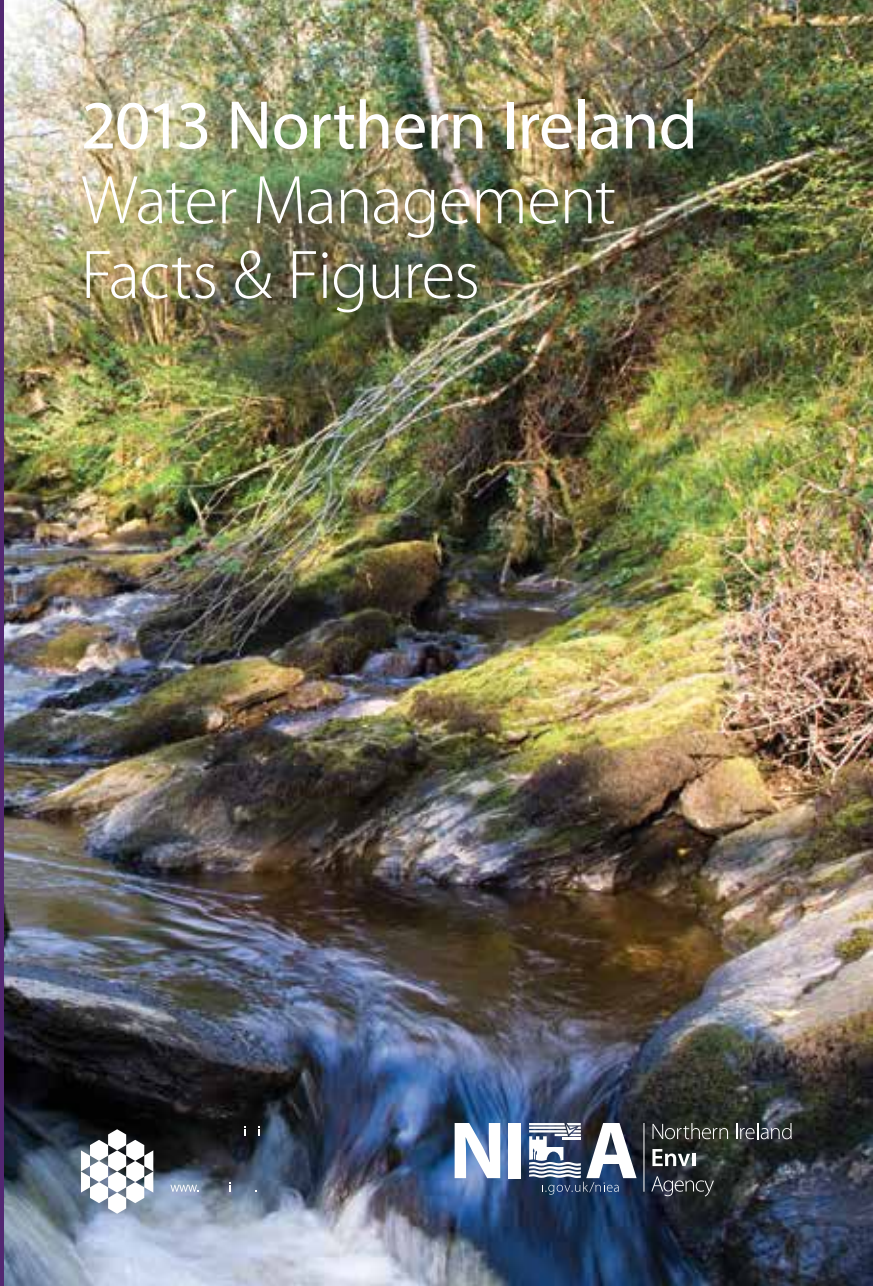
2013 Northern Ireland Water Management Facts & Figures



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Contents

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

White Rocks

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 (23 %) 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 decreased in 2011, with the designated cyprinid river length falling to its lowest compliance 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 5 achieved a good standard in 2011.

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 2011, 96 % had an annual mean concentration of less than 40mg 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 2011 of 78 % and 91 % 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. Drinking water quality remains at the highest level of compliance since 2004, at 99.8 %.

Water pollution incidents are investigated by NIEA. In 2011, 2,123 incidents were reported to NIEA, of which 1,303 were substantiated as having an impact on the water quality of the receiving waterway. Of these 19 % 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 2012, 22 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 90 % 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 all ten designated shellfish waters meeting the mandatory standards. There were no exceedances of the dangerous substances standards in 2011.

Glenarm

Fishing in the River Roe

Section 1

River Quality

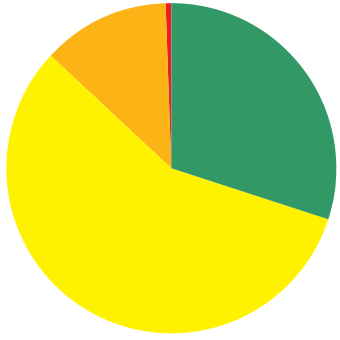
- The river water body classification has been produced using the results from WFD quality elements. Overall classification utilises a combination of biological, chemical and hydromorphological quality elements including macroinvertebrates, pH and ammonia to assign status of river quality in one of five 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 2011, 23 % of river water bodies were classified as 'high' or 'good'. The figures for 2009 and 2010 were 25 % and 22 % respectively.

Figure 1 (2011)

Water Framework Directive Overall Classification (% river water bodies)

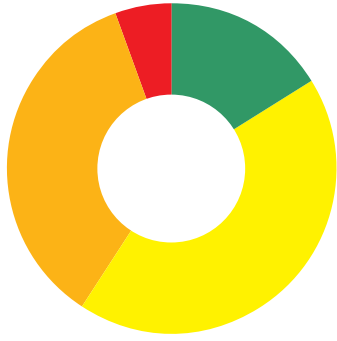
North West

- High - 0
- Good - 30.1
- Moderate - 56.9
- Poor - 12.5
- Bad - 0.5



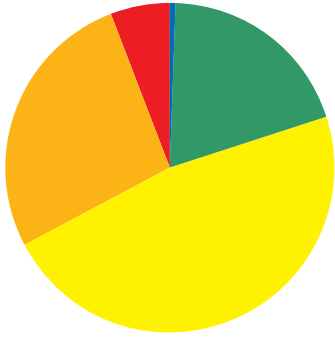
North East

- High - 0
- Good - 16.2
- Moderate - 43.2
- Poor - 35.2
- Bad - 5.4



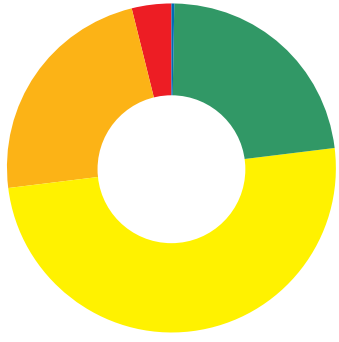
Neagh Bann

- High - 0.8
- Good - 19.6
- Moderate - 46.7
- Poor - 26.6
- Bad - 5.5



All Northern Ireland

- High - 0.4
- Good - 22.8
- Moderate - 49.7
- Poor - 23.1
- Bad - 3.7



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 2011)

	North West (% rwbs)			
	2008	2009	2010	2011
High	0.5	1.4	2.4	0.0
Good	31.1	34.4	28.7	30.1
Moderate	52.6	49.8	57.4	56.9
Poor	15.8	12.4	10.5	12.5
Bad	0.0	1.9	1.0	0.5
No Data	0.0	0.0	0.0	0.0

	North East (% rwbs)			
	2008	2009	2010	2011
High	0.0	1.8	1.8	0.0
Good	14.4	16.2	13.5	16.2
Moderate	52.3	47.7	47.7	43.2
Poor	25.2	27.0	30.6	35.2
Bad	8.1	7.2	6.3	5.4
No Data	0.0	0.0	0.0	0.0

	Neagh Bann (% rwbs)			
	2008	2009	2010	2011
High	0.4	0.4	1.6	0.8
Good	15.7	19.6	15.3	19.6
Moderate	44.7	39.6	44.7	46.7
Poor	34.1	33.7	32.2	26.6
Bad	4.7	6.3	5.5	5.5
No Data	0.4	0.4	0.8	0.8

	All Northern Ireland (% rwbs)			
	2008	2009	2010	2011
High	0.3	1.0	1.9	0.4
Good	21.0	24.3	19.8	22.8
Moderate	49.0	44.9	49.9	49.7
Poor	25.7	24.7	24.0	23.1
Bad	3.7	4.9	4.0	3.7
No Data	0.2	0.2	0.3	0.3

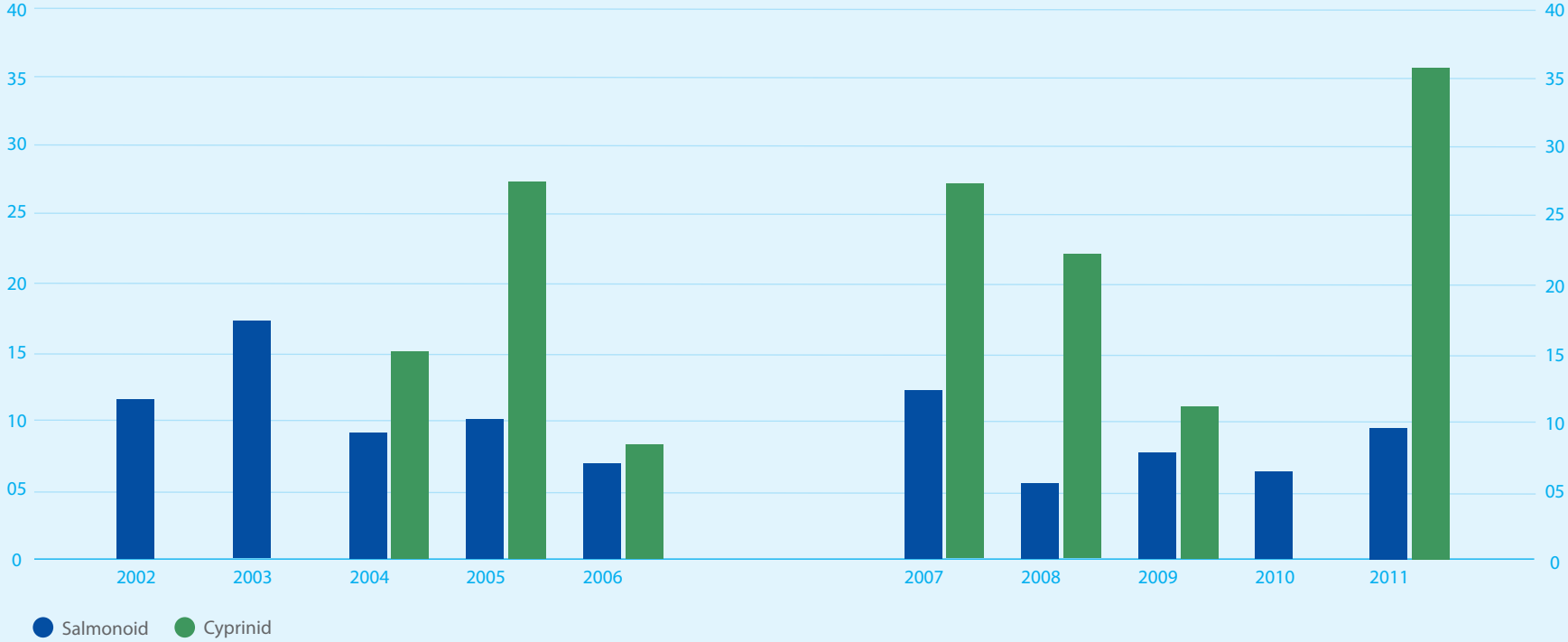
Annalong River & Slieve Lamagan

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 2011, 9.6 % of salmonid river length failed to meet the standards set by the Directive, compared to 9.4 % failure rate recorded in 2004. The standards set by the Directive were not met by 36.7 % of cyprinid river length in 2011 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 (2001 - 2011)



% River Length

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Salmonid	11.8	17.9	9.4	10.1	7.6	13.2	5.7	7.7	6.3	9.6
Cyprinid	0.0	0.0	15.1	27.0	8.0	27.0	22.0	12.7	0.0	36.7

Lower Lough Erne

Section 3

Lake Quality

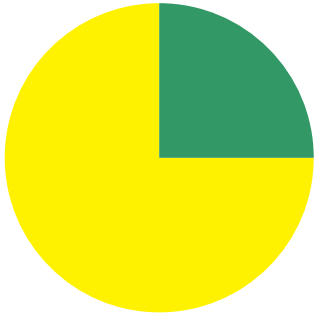
- The Water Framework Directive requires NIEA to classify the 'surface water status' of Northern Ireland's lake water bodies.
- There are 21 lake water bodies in Northern Ireland, that is lakes with an area of greater than 50 ha.
- There are five classes for ecological status; 'high', 'good', 'moderate', '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 2011, as in 2010, five of the 21 lake water bodies in Northern Ireland are classified as 'good' status and 16 lake water bodies are classified as less than 'good status'.

Figure 3 (2011)

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

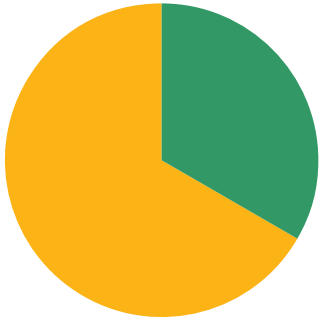
North West

- High - 0
- Good - 2
- Moderate - 6
- Poor - 0
- Bad - 0



North East

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



Neagh Bann

- High - 0
- Good - 2
- Moderate - 0
- Poor - 5
- Bad - 3

All Northern Ireland

- High - 0
- Good - 5
- Moderate - 6
- Poor - 7
- Bad - 3

Table 3

Water Framework Directive Overall Classification (Lake Water Bodies 2011)

	North West
	Number of Lake Water Bodies
	2011
High	0
Good	2
Moderate	6
Poor	0
Bad	0

	Neagh Bann
	Number of Lake Water Bodies
	2011
High	0
Good	2
Moderate	0
Poor	5
Bad	3

	North East
	Number of Lake Water Bodies
	2011
High	0
Good	1
Moderate	0
Poor	2
Bad	0

	All Northern Ireland
	Number of Lake Water Bodies
	2011
High	0
Good	5
Moderate	6
Poor	7
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. The review ensured that the groundwater monitoring network was fit-for-purpose for the requirements of the Water Framework Directive (2000/60/EC). The related Groundwater Daughter Directive (2006/118/EC) sets the groundwater quality standard at 50 mg NO_3/l. 65 out of 67 groundwater bodies are considered to be at good status by WFD classification.
- 52 sites were monitored in 2011, 96 % of which had an annual mean concentration of less than 40 mg NO_3/l and 94 % were less than 25 mg NO_3/l.

Waterfall, Annalong River

Figure 4 (2000 — 2011)

Annual mean nitrate concentrations

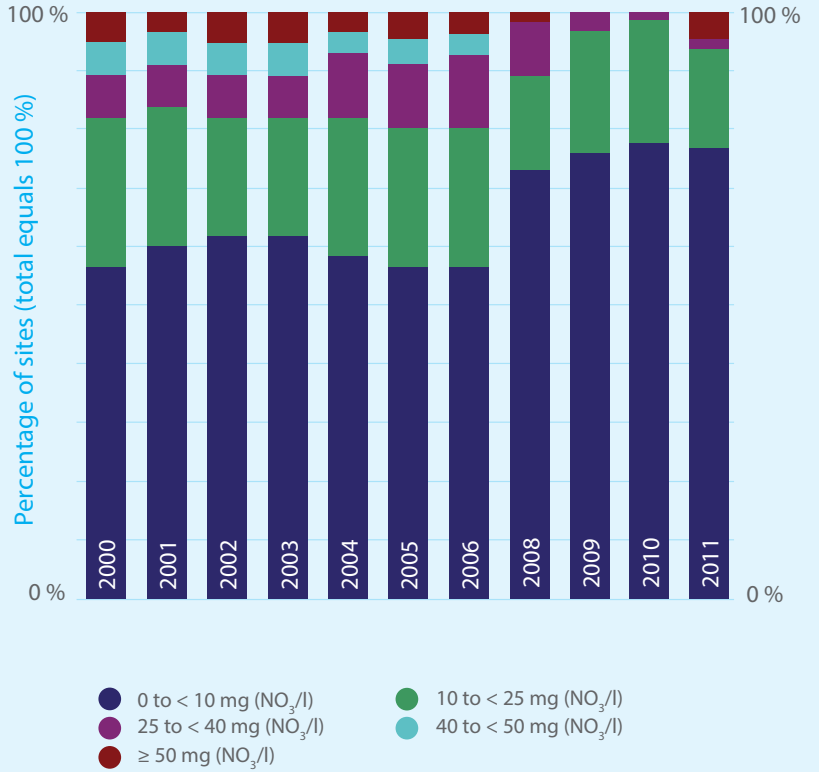


Table 4

Annual mean nitrate concentrations (NO_3/l)

	2000	2001	2002	2003	2004	2005	2006	2008	2009	2010	2011
0 to <10 mg NO_3/l	56.4	60.0	61.8	61.8	58.2	56.4	56.4	73.0	75.9	77.4	76.9
10 to <25 mg NO_3/l	25.5	23.6	20.0	20.0	23.6	23.6	23.6	15.9	20.7	20.8	17.3
25 to <40 mg NO_3/l	7.3	7.3	7.3	7.3	10.9	10.9	12.7	9.5	3.4	1.9	1.9
40 to <50 mg NO_3/l	5.5	5.5	5.5	5.5	3.6	3.6	3.6	1.6	0.0	0.0	0.0
≥50 mg NO_3/l	5.5	3.6	5.5	5.5	3.6	3.6	3.6	0.0	0.0	0.0	3.8

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 2012, 22 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 90 % 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 all ten designated shellfish waters meeting the guideline standards. There were no exceedances of the dangerous substances standards in 2011.

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 in the 2012 annual classification.
- Up until 2006, there were 16 identified bathing waters in Northern Ireland. This increased to 23 in 2007 and to 24 in 2008.

- In 2012, 22 of the 23 beaches monitored in Northern Ireland met the mandatory standards, while 16 achieved the higher guideline standards, compared to the 2011 figure of 20 of the 24 beaches meeting the higher standard.

Figure 5.1 (2002 - 2012)

Bathing water compliance for microbial standards of EC Bathing Water Directive

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mandatory Compliance	15	16	14	15	16	21	23	22	22	24	22
Guideline Compliance	7	13	9	11	14	11	10	11	16	20	16

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

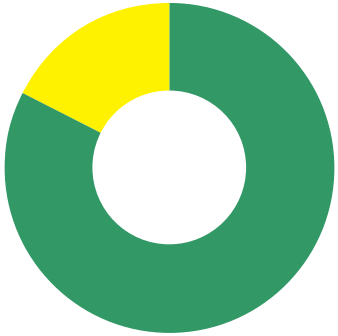
- The Water Framework Directive requires DOE Marine Division and other government departments to protect the status of waters from deterioration and where practicable, to restore waters to good status. For the first round of Classification (2009-2015) DOE Marine Division will classify down to moderate 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 2012, 17 % of transitional and coastal water bodies were classified at high status, 72 % at good status and the remaining 11 % at moderate status. The comparable figures for 2011 were 17 %, 31 % and 52 % 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 (2012)

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

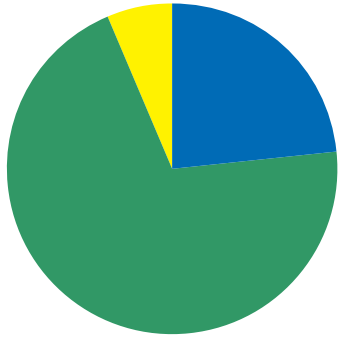
North West

- Good - 82.5
- Moderate - 17.5



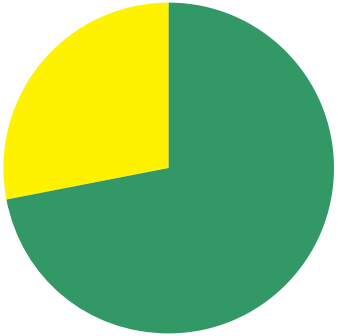
North East

- High - 23.6
- Good - 70.1
- Moderate - 6.3



Neagh Bann

- Good - 72.1
- Moderate - 27.9



All Northern Ireland

- High - 17.1
- Good - 72.2
- Moderate - 10.7

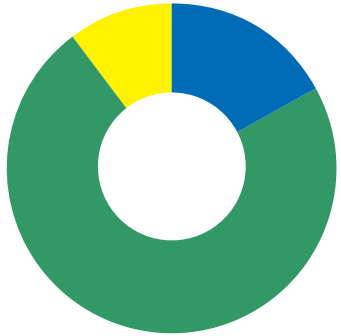


Table 5.2 (2012)

Water Framework Directive overall status in transitional and coastal waters (% marine water body area)

	North West	
	2011	2012
High	0.0	0.0
Good	0.0	82.5
Moderate	100.0	17.5

	North East	
	2011	2012
High	23.6	23.6
Good	29.9	70.1
Moderate	46.5	6.3

	Neagh Bann	
	2011	2012
High	0.0	0
Good	72.1	72.1
Moderate	27.9	27.9

	All Northern Ireland	
	2011	2012
High	17.1	17.1
Good	30.9	72.2
Moderate	52.3	10.7

Whitepark Bay

Section 5.3

Shellfish Waters

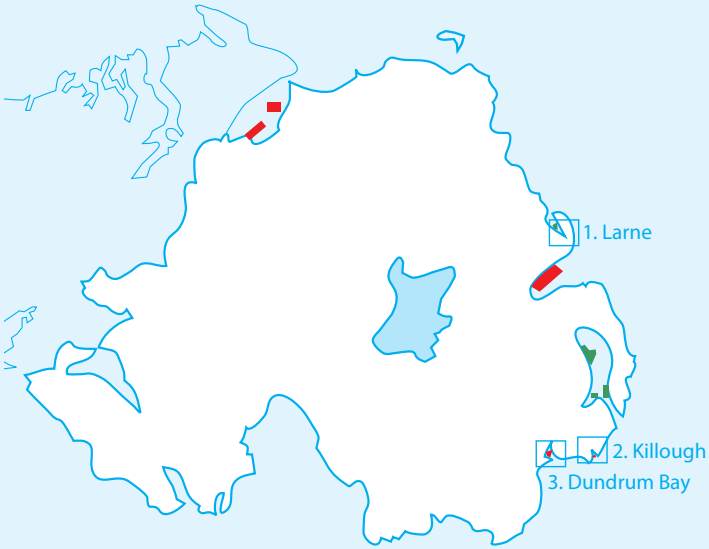
- A total of 10 Shellfish Waters are designated under the Shellfish Waters Directive. These are located within Lough Foyle, Larne Lough, Belfast Lough, Strangford Lough, Killough Harbour, Dundrum Bay and Carlingford Lough. Shellfish Waters are considered as protected areas under the Water Framework Directive.
- NIEA and DOE Marine Division manage Shellfish Waters to ensure no deterioration and steady progress towards compliance with the guideline standards.
- All 10 designated shellfish waters achieved the mandatory standard in 2011.
- 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.
- In 2011, 5 of the 10 shellfish waters met the more stringent guideline coliform standards, the same as in 2010.

Mussels

- 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.

Figure 5.3 (2011)

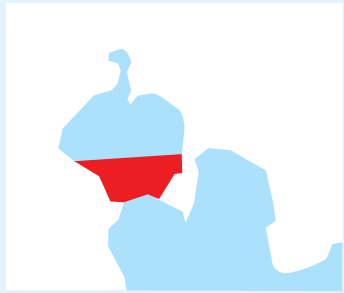
Compliance with more stringent guideline faecal coliform standard in shellfish waters



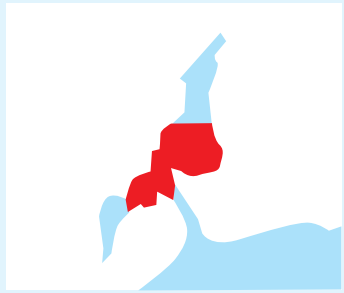
Compliance with Guideline Standards

- Fail
- Pass

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 was 78 % in 2011 compared to 88 % in 2010.
- For trade effluent compliance there has been a steady increase from 76 % in 2001 to 91 % in 2011.

Figure 6 (2001 - 2011)

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

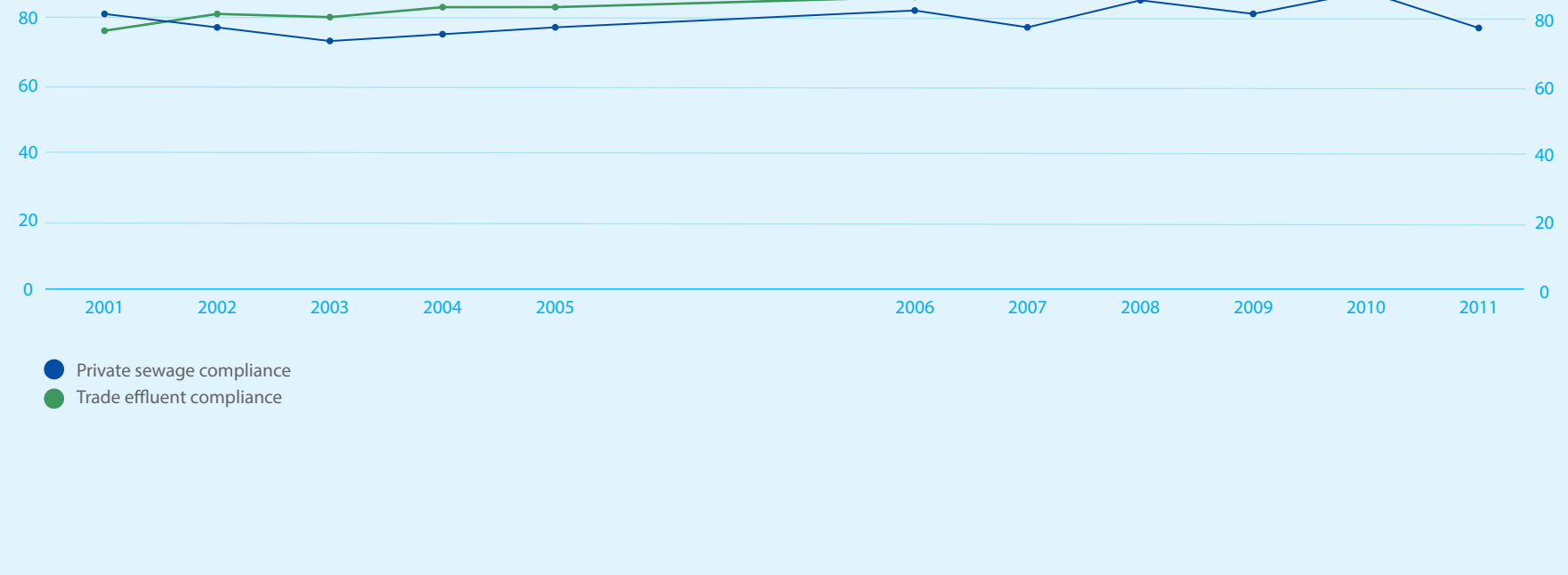


Table 6 (2001 - 2011)

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

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

Coastline at Kinbane

Monawilkin

Section 7

Water Utility Discharge Quality

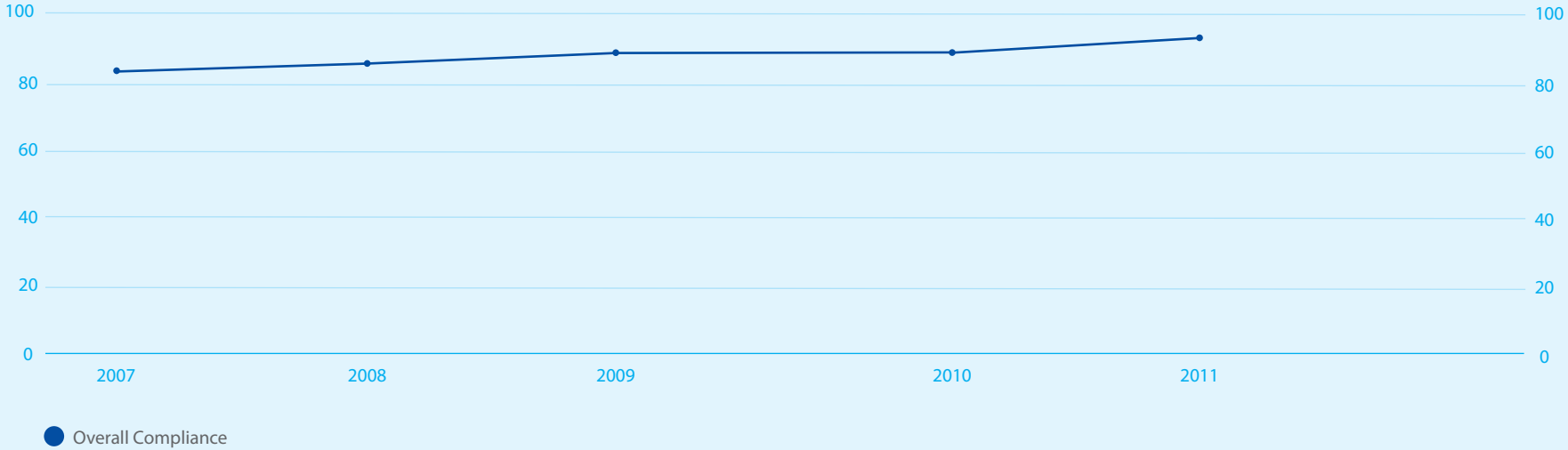
- NIEA monitors the compliance of Water Utility discharges from Waste Water Treatment Works (WWTW) and Water Treatment Works (WTW). Compliance assessment includes discharges from both Northern Ireland Water (NIW) and the Private Public Partnership schemes. Prior to April 2007, NIW was known as the Water 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 2011, NIW compliance was assessed against numeric standards set for discharges from 232 WWTW, serving a population equivalent to or greater than 250. In addition numeric compliance was also assessed for 6 WWTW 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.

Figure 7 (2007 - 2011)

Compliance of water utility discharges (95-percentile)



	2007	2008	2009	2010	2011
Overall compliance with WWTW discharge standards	84	86	87	89	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 2011 there were 2,123 incidents reported to NIEA, of which 1,303 were substantiated as having an impact on the water quality of the receiving waterway.
- The total number of substantiated incidents has fallen from the levels recorded in 2001 – 2003. The number of substantiated incidents in 2011 is 17 % less than the number recorded in 2001.
- Pollution incidents are then classified according to their severity:

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

  In 2011, 19 % were classified as being high or medium severity, which was the same as the 2010 level.

Figure 8 (2001 — 2011)

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
High	49	24	42	23	20	23	22	20	9	7	16
Medium	306	256	297	286	200	168	204	229	195	229	234
Low	1206	1237	1213	918	954	942	1066	988	1044	1001	1053
Total	1561	1517	1552	1227	174	1133	1292	1237	1248	1237	1303

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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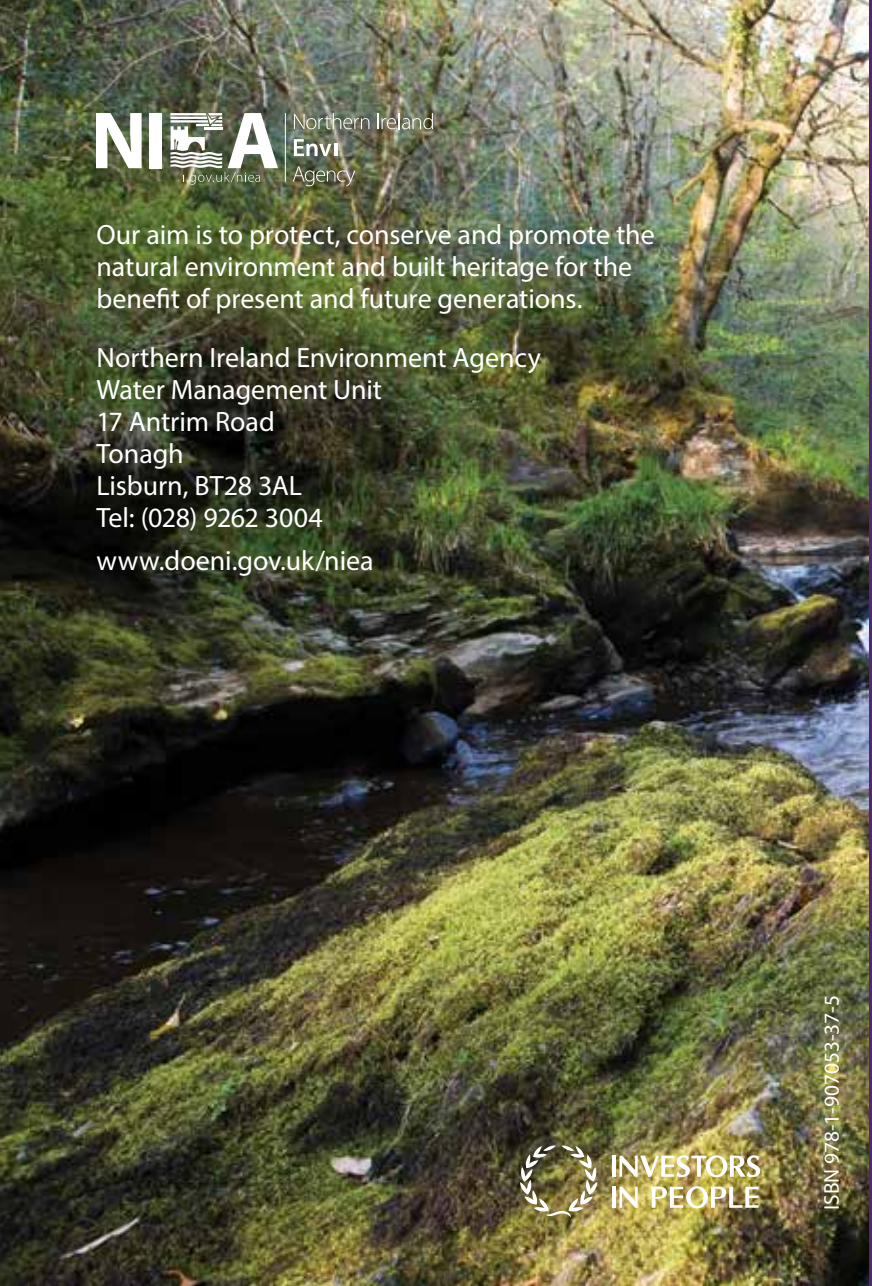
Burntollet River at Ness Country Park



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

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