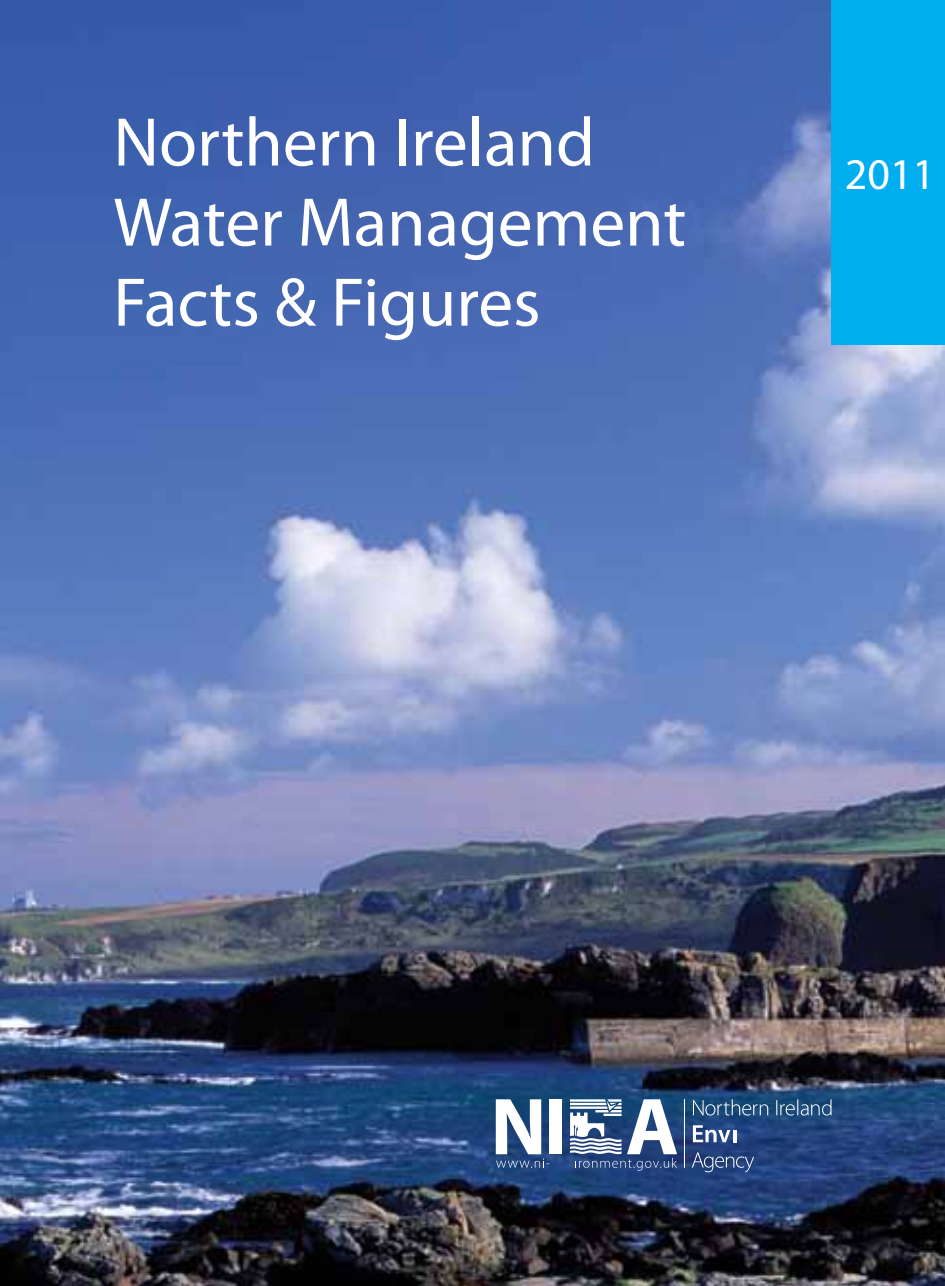
Northern Ireland Water Management Facts & Figures

2011



www.ni-environment.gov.uk

Northern Ireland Environment Agency

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.

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). A quarter of monitored river waterbodies are of at least a good standard.

Full details of classification are available at — http://www.doeni.gov.uk/niea/water-home/wfd.htm

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 under the EC Freshwater Fish Directive has increased in recent years, whereas the level has decreased for the relatively small length of cyprinid designated rivers.

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 2009.

Groundwater is currently of a high quality, with all sites that were monitored having an annual mean concentration of less than 40 mg NO_3/l, and just 2 groundwater bodies being of a poor status according to WFD standards.

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 and water utility discharge quality have improved in recent years, although there was a slight drop off for water utility discharge quality in 2009.

Water pollution incidents are investigated by NIEA. In 2009, 2,152 incidents were reported to NIEA, of which 1,248 were substantiated as having an impact on the water quality of the receiving watercourse. Of these 16 % were considered to be of high or medium severity.

Bathing water quality is measured against mandatory and guideline standards. In 2010 only two beaches (out of 24 monitored) in Northern Ireland failed to meet the EC Bathing Water Directive mandatory standards. Overall status of marine water bodies is also measured with one third classified as high or good with the remaining two-thirds being classified as moderate. Monitoring of shellfish waters also occurs, with four of the ten shellfish waters meeting the guideline standards. There were no exceedances of the dangerous substances standards in 2009.

Section 1

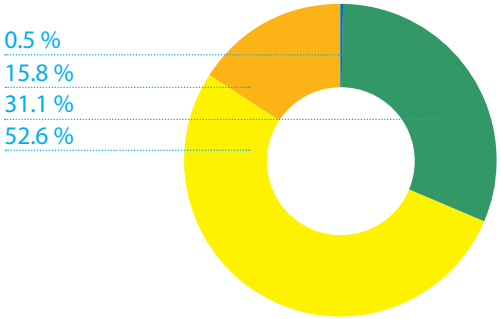
River Quality

- The river waterbody 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 waterbodies from deterioration and, where necessary and practicable, to restore waterbodies to good status.
- The environmental objectives established in the river basin plan set the water status to be achieved for surface waterbodies for each six year planning cycle starting from 2009.
- In 2009, 25 % of river waterbodies were classified as 'High' or 'Good'. This is an increase of four percentage points on 2008.

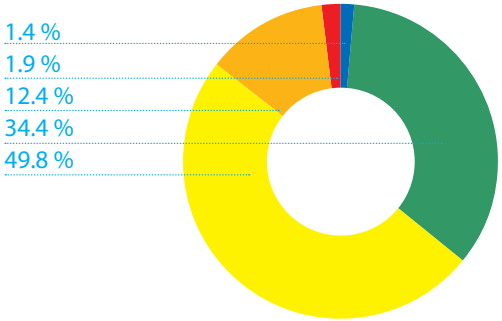
Figure 1 (2008 & 2009)

Water Framework Directive Overall Classification (% river water bodies)

North West 2008



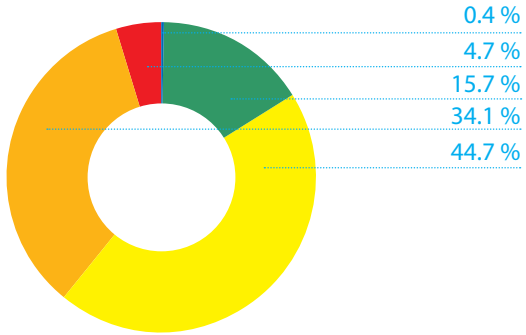
North West 2009



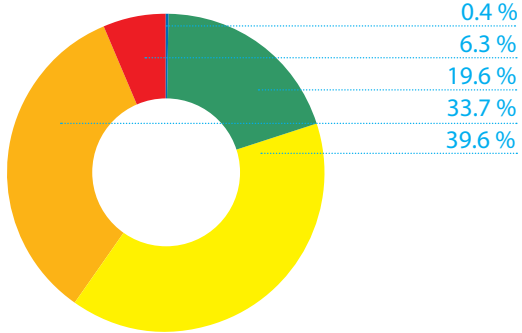
High Good Moderate Poor Bad

Water Framework Directive Overall Classification (% river water bodies)

Neagh Bann 2008



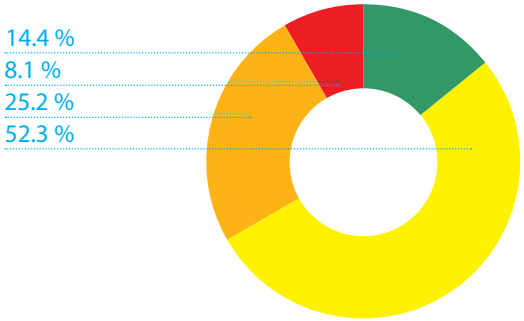
Neagh Bann 2009



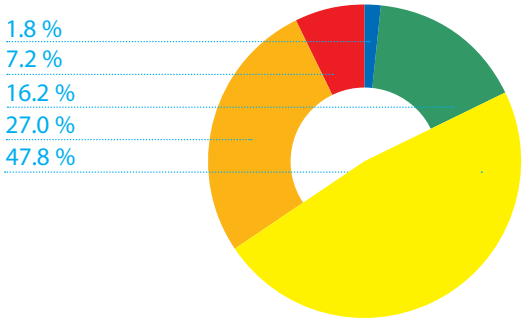
River basins (or catchments) have been assigned to River Basin Districts (RBD) which serve as the administrative areas for coordinated water management

Water Framework Directive Overall Classification (% river water bodies)

North East 2008



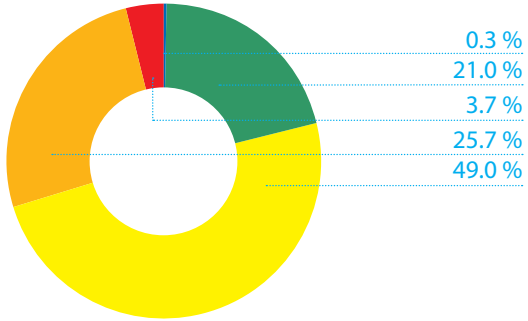
North East 2009



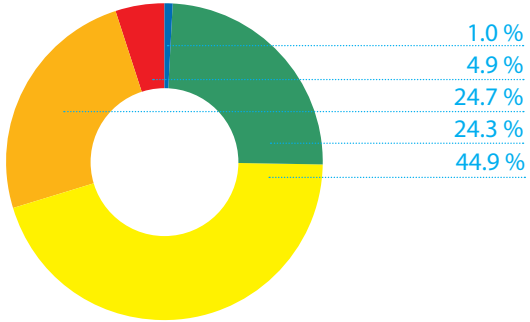
High Good Moderate Poor Bad

Water Framework Directive Overall Classification (% river water bodies)

All Northern Ireland 2008



All Northern Ireland 2009



High Good Moderate Poor Bad

Table 1

Water Framework Directive Overall Classification for river water bodies

	North West			
	2008		2009	
	rwbs	% rwbs	rwbs	% rwbs
High	1	0.5	3	1.4
Good	65	31.1	72	34.4
Moderate	110	52.6	104	49.8
Poor	33	15.8	26	12.4
Bad	0	0.0	4	1.9

	North East			
	2008		2009	
	rwbs	% rwbs	rwbs	% rwbs
High	0	0.0	2	1.8
Good	16	14.4	18	16.2
Moderate	58	52.3	53	47.7
Poor	28	25.2	30	27.0
Bad	9	8.1	8	7.2

	Neagh Bann			
	2008		2009	
	rwbs	% rwbs	rwbs	% rwbs
High	1	0.4	1	0.4
Good	40	15.7	50	19.6
Moderate	114	44.7	101	39.6
Poor	87	34.1	86	33.7
Bad	12	4.7	16	6.3

	All Northern Ireland			
	2008		2009	
	rwbs	% rwbs	rwbs	% rwbs
High	2	0.3	6	1.0
Good	121	21.0	140	24.3
Moderate	282	49.0	258	44.9
Poor	148	25.7	142	24.7
Bad	21	3.7	28	4.9

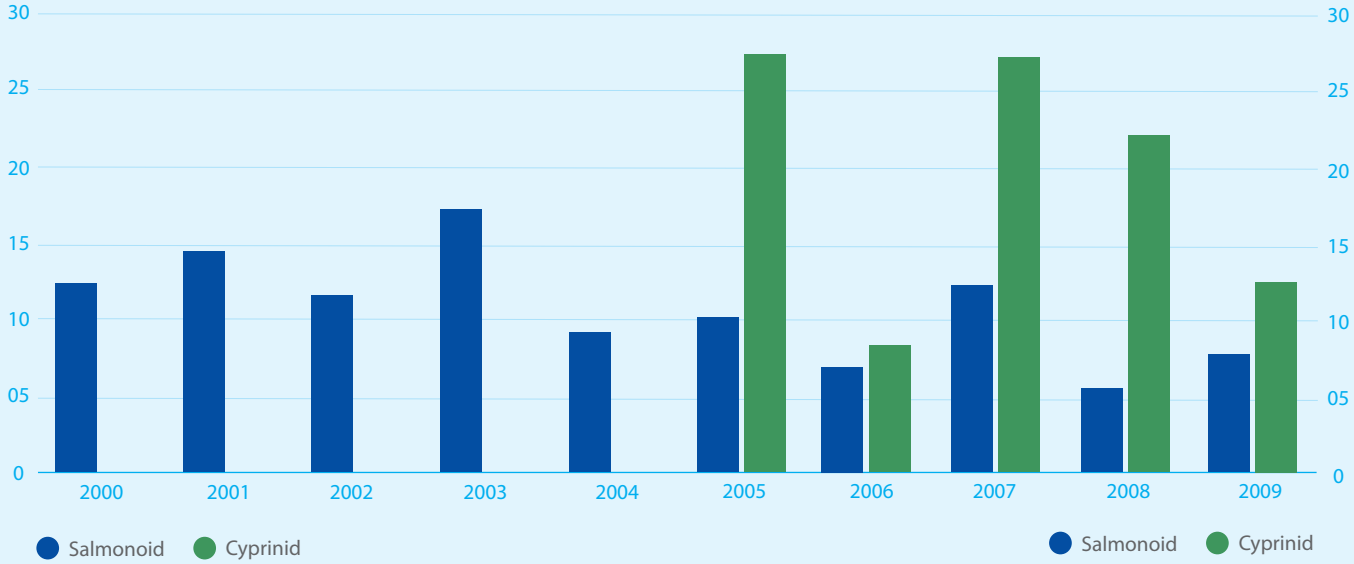
Section 2

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 2009, 7.7 % of salmonid river length and 12.7 % of cyprinid river length failed to meet the standards set by the Directive.

Figure 2

Freshwater Fish Directive compliance failure summary (2000 — 2009)



% River Length

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Salmonid	10.5	14.7	11.8	17.9	9.4	10.1	7.6	13.2	5.7	7.7
Cyprinid	0.0	0.0	0.0	0.0	0.0	27.0	8.0	27.0	22.0	12.7

Section 3

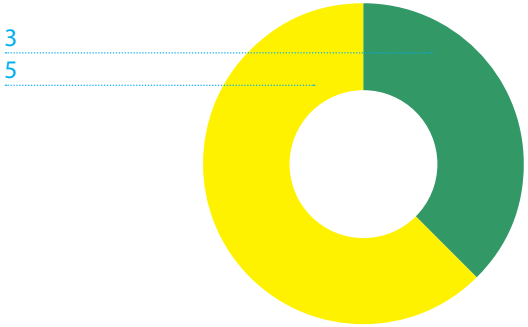
Lake Quality

- The Water Framework Directive requires NIEA to classify the 'surface water status' of Northern Ireland's lake water bodies.
- There are 21 lake waterbodies in Northern Ireland, that is lakes with an area of greater than 50 ha.
- The lake waterbody classification has been produced using the results from WFD quality elements. Overall classification utilises a combination of biological, chemical and hydromorphological quality elements including macrophytes, phytoplankton, phytobenthos, total phosphorus, chlorophyll and dissolved oxygen to assign status of lake quality in one of five classes from 'high' through to 'bad'.
- In 2009, 5 of the 21 lake waterbodies in Northern Ireland are classified as good status and 16 lake waterbodies are classified as less than good status.

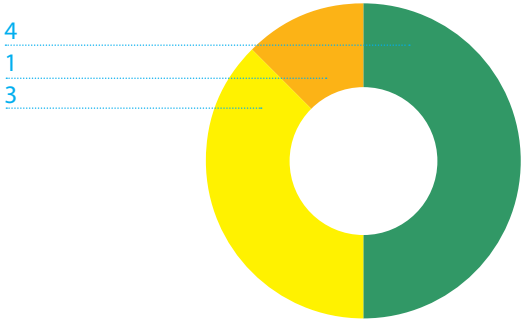
Figure 3 (2008 — 2009)

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

North West 2008



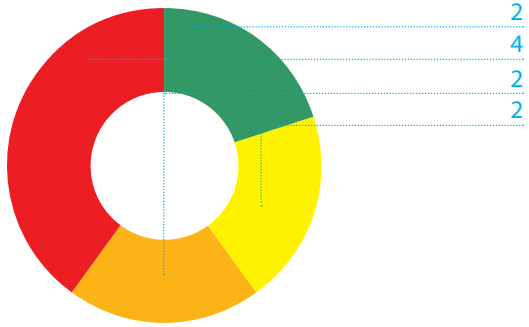
North West 2009



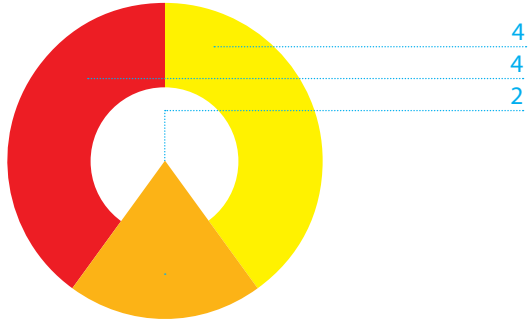
High Good Moderate Poor Bad

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

Neagh Bann 2008



Neagh Bann 2009

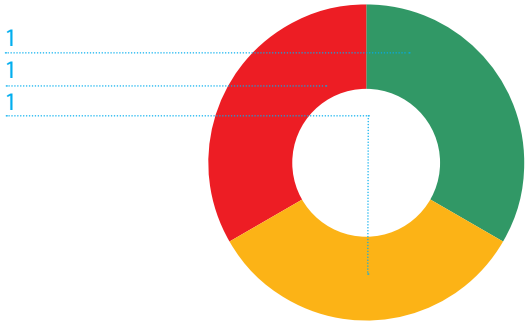


High Good Moderate Poor Bad

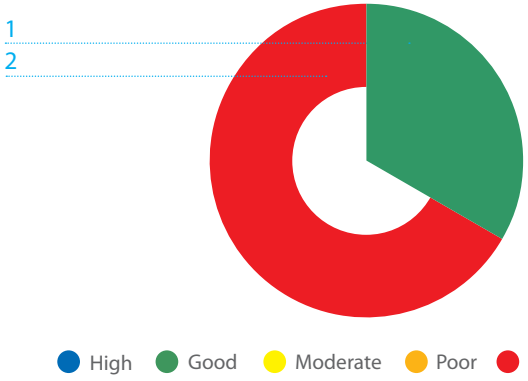
Figure 3 (2008 — 2009)

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

North East 2008

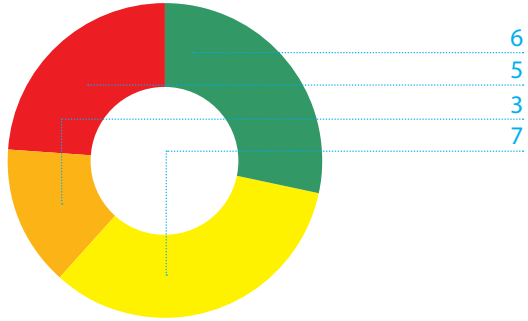


North East 2009



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

All Northern Ireland 2008



All Northern Ireland 2009

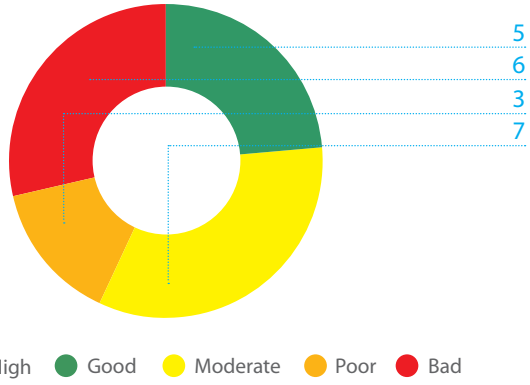


Table 3

Water Framework Directive Overall Classification
(Lake Water Bodies 2008 - 2009)

	North West	
	Number of Lake Water Bodies	
	2008	2009
High	0	0
Good	3	4
Moderate	5	3
Poor	0	1
Bad	0	0

	Neagh Bann	
	Number of Lake Water Bodies	
	2008	2009
High	0	0
Good	2	0
Moderate	2	4
Poor	2	2
Bad	4	4

	North East	
	Number of Lake Water Bodies	
	2008	2009
High	0	0
Good	1	1
Moderate	0	0
Poor	1	0
Bad	1	2

	All Northern Ireland	
	Number of Lake Water Bodies	
	2008	2009
High	0	0
Good	6	5
Moderate	7	7
Poor	3	3
Bad	5	6

Section 4

Groundwater Quality

- Regional monitoring of nitrate concentrations in groundwater across Northern Ireland began in 2000. 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. Sixty-five out of sixty-seven groundwater bodies are considered to be at "Good" status by WFD classification.
- Fifty-eight sites were monitored in 2009, all of which had an annual mean concentration of less than 40 mg NO_3/l and 97 % of sites were less than 25 mg NO_3/l.

Figure 4 (2000 — 2009)

Annual mean nitrate concentrations

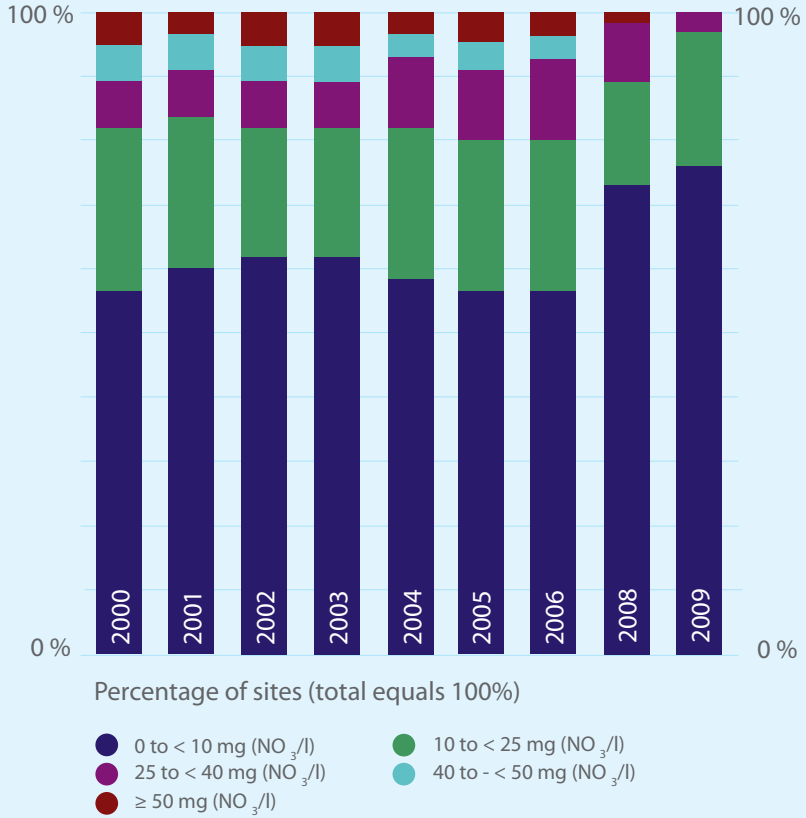


Table 4

Annual mean nitrate concentrations (NO_3/l)

	2000	2001	2002	2003	2004	2005	2006	2008	2009
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
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
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
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
≥ 50 mg NO_3/l	5.5	3.6	5.5	5.5	3.6	3.6	3.6	0.0	0.0

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 2010 only two beaches (out of 24 monitored) in Northern Ireland failed to meet 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. Just over one-third of marine water bodies around Northern Ireland's shores are classified as high or good, with the remaining two-thirds of the total area being classified as moderate.
- Monitoring of shellfish waters also occurs, with four of the ten shellfish waters meeting the guideline standards. There were no exceedances of the dangerous substances standards in 2009.

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.
- Up until 2006, there were 16 identified bathing waters in Northern Ireland. This increased to 23 in 2007 and to 24 in 2008.
- In 2010, two beaches (out of 24 monitored) in Northern Ireland failed to meet the mandatory standards, while sixteen achieved the higher guideline standards.

Figure 5.1 (2001 — 2010)

Bathing water compliance for microbial standards of EC Bathing Water Directive

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory Compliance	13	15	16	14	15	16	21	23	22	22
Guideline Compliance	8	7	13	9	11	14	11	10	11	16

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

Section 5.2

Marine Water Quality

- The Water Framework Directive requires NIEA to classify water bodies as High, Good, Moderate, Poor or Bad.
- 66 % of transitional and coastal water bodies in Northern Ireland are at moderate status with approximately 27.5 % at good status and 6.5 % at high status by area/km^2.
- In measuring water status in transitional and coastal waters, NIEA 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 factors driving classification in coastal waters tend to be nutrient concentrations and plant life. Nutrients and dissolved oxygen concentrations are the most important elements in determining status in transitional waters.

Figure 5.2 (2009)

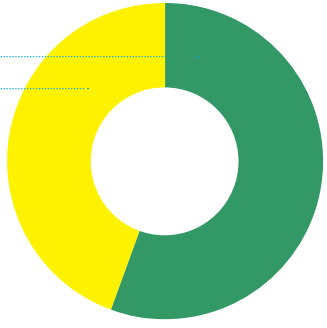
Water Framework Directive Overall Classification
(transitional and coastal waters — area km²)

North West

100 %

Neagh Bann

55.7 %
44.3 %

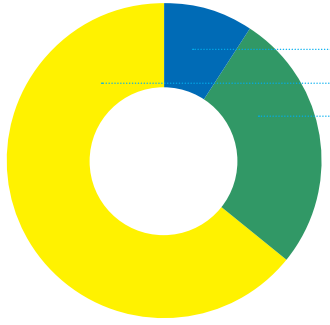


High Good Moderate Poor Bad

Water Framework Directive Overall Classification
(transitional and coastal waters area — km²)

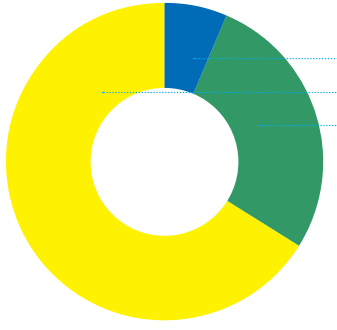
North East

9.4 %
63.9 %
26.7 %



All Northern Ireland

6.4 %
27.5 %
66.1 %



High Good Moderate Poor Bad

Table 5.2 (2009)

Water Framework Directive overall status
in transitional and coastal waters

	North West	
	Area km²	%
High	0	0
Good	0	0
Moderate	200.8	100
Poor	0	0
Bad	0	0

	Neagh Bann	
	Area km²	%
High	0	0
Good	122.1	55.7
Moderate	97.1	44.3
Poor	0	0
Bad	0	0

	North East	
	Area km²	%
High	86.2	9.4
Good	245.2	26.7
Moderate	585.2	63.9
Poor	0	0
Bad	0	0

	All Northern Ireland	
	Area km²	%
High	86.2	6.4
Good	367.3	27.5
Moderate	883.2	66.1
Poor	0	0
Bad	0	0

Section 5.3

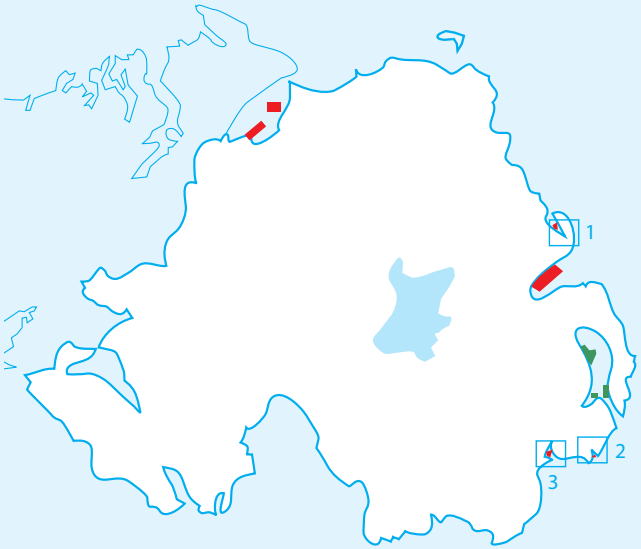
Shellfish Waters

- 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 manages Shellfish Waters to ensure no deterioration and steady progress towards compliance with the guideline standards.
- Compliance with the guideline standards is measured in shellfish flesh against standards. Faecal indicators and some dangerous substances such as heavy metals and organochlorine compounds are measured.
- There are no exceedences of the dangerous substances standards.
- In 2009, 4 of the 10 shellfish waters meet the guideline coliform standards representing 40 % of all waters.

- 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 works 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 (2009)

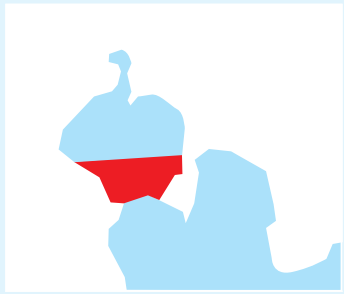
Compliance with guideline faecal coliform standard in shellfish waters



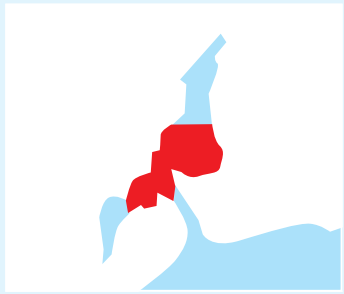
Compliance with Guideline Standards

- Fail
- Pass

1. Larne



2. Killough



3. Dundrum Bay

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 reached it's highest level in 2008 (86 %). It dropped back down to 82 % in 2009.
- For trade effluent compliance there has been a steady increase from 69 % in 2000 to 88 % in 2009.

Figure 6 (2000 — 2009)

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

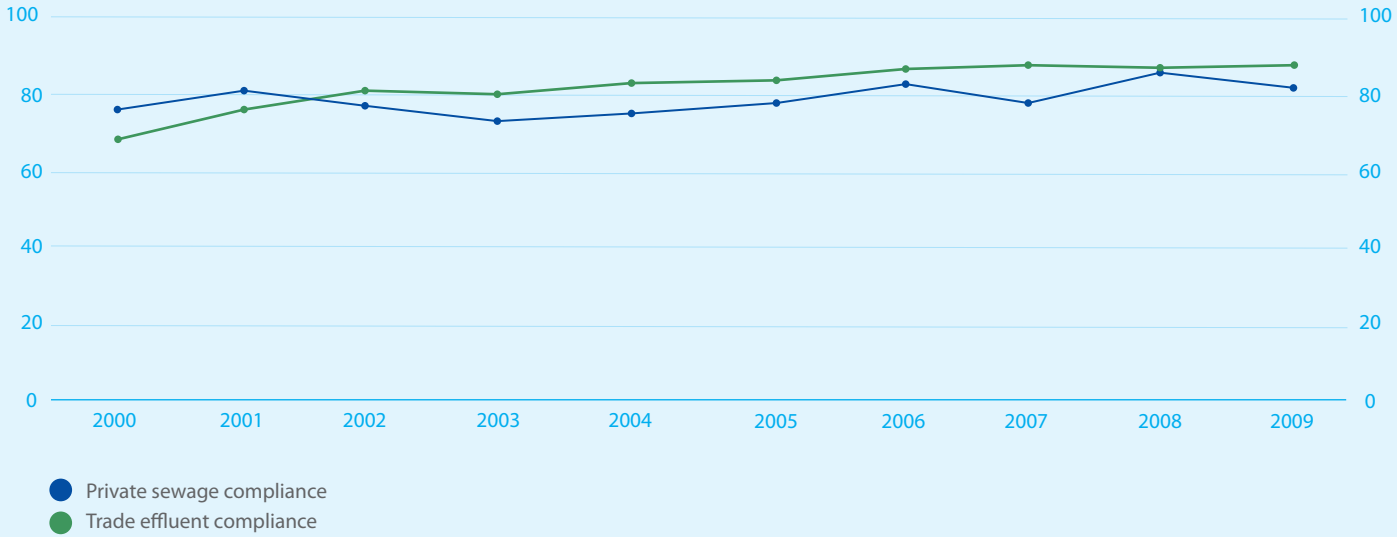


Table 6 (2000 — 2009)

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

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Private sewage compliance	76	81	77	73	75	77	82	77	86	82
Trade effluent compliance	69	76	81	80	83	84	87	88	87	88

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.
- 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.
- The sustained improvement in compliance, which has now reached 88 %, can be attributed to the commissioning of a number of new WWTW and to improvement schemes carried out by NIW.

Figure 7 (2000 — 2009)

Compliance of water utility discharges
(95-percentile)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Overall compliance with WWTW discharge standards	81	58	69	70	80	82	84	84	88	88

Section 8

Water Pollution Incidents

- Water pollution incidents are investigated by NIEA. In 2009, 2,152 incidents were reported to NIEA, of which 1,248 were substantiated as having an impact on the water quality of the receiving watercourse.
- The total number of substantiated incidents has fallen from the levels recorded in 2001 – 2003. The number of substantiated incidents in 2009 is 20 % 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 2009, 16 % were classified as high or medium. This is a decrease on the 2008 level of 20 %.

Figure 8 (2001 — 2009)

Severity of substantiated water pollution incidents

Table 8

Severity of substantiated water pollution incidents

	2001	2002	2003	2004	2005	2006	2007	2008	2009
High	49	24	42	23	20	23	22	20	9
Medium	306	256	297	286	200	168	204	229	195
Low	1,206	1,237	1,213	918	954	942	1,066	988	1,044
Total	1,561	1,517	1,552	1,227	1,174	1,133	1,292	1,237	1,248

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Coastline from Dunseverick Robert Thompson

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Northern Ireland Environment Agency

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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