Number of Lake Water Bodies
	2012
High	0
Good	0
Moderate	1
Poor	2
Bad	0

	All Northern Ireland
	Number of Lake Water Bodies
	2012
High	0
Good	3
Moderate	9
Poor	6
Bad	3



Groundwater

Section 4

Groundwater Quality

- Regional monitoring of nitrate concentrations in groundwater across Northern Ireland began in 2000. The Groundwater Daughter Directive (2006/118/EC) sets the groundwater quality standard at 50 mg NO_3/l. In the period of 2000 to 2006 approximately 90 % of sites had an annual mean concentration of less than 40 mg NO_3/l and approximately 81 % were less than 25 mg NO_3/l.
- Regional monitoring re-commenced in 2008, after a major review of the network was undertaken.
- Sixty-five out of sixty-seven groundwater bodies are considered to be at good status by WFD classification. Ninety-eight percent of all station monitored in 2012 had an annual mean concentration of less than 25 mg NO_3/l. While overall the average nitrate concentration is decreasing in Northern Ireland there are monitoring stations that show an increased trend in nitrate concentrations. The average phosphates concentration (total phosphates) in 2012 was 0.07 mg/l.

Drilling a Groundwater Monitoring Borehole

Figure 4 (2001 — 2012)

Annual mean nitrate concentrations

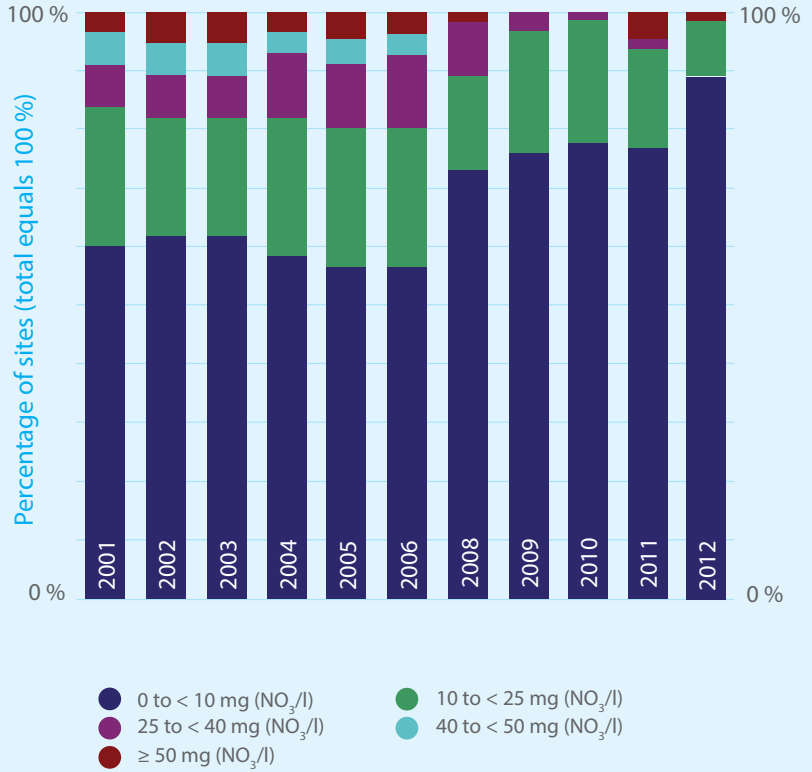


Table 4

Annual mean nitrate concentrations (NO_3/l)

	2001	2002	2003	2004	2005	2006	2008	2009	2010	2011	2012
0 to <10 mg NO_3/l	60.0	61.8	61.8	58.2	56.4	56.4	73.0	75.9	77.4	76.9	89.1
10 to <25 mg NO_3/l	23.6	20.0	20.0	23.6	23.6	23.6	15.9	20.7	20.8	17.3	9.1
25 to <40 mg NO_3/l	7.3	7.3	7.3	10.9	10.9	12.7	9.5	3.4	1.9	1.9	0.0
40 to <50 mg NO_3/l	5.5	5.5	5.5	3.6	3.6	3.6	1.6	0.0	0.0	0.0	0.0
≥50 mg NO_3/l	3.6	5.5	5.5	3.6	3.6	3.6	0.0	0.0	0.0	3.8	1.8

Downpatrick

Whiterocks

Section 5

Marine

This section looks at the quality of Northern Ireland's bathing water, coastal water and shellfish water quality.

- Bathing water quality is measured against mandatory and guideline standards. In 2013, all of the beaches monitored in Northern Ireland met the EC Bathing Water Directive mandatory standards.
- Overall status of marine water bodies is also measured, and this accounts for both the ecological and chemical status of each water body . Almost 80 % of marine water bodies around Northern Ireland's shores are classified as high or good, with the remaining areas being classified as moderate.
- Monitoring of shellfish waters also occurs, with a total of six out of nine designated shellfish waters meeting the guideline standards. In recent years there have been no exceedences of any relevant Water Framework Directive environmental quality standards.

Section 5.1

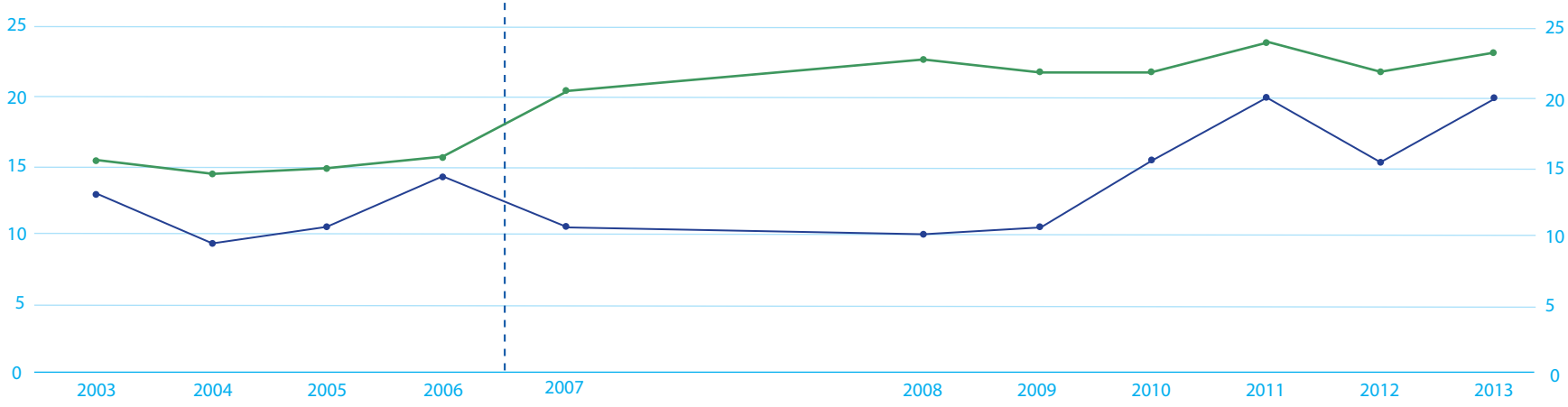
Bathing Water Quality

- The Bathing Waters Directive mandatory standard requires that 95 % of samples collected throughout the bathing season must not exceed the limits set for total and faecal coliforms which are 10,000 and 2,000 colony forming units (cfu)/100ml respectively.
- To comply with guideline values, 80 % of samples should not exceed 500 cfu/100ml for total coliforms and 100 cfu/100ml for faecal coliforms, and 90 % of samples must not exceed 100 cfu/100ml for faecal streptococci.
- As part of the transition to the standards of the 2006 revised Bathing Waters Directive, Escherichia coli and intestinal enterococci are now measured instead of faecal coliforms and faecal streptococci. By UK agreement these have been used from the 2012 annual classification onwards.
- Up until 2006, there were 16 identified bathing waters in Northern Ireland. This increased to 23 in 2007 and to 24 in 2008 but was reduced to 23 in 2012.

- In 2013, all of the 23 beaches monitored in Northern Ireland met the mandatory standards, while 20 achieved the higher guideline standards, an improvement compared to the 2012 figure of 22 beaches meeting the mandatory standards and 16 of the 23 beaches meeting the higher standards.

Figure 5.1 (2003 - 2013)

Bathing water compliance for microbial standards of EC Bathing Water Directive



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mandatory Compliance	16	14	15	16	21	23	22	22	24	22	23
Guideline Compliance	13	9	11	14	11	10	11	16	20	16	20

Note: Up until 2006, there were 16 identified bathing waters in Northern Ireland.
This increased to 23 in 2007 and to 24 in 2008 but was reduced to 23 in 2012.

Section 5.2

Marine Water Quality

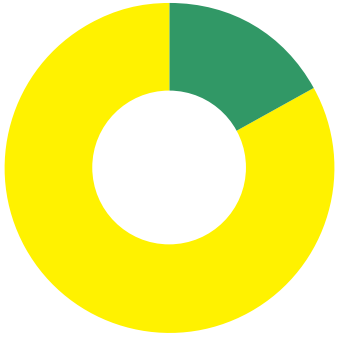
- The Water Framework Directive requires DOE Marine Division and other government departments to protect the status of waters from deterioration and where practicable, to restore waters to good status. For the first round of Classification (2009-2015) DOE Marine Division will classify down to moderate status only, until sufficient monitoring data is collected and assessed against Water Framework Directive tools to ensure confidence in classification. DOE Marine Division classifies marine water bodies according to their ecological status.
- In 2013, 6 % of transitional and coastal water bodies were classified at high status, 73 % at good status and the remaining 21 % at moderate status. The comparable figures for 2012 were 6 %, 79 % and 15 % respectively.
- In measuring water status in transitional and coastal waters, DOE Marine Division considers water chemistry, plant life and sediment dwelling animals. Fish are also considered in transitional waters. Surface water status is determined by the lowest classification of any of the elements above.
- The main factors driving classification in Northern Ireland coastal waters are dissolved inorganic nitrogen (DIN) and Marine plants status. In transitional waters the most important elements in determining status are DIN and dissolved oxygen (DO).
  Full details of classification are available at www.doeni.gov.uk/niea/water-home/wfd.htm

Figure 5.2 (2013)

Water Framework Directive Overall Classification
(transitional and coastal waters — % marine water body area)

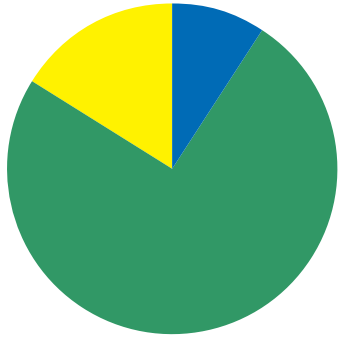
North West

- Good - 17.0
- Moderate - 83.0



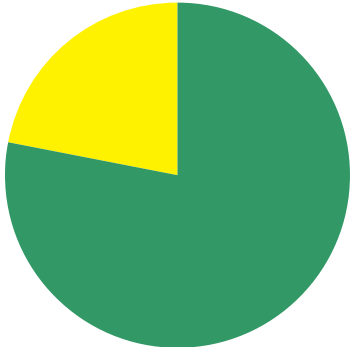
North East

- High - 9.4
- Good - 74.6
- Moderate - 16.0



Neagh Bann

- Good - 78.2
- Moderate - 21.8



Annual updates are produced by DOE Marine division for internal review and to inform progress. Formal reporting of status is required by 2015.

All Northern Ireland

- High - 6.0
- Good - 73.0
- Moderate - 21.0

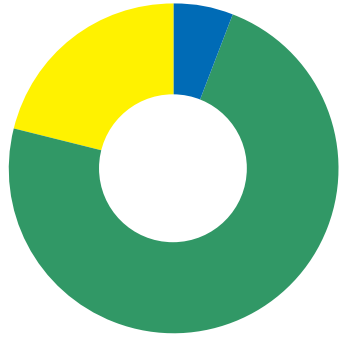


Table 5.2 (2012)

Water Framework Directive Overall Classification
(transitional and coastal waters — % marine water body area)

	North West	
	2012	2013
High	0.0	0.0
Good	82.5	17.0
Moderate	17.5	83.0

	North East	
	2012	2013
High	23.6	9.4
Good	70.1	74.6
Moderate	6.3	16.0

	Neagh Bann	
	2012	2013
High	0.0	0.0
Good	72.1	78.2
Moderate	27.9	21.8

	All Northern Ireland	
	2012	2013
High	17.1	6.0
Good	72.2	73.0
Moderate	10.7	21.0

Northern Ireland figures for 2012 amended from previously published figures because updates will fluctuate until the formal 2015 report to Europe.

Whitepark Bay

Section 5.3

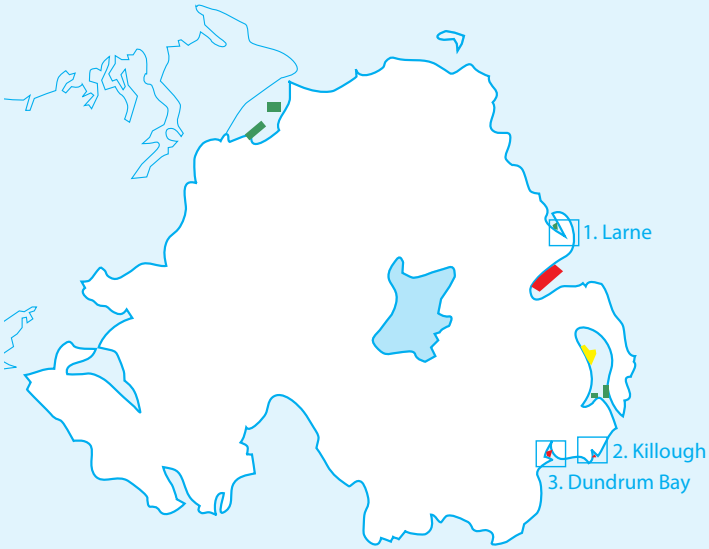
Shellfish Waters

- A total of 10 Shellfish Waters are designated under the Shellfish Waters Directive. These are located within Lough Foyle, Larne Lough, Belfast Lough, Strangford Lough, Killough Harbour, Dundrum Bay and Carlingford Lough. Shellfish Waters are considered as protected areas under the Water Framework Directive. One designated shellfish water in Strangford Lough (Reagh Bay/Paddy's Point) is not currently in production; therefore compliance data for 2012 are not available.
- NIEA and DOE Marine Division manage Shellfish Waters to ensure no deterioration and steady progress towards compliance with the guideline standards.
- A total of six out of nine designated shellfish waters complied with the guideline standard for coliform standards in 2012.
- Compliance with the guideline standards is determined by measuring in shellfish flesh. Faecal indicators and some dangerous substances such as heavy metals and organochlorine compounds are measured. There were no exceedences of the dangerous substances standards.
- From January 2014, the Shellfish Waters Directive will be subsumed into the Water Framework Directive. Relevant shellfish waters contaminants will be monitored under Water Framework Directive Annex VIII and Annex X specific pollutants and priority hazardous substances. In recent years there have been no exceedences of any relevant Water Framework Directive environmental quality standards.
- Once shellfish are harvested, they are categorised by the Food Standards Agency before being placed on the market for public consumption. This process ensures that the purification of shellfish is sufficient to protect public health.
- NIEA and DOE Marine Division work closely with the Food Standards Agency and the Department of Agriculture and Rural Development in managing shellfisheries from both an environmental and public health perspective.

Mussels

Figure 5.3 (2012)

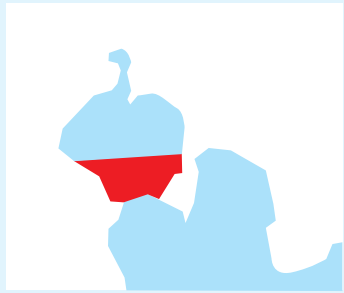
Compliance with more stringent guideline faecal coliform standard in shellfish waters



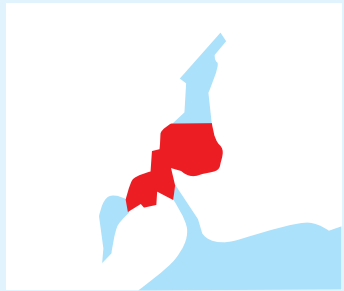
Compliance with Guideline Standards

- Complied
- Non Compliant
- Not in Production

1. Larne



2. Killough



3. Dundrum Bay

Harbour

Section 6

Industrial Discharge Quality

- The monitoring of effluent discharges gives an indication of levels of pollution to the water environment and improvements in controls.
- Numerical limits on Water Order consents for private sewage and trade discharges are set as absolute standards. However, compliance is assessed on a 95-percentile basis, i.e. a discharge must be within its consent conditions 95 % of the time to comply.
- Compliance for private sewage has remained fairly stable at 79 % in 2012 (78 % in 2011).
- For trade effluent compliance there has been an increase from 76 % in 2001 to 91 % in 2010, and remained at around this level until the latest year (90 % in 2012).

Figure 6 (2001 - 2012)

Trends in annual private and trade discharge consent compliance (EA 95-percentile)

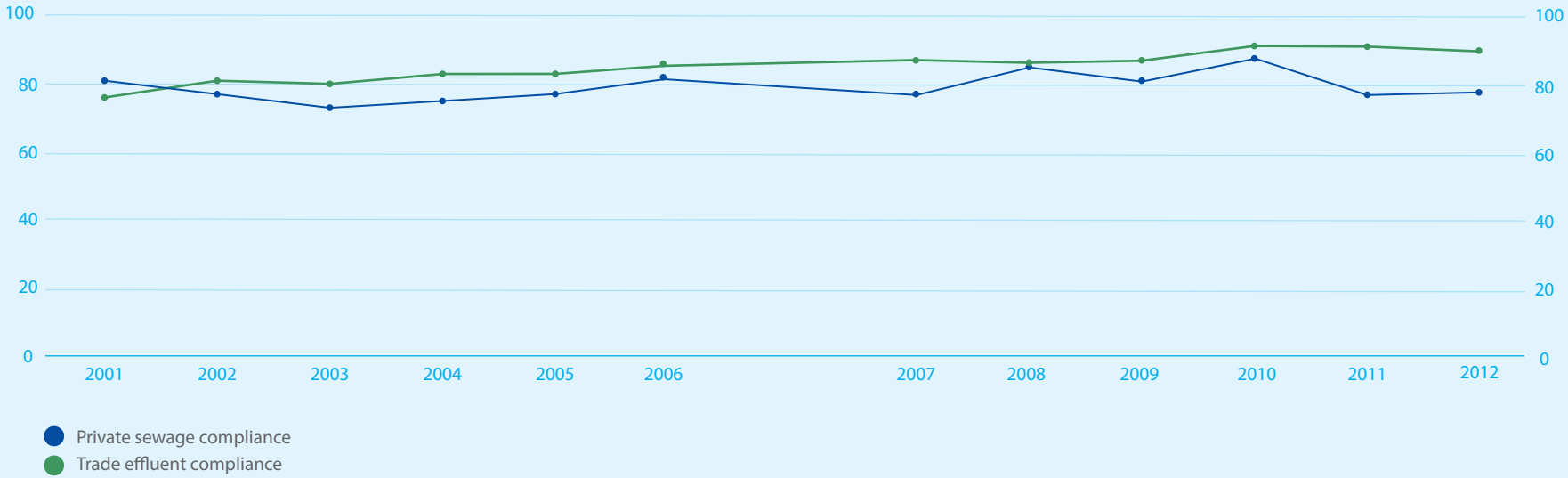


Table 6 (2001 - 2012)

Trends in annual private and trade discharge consent compliance (EA 95-percentile)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Private sewage compliance	81	77	73	75	77	82	77	86	82	88	78	79
Trade effluent compliance	76	81	80	83	84	87	88	87	88	91	91	90

Coastline at Kinbane

Monawilkin

Section 7

Water Utility Discharge Quality

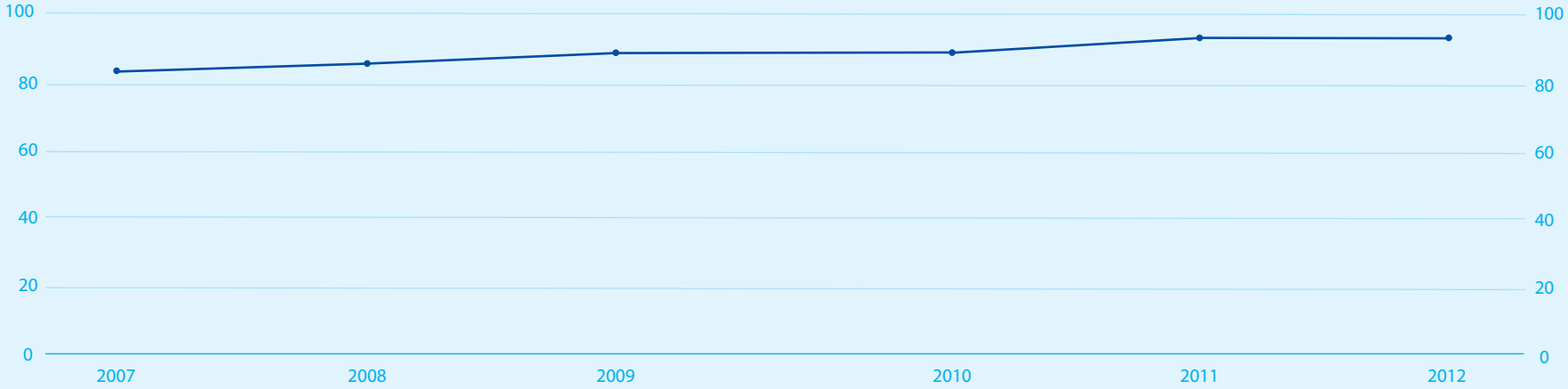
- NIEA monitors the compliance of Water Utility discharges from Waste Water Treatment Works (WWTW) and Water Treatment Works (WTW). Compliance assessment includes discharges from both Northern Ireland Water (NIW) and the Private Public Partnership schemes. Prior to April 2007, NIW was known as the Water Service and compliance was assessed against registered standards. On the 1 April 2007, NIW was for the first time required to have consents issued under The Water (NI) Order 1999 in respect of all discharges. These consent conditions take into account the requirements of the Urban Waste Water Treatment (UWWT) Regulations. Some WWTW have been identified as discharging to sensitive areas and their effluent will require more stringent treatment.
- There has been a change in how compliance of water utility sector WWTW is assessed. As a result, the compliance levels will differ from previously published figures.
- Compliance levels fell to 58 % in 2001. This decrease can be explained by an increase in the number of sites between 2000 and 2001. In 2000, there were 160 sites, but the following year there were 268. This was due to the addition of those works to the public register with population equivalent down to 250.

Silent Valley Reservoir

- In 2012, NI Water compliance was assessed against numeric standards set for discharges from 237 WWTWs, serving a population equivalent to or greater than 250. In addition numeric compliance was also assessed for 6 WWTWs operated under Public Private Partnership contracts.
- Compliance of WWTW against the numeric conditions of the Water Order consent was introduced in 2007. This is a key performance indicator for the water utility sector and has continued to improve since 2007, having reached 93 % in 2011 and remained at that level in 2012.

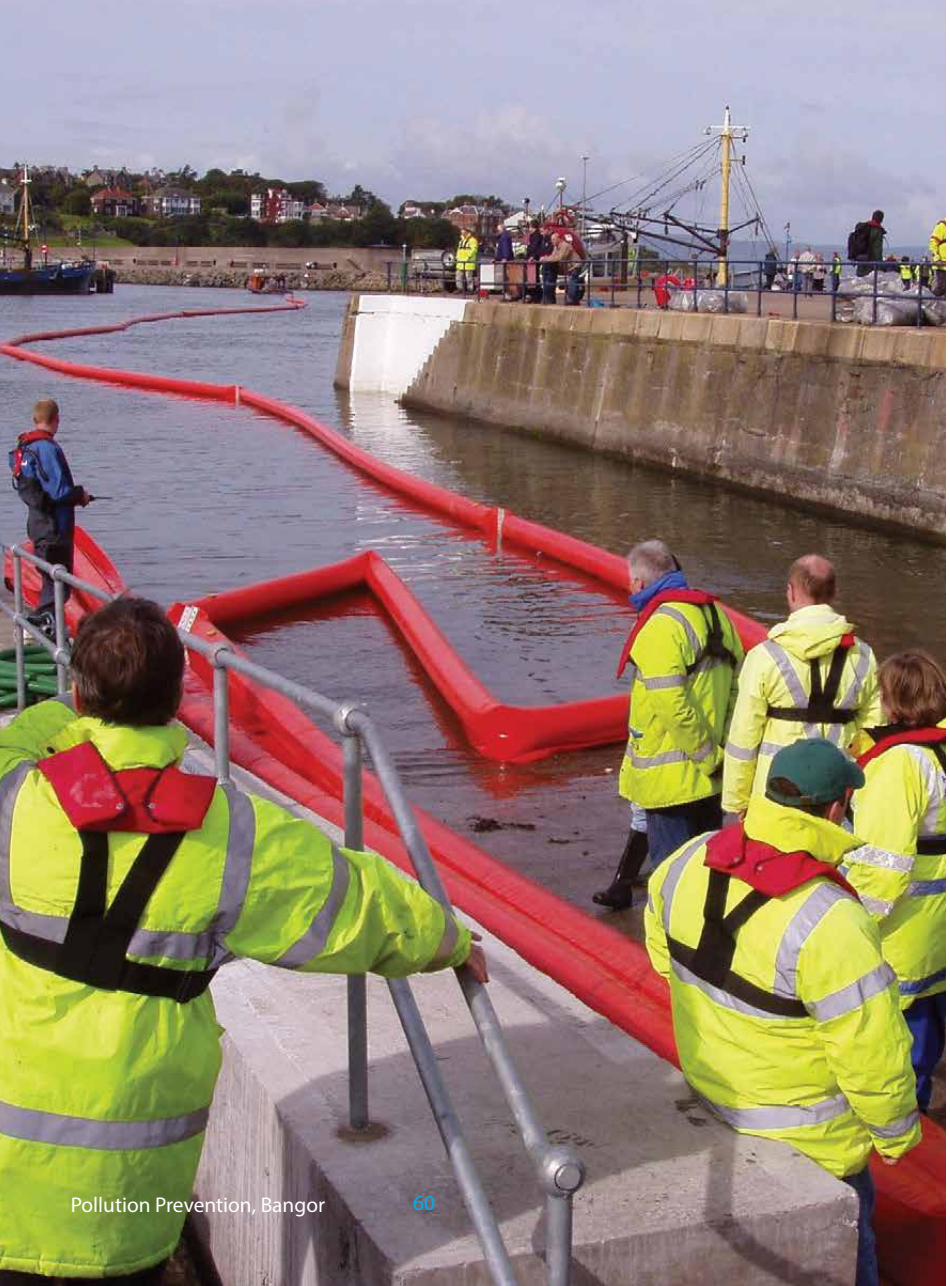
Figure 7 (2007 - 2012)

Compliance of water utility discharges (95-percentile)



	2007	2008	2009	2010	2011	2012
Overall compliance with WWTW discharge standards	84	86	87	89	93	93

Note: Change in methodology from previously published figures



Pollution Prevention, Bangor

Section 8

Water Pollution Incidents

- Water pollution incidents are investigated by NIEA. In 2012 there were 1,986 incidents reported to NIEA, of which 1,175 (59 %) were substantiated as having an impact on the water quality of the receiving waterway.
- Pollution incidents are then classified according to their severity:

  High - major pollution incident
  Medium - significant pollution incident
  Low - minor pollution incident

- In 2012, farming accounted for the largest proportion of substantiated incidences investigated by NIEA (32.3 %), followed by Domestic (18.2 %), Industry (16.9 %) and Northern Ireland Water (15.4 %). NIEA field based activities, proactive work in catchment areas and educational programmes have contributed to the decline in the number of substantiated water pollution incidents since the mid 1990s.
- A significant number of water pollution incidents attributed to Northern Ireland Water each year relate to blockages caused by inappropriate items such as baby wipes and sanitary items being flushed down the toilet rather than being put in the bin.

Figure 8 (2001 — 2012)

Severity of substantiated water pollution incidents

Table 8

Severity of substantiated water pollution incidents

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
High	49	24	42	23	20	23	22	20	9	7	16	7
Medium	306	256	297	286	200	168	204	229	195	229	234	198
Low	1206	1237	1213	918	954	942	1066	988	1044	1001	1053	970
Total	1561	1517	1552	1227	174	1133	1292	1237	1248	1237	1303	1175

Camlough

Water Pollution Hotline

In the event of urgent water pollution incidents, members of the public are advised to call the hotline number below and report such incidents.

***Freephone 0800 80 70 60**

This is manned 24 hours a day, 7 days a week
*Mobile calls are charged at standard network rates.

Photographers
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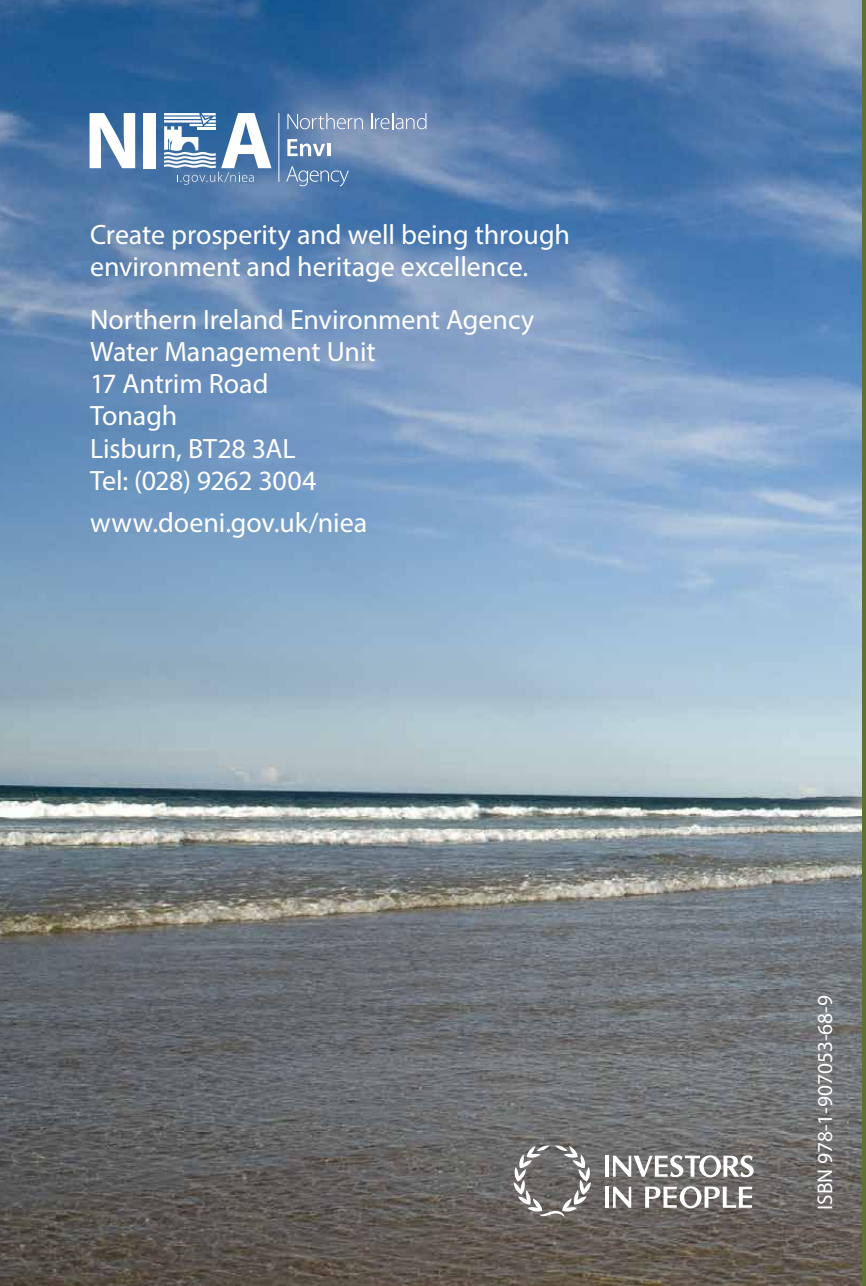

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