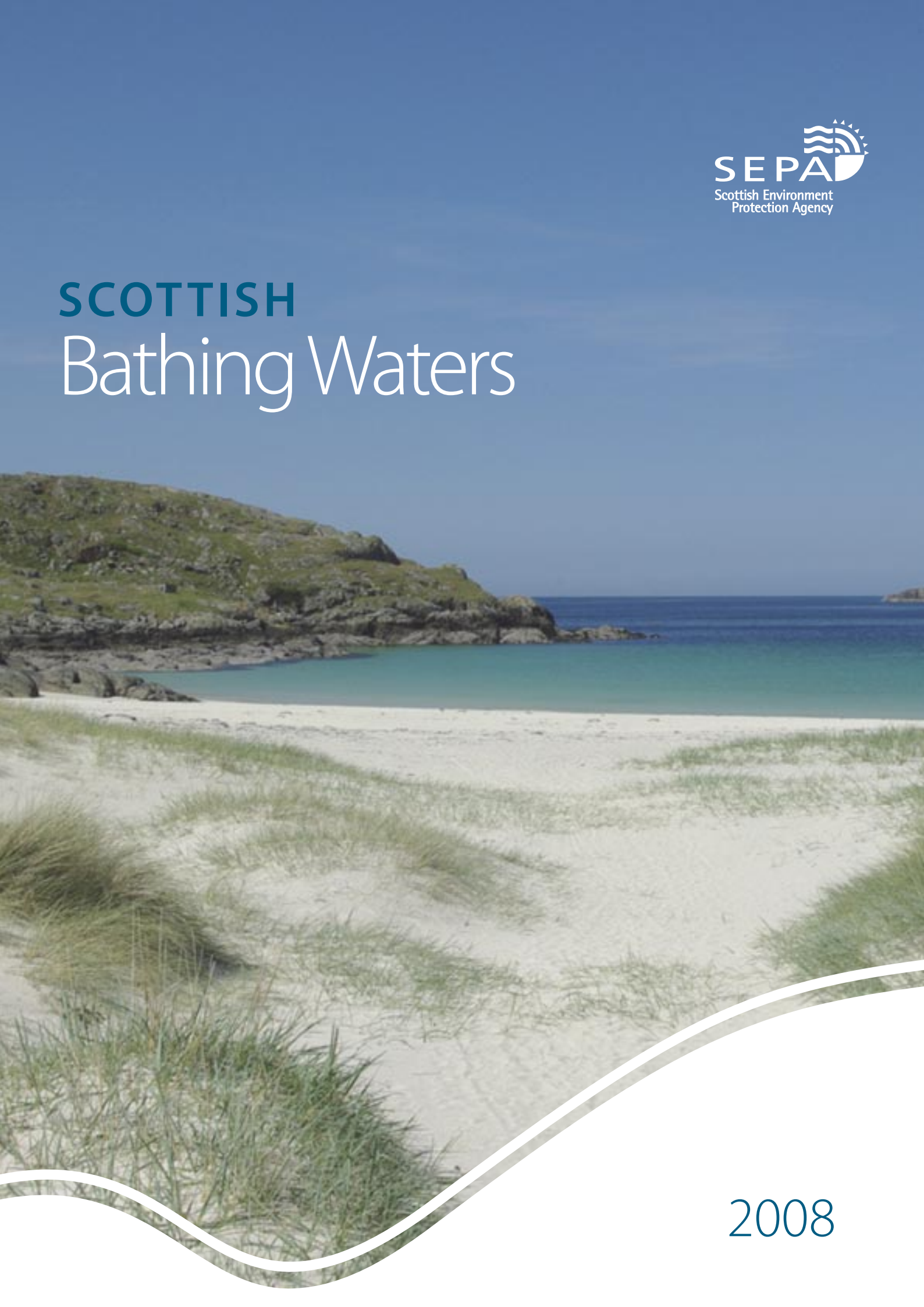
SEPA
Scottish Environment Protection Agency

SCOTTISH
Bathing Waters



2008

Cover photograph: Achmelvich Bathing Water by Tim Johnston

Foreword

2008 was a year of contrasts for bathing waters across Scotland. In addition to the beaches monitored last year, SEPA expanded its programme to include the new official bathing waters announced in May by the Scottish Government, increasing its monitoring of Scotland's bathing waters by more than a fifth overall this summer. We are extremely pleased to be able to report that all the new sites passed the mandatory 'good' standard and half also passed the more stringent 'excellent' standard.

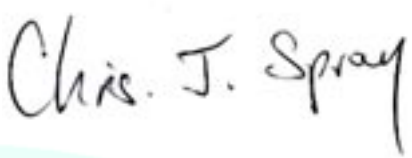
Last season it was widely agreed that the wet weather conditions were a big contributing factor to the failures of some of our bathing waters to meet the mandatory standard. At the end of our 2007 report we stated that our objective for 2008 was to see a return throughout Scotland to the good quality bathing water we have come to expect. In our start of season press release we said we hoped for a drier summer this year, but sadly this hope didn't turn into reality as this summer, like last year, was a disappointing washout with a lack of warm dry spells.

Despite the episodes of wet weather this summer, 91% of bathing waters achieved the EU mandatory good standard and nearly half of Scotland's bathing waters still managed to achieve the more stringent excellent (guideline) standard. This is testimony to the joint efforts of the Scottish Government, Scottish Water, the farming community and SEPA to lessen the impact on nearby water systems and provide the public with good information.

Another area that has worked well has been SEPA's electronic information predictions at 11 beaches around Scotland. For the first time this year the signs displayed additional messages, alternating between displaying daily water quality status and reminders to keep beaches tidy. The extension of the forecast system on the website for Eyemouth was also a success and an electronic beach sign will now be installed there for next year. The predictive accuracy of these signs remains extremely high, with 98% of the daily messages given being accurate or precautionary.

SEPA is committed to working with others to identify the risks associated with potential sources of pollution to our bathing waters. Engaging with our partners in this manner is vital to enable us to work with them to manage such risks. Together we will be in a better position to control pollution – be it from diffuse sources such as run-off from agricultural land or point sources such as from pipe discharges.

There is clearly more to do. We must all intensify our efforts to maintain progress and, if these trends continue, learn to cope with summer intense rainfall events – particularly as we are required to achieve even stricter standards and new beach management duties in just four years' time.



Dr Chris Spray MBE
Director of Environmental Science
Scottish Environment Protection Agency

Executive Summary

The Scottish Government's designation of 20 new sites saw the total number of designated bathing waters in Scotland rise to 80 in 2008. The new sites include Achmelvich on the north-west coast and a new freshwater site, Loch Morlich, in the Cairngorms National Park.

Like last year, the weather this summer was disappointing with a lack of warm dry spells and this affected the results from monitoring bathing water quality. However, half our bathing waters still managed to achieve the highest guideline standard. Of around 1,520 samples taken, 1,484 (98%) met either the good or excellent bathing water standard.

Seven bathing water beaches failed this season and, although this accounts for only 2% of the results overall, SEPA treats these failures very seriously. Our immediate response was to check all the relevant potential sources in the catchment area to identify possible causes, including follow-up microbiology sampling of the bathing water and nearby river inputs. A summary of our findings was published shortly afterwards on our website. Results from investigations at individual sites are included under the details for each of Scotland's 80 beaches in the main text of this report.

The poor results registered this year were generally recorded after heavy rainfall. Heavy rainfall can cause drainage overflows and produce high levels of polluted run-off from land upstream, which washes into the bathing water and reduces water quality. July and August 2008 were all wetter and duller than normal and Scotland had its dullest September since 1985. Data provided by the Centre for Ecology and Hydrology (CEH) indicate that Scotland as a whole had its ninth wettest summer in the last 140 years.

However, rainfall cannot be blamed for all poor results. Some of the polluted samples occurred outwith times of high rainfall and were caused by pollution derived from agriculture, while some were caused by sewage. Where sewage was the cause, SEPA took swift enforcement action and Scottish Water took prompt corrective measures.

SEPA is constantly reviewing its work on bathing waters and has expanded other initiatives which will help implement the new Bathing Water Regulations, which came into force in May 2008. SEPA is extending its water quality prediction service and the extension of the forecast system on the website for Eyemouth was a success. An electronic beach sign will now be installed there for next year.

SEPA is trialling the use of microbial source tracking methods based on DNA analysis in its investigations into sample failures. Microbial source tracking can be used to help track the sources of bacterial pollution found in bathing waters. Samples taken during the 2008 bathing water season will be analysed over the course of this winter.

Over the next four years we have to meet the tougher challenges brought by a new Bathing Water Directive. This will require SEPA and its stakeholders, including Scottish Water, local authorities and farmers, to increase their efforts to improve our bathing waters.

1. Introduction

Photo: Achmellvich Bathing Water

1.1 SEPA's role in bathing water quality

The Scottish Environment Protection Agency (SEPA) is part of the family of public services in Scotland. It is a non-departmental public body, operating at arm's length but accountable through Scottish Ministers to the Scottish Government.

As Scotland's environmental regulator, SEPA's main role is to protect the environment and human health. We do this by being an excellent regulator, helping business and industry to understand their environmental responsibilities, enabling our customers to comply with legislation and good practice and to realise the many economic benefits of good environmental practice. We also protect communities by regulating activities that can cause harmful pollution and by monitoring the quality of Scotland's air, land and water.

SEPA's duties include monitoring and reporting on the state of Scotland's environment and using that sound scientific understanding to inform our independent regulation of activities that may affect its quality.

As well as publishing this report, we place the bathing water monitoring results on our website within a few days of sample collection, throughout the bathing season from 1 June to 15 September along with a pre-season sample taken in late May.

1.2 SEPA's commitment to improving bathing water quality

Scotland has a rich and diverse environment. The quality of Scotland's environment is a key asset and source of competitive advantage. As a nation we trade on the high quality of that environment, so its continuing health and improvement are fundamental to sustainable economic growth.

Scotland's natural assets generate an income worth at least £17 billion. This is either directly through activities such as farming and sourcing raw materials or indirectly through associated businesses such as tourism. It is estimated that tourism contributed over £5 billion to the Scottish economy in 2006.

High-quality bathing waters are important for a wide variety of interests and help to promote the important and valuable tourism industry within Scotland. All possible sources of pollution must be recognised and controlled in order to protect and, where necessary, improve the quality of waters.

Bathing waters feature in *SEPA's Corporate Plan for 2008–2011* in two outcomes – 'Protected human health and communities' and 'Improved water environments'. Specific objectives include:

- Each year, support Scotland's achievement of 100% compliance for designated bathing waters, investigating all failures immediately.
- To progressively improve the condition of protected areas in Scotland's water environment. Bathing waters are among the areas that have been identified by Scottish Ministers as having important characteristics.

SEPA maintains a policy on microbiological standards for relevant discharges; all new or modified discharges to identified bathing waters must be designed to ensure that the Bathing Water Directive's guideline standards are met. This policy also requires that the microbiological quality of other coastal waters is adequately protected and improved as necessary.

SEPA will continue working with all other relevant authorities to improve on this year's results. Section 3 of this report describes ongoing work to promote current quality standards and to achieve the more stringent new European standards. Further details for individual waters are given in the Improvement Plans available on the bathing waters website: www.sepa.org.uk/water/bathing_waters.aspx

1.3 Purpose of this report

This report contributes to SEPA's aim of providing useful information on Scotland's environment. As well as giving the results of water quality monitoring, it describes factors underlying these and outlines site-specific plans for improvement.

The results of SEPA's routine monitoring in 2008 are presented in Section 2. This gives details for Scotland's 80 identified bathing waters routinely monitored during the bathing season.

Section 3 provides more information about SEPA's work and plans to ensure further water quality improvements.

As required by the Bathing Water Directive, the water quality results for the 80 identified bathing waters have been reported to the European Commission. The Commission will publish the results as part of its annual report on the overall quality of bathing waters throughout the European Union.

1.4 Improving water quality

SEPA aims to be an efficient, effective and enabling organisation. Our views on environmental protection priorities for Scotland are set out in *SEPA's Corporate Plan 2008–2011* (available on our website). Under the outcome 'Improved water environments' this commits SEPA to making continual progress towards improving the condition of protected areas, which includes all our designated bathing waters.

SEPA's aim is to continue to make progress towards total compliance with the Bathing Water Directive's mandatory standards. This compliance is not something that SEPA can achieve on its own and we will continue to work with all relevant organisations, the agricultural community and the public to attain this goal. Only by working in partnership can we give Scotland and its visitors the high quality of bathing water they are entitled to expect in the 21st century.

We work to preserve and improve the quality of Scotland's lochs, rivers, estuaries, wetlands, groundwater and coastal waters so that they are sustainable for the future. SEPA is responsible for co-ordinating the management of the water environment through the production of river basin management plans.[1] All our work on the water environment is now based on the obligation to produce and implement these plans, which must achieve a balance between the protection of Scotland's water environment, sustainable economic development and the protection of the interests of those who depend on the water environment for their quality of life. The work on bathing waters by SEPA and its partners will also be identified and implemented through the river basin management plans.

The importance of factors outside SEPA's statutory control has become increasingly apparent. The Scottish Government recognised this in its first strategy document published in March 2002, *Strategy for Improving Scotland's Bathing Waters*, followed by its *Four Point Plan for Reduction of Agricultural Pollution Sources* published in December 2002. The strategy was further updated in 2006 by *Better Bathing Waters: Meeting the Challenges of the Revised Bathing Water Directive in Scotland*. These publications (available on the Scottish Government website) are proving very helpful in enabling problem sources to be tackled. More details of the work sponsored by the Scottish Government are given in Section 3.3.

Although all large continuous sewage discharges to Scottish waters are now essentially subject to at least full secondary treatment, sewage remains a significant cause of pollution in coastal waters. Storm overflows to rivers and directly to sea remain a pollution problem in numerous catchments. Measures to reduce sewage-related problems are, in most cases, the responsibility of Scottish Water.

[1]For information on river basin planning see www.sepa.org.uk/water/river_basin_planning.aspx

SEPA and the Scottish Government work with Scottish Water and the Water Industry Commission to ensure:

- planned capital investment programmes aimed at upgrading sewerage infrastructure throughout the country are prioritised to maximise environmental benefits;
- compliance with regulations implementing the European Urban Waste Water Treatment Directive (UWWTD) and all relevant quality standards.

Investment is required not only in sewage treatment but also in sewerage infrastructure, particularly in storm water overflows. At times of heavy rainfall, combined sewer overflows (CSOs) are necessary to prevent flooding. To achieve this, CSOs have to discharge diluted but minimally treated sewage to watercourses and coastal waters. To minimise their impact on water quality, SEPA imposes conditions requiring the removal of solids and on the location and frequency of operation of CSOs.

In urban areas, greater use of Sustainable Urban Drainage Systems (SUDS) is increasingly limiting urban diffuse pollution from new developments. However, there remains a large problem of contaminated surface water run-off from existing urban areas. The results of an evaluation of retrofitting SUDS to urban areas near to bathing waters by the Scottish Government were published in 2004.[2] Information on SUDS and the latest developments are given on the SEPA website.[3]

Under the Environmental Protection Act 1990, local authorities are responsible for keeping 'Amenity Beaches' free from litter. Amenity Beaches are those areas of beach adjoining an identified bathing water. Local authorities are encouraged to display notice boards at these waters, giving a variety of information including the water quality data supplied by SEPA.

1.5 Identification of bathing waters

The requirements of the revised Bathing Water Directive (see Section 1.6) regarding the identification of bathing waters came into force from March 2008. From this date onwards, Scottish Ministers must establish and keep under annual review a list of bathing waters (and set the length of the bathing season). Ministers are also required to designate sites as bathing waters where they expect a large number of people to bathe, taking account of past trends, infrastructure or facilities provided, and other measures to promote bathing.

To meet this obligation, Scottish Ministers chose to designate an additional 20 bathing waters for the 2008 bathing water season. This increased the number of official sites by a third. Ministers designated sites that:

- they were aware of – through the consultation on a future identification process carried out in 2004 by the then Scottish Executive; or
- were brought to their attention by the Bathing Water Review Panel, SEPA and Keep Scotland Beautiful as meeting the usage criteria laid down in the 2004 consultation.

The Bathing Water Review Panel was set up by Clean Coast Scotland following a recommendation in the 2004 consultation to help Ministers in determining which sites (both existing and future) merited designation. SEPA was a member of this panel, which ceased to operate in April 2008.

In readiness of the new designation requirements from 2008, the panel's role was to:

- seek and consider applications for official identification;
- examine existing bathing waters with very low usage for possible de-designation.

The panel then put its recommendations to Ministers for consideration, making its final recommendations at the end of 2007.

Official designation provides for action to be taken to ensure the bathing water meets the directive's standards to protect public health. It was therefore in the interest of the owners of non-recognised sites to apply for designation where they met the appropriate criteria and the panel actively promoted this.

[2]www.scotland.gov.uk/topics/environment/water/bathingwaters/retrofittingSUDS
[3]www.sepa.org.uk/land/diffuse_pollution/diffuse_pollution_initiative/suds.aspx

Three of the 20 new sites were designated in 2008 on the basis of the panel's recommendations:

- Achmelvich;
- Leven;
- Kirkcaldy (Seafield).

The 17 additional sites were designated on the basis of usage evidence from SEPA, Keep Scotland Beautiful or already gathered by the Government for the 2004 consultation. These sites are:

- Broad Sands;
- Culzean;
- Dhoon Bay;
- Findhorn;
- Heads of Ayr;
- Kinghorn (Harbour Beach);
- Loch Morlich;
- Lossiemouth (East);
- Lunan Bay;
- Lunderston Bay;
- Maidens;
- Mossyard,;
- Rosemarkie;
- Seacliff;
- Seamill;
- Tentsmuir Sands;
- Thurso

The panel also re-appraised six existing sites. Ministers chose to de-designate St Abbs on this basis.

Identifying the list of bathing waters will continue as an annual process. The process by which identifications are made after 2007 was considered as part of the Scottish Government's consultation, *Better Bathing Waters for All*, on the transposition of the revised Bathing Water Directive into national law. An announcement on the process by which Ministers will be advised in future will be made during this year.

Further information on the designation process is available on the Scottish Government's website (see Section 3).

1.6 Revision of the Bathing Water Directive

The revised Bathing Water Directive (2006/7/EC), which came into force on 24 March 2006, introduces water quality standards that are substantially more stringent than those of the current directive. The text of the revised directive can be found on the EU's website.[4]

These new standards must be met by 2015, the date by which many other EU Water Framework Directive quality objectives also have to be met. However, the first compliance period for the revised Bathing Water Directive requires four-year classification data and samples will be collected from 2012 to 2015. Hence, the new standards will need to be achieved in Scottish bathing waters from 2012.

[4]http://eur-lex.europa.eu

The revised directive has four quality categories – excellent, good, sufficient and poor. The new 'good' standard is broadly equivalent to the existing guideline standards. By 2015 Member States have to ensure that all bathing waters are of at least 'sufficient' quality and have put in place measures to increase the number of 'good' or 'excellent' bathing waters. If a bathing water is classified as 'poor' for five consecutive years even after improvement measures have been introduced, permanent advice against bathing must be introduced.

There are also changes to the bacterial entities that must be monitored. These arise from recommendations of the World Health Organization. In place of the current coliform and faecal streptococci standards, the revised directive sets standards for *Escherichia coli* and intestinal enterococci. While slightly complicating the microbiological analytical techniques necessary, the differences in the values obtained are anticipated to be minimal.

Action is also required, where necessary, to tackle cyanobacteria blooms, macro algae, marine phytoplankton and other waste from 2011.

The new directive sets different quality standards for coastal and inland bathing waters. Further differences are that quality assessments are spread over four years and the required sampling frequency is lower. Sampling schedules (the monitoring calendar) will be set in advance of the bathing season, but there will be several days' flexibility. This could avoid the need to sample during very wet weather when bathers would not be expected; SEPA has undertaken a trial to determine how this might work in practice.

The new directive seeks greater public participation in its implementation. It puts more emphasis on providing information to bathers, including via the internet, and particularly on the risks bathers might face from pollution. It also allows up to 15% of sample results to be discounted during short-term pollution events, provided there is a public warning system in place to inform prospective bathers of potentially less good quality. The SEPA internet information and its electronic signage scheme already in place at a limited number of sites in Scotland (see Section 2.4) go towards meeting these requirements. The abnormal events provisions of the current directive will be maintained.

The Scottish Government recognised that significant changes will be required to meet the conditions of the new directive. In 2006 it published a strategy, *Better Bathing Waters: Meeting the Challenges of the Revised Bathing Water Directive in Scotland*, which outlined how those challenges would be met. This strategy document sets out how the Scottish Government proposes to implement and meet the microbiological requirements of the revised Bathing Water Directive in Scotland by the 2015 deadline. The strategy assesses past work towards complying with the requirements of the existing directive and how this will progress under the revised directive. It also identifies the important role SEPA will play.

The strategy announced the Government's intention to transpose the directive through legislation. In November 2007 the Scottish Government consulted on draft legislative proposals in its consultation paper, *Better Bathing Waters for All*. Following consultation, the Bathing Waters (Scotland) Regulations 2008[5] came into force in May 2008. These fully transpose the directive, establish SEPA's role under the directive and set out the timeframe for its duties to come into effect. Scottish Government guidance on the regulations will be available in 2009.

[5]www.opsi.gov.uk/legislation/scotland/ssi2008/ssi_20080170_en_1

2. 2008 Bathing Water Quality Results

Photo: Fraserburgh

2.1 Results overview

In 2008, 73 (91%) of the 80 identified bathing waters in Scotland met the EU mandatory standards. Of these, 39 (49%) also met the guideline standard. These numbers include the 20 newly designated bathing water sites; all passed the mandatory standard and half also met the more stringent guideline standard.

Although these compliance results are lower than in some previous seasons, as in 2007, it is necessary to consider them in the context of the very wet weather recorded through much of Scotland during the bathing season. More details of this summer's weather are given in Section 2.3.

Following the wet season in 2007, the 'reduced sampling' provision of the Bathing Waters Directive (Annex 3.4) was applied to two sites in 2008. This reduction is covered by a stringent SEPA policy that any reduced sampling site that exceeded the guideline level of any determinand (no matter how minor an exceedance) would return to the full schedule of 20 samples in 2008. Both sites recorded a full set of guideline compliance.

An additional five sites, four of which were newly designated, were only sampled 10 times due to their geographical remoteness. Four of these sites met the guideline standard; one narrowly missed this standard but comfortably met the mandatory standard.

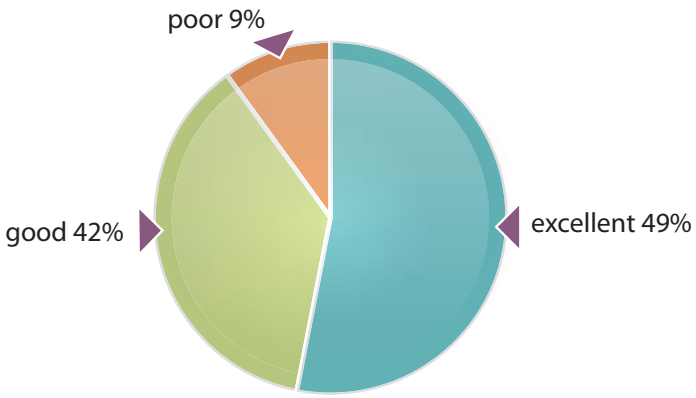
The full set of microbiological monitoring data from the 80 identified bathing waters in Scotland can be found in Annex 1. The results are summarised below (see also Figure 1, and Maps 1 and 2):

Of the 80 identified bathing waters:

- 39 (49%) met the guideline quality standards of the directive and are of 'excellent' quality ;
- 34 (42%) met the mandatory coliform quality standards of the directive and are of 'good' quality ;
- 7 (9%) failed the mandatory coliform quality standards of the directive and are of 'poor' quality .

To put this into context, this was due to 36 poor samples out of around 1,520 samples in total.

Figure 1: Scotland's 2008 bathing water results

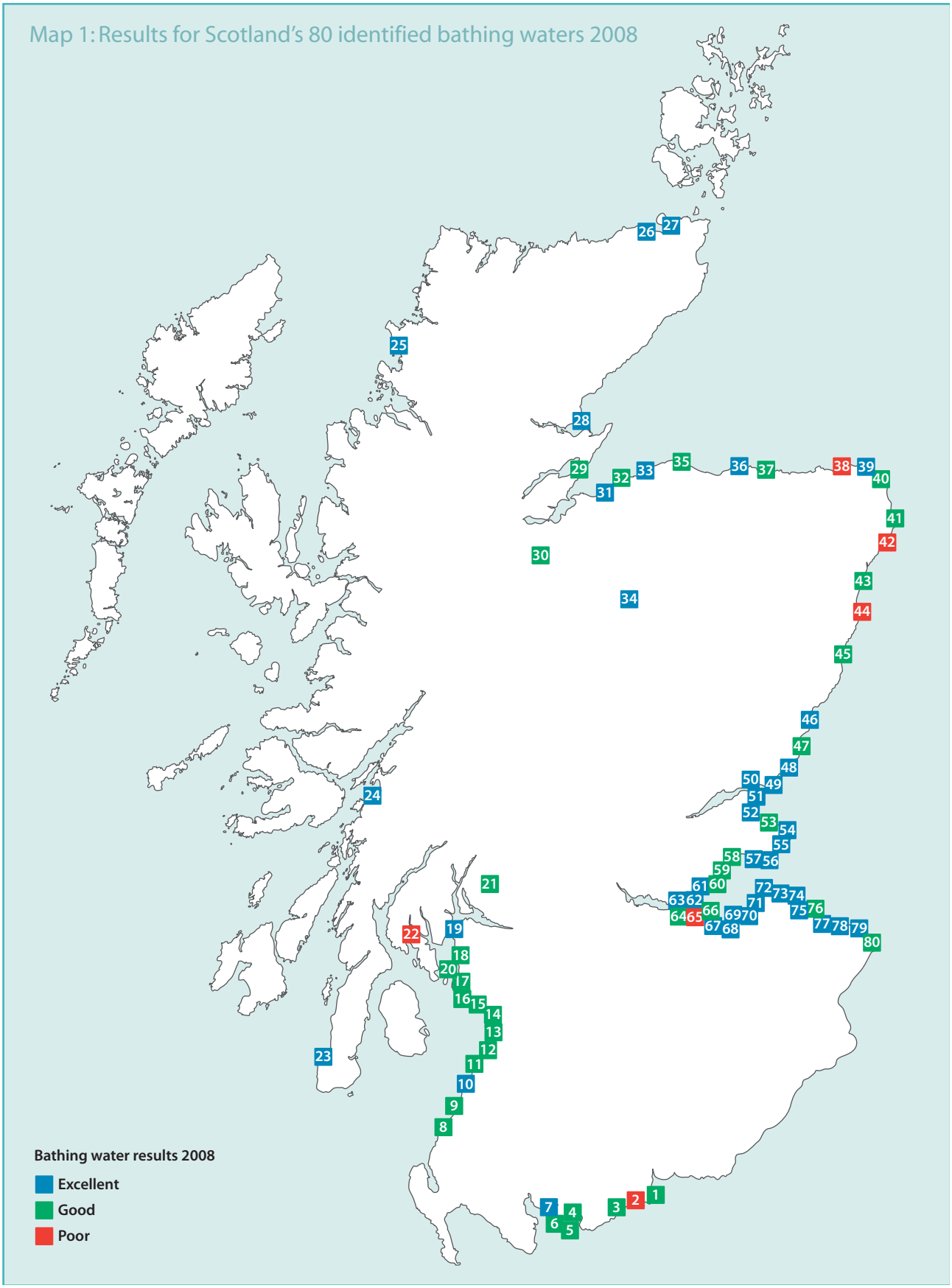


2.2 Details for each of Scotland's 80 identified bathing waters

This section contains specific information for each of Scotland's 80 identified waters. It also focuses on the underlying factors behind bathing water quality at each site and outlines the plans for improvements. Waters are described in clockwise order around Scotland, starting in the south west.

In the following paragraphs: 'n/s' indicates not sampled, 'good' quality indicates a pass of the current directive's mandatory standards and 'excellent' quality indicates a pass of its guideline quality standards.

Map 1: Results for Scotland's 80 identified bathing waters 2008



Map ref.	Bathing water	Result
1	Southerness	Good
2	Sandyhills	Poor
3	Rockcliffe	Good
4	Dhoon Bay	Good
5	Brighouse Bay	Good
6	Carrick	Good
7	Mossyard	Excellent
8	Girvan	Good
9	Maidens	Good
10	Culzean	Excellent
11	Heads of Ayr	Good
12	Ayr (South Beach)	Good
13	Prestwick	Good
14	Troon (South Beach)	Good
15	Irvine	Good
16	Saltcoats/Ardrossan	Poor
17	Seamill	Good
18	Largs (Pencil Beach)	Good
19	Lunderston	Excellent
20	Millport Bay	Good
21	Luss Bay	Good
22	Ettrick Bay	Poor
23	Machrihanish	Excellent
24	Ganavan	Excellent
25	Achmelvich	Excellent
26	Thurso	Excellent
27	Dunnet	Excellent
28	Dornoch	Excellent
29	Rosemarkie	Good
30	Dores	Good
31	Nairn (Central)	Excellent
32	Nairn (East)	Good
33	Findhorn	Excellent
34	Loch Morlich	Excellent
35	Lossiemouth (East)	Good
36	Cullen Bay	Excellent
37	Inverboyndie	Good
38	Rosehearty	Poor
39	Fraserburgh (Tiger Hill)	Excellent
40	Fraserburgh (Philorth)	Good

Map ref.	Bathing water	Result
41	Peterhead (Lido)	Good
42	Cruden Bay	Poor
43	Balmedie	Good
44	Aberdeen	Poor
45	Stonehaven	Good
46	Montrose	Excellent
47	Lunan Bay	Good
48	Arbroath (West Links)	Excellent
49	Carnoustie	Excellent
50	Broughty Ferry	Excellent
51	Tentsmuir Sands	Excellent
52	St Andrews (West Sands)	Excellent
53	St Andrews (East Sands)	Good
54	Kingsbarns	Excellent
55	Crail (Roome Bay)	Excellent
56	Elie (Ruby Bay)	Excellent
57	Elie (Harbour) and Earlsferry	Excellent
58	Leven	Good
59	Kirkcaldy (Seafield)	Good
60	Kinghorn (Harbour Beach)	Good
61	Kinghorn (Pettycur)	Excellent
62	Burntisland	Excellent
63	Aberdour (Silver Sands)	Excellent
64	Portobello (West)	Good
65	Portobello (Central)	Poor
66	Seton Sands	Good
67	Longniddry	Excellent
68	Gullane	Excellent
69	Yellowcraig	Excellent
70	Broadsands	Excellent
71	North Berwick (West)	Excellent
72	North Berwick (Milsey Bay)	Excellent
73	Seacliff	Excellent
74	Dunbar (Belhaven)	Excellent
75	Dunbar (East)	Excellent
76	Whitesands	Good
77	Thorntonloch	Excellent
78	Pease Bay	Excellent
79	Coldingham	Excellent
80	Eyemouth	Good


Sandyhills

Southerness

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Poor	Good	Good	Poor	Good	Good	Good	Good

Southerness was designated as an EU bathing water in 1999. In 2008 one sample failed to meet the EU mandatory standards. But the more stringent guideline values were met consistently during the good weather at the end of May and into June.

The main threat to water quality is from sewage inputs, especially from the town of Dumfries. In addition to the sources of sewage from Dumfries [Troqueer, Dalscone and Lincluden sewage treatment works (STW)], there are a number of Scottish Water discharges from small communities along the Nith Estuary.

The combined sewer overflows (CSOs) in the Troqueer catchment of Dumfries were upgraded in 2005 to provide better screening and to reduce the frequency of overflows. However, there are still issues with overflow frequency at two outfalls on the Troqueer network and premature overflows of settled sewage at Troqueer STW which need to be addressed. The work at Troqueer STW is scheduled to be completed in late 2009. The only private wastewater treatment plant is at Southerness, where it serves the caravan park and village. This treatment works has been upgraded to secondary treatment with ultraviolet disinfection provided during the bathing season.

Sandyhills

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Poor	Poor	Good	Good	Good	Good	Good	Poor	Poor

Sandyhills bathing water has a varied history of compliance and unfortunately achieved poor water quality again in 2008.

The main threat to bathing water quality is agricultural run-off. Work funded through a biogas, composting and farm measures project by the Scottish Government, together with an associated farm inspection programme carried out by SEPA, now appears to be reducing agricultural diffuse pollution. Composting facilities and biogas plants have been installed to treat slurries and manures. These have received welcome positive feedback from the farming communities involved and the project itself gained positive media coverage.

This bathing beach is part of SEPA's electronic beach signage network, which provides daily predicted water quality information to bathers (see Section 2.4).


Rockcliffe

Rockcliffe

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Poor	Good	Poor	Poor	Good	Good	Good	Good	Good

Before its identification in 1999, the bathing water at Rockcliffe was not of consistently satisfactory quality. Since the local sewage treatment upgrading completed by Scottish Water before the 2004 bathing season, it has complied consistently with EU good quality requirements.

The continued satisfactory water quality this year is encouraging. It suggests that the improvements made to local sewage treatment, involving the addition of ultraviolet disinfection and a storm storage tank, have contributed to bathing water quality improvement. In particular, the new storm sewage tank significantly reduces overflows of diluted and screened sewage during very wet weather.

Dhoon Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Good

Dhoon Bay is a new EU bathing water that was designated for the first time in 2008 and achieved good quality.

The small coastal burns, Mill Hall and Corraford Burns, drain into Dhoon Bay and could be potential sources of microbial pollution. However, the main contributory source is judged to be the River Dee with its extensive catchment. The presence of numerous farms (sheep, beef and dairy) in this catchment means that diffuse pollution will always pose a risk. The western flanks are intensively afforested, especially around the Black Water of Dee/Clatteringshaws area. The catchment around Loch Ken is a major wildlife area and birdlife may contribute to coliform sources. In addition, the River Dee catchment has many small private septic tanks.

Sewage discharges from Carsphairn, St Johns Town of Dalry, Balmaclellan, New Galloway, Castle Douglas, Twynholm, Ringford, Laurieston, Twynholm, Bridge of Dee, Rhonehouse and Kirkcudbright are potential microbial sources. Work under Scottish Water's Quality and Standards II programme at New Galloway, Castle Douglas and Kirkcudbright has improved discharge quality and all other sites currently meet licence conditions.

The storm overflows serving the town of Kirkcudbright and its sewage works may pose a risk to Dhoon Bay due to their geographical proximity; this issue is being studied by Scottish Water. Although Kirkcudbright Creamery discharges effluent on the ebb tide and is close to the bathing water at Dhoon Bay, it should not be a source of microbial pollution of the bathing water.


Brighouse Bay

Brighouse Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Good	Good	Good	Poor	Good	Good	Good	Good	Good

Brighouse Bay is a small sheltered sandy beach between rocky outcrops.

There are no significant sewage discharges into this catchment, so there is little doubt that the occasional high bacterial counts in samples from this site are due to agricultural run-off both from farm steadings and diffuse pollution.

A project funded by the Scottish Government, completed in 2005, involved extensive fencing of watercourses and provision of alternative livestock watering points. Two farm wetlands were also introduced. This work sought to reduce poaching (trampling) of riverbanks and livestock excreta entering the Brighouse Burn. It is not yet clear if the good overall water quality achieved again this year in Brighouse Bay was due to these extensive efforts to reduce agricultural sources of pollution. A Scottish Government evaluation study investigated the level of improvement achieved from these field-based measures and is available on the Scottish Government website.

In the past, this bathing water has been most contaminated immediately after heavy rainfall events and one poor quality sample was reported in 2007. The results are encouraging but, given the recent relatively dry seasons experienced in this area, some caution is necessary. We cannot assume that its problems have all been fixed.

This bathing beach is part of SEPA's electronic beach signage network.

Carrick

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Good	Excellent	Poor	Good	Good	Good	Good

Carrick has had a rather variable quality record since its identification as a bathing water in 1999. This year it was of good quality status.

Following the failure in 2004 (the first in this water's history), a programme of farm inspections was instituted. It was concluded that agricultural run-off from this catchment was unlikely to have been the cause of the failure, though a farm slurry pollution problem was identified and fixed in 2007. Fortunately this incident did not affect the bathing water area.

As there are no major sewage inputs nearby, SEPA is considering further possible sources that may pose a risk to this bathing water. These include input from nearby islands, which are heavily populated with sea birds, or tidal influences carrying diffuse pollutants along the coast from the Fleet Estuary.


Mossyard

Mossyard

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Poor	Good	Poor	Good	Poor	Excellent	Excellent

Mossyard was newly identified as an EU bathing water in 2008, when it achieved excellent quality status. Because of its general recreational use, SEPA has monitored the water quality since 1999.

The area is rich in wildlife, with flocks of geese and other bird species occupying Fleet and Wigtown Bays during the whole year. In addition, the area has a good reputation for producing salt marsh lamb and flocks graze the Wigtown Bay salt marshes in good numbers, especially near Creetown. Sheep faecal pellets are a known potential source of coliforms, which could affect the Mossyard bathing water.

In terms of risk, the main source of likely failures is the River Fleet catchment, which drains a large area of land. The upper catchment is intensively afforested and the lower area consists of arable and dairy farms. Gatehouse of Fleet sewage treatment works applies secondary treatment and discharges into the Fleet Estuary.

The small coastal burn that flows through Mossyard Farm (beef and sheep) could pose a small risk to potential beach failures. Sewage from the caravan site at the farm is treated via a septic tank and soakaway system. The nearby Auchenlarie Holiday Park has implemented the first phase of a new sewage treatment facility to improve discharges into Wigtown Bay.

There have been occasional reports of algal blooms along this coastline during exceptionally sunny and calm weather conditions. Although such blooms can be a contributory factor in harbouring microbial pollution, the Mossyard coastline has good exposure to tidal conditions and is generally devoid of calm areas where algal blooms could accumulate.

Girvan

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Good

Girvan bathing water enjoyed eight years of good quality following completion of a major sewerage scheme. In 2007 the quality was poor as a consequence of the wet summer and frequent high river flows, conditions recognised as a threat to the bathing water. It is pleasing to report that the quality in 2008 reverted to good status, despite the generally wet late summer. This change did not result from any significant improvements but is a consequence of less frequent high river flows and the statistical variability inherent in any sampling regime. However, there is an underlying trend of gradual improvement.


Prestwick

Maidens

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Good	Good	Good

Maidens was newly identified as an EU bathing water in 2008, when it met good quality status. Due to its general recreational use SEPA has monitored the water quality since 1998.

Maidens beach borders the enclosed bay between Maidens harbour to the south and the rocky outcrop of Barwhin Point to the north. The beach is adjacent to caravan parks and the village of Maidens, in an area very popular with holidaymakers (especially in the summer months).

Historically the bay suffered from pollution by poor quality sewage effluent discharged from the village's septic tank. In 2003 this system was abandoned and the drainage from the village is now pumped to the treatment works at Girvan. The storm overflow at the pumping station is designed to meet bathing water criteria and the only other remaining potential pollution sources are diffuse run-off from land draining into the bay. Water quality at Maidens is usually expected to be good.

Culzean

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Good	Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent	Excellent

Culzean was newly identified as an EU bathing water in 2008. It achieved excellent quality status as it has done consistently since 2005. Due to its general recreational use SEPA has monitored the water quality since 1998.

Culzean is a very small attractive beach at the south-west edge of Culzean Country Park. To the south is the village of Maidens and to the north-east are the dramatic cliffs and rocky shore of the Country Park, noted for the wildlife. The bathing water is very popular with visitors to Culzean Country Park and Maidens village. Water quality is usually expected to be good or excellent.

Heads of Ayr

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	Good	Poor	Poor	Good	Good	Excellent	Good	Excellent	Good

Heads of Ayr was newly identified as an EU bathing water in 2008, when it met good quality status. Due to its general recreational use SEPA has monitored the water quality since 2000.

The bathing water is located between the Heads of Ayr cliffs and the rocky outcrops at Greenan Castle, to the south-west of Ayr's main beach front. The beach is very popular with visitors from the nearby holiday parks.

There is potential for bacterial pollution from private sewage treatment facilities and diffuse run-off via the Carwinshoch Burn. Nevertheless, it is pleasing to report that in the first year of sampling following designation the bathing waters are classed as good.


Ayr (South Beach)

Ayr (South Beach)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Poor	Poor	Good	Good	Good	Good	Good	Poor	Good

Ayr (South Beach) bathing water achieved good status for five years until 2007, when quality was poor as a consequence of the wet summer and frequent high river flows. Water quality in 2008 reverted to good status despite the generally wet late summer.

Diffuse urban pollution remains a concern and weekly checks on key points, such as sewer overflows and surface water outfalls, were carried out throughout the bathing season.

Diffuse pollution via the two main rivers (Doon and Ayr) that flow into Ayr Bay on the Firth of Clyde continues to have the potential to cause poor water quality. The bathing water is therefore part of SEPA's electronic signage network.

Prestwick

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Good

Prestwick bathing water enjoyed eight years of good quality until 2007, when quality was poor as a consequence of the wet summer and frequent high river flows – conditions recognised as a threat to Ayrshire's coastal water quality. It is pleasing to report that the quality in 2008 reverted to good status despite the generally wet late summer.

Diffuse urban drainage remains a potential threat to quality and weekly checks on key points such as sewer overflows and surface water outfalls were carried out throughout the bathing season. A greater risk is from diffuse run-off via rivers and burns, and the bathing water remains part of SEPA's signage network.

Troon (South Beach)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Poor	Good	Good	Excellent	Good	Excellent	Good	Excellent	Good

This is the eighth successive year that Troon (South Beach) bathing water was classed as either good or excellent. It is a little disappointing that last year's excellent status was not repeated, but perhaps not too surprising in another wet summer. This change is not as a result of any deterioration but is a consequence of wet weather over the summer and the statistical variability inherent in any sampling regime. Fourteen of the 20 samples taken in 2008 were of excellent quality.


Irvine

Irvine

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Good	Good	Good	Good	Poor	Good	Good	Poor	Good

The quality of the bathing water at Irvine was again classed as good in 2008. The waters remain at risk from diffuse pollution via the rivers Garnock and Irvine, and this bathing water is part of SEPA's electronic beach signage network.

Scottish Water has continued to investigate and model improvement measures to reduce intermittent storm overflow discharges into the Irvine catchment. Diffuse urban pollution remains a concern and weekly checks on key points, such as sewer overflows and surface water outfalls, were carried out throughout the bathing season.

Saltcoats/Ardrossan

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Poor	Poor	Good	Good	Good	Good	Good	Good	Poor

After six successive years of good status, it is disappointing to report that Saltcoats/Ardrossan bathing water was classed as poor during 2008. Out of the 20 samples, 12 were of excellent quality but a further four were of poor quality. In all four cases the samples were taken following heavy rainfall and no obvious pollution sources were identified.

As elsewhere in Ayrshire, weekly checks on key points, such as sewer overflows and surface water outfalls, were carried out throughout the bathing season. This bathing water is part of SEPA's electronic beach signage network.

Seamill

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Poor	Good	Poor	Good	Good	Poor	Excellent	Good	Good

Seamill was newly identified as an EU bathing water in 2008, when it met good quality status. Due to its general recreational use SEPA has monitored the water quality since 1998.

Seamill bathing water is situated next to the small town of West Kilbride. The sandy beach is popular with both locals and summer visitors. The main risk to water quality is diffuse run-off via local burns and some urban drainage.

As elsewhere in Ayrshire, weekly checks on key points such as sewer overflows and surface water outfalls were carried out throughout the bathing season. Water quality is usually expected to be good.

Saltcoats/Ardrossan

Largs (Pencil Beach)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	Good	Good	Poor	Good	Good	Good	Good	Good	Good

Largs (Pencil Beach) was newly identified as an EU bathing water in 2006 and met good quality status in both 2007 and 2008. Due to its general recreational use, SEPA has monitored the water quality since 2000.

The designated bathing water area consists of a number of sandy beach areas with a mix of grass and pebble shore strips interspersed by rocky outcrops. Two small coastal burns enter the sea at the beach, draining a relatively small catchment consisting mostly of hill, moorland and a golf course. The main farming activity is sheep grazing, which studies elsewhere in the UK have shown could introduce diffuse sources of faecal indicator bacteria.

Some 1.2km north of the designated bathing water area, Gogo Water, may have some influence on bathing water quality under certain tidal states and at times of high river flow. But once again no samples failed to meet the mandatory bacterial standard in 2008, even following wet weather. The most likely risk of failure is still diffuse run-off during the wet weather and SEPA considers that this water, like the others in Ayrshire, remains vulnerable to pollution caused by storm events.

Lunderston

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Good	Poor	Good	Good	Good	Good	Good	Excellent	Excellent

Lunderston was newly identified as an EU bathing water in 2008, when it met excellent quality status. Due to its general recreational use SEPA has monitored the water quality since 1998.

This compact sandy beach is a popular recreation and picnic area adjacent to Cardwell Garden Centre and is located approximately five miles from Greenock and 30 miles from Glasgow. Lunderston Bay is Clyde Muirshiel Regional Park's only seaside attraction, with free parking, Ranger Service, environmental education events and various seaside activities.

There are no significant discharges into the bay that cause concern to SEPA. Inverclyde sewage treatment works, which provides full biological treatment, discharges to Firth of Clyde approximately 1km north-west of the bay.

Millport Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Poor	Good	Good	Good	Good	Good	Excellent	Good

Millport Bay on the Isle of Cumbrae was first identified as a bathing water in 1999. Although it attained excellent quality status in 2007, it was again classed as good in 2008.

Old septic tanks serving Millport were abandoned before the 2005 season and all sewage is now intercepted and pumped to a new treatment plant that discharges outside the bathing area. This new treatment scheme has resulted in improved quality and more reliable compliance with EU mandatory standards. The bathing water was affected this year by diffuse urban drainage during wet weather.

Luss Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Luss Bay on Loch Lomond continues to attain good quality status, although there was one failure this year of the mandatory standard. Concurrent samples taken from Luss Water and near Luss sewage treatment works showed that the problem was not caused by agricultural run-off to the catchment or the operation of the STW. There are other potential sources, such as the number of birds on the water around the sampling point and diffuse inputs from the nearby car park and roadways, but no obvious source of failure was found.

Scottish Water has added a further treatment unit at Luss STW to improve the clarity of the final effluent, which in turn improves the effectiveness of ultraviolet disinfection of the discharge. This was reflected in the consistently good compliance with the coliform standards laid down in the STW licence.

Ettrick Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor

Ettrick Bay on Bute was designated a bathing water in 1999 and, for six years, failed to meet the directive's quality standards. After two years of good quality, the bathing water returned to poor status in 2007 and 2008. Three failures of the mandatory standard were recorded on 31 July, 27 August and 1 September 2008. On each occasion, the significant rainfall recorded during the preceding 48 hours is likely to have washed large amounts of bacteria from the surrounding land into the receiving watercourses.

There are no significant sewage discharges in the vicinity of the beach and the failure to meet the required standards is attributed solely to agricultural pollution, which reaches the bathing water via local streams that flow across the beach. The surrounding area is intensively farmed and high levels of bacteria have been found in the streams after heavy rainfall.

SEPA has encouraged all farms in the area to adopt practices that will reduce bacterial inputs to local watercourses. Its continuing work with the agricultural sector to promote best practice should lead to further improvements in the water quality at Ettrick Bay. However, the beach will continue to be at risk of failure should rainfall in future years repeat the pattern this season of short high rainfall periods, instigating a flux of nutrient input to the bathing water. This bathing water therefore remains part of SEPA's electronic signage project.

Machrihanish

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Machrihanish was identified as an EU bathing water in 1999. The bay is a 5km long, quiet, rural sandy beach located on the Mull of Kintyre peninsular. It is favoured not only by locals but also by surfers and other water sports enthusiasts. It achieved good quality until 2003 and has met excellent quality standards for six successive years.

The step change in 2003 followed the diversion by pumping of sewage from the small communities of Machrihanish, Stewarton and Drumlemble across to Campbeltown STW for full treatment. Provided potential agricultural pollution sources in the area are kept under control, excellent quality should now be maintained and, as a result, this bathing water is at low risk of failing to comply with EU standards.

Achmelvich

Ganavan

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Good	Good	Excellent	Good	Good	Good	Excellent

Ganavan was identified as a bathing water in 1999 and achieved excellent quality in 2008, meeting guideline standards.

The bathing water consists of two sandy beaches a few miles north of Oban. The beaches are secluded and provide excellent views for visitors to enjoy. A Scottish Water pumping station pumps sewage from the Ganavan public system to Oban for treatment at the STW prior to discharge into the Sound of Kerrera. This STW serves the resident population of Oban (9,000 rising to 20,000 in summer). SEPA has required a local caravan site to upgrade its sewage treatment facility. Despite this requirement the bathing water is believed to be at low risk of failing mandatory standards.

Achmelvich

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Excellent

Achmelvich was designated a new bathing water and sampled for the first time in 2008.

The bathing water lies three miles north-west of Lochinver and 40 miles north of Ullapool. It is adjacent to a small but popular campsite and caravan park which overlooks the beach. Apart from the caravan park, no public sewerage system operates within this water.

Despite the difficult road access, the area is popular with tourists (especially during the summer months). The white sandy beach and clean water quality attract those interested in the outdoors and water sports, with water-skiing, windsurfing and coasteering being popular on the beach. The implementation of a beach management guide in 2004 led to dogs being banned from the beach during the peak tourist season.

The excellent status achieved in 2008 can be attributed to the absence of any major discharge into the bathing water and it is considered to be at low risk of failing mandatory standards.

Thurso

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Good	Good	Good	Excellent	Good	Good	Excellent	Good	Excellent

Thurso was designated a new bathing water and sampled for the first time in 2008.

The bathing water is less than 1km long and extends from Rockwell Point to Little Ebb. The bay receives freshwater input from the River Thurso. The river mouth is at the most southerly reach of the bay and at least 2km from the more northerly and more open waters of the Atlantic.

During the 2008 bathing season Scottish Water began investigating an intermittent discharge of sewage effluent from a flagstone-lined culvert to the River Thurso within the tidal limit. It has had difficulties finding the source of this discharge and investigations are ongoing. Despite this intermittent discharge, the bathing water achieved guideline standards for the 2008 bathing water season and is expected to obtain at least mandatory standards in future.


Rosemarkie

Dunnet

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Excellent	Good	Excellent	Good	Excellent	Excellent	Good	Good	Excellent	Excellent

Dunnet, in Caithness, was identified as a bathing water in 1999, although it has been monitored as a non-designated beach since 1996. Good or excellent quality has been recorded every year since 1998.

The input of sewage from Castletown previously affected the quality of the bathing water in Dunnet Bay. As part of ongoing investment to improve water quality in the area, Scottish Water installed a sewage treatment works in 2006 on a new site further from the bathing water. This year the bathing water achieved excellent quality, meeting guideline standards.

Health and safety issues over the use of peracetic acid as a disinfectant at the Dunnet septic tank had prevented its use in previous years. SEPA had asked Scottish Water to arrange for flow proportional peracetic dosing during the 2008 bathing season, but problems with access meant Scottish Water was unable to maintain the septic tank and therefore peracetic dosing did not take place. Scottish Water is discussing alternative access to the septic tank with other landowners.

Dornoch

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Dornoch was identified as a bathing water in 1999. Local sewage and agricultural sources of pollution have been progressively reduced and, in 2008, it achieved excellent quality again for the eleventh consecutive year.

The beach continues to be a popular destination for visitors and locals who value the high quality of the bathing water. The only river feeding directly into the bathing water is the Dornoch Burn, which has a relatively small catchment area and therefore does not pose a significant risk to bathing water quality.

Rosemarkie

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Good

Rosemarkie was designated a new bathing water and sampled for the first time in 2008, meeting mandatory standards and achieving good status.

The bathing water fronts a wide, picturesque bay which looks out on Fort George and the Moray coastline across the Moray Firth.

A single sample taken on 4 June 2008 exceeded the mandatory standards during a period of particularly heavy rainfall. SEPA served an enforcement notice on Scottish Water regarding inadequate treatment of sewage from the villages of Fortrose and Rosemarkie, although this has not been positively identified as the cause of the exceedance. Scottish Water will continue to monitor closely the sewage works in question to ensure compliance with bacteriological conditions.


Nairn Central

Dores

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

An area of Loch Ness next to the village of Dores was identified as a bathing water in 1999. It is one of three identified freshwater bathing waters in Scotland and again achieved good quality this year.

This relatively small bay, around 0.6km long, is popular with tourists (particularly in the summer season). The Rock Ness music festival in June attracts thousands of visitors to the area.

Scottish Water extended the public sewerage system in the village in 2004 to pick up numerous septic tanks previously identified as a potential risk to water quality and which discharged to either the Minister Burn or Loch Ness. SEPA continues to monitor the Minister Burn and is seeking to find and eliminate remaining pollution sources. This bathing water is expected to achieve good status in 2009.

Nairn (Central)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Excellent	Excellent	Good	Excellent	Good	Excellent	Good	Good	Excellent

Nairn (Central) was identified as a bathing water in 1999. It is one of two designated bathing waters in Nairn, which are separated from each other by the piers either side of where the River Nairn flows into the sea. The beach area to the western side of the piers, bordering the town's leisure area, is known as Nairn (Central). The beach area to the eastern side is known as Nairn (East) – see page 26.

Water quality benefited greatly from the upgrading of the Nairn sewage treatment works in 2000, but the disinfection system required by SEPA to ensure adequate protection proved unreliable and a completely new disinfection system was installed in 2004. The record of good or excellent quality since 1996 was maintained with excellent quality in 2008.

The pollution threats to Nairn (Central) are the same as those for Nairn (East) and are outlined on the next pages.


Loch Morlich

Nairn (East)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Excellent	Good	Good	Excellent	Excellent	Poor	Good	Good	Good

Nairn (East) is a pleasant and popular sandy beach. In recent years it has had a good and improving quality record but, in 2005, two early season samples exceeded the mandatory quality standards. Subsequent enforcement action by SEPA led to a court case with a successful outcome during 2006. During 2007 one sample exceeded the mandatory EU standards, but this followed an extensive downpour, which was the obvious cause. Despite this the underlying water quality has remained very good for the last three years, but may be temporarily influenced by unauthorised discharges, diffuse agricultural pollution and weather-related events.

Bacterial loadings from the River Nairn are considered sufficient to pose a risk to the bathing beaches at Nairn. Consequently SEPA issued Scottish Water with revised discharge licence consents that require disinfection of effluents at Sunnyside, Croy and Cawdor sewage treatment works prior to discharge. SEPA continues to work with Scottish Water to improve discharge quality at these sewage treatment works. The continuous discharge from Brackla septic tank has been removed and the remaining few properties that feed intermittently into the tank pose a low risk of contamination.

Issues remain with the performance of some sewage treatment works (public and private) in the Nairn area, with bacteriological standards being breached in the latter part of the 2008 season. In addition, the collection system in Nairn itself has suffered some problems. Discussions are being held to prevent these issues being carried over into the 2009 season.

Findhorn

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Excellent

Findhorn is a new EU bathing water, designated at the start of the 2008 bathing season. The beach is located within the Moray Firth at the mouth of Findhorn Bay, which receives the River Findhorn as well as several burns and is an important habitat for birds. The designated area sits at the end of a sweeping sandy bay and is backed by dunes and a caravan site. Findhorn achieved excellent water quality in this first year of its designation, with all samples complying with guideline standards throughout the bathing season.

Loch Morlich

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Excellent

Loch Morlich was newly designated as a bathing water at the start of the 2008 bathing season and is one of only three inland bathing waters in Scotland. It is situated in the Cairngorms National Park and falls within the River Spey Special Area of Conservation. It is a shallow loch surrounded by forest, sitting close to the foot of Cairngorm. The loch lies approximately six miles from Aviemore and is a popular location for water sports activities, as well as walking and mountain biking.

Loch Morlich qualifies for reduced sampling due to its remote location. It achieved excellent water quality in 2008, with all samples complying with guideline standards.


Cullen Bay

Lossiemouth (East)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Good

Lossiemouth (East) was newly designated as an EU bathing water in 2008 (though it has been monitored by SEPA and its predecessors since the 1980s) and achieved good water quality during the bathing season. The designated bathing beach is a long, sandy stretch situated to the east of the town of Lossiemouth on the Moray coast near Elgin.

One mandatory exceedance occurred in late August, but this was discounted on the grounds of abnormal weather as rainfall levels exceeded the five-year return period.

The River Lossie and the Spynie Canal flow across the back of the beach and into the sea at one end of the bathing water. Further work is needed to determine whether water quality issues in these watercourses could be affecting bathing water quality.

Cullen Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent

The attractive sandy beach at Cullen is a popular destination for visitors and locals who value the high standard of the bathing water, which has consistently achieved good or excellent quality since 1997.

Cullen has benefited from substantial improvements to the surrounding sewerage system in recent years. Pumping stations were commissioned early in 2003 to transfer sewage from Cullen to the sewage treatment works at Buckie.

Cullen achieved excellent quality in 2008, with the vast majority of samples complying with guideline standards. One sample failed the mandatory standards during a period of exceptionally heavy rain in late August, but this result was discounted on the grounds of abnormal weather. A mandatory breach of the faecal coliforms standard did occur in July during good weather conditions. The cause of this failure is unknown, but no further breaches occurred and faecal coliform levels remained low throughout the remainder of the season.


Inverboyndie

Inverboyndie

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Excellent	Good	Good	Excellent	Excellent	Good	Excellent	Good	Good

Inverboyndie was identified as a bathing water in 1999. The beach is a popular tourist area as it is adjacent to a large caravan site. It achieved good bathing water quality in 2008, although water quality was affected by wet weather on occasions during the summer. One mandatory failure was discounted on the grounds of abnormally wet weather in late August.

Inverboyndie has benefited from substantial improvements to the surrounding sewerage system in recent years. A continuous discharge of untreated sewage at one end of the beach has been eliminated; the sewage is now pumped to a sewage treament works (at Macduff) where it undergoes full biological treatment followed by ultraviolet (UV) disinfection. The outfall has been retained only as a storm and emergency overflow for the pumping station.

A potential impact on bathing water quality at this beach comes from the Boyndie Burn, which discharges to the sea at the western end of the beach. Farms in this catchment were inspected in 2003 to identify potential sources of bacterial contamination that could affect bathing water quality. The response from the farming community was encouraging, with the majority of farms found to have taken action to minimise agricultural pollution.

Several large septic tanks serving the Inverboyndie caravan site were identified as impacting on water quality at the mouth of Boyndie Burn. Following action by SEPA, these septic tanks have been removed and the site was connected to the public sewer before the start of the 2008 bathing water season.

Rosehearty

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Excellent	Good	Good	Good	Excellent	Good	Good	Excellent	Good	Poor

Adjacent to the town of Rosehearty, this beach is becoming more popular with wildlife enthusiasts after recent sightings of basking sharks and whales off the coast. It is also frequently used by scuba divers. Rosehearty was identified as a bathing water in 1999.

The bathing water failed to achieve good quality in 2008 for the first time since its designation as it exceeded the mandatory standard for faecal coliforms on two occasions. The first failure was a very marginal breach following wet weather, which may have been influenced by the operation of the storm overflow at the wastewater pumping station. However the second failure occurred following a period of relatively dry weather. Subsequent investigative sampling found levels of bacteria to be higher at the sample point than elsewhere at the bathing water. There is little circulation in the area of sampling and the large amounts of seaweed present can harbour bacteria, prolonging their survival. It is thought that the elevated number of bacteria in this second failing sample may have been indicative of a localised area rather than the entire bathing water. SEPA is therefore considering finding a more representative sampling point for Rosehearty.

In 2001 sewage from the town was diverted to the new STW at Fraserburgh, which has UV disinfection designed to protect bathing water quality. There is now only a pumping station at Rosehearty, which is authorised to discharge screened sewage only under certain storm and emergency conditions. An audit of several farm steadings draining to watercourses in the vicinity of Rosehearty in 2003 concluded that they did not pose a threat to compliance with bathing water quality standards.


Fraserburgh

Fraserburgh (Tiger Hill)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Good	Poor	Good	Excellent	Good	Excellent	Excellent	Good	Excellent

This sandy beach next to the town of Fraserburgh is a popular location for bathing as well as for surfing, walking and family outings. The bathing water was of excellent quality in 2008, with the vast majority of samples complying with guideline standards.

Significant upgrading of the local sewerage infrastructure was completed in 2001, with 12 previously untreated sewage outfalls being replaced by a full biological treatment plant with UV disinfection and a single outfall 3km to the west of the bathing water.

The local Kessock Burn drains to the beach to the west of the monitoring point and remains a potential source of bacterial contamination. Audit inspections of farms in the catchment were carried out in 2003. The majority of these have since been revisited and found to have complied with the required improvement measures.

Fraserburgh (Philorth)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Good

This beach is a popular recreational and windsurfing area located at one end of the sandy bay that links Fraserburgh and Philorth.

Fraserburgh (Philorth) achieved good rather than excellent water quality in 2008, following a breach of the mandatory standards in late August. This occurred after a period of very wet weather, which affected the whole of north-east Scotland (although locally monitored rainfall levels were not sufficiently high to warrant an abnormal weather waiver). Water quality throughout the rest of the season was of a high standard, with 80% of samples complying with guideline standards.

There are no sewage discharges in the immediate vicinity of the bathing water and the Water of Philorth discharges some distance to the east of the monitoring point.

Peterhead (Lido)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Good	Poor	Excellent	Good	Excellent	Excellent	Excellent	Good

Peterhead (Lido) is located within the outer harbour (Bay of Refuge) of the town of Peterhead. This bathing water attracts a diverse range of water sports enthusiasts, with dinghy sailing in the sheltered waters of the bay being particularly popular. Peterhead Lido achieved good bathing water quality in 2008, continuing a good compliance record.

Improvements to the sewerage infrastructure completed before the 2003 season included increased storage capacity at the main pumping station and a better telemetry system. Discharges from the pumping station are now permitted only under emergency or storm conditions, with the licence conditions designed to protect the bathing water. Further improvements to this pumping station, including the installation of new pumps, are planned under Scottish Water's Quality & Standards III investment programme and should be completed before the start of the 2009 season.


Cruden Bay

Cruden Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Poor	Good	Poor	Good	Good	Good	Good	Good	Poor

This bathing water consists of an extensive sandy beach backed by sand dunes next to the small village of Cruden Bay. It failed to achieve good water quality in 2008 for the first time since 2003. Mandatory exceedances occurred on three occasions during the bathing season, each time following periods of wet weather.

Sewage from the village has been pumped to Peterhead sewage treatment works since 2003 and an unsatisfactory short outfall has been removed. The former outfall is retained only as a storm and emergency overflow. These improvements are reflected in the good standards in recent years prior to 2008. Cross-connections are thought to be a potential issue in the village.

The Water of Cruden, which drains the majority of the catchment, flows past the village of Cruden Bay and into the sea at one end of the bathing water. Diffuse pollution still affects water quality, with around 60 farms operating in the catchment. These have been visited and, where necessary, remedial measures implemented.

The Water of Cruden also receives the discharge from the sewage treatment works serving the village of Hatton upstream. A sand filter and ultraviolet (UV) disinfection unit was installed at the Hatton STW before the start of the 2006 season to reduce the bacterial loading to the Water of Cruden. But, despite the serving of an enforcement notice and Scottish Water operating two systems in tandem, the treatment system is still not operating satisfactorily. Scottish Water intends to pump flows from Hatton to Peterhead STW for treatment within the next three years but, in the meantime, is working to resolve performance issues with the UV treatment system. A large septic tank discharge at Bridgend, downstream from Hatton, was removed from the Water of Cruden in 2005 in favour of discharge to soakaway.

Microbiological surveys were carried out in August 2008 to help identify particular sources of contamination within the catchment. Samples showing elevated levels of contamination were reserved for potential microbial source tracking analysis to distinguish between human and animal sources of bacteria. It is hoped that the results of this survey will help identify the further work needed to achieve improved water quality in Cruden Bay.

In light of the revised Bathing Water Directive, Scottish Water has commissioned a Drainage Area Study of the catchment. If work is deemed necessary, an improved modelling tool may be available by autumn 2009, which could be used to identify the improvements required to achieve compliance with relevant environmental standards.

Balmedie

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good

This popular expanse of sandy beach is next to Balmedie Country Park, about seven miles north of Aberdeen. It was identified as a bathing water in 1999 and has achieved good or excellent water quality since then. The failure to continue the pattern of excellent water quality at Balmedie in 2008 may be a result of the wet summer.

The bathing water quality in recent years has benefited from the installation of a new STW at Balmedie, which was commissioned before the 2004 bathing season. The STW also treats sewage pumped from the nearby village of Newburgh.

Farm audits carried out during the 2003 season in the Balmedie area revealed a number of minor problems, which resulted in several follow-up inspections in 2004. Agricultural pollution is not now considered to have a significant impact on bathing water quality at this location.


Aberdeen

Aberdeen

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Good	Good	Good	Good	Good	Good	Excellent	Good	Poor

Aberdeen has an extensive sandy beach, which is a popular recreation area and attracts many walkers, swimmers, surfers and kite surfers. The bathing water failed to achieve good water quality in 2008 due to mandatory exceedances on two occasions, both following very heavy rainfall. Electronic signage is provided near the Aberdeen Ballroom to advise bathers of predicted water quality.

Improvements to the sewerage network have seen a reduction in combined sewage discharges from the Kings Links overflow and the installation of two mechanical screens, two static screens and seven event recorders. Five other sewer overflows have been eliminated. Ultraviolet disinfection of the final effluent at Persley STW is carried out to reduce the bacterial loading to the River Don.

Scottish Water is working on a drainage area plan for the city. This will identify further improvements to the drainage network necessary to reduce the operating frequency of combined sewer overflows and effectively lead to improved water quality of the burns and rivers in the catchment for the bathing water.

Microbial source tracking samples were taken at the bathing water and the main river inputs during the 2008 season, as part of an action plan to help understand potential sources of bacterial pollution.

Stonehaven

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Good	Good	Good	Good	Good	Poor	Good	Good	Good

Stonehaven is an increasingly popular coastal resort that is well used by water sports enthusiasts. It was identified as a bathing water in 1999 but had been monitored since the 1980s. Stonehaven achieved good water quality in 2008.

In order to comply with the Urban Waste Water Treatment Directive, sewage effluent from Stonehaven is now pumped to the main Aberdeen treatment plant for full secondary treatment and disposal via the long sea outfall at Nigg Bay. These facilities have been in place since 14 July 2008.

Despite the completion of this scheme in July, a single mandatory exceedance occurred following very wet weather in late August. Levels of bacteria in the River Carron on this occasion were over three times the seasonal average. The extremely low salinity measured at the sample site indicated that the high numbers of bacteria were mainly due to riverine inputs resulting from heavy rainfall.

Farming within the River Carron catchment is thought to contribute to diffuse pollution during wet weather. It is hoped that a small investigative microbiological survey, due to be carried out in winter 2008–2009, will help to explain the differences in bathing water quality in the vicinity of the River Carron in the southern part of the bathing water and the River Cowie in the north.


Montrose

Montrose

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The bathing water at Montrose has consistently achieved excellent quality since 1999.

The commissioning of Montrose sewage treatment works and associated works in January 2002 has ensured this high quality is maintained. The treatment plant and few remaining storm overflows (which include storm storage and screening) are designed to be compatible with the attainment of the Bathing Water Directive's guideline standards.

Lunan Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good

Lunan Bay was formally identified as an EU bathing water in 2008, although it has been monitored by SEPA for many years and has consistently achieved excellent water quality in the past.

In view of its consistent excellent status, sampling frequency was reduced from 20 to 10 samples in 2008 (as permitted by the Bathing Water Directive). It was therefore very disappointing that Lunan Bay failed to achieve excellent status this year. However, it is recognised that the weather conditions this summer are likely to have influenced the results.

Arbroath (West Links)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Good	Excellent	Poor	Good	Excellent	Excellent	Excellent	Good	Excellent

The identified bathing water at Arbroath (West Links) was excellent quality in 2008. The substantial improvement since the 1990s is ascribed to the pumping of local sewage to Hatton STW, which was commissioned in 2001. SEPA required this works to be designed to ensure that excellent quality would be achieved at Arbroath (West Links).

The disappointing failure of this bathing water in 2002 was tentatively ascribed to unplanned discharges from the combined sewer overflow. Possible sources were investigated and freshwater inputs close to the bathing water were monitored in conjunction with the bathing water during 2003–2004. But with better Scottish Water maintenance procedures by then in place, these sources were all clean. In 2005 monitoring effort was directed elsewhere, and excellent or good bathing water quality has been maintained.


Arbroath (West Links)

Carnoustie

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Since completion of the Hatton sewage treatment scheme, Carnoustie has had a good compliance record. All normal sewage flows from the Carnoustie catchment are pumped to the Hatton STW for full treatment. SEPA required this works to be designed to ensure guideline quality standards were met.

The local Lochty Burn, which outflows into the bathing water, has been identified as an occasional source of pollution. In addition, the complexity and age of the Carnoustie public sewerage system requires continued vigilance and investigative effort to ensure excellent bathing water quality is maintained. Achieving excellent water quality in 2008, despite the exceptionally wet weather, illustrates the success of this ongoing work.

The temporary dip in bathing water quality in 2002 was ascribed to contamination from local surface water inputs, which were affected by increased rainfall. Continuing investigations led to the identification and remediation of a number of potential problems, with surface water drains, sewer overflows and possibly sewer leakage into the Lochty Burn.

Further remedial work was carried out on the sewerage system in 2006 after a poor quality bathing water sample was traced back to a specific malfunction. A local Environmental Improvement Action Plan was implemented by SEPA before the 2007 bathing season to seek out and eliminate remaining potential polluting inputs to the burn, in order to minimise the risk of future poor quality events. With the co-operation of local residents, the direct discharges of septic tank effluent to the Lochty Burn from the Clayholes and Carlogie areas were removed.

Tentsmuir Sands

Broughty Ferry

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent

Broughty Ferry became an identified bathing water in 2006, but had been monitored by SEPA since 1997 due to its recreational use. Before 2002 water quality at Broughty Ferry was often poor. Excellent quality was achieved between 2002 and 2006, but only good quality in 2007, before a return to excellent quality this season.

The apparent slight drop in bathing water quality in 2007 was probably a result of the higher than average summer rainfall, though the Tay public finance initiative sewerage scheme is not designed to deliver excellent quality at Broughty Ferry. Increased rainfall can lead to greater run-off from urban and arable land, and also increases the likelihood of sewage system overflows.

Since 2002 all normal sewage flows from the Dundee area have been pumped to Hatton sewage treatment works (STW) for full treatment. As part of the same project, six crude sewage discharges in the Broughty Ferry area were intercepted and taken to a new pumping station at Broughty Castle, from where flows are passed forward to Hatton STW. Storm storage was provided at the pumping station and a new outfall installed to allow the discharge of screened storm sewage.

At the start of the 2007 season Broughty Ferry held a Blue Flag quality award, which recognises both the quality of the bathing water and the facilities provided by the local authority. It lost this status in 2007 because only EU mandatory standards were achieved. However, the bathing water returned to excellent status in 2008.

Tentsmuir Sands

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Tentsmuir Sands was formally identified as an EU bathing water in 2008, although it has been monitored by SEPA for many years. This bathing water consistently achieves excellent water quality.


St Andrews (West Sands)

St Andrews (West Sands)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

St Andrews (West Sands) has a good record of compliance with EU standards and has achieved excellent quality in each of the last 10 years. This bathing water also holds a Blue Flag quality award.

There was one mandatory exceedance on 5 August 2008, which was considered to be due to heavy rain. The problem recurred on 14 August 2008, but the weather that day was considered severe enough for an abnormal weather waiver to be granted. The other samples taken over the bathing season were of excellent quality and the beach retained its excellent status.

The STW at Kinkell Ness, to which all sewage from St Andrews is pumped, was commissioned in 2001. This works has tertiary treatment including ultraviolet disinfection and the treated effluent is discharged via a long sea outfall. Storm tanks constructed in the Kinness Burn sewer catchment minimise discharges from storm sewer overflows. The STW consistently meets its discharge consent conditions, which should ensure continuing excellent bathing water quality.

This STW reduces the risk of non-compliance with the Bathing Water Directive at both the St Andrews bathing waters. In January 2008 work to install new storm screens at the Harbour and Bruce Embankment pumping stations in St Andrews was completed. Both pumping stations discharge storm sewage to the designated bathing waters at West and East Sands (see below).

St Andrews (East Sands)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Poor	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Good	Good

This bathing water was identified in 1999, although SEPA and its predecessors had monitored it for many years. Between 2003 and 2006 the bathing water achieved excellent quality, but was only good quality in 2007 and 2008. Like St Andrews (West Sands), St Andrews (East Sands) exceeded mandatory standards on 14 August 2008 but was granted an abnormal weather waiver.

The bathing water at East Sands began the 2007 season holding a Blue Flag award. However, it lost this status because only EU mandatory standards were achieved during 2007. The reason for the reduced performance appeared to be the unusually wet summer, resulting in increased storm sewage discharge and increased freshwater flow from the Kinness Burn, which flows in to the north end of the bathing water.

The failure of East Sands to achieve excellent status in 2008 is again believed to be due to the high levels of coliform bacteria in the Kinness Burn. An action plan is being implemented on this watercourse to try to pinpoint the source(s) of contamination.


Crail (Roome Bay)

Kingsbarns

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Kingsbarns was identified as a bathing water in 1999. It achieved excellent quality for the seventh year running in 2008.

Poor bathing water quality was recorded in 2001, but since then the sea outfall has been extended to low water mark and Kingsbarns sewage treatment works (STW) has been upgraded. The STW now consists of a submerged media aeration system followed by sand filtration and ultraviolet disinfection during the bathing season. This tertiary treatment should ensure continuing excellent water quality.

Crail (Roome Bay)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

First identified as a bathing water in 1999, Crail (Roome Bay) has achieved excellent bathing water quality ever since. All local sewage sources are pumped to a STW at Kilminning, which provides adequate protection of these waters.

Elie (Ruby Bay)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Elie (Ruby Bay) was formally identified as a bathing water in 1999, although SEPA began monitoring in 1998. This bathing water has achieved excellent quality every year it has been monitored. Until 2007, Elie (Ruby Bay) was monitored and reported as part of the larger Elie (Harbour and Ruby Bay).

Elie (Harbour)

Elie (Harbour) and Earlsferry

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Elie (Harbour) and Earlsferry was formally identified as a bathing water in 2007, although it had been monitored by SEPA and its predecessors since the early 1980s. This bathing water has achieved excellent quality each year since 1998.

In 2008 Scottish Water provided storm storage and 6mm screening on overflows at pumping stations at South Street, Elie, and Cadgers Wynd, Earlsferry. Both pumping stations have storm outfalls to the bathing water. In addition, extensive repairs were made to the outfall pipe from the pumping station at Cadger's Wynd to ensure the discharge is made below low water mark.

Elie (Harbour) beach is managed and holds a Blue Flag award.

Leven

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Good	Excellent	Good	Good	Good	Good	Good	Excellent	Good

Leven was formally identified as an EU bathing water in 2008, although it has been monitored by SEPA for many years. Leven has consistently achieved good status since 2000, achieving excellent status in 2001 and 2007. Leven exceeded EU mandatory standards on 1 July 2008; SEPA is investigating the potential causes of this sample failure.

The sewerage infrastructure in this area is not designed to achieve EU guideline bathing water quality and it is considered that guideline status cannot be expected.

Kirkcaldy (Seafield)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Poor	Poor	Good	Good	Good	Good	Good	Excellent	Excellent	Good

Kirkcaldy (Seafield) was formally identified as an EU bathing water in 2008, although it had been monitored by SEPA for many years. It has achieved at least EU mandatory status (good) since 2001. The bathing water failed to meet mandatory standards on 3 June 2008 but achieved good status overall.

The sewerage infrastructure in this area is not designed to achieve guideline bathing water quality (excellent) and mandatory status is all that can be expected of this beach. However, guideline status was achieved in 2006 and 2007. Scottish Water will be targeting investigations of its assets in this area to identify the improvements required to achieve guideline status.


Burntisland

Kinghorn (Harbour Beach)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Poor	Good	Good	Good	Good	Good	Good	Poor	Good

Kinghorn (Harbour Beach) was formally identified as an EU bathing water in 2008, although it had been monitored by SEPA for many years.

This bathing water failed to achieve good status in 2007 due to a problem with an overflow from one of the pumping stations. Scottish Water has since rectified this problem and the bathing water returned to good status in 2008.

There was one exceedance of mandatory standards on 30 July 2008. This was believed to have been due to a choke in the Kinghorn sewerage system, which resulted in sewage overflowing into the Kinghorn Burn which outfalls to the harbour.

Kinghorn (Pettycur)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Good	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Good	Excellent

In 2006 Kinghorn (Pettycur) bathing water achieved excellent quality for the fourth consecutive year. However, in 2007, this very high standard was narrowly missed and only good bathing water quality was achieved. This decline in quality was ascribed to increased frequency of storm sewage discharge from the local sewage treatment works (STW) due to the unusually wet summer. The bathing water returned to excellent water quality in 2008.

New treatment facilities and a long sea outfall pipe at Pettycur were commissioned early in 1993. During 2001 the scheme was extended to treat and discharge all of Kinghorn's sewage through this system. This resulted in much improved water quality being achieved at Kinghorn's other beach, Kinghorn Harbour (see above), although excellent quality has not yet been attained there. Investigations before the 2006 season to determine the reason for this were inconclusive and will continue.

Burntisland

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Burntisland was identified as a bathing water in 1999. Before then untreated sewage was discharged via several short outfalls, causing gross pollution.

Scottish Water has since completed a prolonged series of improvements started by the former Fife Regional Council. Flows from several unsatisfactory outfalls have been diverted to a new STW before discharge via a long sea outfall. The unsatisfactory discharge from Lammerlaws was diverted to this works at the end of 1998 and excellent water quality has been achieved since. A new Lochies Road pumping station scheme was completed early in 2003, removing a discharge with an immediate threat to the bathing water. The harbour outfall and a few other small outfalls were intercepted and connected to the main sewers prior to the 2004 bathing season. This work should ensure that guideline quality standards continue to be attained.

In 2008 Burntisland maintained its excellent bathing water quality for the tenth consecutive year. Burntisland beach is well managed and holds a Blue Flag award.


Aberdour (Silver Sands)

Aberdour (Silver Sands)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The very popular bathing water at Aberdour (Silver Sands) has achieved excellent quality for the past 11 years and holds a Blue Flag award. The diversion of Dalgety Bay sewage by means of a pumping station and rising main to Dunfermline STW was completed in spring 2003, removing this distant potential risk to bathing water quality.

Portobello (West)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Poor	Good	Good	Good	Good	Good	Good	Good	Good

Portobello (West) was identified as a bathing water in 1999. In 2008 it was of good quality for the eighth consecutive year. This bathing water exceeded mandatory standards on 29 July 2008 and again on 6 August, though an abnormal weather waiver was granted for the second exceedance. The failures were considered to be due to heavy rain causing combined sewer overflows to operate and elevated bacterial levels in the Figgate Burn.

Bathing water quality at this site has been successively improved over many years by progressive enhancement of sewage treatment and sewerage infrastructure. Edinburgh's STW has effluent disinfection and does not threaten water quality. The remaining water quality threats are from local sewage pumping stations, the local Figgate Burn and potentially contaminated surface water run-off from adjacent urban areas.

A joint SEPA/Scottish Water working group continues to determine the impact of storm overflows and other inputs to the Figgate Burn, with a view to reducing these sources. A programme of CSO upgrading was carried out to reduce spill frequency. Several other sources of faecal contamination to the burn were identified and removed. This resulted in improved sanitary quality in the Figgate Burn, with a parallel improvement in bathing water quality at Portobello (West), as measured by the percentage of samples meeting the EU guideline standard for faecal coliforms. Other work to identify sources of surface water run-off contamination is continuing.

To further improve this bathing water to guideline standard, a study group was set up to investigate the reasons for the current failure to achieve this quality. All unsatisfactory intermittent discharges in the catchment have been reviewed and a new tidal waters model has been used in conjunction with a freshwater model of the Figgate Burn to identify any improvements required. It was concluded that no further improvements are required at CSOs in the vicinity of the bathing water, and that background bacterial levels in the Figgate Burn are hindering the bathing water from reaching excellent quality. A sampling programme is continuing for the Figgate Burn to try to trace the source of these elevated bacterial levels.


Portobello (Central)

Portobello (Central)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Poor

Portobello (Central) became an identified bathing water in 1999. The bathing water achieved excellent quality for the first time in 2001, a status which was maintained until 2005. The main reason for the change in status from good in 2000 to excellent in 2001 was improvements by Scottish Water to reduce the occurrence of storm sewage overflows. For example, investigative work on the Joppa sewer by the water authority following a sewer overflow in May 2000 resulted in removal of debris. This increased the flow passing on to Seafield and reduced the frequency of overflows at Joppa.

Portobello (Central) was good quality in both 2006 and 2007 but failed EU mandatory standards for 2008. The bathing water first failed EU mandatory standards on 29 July, but the rainfall was sufficiently heavy to trigger an abnormal weather waiver. There were two further failures on 6 August 2008 and 18 August but, despite significant rainfall, it was not considered sufficient to trigger an abnormal weather waiver in either case.

Investigations showed that the intense rainfall caused the flow in the sewer at the Joppa pumping station to exceed the capacity of the duty and assist pumps, causing more frequent spillages of the combined sewer overflow (CSO). The standard procedure at the pumping station is to have duty and assist pumps operating, with a standby pump available if one of these should fail. As the capacity of the duty and assist pumps was exceeded, Scottish Water brought the standby pump into operation for the rest of the bathing season.

Problems with the pumps at the Joppa sewage pumping station was also considered the reason for an exceedance of mandatory standards in 2007. The pumps had been required to operate above their design capacity due to additional flow in the sewer, which was due to minewater from abandoned mineworkings. To address this issue, Scottish Water installed new pumps in 2007 of greater capacity in order to reduce the spill frequency at the pumping station.

The Coal Authority has also been examining ways to reduce the minewater flow. A preparatory borehole was sunk into the abandoned mineworkings during 2008, and pump tests will be carried out early in 2009 to establish whether it is possible to find ways of reducing this flow.

Although the threat from diffuse pollution is relatively slight, this bathing water is part of the SEPA's electronic signage system (see Section 2.4).


Seton Sands

Seton Sands

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	Good	Good	Good	Good	Excellent	Excellent	Good	Excellent	Excellent	Good

Seton Sands/Longniddry was identified as a bathing water in 1999. Between 1999 and 2002 it achieved good quality and, in 2003, achieved excellent quality for the first time. This was maintained in 2004 but not, disappointingly, in 2005, when the bathing water returned to good quality. This drop was investigated before and during the 2006 bathing season. Though some elevated contamination levels were found in the Canty Burn, it was not possible to confirm that this was the source of the problem in 2005. The Canty Burn is now sampled at the same time as bathing water samples are collected to provide additional information should any future problems arise. Work to eliminate overflows from dual manholes in the Canty Burn catchment has been completed. Longniddry (see below) became a separate identified bathing water in 2006.

The EU mandatory standard was exceeded at Seton Sands on 18 August 2008. On this occasion rainfall was heavy but not sufficient to trigger an abnormal weather waiver. An investigation showed that the failure had been influenced by a choke in a hydrobreak CSO at Seton Sands Caravan Park. Prompt action was taken by Scottish Water to address this problem, which resulted in the subsequent sample passing the standard and the bathing water achieving good status for the year.

Longniddry

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Poor	Poor	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent

Although previously part of the Seton Sands bathing water, Longniddry became a separate identified bathing water in 2006. It has been monitored by SEPA since 1996. Before 2002 water quality at Longniddry was often poor, but good or excellent quality has been achieved continuously since then.

In 2002 a new interceptor sewer was laid to convey the sewage from Longniddry to Edinburgh sewage treatment works (STW). The existing STW at Longniddry became a storm treatment works with a design overflow spill frequency of only once every five years. The impact of this improvement and work, funded partly by residents, to convey sewage from Seton Mains to this sewerage system is best measured by the fact that the bathing water at Longniddry Bents met the excellent quality standard for the first time in 2004, despite the wet weather that year. This standard has been maintained since.

Gullane

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The very popular and picturesque bathing water at Gullane has achieved excellent quality status every year since 1995 – a consistency of excellence which reflects this bathing water's status as one of the cleanest in the UK.

The high quality of the bathing water at Gullane is due to the effective local STW and the fact that storm overflows are located well away from the bathing water area. Work was completed early in 2004 to build a new long sea outfall and to extend the outfall for the discharge of storm sewage. This provides further protection of the bathing waters in this area.


Yellowcraig

Yellowcraig

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent

The improvement in quality of the identified bathing water at Yellowcraig in 1999 followed the diversion of sewage from Dirleton to the sewage treatment works (STW) and long sea outfall to the east of North Berwick. Prior to this it had discharged at the western end of Broad Sands Bay. Following this diversion, Yellowcraig achieved excellent quality for six consecutive years up to 2004, and it was disappointing that there was a drop in bathing water quality to good in 2005. One possible cause was a nearby surface water discharge which may have been intermittently contaminated, but SEPA was not able to confirm this.

In 2006 Yellowcraig returned to consistently achieving guideline bathing water quality, perhaps suggesting that the 2005 result was atypical.

Broadsands

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Excellent

Broadsands was formally identified as an EU bathing water prior to the 2008 bathing season. It is adjacent to Yellowcraig and people frequently walk between the two beaches. Although it had not previously been monitored, it achieved excellent water quality in 2008.

It is expected to continue to maintain excellent status, achieving similar water quality to Yellowcraig.

North Berwick (West)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent

SEPA and its predecessors have sampled North Berwick (West) since the 1970s, though its first year as an identified bathing water was 1999.

Before 1995, when the North Berwick STW scheme was completed [see opposite page under North Berwick (Milsey Bay)], North Berwick (West) frequently failed to meet required quality standards. While bathing water quality improved markedly after this date, occasional problems with the sewage collection and treatment infrastructure remained. The reason for the slight reduction in quality in 2004 from excellent to good was probably related to a local sewage contamination incident being flushed through to the beach by water from a burst water main. This was revealed and tracked down through monitoring work by SEPA and Scottish Water. Prompt remedial action by Scottish Water should ensure this problem does not recur.

In 2005 North Berwick (West) returned to excellent status, which was maintained in 2006. It was disappointing that, in 2007, North Berwick (West) met the mandatory (good) standard and not the excellent standard – albeit by the narrowest of margins. This was partly due to a pump failure at North Berwick STW on 15 July 2007, which caused backing up in the main sewers and surcharging onto the beach. SEPA served an enforcement notice on Scottish Water requiring it to investigate the cause of the problem and to take action to resolve it. Scottish Water took very prompt action to deal with this problem and has put in place measures to prevent any recurrence.

Two mandatory exceedances occurred on 10 July and 7 August 2008 due to extremely heavy rainfall. In both cases an abnormal weather waiver was granted and the bathing water returned to excellent (guideline) status in 2008.


North Berwick (Milsey Bay)

North Berwick (Milsey Bay)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The identified bathing water at North Berwick (Milsey Bay) has achieved excellent quality since 2000. Bathing water quality improved greatly after the commissioning of the North Berwick STW and long sea outfall in 1995, although SEPA was disappointed that excellent quality was not achieved until after 1999.

Investigations by SEPA before the 2000 bathing season identified two significant sewage sources that could affect water quality at Milsey Bay. These were brought to the attention of Scottish Water for remediation. As a consequence, North Berwick (Milsey Bay) achieved excellent quality in 2000 for the first time. This very high standard has been maintained since.

In the early part of the 2004 bathing season, slightly elevated bacterial levels were observed in the Milsey Bay bathing water. SEPA investigative sampling discovered a small leak from the STW high level overflow. Scottish Water found this to be a result of faulty bleed valve seals. As a result of these investigations, action was carried out to remedy the situation and thus ensure that excellent water quality was maintained. The same problem had occurred in 2002. To prevent a recurrence, any leaks are now returned to the inlet rather than to the overflow channel. These leaks and discharges illustrate the need for ongoing vigilance. This is particularly true with bathing waters that have freshwater inputs and storm sewage infrastructure nearby.

Seacliff

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	n/s*	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

* Access restrictions due to foot and mouth disease.

Seacliff was identified as an EU bathing water prior to the 2008 bathing season, although it had been monitored by SEPA for many years. The bathing water is popular with surfers and the water quality is consistently excellent.


Dunbar (Belhaven)

Dunbar (Belhaven)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent

Dunbar (Belhaven) is a fine sandy beach where the identified bathing water achieved excellent status every year between 1993 and 2008, with the exception of 2006.

Excellent bathing water quality was again achieved in 2008, although mandatory standards were exceeded on 13 August 2008. Rainfall was heavy but not sufficient to trigger an abnormal weather waiver. Investigations showed that high levels of bacteria were present in a surface water outfall from Dunbar discharging to the Biel Water. Extensive subsequent investigations by both Scottish Water and SEPA identified a newly developed pumping station discharging into this surface water system. This problem has now been resolved.

Mandatory standards were also exceeded on 10 July and 7 August 2008. However, the rain was considered sufficiently heavy to grant an abnormal weather waiver.

The original West Barns sewage treatment works (STW) and long sea outfall were commissioned in 1993. Although the bathing water has mostly achieved excellent quality since, the STW and outfall suffered frequent short circuiting with the result that untreated sewage could be discharged via the old West Barns outfall and storm overflow. SEPA required Scottish Water to eliminate this source of pollution. The consent issued for a new treatment works required Scottish Water to replace the West Barns STW by the end of 2005. However, delays in concluding the terms of the necessary land acquisition meant that the works were not completed until May 2008. The new STW has been built inland with a discharge to the Biel Water, utilising the existing long sea outfall as a storm overflow. The use of membrane technology means that the high quality of effluent required for bathing water compliance will be achieved without the need for additional disinfection, further safeguarding the quality of this bathing water. Investigations have shown that the new sewage treatment works is performing well and complying with its consent.

Dunbar (East)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Dunbar (East) was identified as a bathing water in 1999, although it had been monitored by SEPA and its predecessors for many years.

In 2008 Dunbar (East) again achieved excellent quality as it has done every year since sewage from the east side of Dunbar was diverted to the main sewer 12 years ago.

Thorntonloch

Whitesands

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Good

Whitesands achieved excellent status each year from 1988 to 2003, though it was not formally identified as a bathing water until 1999.

Disappointingly, Whitesands only achieved good status in 2004, failing to meet excellent by the narrowest of margins. This was possibly a result of the wet weather, increasing local surface water contamination. This site is remote from any significant sewage inputs.

Excellent status was restored in 2005 and maintained in 2006 and 2007. Unfortunately, this bathing water again achieved good status in 2008, once more failing to meet excellent by the narrowest of margins. This is again probably a result of the unusually wet weather.

Whitesands is a shallow enclosed bay, protected from the effects of strong waves and currents by the rocky outcrops at each end. These outcrops may also restrict the turnover of water when the tide is receding.

Thorntonloch

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The bathing water at Thorntonloch has been consistently of excellent quality each year since 1988, although it was only identified as an EU bathing water prior to the 1999 bathing season.

In view of its consistently excellent status, the frequency of monitoring was reduced in 2004 and 2005 (as permitted by the Bathing Water Directive) from 20 samples a year to five. One of the five samples taken in 2005 exceeded one of the directive's guideline quality standards. Overall excellent status was maintained but, in accordance with SEPA's precautionary procedure, the sampling frequency returned to 20 times in 2006. Excellent bathing water quality was maintained in 2008.

Coldingham

Pease Bay

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The identified bathing water at Pease Bay has been of excellent quality since 1999.

The caravan park at the bay installed a new sewage treatment works before the start of the 2006 bathing season. The plant uses membrane reactor technology which provides bacteriological treatment of the effluent all year around so that it meets mandatory standards. The plant discharges to the Pease Burn and is monitored by SEPA during the bathing season. Samples of the effluent collected in 2007 indicated it was of very high quality. Some issues with the plant were experienced during 2008, but the operator is taking action to ensure it is fully compliant prior to next year's bathing season.

The sewage from Cockburnspath (1.5km inland) is pumped to a sewage treatment works (STW) at Cove Village where, together with the sewage from Cove Village, it receives full treatment prior to discharge to the North Sea about 1.5km north of the bathing water. During the bathing season the effluent from the STW is disinfected prior to discharge. Work was carried out in 2006 to increase the capacity of this STW to accommodate sewage from a new housing development in Cockburnspath.

In view of its consistent excellent status, the frequency of testing at Pease Bay was reduced in 2004 from 20 to five samples, as permitted by the Bathing Water Directive. During 2006 one of these five samples surprisingly exceeded one of the guideline limits, although excellent water quality was retained overall. As a result, sampling frequency in 2007 returned to 20 times per season in accordance with SEPA's precautionary procedure.

In 2008 one sample failed to meet the mandatory standard on 6 August. This was largely attributed to heavy rainfall in the catchment and wet weather run-off. A sample collected from the Cockburnspath Burn was found to have a high faecal coliform count.

Coldingham

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The very popular bathing and surfing beach at Coldingham was identified as a bathing water in 1999, although it had been monitored previously. Excellent quality has been achieved each year since 1996 with the exception of 2000, when several samples taken during or after heavy rain reduced it to good status.

Until 2004 screened sewage from Coldingham was discharged south-east of the bathing area. There was also a small septic tank discharge at the northern edge of the bay. Occasionally poor bacteriological results at Coldingham showed that these two discharges posed a threat to water quality. In March 2004 Scottish Water completed a programme of work to collect sewage from Coldingham and pump it to the STW at Eyemouth, where it now receives full treatment before being discharged to the North Sea.


Eyemouth

Eyemouth

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Poor	Poor	Poor	Good	Good	Good	Good	Poor	Good	Poor	Good

Eyemouth was identified as a bathing water in 1999. Although it achieved good status during the 2008 season, it has unfortunately failed to meet mandatory standards on a number of occasions previously. Two poor water quality samples were collected in 2005 following heavy rainfall. The poor water quality samples collected in 2007 were also obtained during or following heavy rainfall events.

SEPA investigations into the poor water quality at Eyemouth suggest that this can be largely attributed to high levels of bacteria in the Eye Water, a large river that discharges into the south of the bathing water. A further potential source is the North Burn, a small culverted watercourse that discharges directly into the bay at Eyemouth and which has been found to contain occasional high levels of bacteria.

The Eye Water is sampled regularly by SEPA throughout the bathing season and has been found to contain high levels of bacteria, especially during and following heavy rainfall events. The river is strongly implicated as the cause of the 2005 and 2007 failures. The catchment is largely agricultural and run-off from agricultural grazing land, as well as areas where livestock have direct access to the watercourse, are thought to be responsible for the elevated levels of bacteria found in the Eye Water. Storm overflows that discharge from Eyemouth's sewerage network into the Eye Water during wet weather may also be a contributory factor.

Extensive investigations have been carried out by Scottish Water to determine the sources of high bacteria levels in the North Burn. As a result, a large number of foul sewerage discharges (wrong connections) have been diverted from this burn to the foul sewer. Despite the significant improvements made in recent years, the North Burn continues to experience sporadic high levels of bacteria. SEPA and Scottish Water are continuing to investigate these sources and both have carried out further sampling during the 2008 season. It is hoped that microbial source tracking analysis of recent samples will allow SEPA to determine whether the bacteria present are of human or animal origin.

All farms in the catchment have been visited by SEPA and meetings have been held with the agricultural community to raise awareness. In June 2008 SEPA officers walked the entire Eye catchment in order to map the areas at high risk of causing faecal contamination (eg sites where livestock have direct access to the watercourse and heavily poached areas). Some 200 sites were identified during this survey and further sampling is being carried out at a number of these sites to verify whether these areas are causing a problem. Once all the information has been gathered, the results will be fed back to stakeholders and the agricultural community.

In view of the predictable conditions at Eyemouth, SEPA extended water quality forecasting on its website to include this bathing water in 2008.

2.3 Summer weather in 2008

Prior to the start of the 2008 bathing water season, the month of May was a remarkably warm, dry and sunny month and, by June a considerable soil moisture deficit had built up.

This warm, dry start gave some hope for a fine summer ahead but, unfortunately, this was not to be. June, July and August turned out to be wetter and duller than normal. September was drier than average, but the lack of sunshine and continuing grey skies meant that Scotland had its dullest September since 1985.

Compared with a normal year, the areas with the wettest summer were found to the east of the country, ie parts of Aberdeenshire, Angus, Fife, the Lothians and Borders. Summer rainfall to the west tended to be closer to the long-term average and a large area to the north of the Great Glen actually had a drier summer than normal.

Data provided by the Centre for Ecology and Hydrology (CEH) indicate that Scotland as a whole had its ninth wettest summer in the last 140 years. However, CEH data for regions within Scotland reveal considerable geographical variation. The Tweed catchment had its second wettest summer and the Solway area its third wettest in a 95-year record. The Forth area had its fourth wettest summer and its second wettest August in the last 95 years. This contrasts with the Highland area where August rainfall ranked 32 out of 95 years and summer rainfall 39 out of 95 years.

With the end of the fine weather in May, any soil moisture deficit that had built up was gradually eroded through June and July.

August was a dull, wet month, particularly towards the south-east where exceptionally wet weather was experienced at many places. With little or no soil moisture deficit remaining, any spells of persistent rainfall caused river levels to rise quickly and many rivers were in spate at one time or other during the month.

Throughout August a succession of localised flood events occurred. Some areas such as Fife, Edinburgh and Lanarkshire were unfortunate enough to experience more than one such flooding episode.

Flooding was reported on 1 August in the Stirling and Callander areas, as well as at Kilbirnie where the River Garnock burst its banks. Edinburgh and the Borders had floods on 7 August. Flooding caused problems in Fife on 10 and 13 August. Parts of Lanarkshire experienced flooding on 19 August, as did parts of West Lothian on 20 August.

A total of 150 Flood Watches, 22 Flood Warnings and three Severe Flood Warnings were issued by SEPA between 4 and 31 August. This gives some indication of the widespread nature and persistence of the flooding.

Taking the three summer months together, the Moray Firth and Aberdeenshire had around 150% of average rainfall. The station at Forehill near Peterhead is typical, recording 177mm, which is equivalent to 146% of the 1961–1990 average. At Montrose, summer rainfall reached 200% or more of the long-term average. The rain gauge at Abbey St Bathans in the Borders recorded 166mm for the summer, which is well over twice (223%) the 1961–1990 average.

To the west, Ayrshire and the Dumfries area recorded closer to 150% of the long-term average for the summer as a whole. The rainfall station at Prestwick in North Ayrshire recorded 279mm for the three months, equivalent to 131% of the long-term average.

August was by far the wettest of the three summer months. Many stations in southern and central Scotland reported their wettest August on record. Harelaw in Mid Lothian recorded 180mm for the month – equivalent to 307% of the long-term average – while Strathkinness near St Andrews recorded 208mm for the month, equalling 332% of the long-term average.

In the Borders, July was also a wet month, with the station at Abbey St Bathans recording 127mm for the month, equal to 304% of the long-term average.

Figures 2–4 show daily and monthly rainfall recorded in 2008 compared with the 1961–1990 long-term monthly averages for the SEPA rainfall stations at Harelaw (West Lothian), Strathkinness (Fife), and Ashgrove (Ayrshire) respectively.

Note: The monthly total shown for October 2008 is for the first 22 days only. The actual totals for October 2008 will be higher than indicated.

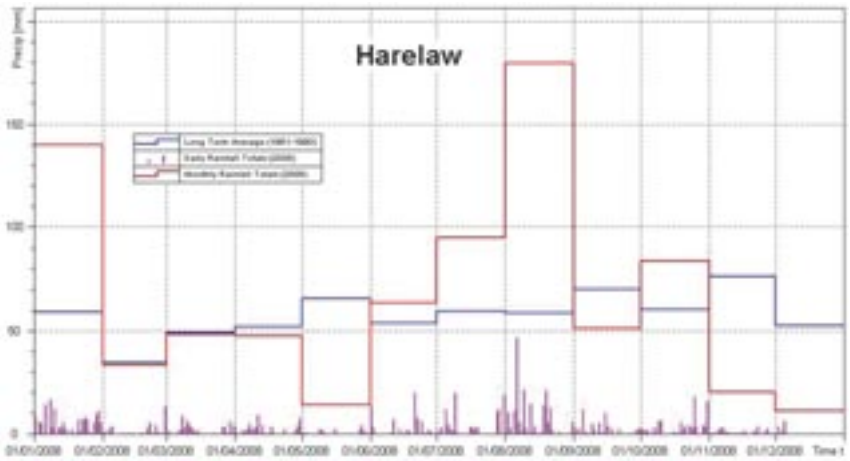


Figure 2: Daily and monthly rainfall recorded in 2008 compared with the 1961–1990 long-term monthly averages (in blue) for the SEPA rainfall station at Harelaw (West Lothian)

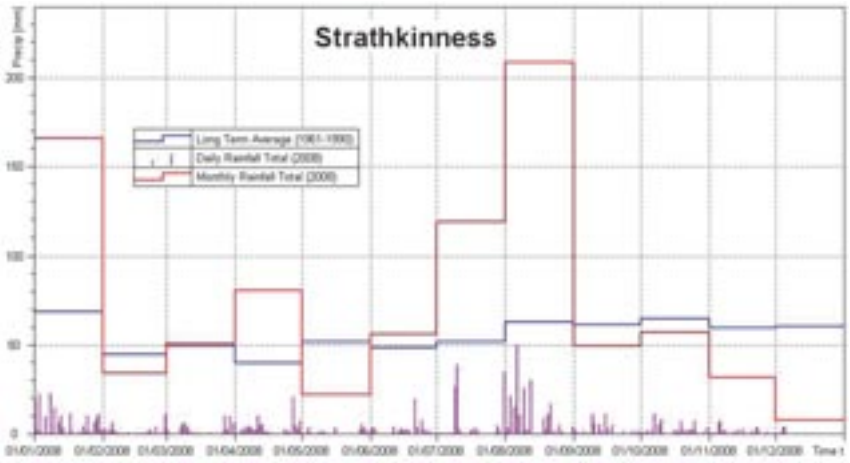


Figure 3: Daily and monthly rainfall recorded in 2008 compared with the 1961–1990 long-term monthly averages (in blue) for the SEPA rainfall station at Strathkinness (Fife)

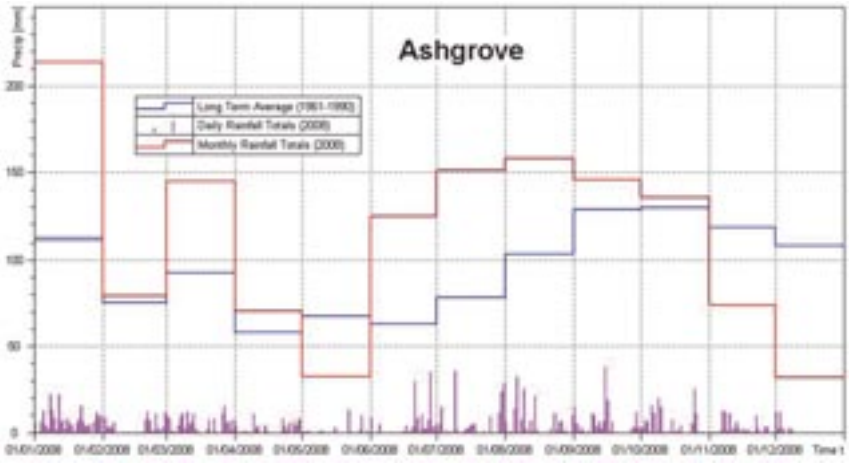


Figure 4: Daily and monthly rainfall recorded in 2008 compared with the 1961–1990 long-term monthly averages (in blue) for the SEPA rainfall station at Ashgrove (Ayrshire)

Mostly as a consequence of the very dry May, river flows tended to be below average throughout Scotland in both June and July. However, a number of stations did record above average flows in July. These include the River Ythan at Ellon (Aberdeenshire), which recorded 215% of the long-term average, the River Nith at Friars Carse (Dumfries) which recorded 146% and the Water of Girvan at Robstone (South Ayrshire), which recorded 141%.

August was easily the month with highest flows during the summer of 2008. Many stations recorded their highest mean for August since 1985 and conditions were even more extreme at some locations – particularly in Fife, the Lothians and the Borders.

Mean flows for August were between 200% and 400% of the long-term average in Aberdeenshire and Angus, while in Fife, the Lothians and Borders mean flows for the month were generally between 400% and 700% of the long-term average.

Some of the flows recorded were quite exceptional. Eyemouth on the Eye Water recorded a mean flow for August of 3.979 cumecs, equivalent to nearly seven times higher (685%) than the long-term average for August.

Similarly, in Fife the gauging station at Kemback on the River Eden recorded a mean flow for the month of 10.37 cumecs, which represents 519% of the August average.

Both Eyemouth and Kemback have more than 40 years of records and the mean flow for August 2008 was the highest ever recorded at both.

In the south-west of the country, August flows were between 200% and 300% of the long-term average. For example, Shewalton on the River Irvine recorded 220% of the long-term average for August and Friars Carse on the Nith recorded 263%.

Flows remained above average throughout September although, for most areas apart from the south-west, it was quite a dry month in terms of rainfall.

Figures 5 and 6 show daily mean flows for 2008 compared with the long-term monthly averages for the period of record for the SEPA gauging stations on the River Nith (Friars Carse) and the River Eden (Kemback) respectively.

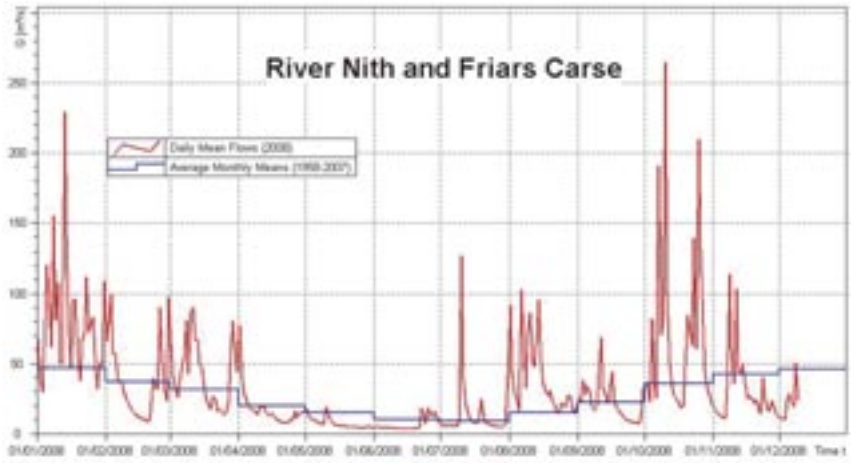


Figure 5: Daily mean flows for 2008 compared with long-term monthly averages for the period of record for the SEPA gauging stations on the River Nith (Friars Carse)

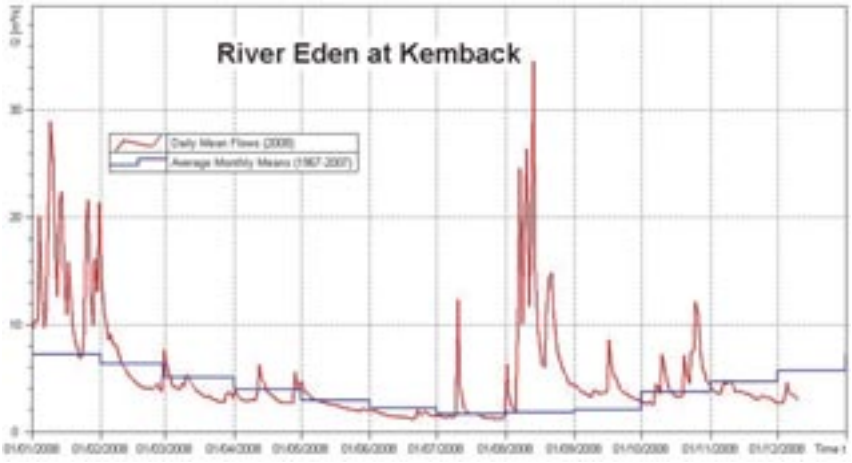


Figure 6: Daily mean flows for 2008 compared with long-term monthly averages for the period of record for the SEPA gauging stations on the River Eden (Kemback, Fife)

2.4 Bathing waters signage: providing daily forecasts of predicted bathing water quality

An important part of the revised Bathing Water Directive is providing information on bathing water quality to the public. The SEPA signage network is a leading example of how this can be achieved. Although the current system puts Scotland at the forefront of this public information provision, work is ongoing to expand and improve the prediction system.

SEPA's bathing water quality prediction and signage system was a particular success during this wet summer, keeping bathers up-to-date each day on predicted water quality conditions at 11 of Scotland's beaches.

New for this season was the extension of the forecast system on the website for Eyemouth. This was a success and an electronic beach sign will now be installed there for next year. For the first time this year, the signs displayed additional messages, alternating between displaying daily water quality status and reminders to keep beaches tidy.

Although generally of a high quality, the 11 bathing waters were selected because they had previously been found to be at risk of not meeting European standards during or after wet weather. The electronic message signs allow predictions of water quality to be shown to the public daily, indicating either good quality or risk of poor quality (the latter meaning potential failure of EU standards).

2008 was the fourth year in which SEPA was fully responsible for the real-time electronic signage. The work was initially funded by the Scottish Government and piloted jointly with it in 2003–2004.

SEPA provides scientific advice, technical input and manages the daily operation of the sign network. It has developed additional systems to provide wider access to the same information through its website, telephone information line and a text messaging service. A firm of consulting engineers has been sub-contracted to install and provide technical support. In addition, the local authorities and Clean Coast Scotland are consulted and provide advice.

From June to mid September, SEPA issued daily water quality forecasts using its extensive rainfall and hydrological information network to make sign message management decisions. The sign status was then recorded via a computer control station which enabled switching to the relevant version of text message. Further information on the background to the system and details of the text messages are available on SEPA's website.[6]

The signs are not intended to be an alternative to environmental improvements or action to reduce pollution, but to provide additional public information. Efforts to reduce or eliminate potential sources of pollution are continuing and are reducing the frequency with which potential poor quality warnings have to be issued. Legal provision has now been made in the 2008 regulations for SEPA signage to provide warnings in respect of short term pollution events.

[6] www.sepa.org.uk/water/bathing_waters.aspx

2.5 Predictions and results

During the 2008 bathing season 78% of the days, on average, were predicted as having good or better water quality. This is a similar figure to those recorded in 2004 (81%) and 2007 (80%) – the previous wetter than average years – though less than in 2006 and 2005 (87% and 90% respectively).

The signage at the 11 locations indicated correct or protective precautionary conditions to the public 98% of the time. Of the 209 compliance samples taken from the sites with signage during the bathing water season, the project correctly predicted measured water quality on 81% of occasions (Figure 7). This success rate is similar to 2007 but lower than in 2005 and 2006, largely due to a higher number of precautionary forecasts, ie when the sign predicts poor water quality but the measured water quality is good. The main reason for these additional precautionary forecasts was the persistently high river flows observed this season.

In 2008 signage correctly predicted 10 of the 15 measured poor water quality events (Figure 8). Though this was slightly less than in the last few years, a full investigation was undertaken in all cases when an exceedance had not been correctly predicted. In most cases, the knowledge gained was used to make an improvement to the model.

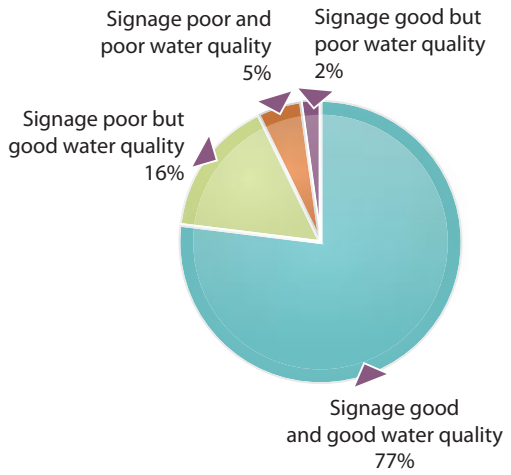


Figure 7: Bathing waters signage performance and validation of daily predictions

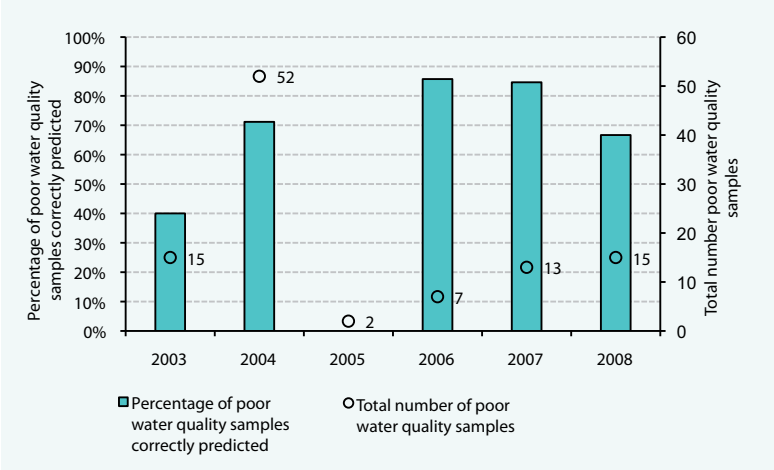


Figure 8: Validation of poor water quality samples, 2003–2008

2.6 Ongoing improvements

SEPA further developed and improved its bathing waters predictive modelling capability during 2008:

- Eyemouth benefited from an extension of the forecast system on the website, allowing the public to access predictions at this site for the first time. This was a success and an electronic beach sign will now be installed there for next year.

- Predicted rainfall accumulations were successfully used in addition to preceding rainfall (eg the correct forecasting of the mandatory exceedance at Aberdeen in July). While the forecast made in the morning is normally representative of water quality conditions for the entire day, very heavy rainfall during the day can cause same day deterioration in water quality at some sites due to a short catchment response time. Informing potential water users of this deterioration ensures they have the most up-to-date information available when deciding whether to use the water.

- At Troon (South), knowledge gained over previous seasons allowed the system to be adjusted to be less precautionary. Despite the wet summer this enabled good water quality to be predicted on over nine out of 10 days. In the future SEPA intends that predictions will take into account improvements to bathing water quality. Improvements can result from upgrades to Scottish Water's sewerage infrastructure and sewage treatment, private sewage disposal schemes (where relevant) or reduced pollution from agriculture.

- The use of rain radar to improve bathing water quality predictions was investigated in a project called 'Methods of Estimating Impacts of Rainfall on Bathing Beach Quality' funded by the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER). The project reported in August 2008[7] and decisions will now be made as to how best to take this work forward.

[7] www.sniffer.org.uk

3. Further improvements to water quality

3.1 Investment by Scottish Water

Until recently, many decades of significant under-investment in the water and sewerage infrastructure of Scotland meant that sewage discharges were the major cause of water pollution. In 2000 many bathing waters were still failing or at risk of failing to meet required EU standards, due to unsatisfactory sewage discharges.

The situation is now substantially improving, particularly with the introduction of the Quality and Standards (Q&S) process for setting the capital expenditure plans for Scottish Water and its predecessor authorities. Q&S I covered a two-year period from April 2000 to March 2002, delivering an investment in water and sewerage infrastructure of £740 million. This was complemented by a further £380 million invested in Public Private Partnership schemes, although these generally tackled only the larger discharges. However, much more remained to be done to achieve adequate environmental quality protection.

Q&S II covered the four-year period from April 2002 to March 2006. It consisted of an unprecedented scale of investment of £1.8 billion to upgrade and enhance drinking water supply and sewerage provision in Scotland. SEPA worked with Scottish Water to identify all those schemes within the programme necessary to improve the quality of bathing waters and to ensure these were scheduled for completion as early as possible, with interim temporary solutions being put in place where appropriate.

Further works are being carried out in the next stage of the capital investment programme, Q&S III, which began in 2006 and runs to 2010. Q&S III consists of around £150 million devoted to capital works improvements to address environmental issues.

Details of improvement works are described in the discussion of the bathing water results for individual bathing waters in Section 2.2. A summary of certain major works is given in Table 1.

Table 1: Summary of major works by Scottish Water

Bathing water	Description
Irvine, Troon (South Beach) and Saltcoats/Ardrossan	Extensive investigation and modelling work has been carried out on behalf of Scottish Water into the impacts of the combined sewer overflows (CSOs) in the Meadowhead and Stevenston catchments. The work involved updating existing sewer models, constructing a model of the River Irvine and its tributaries and a new marine model of Irvine Bay and the outer Firth of Clyde. The results will be used to inform solutions to the problems associated with the CSOs. Scottish Water is developing options for implementation during Q&S III.
Largs (Pencil Beach)	The provision of a new sewage pumping station at Largs has removed the bulk of the sewage discharge from the vicinity of the bathing beach.
Millport Bay	The sewage treatment works (STW) and sewerage system installed in 2006 continue to function well.
Stonehaven	New pumping stations and interceptor sewers were commissioned in August 2008 to convey sewage from Stonehaven and villages to the north to the Aberdeen STW.
St Andrews East and West Sands	New storm screens were installed at the harbour and Bruce Embankment pumping stations in St Andrews.
Elie (Harbour) and Earlsferry	New storm storage and screening was provided on the outfalls from the pumping stations at Cadger's Wynd, Earlsferry, and South Street, Elie, and the outfall from Cadger's Wynd overflow was upgraded to ensure any discharge is made below the low water mark.
Portobello (West)	Following the outcome of unsatisfactory intermittent drainage studies in the Figgate Burn and its coastal catchment, improvements were carried out at three CSOs which had seriously impacted on bathing water quality.
Dunbar (Belhaven)	A new STW to serve Dunbar was commissioned in April 2008. This works uses membrane technology to produce a very high quality final effluent. This will allow further development in the Dunbar area, while safeguarding the quality of the Belhaven bathing water.

3.2 Private sewage treatment systems

As highlighted in Section 2.2 during the discussion of the results for individual bathing waters, not all sewage treatment schemes are part of the public network operated by Scottish Water. Improvements often have to be sought from privately run systems treating waste from caravan sites and even individual homes. Very often the preferred solution is connection to a public system, but this may have to be paid for by a householder or a developer.

3.3 Scottish Government sponsored improvement works and diffuse pollution controls

The Scottish Government has undertaken considerable research into the impact of diffuse pollution – both urban and rural – on bathing water quality. Projects include:

- investigating best management practices on farms;
- retrofitting sustainable urban drainage systems (SUDS);
- treating livestock slurry by anaerobic digestion or composting to kill pathogens;
- co-digesting cattle slurry with human sewage sludge;
- co-digesting animal waste;
- introducing farm-based measures.

A final report was published in 2008 and is available on the Scottish Government website.[8]

SEPA is currently managing an evaluation of the effectiveness of maturity to the field measures undertaken for one of these projects – the Scottish Government project on best management practices on farms in the Brighouse Bay catchment. A final report is expected by the end of 2008.

This research programme has enabled the Scottish Government to determine the best means of tackling the threat of diffuse pollution, not only to bathing waters but also to the water environment in general. The Water Framework Directive requires that measures are introduced to tackle these risks.

Following consultation between 2005 and 2007 on proposed legislation for the control of diffuse water pollution from rural land use, the Scottish Government introduced a set of General Binding Rules (GBRs) in April 2008 in collaboration with key stakeholders, including SEPA. These rules are designed to protect the water environment and to prevent actions that could result in undue risks. The measures are based on widely accepted standards of good practice, such as the Scottish Government's *Prevention of Environmental Pollution from Agricultural Activity Code* (PEPFAA), the *Four Point Plan*, *Farm Soils Plan* and the Forestry Commission's *Forests & Water Guidelines*.

The GBRs are intended to help bring about good water status across Scotland without imposing onerous costs or conditions on land managers. They are part of the Controlled Activities Regulations (CAR) regime and establish the basic activities that should be undertaken to prevent pollution. They also propose that draining lightly contaminated farmyard water to a wetland constructed for the purpose should be permitted as an alternative to collecting run-off in a slurry store. These measures will help to protect bathing water quality from agricultural diffuse pollution.

Even with these national GBRs in place, there are likely to still be problems associated with certain pollutants in some catchments. For these areas, it may be necessary – in conjunction with river basin planning – for the national rules to be supplemented by further localised controls on a particular land use activity within a catchment. The Scottish Government are examining these issues in its Closing the Gap consultation.

3.4 SEPA plans to reduce sources of diffuse pollution

Diffuse pollution (ie the discrete and dispersed input of contaminants to the water environment) can be difficult to identify. Individual losses of potentially polluting material can be minor, but the cumulative impact of these losses can have significant impacts on bathing water quality. Appropriate land management practices can help to significantly reduce the occurrence of diffuse pollution to surrounding waters.

[8] www.scotland.gov.uk/topics/environment/water/bathingwaters

SEPA continues to use Environmental Improvement Action Plans (EIAPs) to work with others to protect and improve water quality. However, a range of additional measures to mitigate diffuse pollution are now available in Scotland and provide a major opportunity to address diffuse pressures at a national scale for the first time. These measures include:

- Diffuse pollution regulations under CAR;
- Scotland's Environmental and Rural Services (SEARS);
- funding under the Scotland Rural Development Programme (SRDP);
- the river basin planning process.

SEPA will implement these new measures via national awareness raising, guidance and training campaigns, and a catchment management planning approach in 'priority catchments', such as those draining to bathing waters with diffuse pollution inputs.

The regulations for diffuse pollution cover a range of rural land use activities and will significantly help to reduce the risk of diffuse pollution to the water environment. Activities covered include the storage and application of livestock manures and slurries, livestock access to watercourses and the siting of livestock feeding areas in proximity to watercourses. These new regulations are based on widely accepted standards codes of good practice, such as the PEPFAA Code, and are good examples of 'better regulation'.

The Scotland's Environmental and Rural Services (SEARS) project involves nine organisations that deliver rural services working more closely together to deliver an improved service to land managers. Under the SEARS process, SEPA has trained staff from the Scottish Government and Scottish Natural Heritage (SNH) to carry out inspections and provide advice on compliance with the diffuse pollution regulations on over 1,000 farms across Scotland. These inspections have highlighted the risks of faecal contamination to the water environment from livestock, and advice has been provided on measures that farmers can take to reduce diffuse pollution risks.

The Scotland Rural Development Programme contains a number of new measures to address diffuse pollution. These include support for constructed farm wetlands (CFWs), buffer strips and fencing. It is hoped that the construction of CFWs to collect and treat lightly contaminated water from around farm steadings will improve the quality of water discharged into surrounding watercourses. SEPA is helping the Tweed Forum and the Farming and Wildlife Advisory Group (FWAG) to monitor new CFWs installed as part of a catchment project in the Borders to help to reduce diffuse pollution risk. SEPA plans to publish guidance on the design of CFWs shortly.

Following investigative work on the Eye Water at Eyemouth, SEPA continues to work with farmers, NFU Scotland and the Scottish Government to reduce diffuse agricultural sources. Previous Environmental Improvement Action Plans (EIPAPs) have identified that diffuse agricultural sources are a significant cause of the high levels of faecal indicator organisms (FIOs) in the Eye Water, which have contributed to FIO contamination and subsequent failures at the Eyemouth bathing water. Work is ongoing to identify areas in the catchment where livestock have free access to watercourses; microbiological samples will be used to assess any negative impact on water quality at these points.

Monitoring of water quality to assess the effectiveness of measures in one of SEPA's Monitored Priority Catchments (MPC) has continued on the River Cessnock, an important tributary affecting the Irvine bathing water. The MPC project provides an opportunity to demonstrate how effective mitigation measures or changes to farming practices can be in terms of reducing diffuse pollution risks. SEPA is working with the Scottish Government, Macaulay Institute and the Scottish Agricultural College on the project, with direct involvement from local landowners through a farmers' focus group.

Through the EIAP process, SEPA is working in the Endrick catchment with farmers, NFU Scotland, Scottish Water, SNH, the Loch Lomond and Trossachs National Park Authority, and FWAG to promote better use of nutrients and reduce the risk of diffuse and point source inputs from farms in the catchment. The EIAP aims to promote a range of best management practices and reduce the risk of bacterial contamination of Loch Lomond.

A series of samples were collected during the 2008 bathing water season from prioritised bathing waters for later analysis using microbial identification techniques. The microbial source tracking project aims to discriminate between human (sewage) and animal sources (see Section 3.5). The results will allow remedial work to be targeted at the sources of bacterial contamination in specific bathing water catchments.

A number of watercourses affected by urban impacts have also been included in SEPA's improvement plans. For example, work is continuing on the East Tullos Burn in Aberdeen to characterise diffuse pollution risks from an urban, industrialised catchment and water quality monitoring is underway at the Piltanton Burn in Dumfries and Galloway to identify the sources of pollution including agriculture and industry.

3.5 Future developments

SEPA continued to work during 2008 with the Environment Agency and the Scottish Government on two UK Water Industry Research (UKWIR) research projects on the laboratory development of improved molecular methods (based on DNA analysis and fingerprinting techniques).

The two projects are:

- microbial source tracking (MST);
- developing rapid methods for testing.

Microbial source tracking project

The MST project aims to provide analytical tools for the identification of sources (quantitative and semi-quantitative) of faecal contamination at bathing waters. When fully developed, it will be possible to use this technique on catchments to identify sources of faecal coliforms (human, cow, sheep, dog, avian) where there is currently uncertainty. This will:

- enable fuller understanding of sources of potential contamination (arising from diffuse pollution, point source pollution, natural or impact of human activities);
- make it easier to take appropriate remedial actions in a specific bathing water catchment.

The objectives of this collaborative UK project are to further improve the sensitivity and reliability of the genotyping technique. Progress has also been made to extend the level of discrimination so that different sources can be isolated. Human (sewage), cattle, dogs and avian (specifically common coastal birds) sources are a priority for reliable identification. The methods will be developed so that they can be transferred or offered as a routine laboratory service to the project partners.

During the 2008 bathing water season SEPA collected a series of samples from a few prioritised sites and at times of elevated microbiological pollution for subsequent testing using the MST tools. These preserved samples will be analysed by the specialist MST techniques now available from the Environment Agency and the results will help SEPA plan pollution improvements for the 2009 season.

Rapid methods testing project

The rapid methods testing project is a parallel project though it uses different methods and has a separate end purpose. Like the MST project, it is facilitated by UKWIR and the Environment Agency is the lead organisation of a consortium that includes SEPA along with other key organisations. The project is developing a rapid method (i.e. within five hours of a sample arriving in the laboratory) to analyse water samples for Escherichia coli and intestinal enterococci.

Good progress has been made on developing laboratory methods that provide rapid results directly comparable to the longer, culture-based, standard microbiology methods. The methods will enable rapid measurement of microbiological water quality such as following a short-term pollution incident, or quick beach management and information update tasks. These methods will be particularly helpful for breaches of the mandatory water quality standards, providing quantitative evidence to support decision-making.

4. Conclusions

In 2008 almost half of the 80 Scottish bathing waters achieved the highest guideline standard and, of over 1,500 actual samples taken, 98% met either the good or the excellent bathing water standard. Unfortunately seven bathing waters failed overall for this year's season as, like in 2007, the detrimental effect of an extremely wet season was seen. These results contrasted with the full mandatory compliance enjoyed in 2006, a year which saw the absence of unseasonably wet weather. However, this season again saw a continuation of the substantial progress made in previous years in many aspects of the bathing water environment.

The requirements of the revised Bathing Water Directive regarding the identification of bathing waters came into force from March 2008. Scottish Ministers must now establish and keep under annual review a list of bathing waters and designate sites as bathing waters where they expect a large number of people to bathe taking account of past trends, infrastructure or facilities provided, or other measures to promote bathing. To meet this obligation, Scottish Ministers chose to designate an additional 20 bathing waters for the 2008 bathing water season, increasing the number of official sites by a third.

The new Directive seeks greater public participation in its implementation. It puts more emphasis on providing information to bathers, including via the internet, and particularly on the risks bathers might face from pollution. It also allows up to 15% of sample results to be discounted during short-term pollution events provided there is a public warning system in place to inform prospective bathers of potentially less good quality.

The SEPA signage network is a leading example of how this can be achieved. SEPA's electronic information signs at beaches around Scotland continued to work well this season, with signage at the 11 locations indicating correct or protective precautionary conditions to the public 98% of the time. While the current system puts Scotland at the forefront of this public information provision, work is ongoing to expand and improve the prediction system.

Major highlights this year were the extension of the forecast system to Eyemouth and further refinement of the local model at Troon (South), enabling good water quality to be predicted on over nine out of 10 days despite the wet summer. The signs themselves were upgraded to display additional messages, this season alternating between displaying daily water quality status and reminders to keep beaches tidy.

The Scottish Government recognised that significant changes will be required to meet the conditions of the new Directive. In November 2007 it consulted on draft legislative proposals in *Better Bathing Waters for All* and, following consultation, the Bathing Waters (Scotland) Regulations 2008 came into force in May 2008. These fully transpose the Directive, establish SEPA's role under the Directive and set out the timeframe over which its duties come into effect.

The new Directive introduces water quality standards that are substantially more stringent than those of the current Directive. Further differences are that quality assessments are spread over four years and sampling schedules must be set in advance of the bathing season. However several days' flexibility will be allowed, which could avoid the need to sample during very wet weather when bathers would not be expected.

SEPA, the Environment Agency and the Northern Ireland Environment Agency have continued to work together on the UK Bathing Waters Technical Advisory Group. This group has considered and advised government on best practice for the many aspects and challenges of the revised Directive.

This year's results are again undoubtedly a dip in the long-term improvement trend seen over previous years. However this longer trend reflects the very substantial environmental improvements delivered by Scottish Water's investment in new sewage treatment schemes and the success of continuing work by SEPA and others to minimise diffuse pollution from agricultural sources.

SEPA's work with Scottish Water to bring about continued improvements in the sewage infrastructure is vital. The capital investment made so far has brought about real environmental benefits which are increasingly visible. The Scottish Water investment programme, Quality & Standards II, provided an unprecedented scale of investment to upgrade and enhance drinking water supply and sewerage provision in Scotland. The next Scottish Water investment programme, Quality & Standards III, will deliver additional improvements. Running from 2006 to 2010, £150 million is being devoted to capital works improvements to address environmental issues.

Diffuse pollution is still the main source of problems and threats to quality at numerous bathing waters and further improvements will be required. SEPA continues to use Environmental Improvement Action Plans (EIAPs) to work with others to protect and improve water quality but can now use a range of additional measures to mitigate diffuse pollution. These include the Diffuse Pollution Regulations under CAR, funding under the Scotland Rural Development Programme (SRDP), Scotland's Environmental and Rural Services (SEARS) and the river basin planning process. These new measures provide a major opportunity to address diffuse pressures at a national scale for the first time. SEPA will also continue to work with farmers, NFU Scotland, the Scottish Government and Scottish Natural Heritage to reduce diffuse agricultural sources.

Although the weather is beyond our control, we must not lose sight of the need for Scotland's bathing waters to be of the highest possible quality. There is clearly more to do and we must all intensify our efforts to maintain progress and learn to cope with summer intense rainfall events if these trends continue, particularly as we are required to achieve tighter standards and new beach management duties in just four years' time.

Annex One: 2008 Monitoring data from Scotland's 80 identified bathing waters

			Good quality (EC mandatory standard)		Excellent quality (EC mandatory standard) (EC guideline value)			
Bathing water	Local authority	No. of sample results	No. of TC* ≤ 10,000/ 100ml	No. of FC* ≤ 2000/ 100ml	No. of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	Overall quality
Southerness	D&G	20	20	19	10	6	15	Good
Sandyhills	D&G	20	19	18	7	1	8	Poor
Rockcliffe	D&G	20	20	20	12	6	14	Good
Dhoon Bay	D&G	20	20	20	12	6	12	Good
Brighouse Bay	D&G	20	20	20	15	9	16	Good
Carrick	D&G	20	20	20	18	14	18	Good
Mossyard	D&G	20	20	20	19	19	20	Excellent
Girvan	SA	20	20	20	17	12	15	Good
Maidens	SA	20	20	20	13	8	16	Good
Culzean	SA	20	20	20	19	18	20	Excellent
Heads of Ayr	SA	20	19	19	10	7	15	Good
Ayr (South Beach)	SA	20	20	20	11	6	12	Good
Prestwick	SA	20	20	19	16	12	15	Good
Troon (South Beach)	SA	20	20	20	17	14	17	Good
Irvine	NA	20	20	20	16	13	16	Good
Saltcoats/Ardrossan	NA	20	17	16	14	12	13	Poor
Seamill	NA	20	20	19	13	10	16	Good
Largs (Pencil Beach)	NA	20	20	20	15	14	16	Good
Lunderston Bay	Inv	20	20	20	20	16	20	Excellent
Millport Bay	NA	20	20	19	15	10	14	Good
Luss Bay	A&B	20	19	19	12	9	16	Good
Ettrick Bay	A&B	20	19	17	10	6	13	Poor
Machrihanish	A&B	10	10	10	9	8	10	Excellent
Ganavan	A&B	20	20	20	17	16	19	Excellent
Achmelvich	H	10	10	10	10	10	10	Excellent
Thurso	H	20	20	20	19	18	20	Excellent
Dunnet	H	20	20	20	20	17	19	Excellent
Dornoch	H	5	5	5	5	5	5	Excellent
Rosemarkie	H	20	20	19	17	15	16	Good
Dores	H	20	20	20	12	11	15	Good
Nairn (Central)	H	20	20	20	20	19	20	Excellent
Nairn (East)	H	20	20	20	18	15	19	Good
Findhorn	Moray	20	20	20	20	20	20	Excellent
Loch Morlich	H	10	10	10	10	10	10	Excellent
Lossiemouth (East)	Moray	20 (+1AWW†)§	20	20	10	8	11	Good
Cullen Bay	Moray	20 (+1AWW†)§	20	19	19	18	18	Excellent

			Good quality (EC mandatory standard)		Excellent quality (EC mandatory standard) (EC guideline value)			
Bathing water	Local authority	No. of sample results	No. of TC* ≤ 10,000/ 100ml	No. of FC* ≤ 2000/ 100ml	No. of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	Overall quality
Inverboyndie	Aber	20 (+1AWW†)§	20	20	13	12	18	Good
Rosehearty	Aber	20	20	18	15	11	12	Poor
Fraserburgh (Tiger Hill)	Aber	20	20	20	19	18	19	Excellent
Fraserburgh (Philorth)	Aber	20	19	19	17	17	16	Good
Peterhead (Lido)	Aber	20	20	20	17	17	16	Good
Cruden Bay	Aber	20	19	17	11	4	10	Poor
Balmedie	Aber	20	20	20	16	11	19	Good
Aberdeen	ACC	20	19	18	13	10	14	Poor
Stonehaven	Aber	20	19	19	10	7	7	Good
Montrose	Angus	20	20	20	18	20	19	Excellent
Lunan Bay	Angus	11	11	11	7	10	11	Good
Arbroath (West Links)	Angus	20	20	20	20	17	19	Excellent
Carnoustie	Angus	20	20	20	17	16	18	Excellent
Broughty Ferry	DC	20	20	20	16	16	19	Excellent
Tentsmuir Sands	Fife	10	10	10	10	10	10	Excellent
St. Andrews (West Sands)	Fife	20 (+1AWW†)§	20	19	19	17	19	Excellent
St. Andrews (East Sands)	Fife	20 (+1AWW†)§	20	20	16	12	19	Good
Kingsbarns	Fife	20	20	20	19	18	19	Excellent
Crail (Roome Bay)	Fife	20	20	20	20	19	20	Excellent
Elie (Ruby Bay)	Fife	20	20	20	19	18	20	Excellent
Elie (Harbour) and Earlsferry	Fife	20	20	20	20	20	20	Excellent
Leven	Fife	20 (+2AWW†)§	20	19	16	14	18	Good
Kirkcaldy (Seafield)	Fife	20	20	19	12	10	14	Good
Kinghorn (Harbour Beach)	Fife	20	20	19	15	12	17	Good
Kinghorn (Pettycur)	Fife	20	20	20	20	17	19	Excellent
Burntisland	Fife	20	20	20	18	17	19	Excellent
Aberdour (Silver Sands)	Fife	20	20	20	20	18	20	Excellent
Portobello (West)	CofE	20 (+1AWW†)§	19	19	12	9	14	Good
Portobello (Central)	CofE	20 (+1AWW†)§	19	18	16	14	16	Poor
Seton Sands	EL	20	20	19	15	16	17	Good
Longniddry	EL	20	20	20	17	16	20	Excellent
Gullane	EL	6	6	6	6	6	6	Excellent
Yellowcraig	EL	20 (+2AWW†)§	20	20	18	17	19	Excellent

			Good quality (EC mandatory standard)		Excellent quality (EC mandatory standard) (EC guideline value)			
Bathing water	Local authority	No. of sample results	No. of TC* ≤ 10,000/ 100ml	No. of FC* ≤ 2000/ 100ml	No. of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	Overall quality
Broad Sands	EL	20 (+2AWW†)§	20	20	19	18	20	Excellent
North Berwick (West)	EL	20 (+2AWW†)§	20	20	19	16	19	Excellent
North Berwick (Milsey Bay)	EL	20 (+2AWW†)§	20	20	18	17	19	Excellent
Seacliff	EL	20 (+1AWW†)§	20	20	20	20	20	Excellent
Dunbar (Belhaven)	EL	20 (+2AWW†)§	20	19	19	17	19	Excellent
Dunbar (East)	EL	20 (+2AWW†)§	20	20	19	16	18	Excellent
Whitesands	EL	20	20	20	18	15	18	Good
Thorntonloch	EL	20	20	20	20	16	20	Excellent
Pease Bay	SB	20	20	19	16	16	19	Excellent
Coldingham	SB	20	20	20	19	18	19	Excellent
Eyemouth	SB	20	20	20	15	13	16	Good

* FC = faecal coliforms; FS = faecal streptococci; TC = total coliforms.

† AWW = Abnormal Weather Waiver.

§ 20 (+xAWW) denotes 20 samples used for compliance, plus x AWW.

Local Authority Abbreviation codes:

A&B	Argyll and Bute	D&G	Dumfries and Galloway	Inv	Inverclyde
Aber	Aberdeenshire	DC	Dundee City	NA	North Ayrshire
ACC	Aberdeen City Council	EL	East Lothian	SA	South Ayrshire
CofE	City of Edinburgh	H	Highland	SB	Scottish Borders

Annex Two: Current legislation and results assessment

EU Bathing Water Directive (76/160/EEC)

The EU Bathing Water Directive requires each Member State to identify bathing waters and to take all necessary measures to bring these waters up to the quality standards prescribed. A 'bathing water' is defined as fresh or sea water where bathing is either explicitly authorised and is traditionally practised by a large number of bathers or is not prohibited.

The environmental quality standards are set to protect the environment and public health, and include safe limits for microbiological, physical and chemical quality measures. The Directive lays down requirements for the frequency of sampling, methods of analysis and inspection of bathing areas, and the interpretation of results. It also requires the exclusion of results obtained in abnormal circumstances.

Related legislation

The Bathing Waters (Scotland) Regulations 2008 introduces the requirements of the revised Bathing Waters Directive, and will come into effect in a phased manner over the coming years. Particular milestone events are 2008, 2011, 2012 and 2015. The key features of the Regulations will be tighter microbiological standards, to be met by 2015 with monitoring started by 2012, and an increased provision of public information.

Under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 as amended, SEPA issues authorisations for discharges of sewage and trade effluent to controlled waters, including all coastal and inland waters. The conditions applied to each consent must be met by the discharger and are designed to enable compliance with relevant water quality objectives. The latest amendment, via The Water Environment (Diffuse Pollution) (Scotland) Regulations 2008, introduces further General Binding Rules (the lowest level of authorised activity), based on widely accepted agricultural and forestry standards of good practice.

The Urban Waste Water Treatment Directive (UWWTD) specifies minimum legal standards for the treatment of municipal waste water. These standards are determined by the size of the community to be served by a sewage treatment works (STW) and by the nature of the receiving environment. This Directive also requires treatment to ensure compliance with all other relevant EU Directives including the Bathing Water Directive. The Urban Waste Water Treatment (Scotland) Regulations 1994 implement this Directive in Scotland.

The Water Framework Directive (WFD) will be the principal driver for water quality improvements in Scotland over the next decade and beyond. This Directive requires Member States to ensure attainment of good status in coastal waters, estuaries, rivers, lochs and groundwater by 2015 through the implementation of River Basin Management Plans, the first of which must be finalised by 2009. The WFD will replace seven existing directives and will provide the context within which other directives, including the Bathing Water Directive, operate.

Interpretation of results and requirements for monitoring programmes

The requirements of the current Bathing Water Directive have been implemented in Scotland by the Bathing Waters (Classification) (Scotland) Regulations 1991. The Directive contains two series of water quality standards:

- mandatory quality standards which Member States must meet;
- more stringent guideline quality standards which Member States must endeavour to achieve.

Importantly, the EU standards set are not absolute but are expressed as percentiles. This recognises the naturally variable nature of our environment and means that not all samples taken have to meet the published standards.

Mandatory standards (good quality)

Mandatory standards apply to ten quality indicators:

- total coliforms (TC);
- faecal coliforms (FC);
- salmonella;
- enteroviruses;
- pH;
- colour;
- mineral oils;
- detergents;
- phenols;
- transparency.

Ninety five per cent of samples taken during the bathing season must comply with the mandatory coliform quality standards for the site in order to achieve a mandatory level pass. Waters which meet this standard are classified as being of good quality, while those that do not are classed as poor.

Guideline values (excellent quality)

In addition to the mandatory standards, there are guideline values for the two coliform groups and faecal streptococci (FS) bacterial quality indicators. These guideline values are more stringent than the mandatory standards and, if achieved, indicate very good bathing water quality – described as excellent in this report.

Abnormal weather

Under Article 5.2 of the Directive, results must be excluded from consideration if they are the consequence of abnormal weather conditions. If a result is excluded, then a replacement sample is taken immediately after the abnormal effects have ceased. A number of events justified application of this provision in 2008, leading to 22 sample results being disregarded and later replaced.

Exceptional geographic conditions

Under Article 8, the requirements of the Directive may be waived by Scottish Government because of exceptional natural geographical conditions in respect of the colour and transparency conditions. For example, Sandyhills on the Solway Firth has a waiver for transparency because tidal action can lead to high levels of suspended sediment being stirred up. At Nairn (East), a waiver has been granted for both transparency and colour because, when in spate, the River Nairn discharges peaty coloured water into the sea near the sampling point. In 2008, six identified bathing waters in Scotland had waivers for colour and 67 waivers for transparency.

Sampling frequency

The minimum frequency of sampling is prescribed in the Annex to the Bathing Water Directive. Checks must normally be made at least once every two weeks during the bathing season:

- total and faecal coliforms;
- transparency;
- colour;
- mineral oils;
- detergents (officially, surface-active substances reacting with methylene blue);
- phenols.

For the remaining parameters with mandatory standards (salmonella, enteroviruses and pH) and for other parameters where inspection is prescribed, concentrations should be checked whenever inspections show that the substance may be present or where the quality of the bathing water has deteriorated.

Additional samples must be taken if there are grounds to suspect that the quality of the waters is deteriorating or is likely to deteriorate as the result of any discharge. Given this requirement and the historically poor compliance record of Scottish bathing waters, additional samples are generally taken from all waters, so that they are sampled 20 times during the bathing season.

The Bathing Water Directive also permits sampling frequency to be halved for waters where quality is consistently good. After the improvements made to Scottish bathing waters, in 2003 the European Commission indicated a list of Scottish sites where this provision may be applied. As described in earlier reports, SEPA implemented this provision for the first time in 2004. SEPA will only apply the provision to waters that meet a very much higher quality hurdle than that required by the EU. This hurdle requires high statistical confidence that the Directive's guideline quality standards have been met over the preceding three-year period. It thus includes results from years before the most recent quality improvement schemes were completed.

Sites selected for reduced sampling are sampled five times during the bathing waters season. Details of sites where the reduced sampling provision was applied in 2008 are identified in Annex 1.

Interpretation of microbiological values

The Bathing Water Directive sets standards for microbiological quality indicator organisms that are all naturally present in the guts of humans and all other warm-blooded animals. The presence of these indicators of faecal contamination in excess of the values in the Directive indicates that waters may have received discharges of sewage that have received adequate treatment or dilution. Large concentrations of seabirds or livestock slurries and manure also give rise to these microbiological indicators in bathing waters and the latter must therefore be applied properly to agricultural land to prevent pollution. The bacteria and viruses present in sewage and animal excreta may cause illness, especially as a result of ingestion or infection through wounds or cuts.

Article 5 of the Directive specifies how the results of faecal coliform, total coliform and faecal streptococci monitoring are to be interpreted. These are summarised in Table A1.

Table A1: Interpretation of microbiological values for bathing waters where 20 samples have been taken

Level of pass	Symbols used in this report	Interpretations	Total coliforms	Faecal coliforms	Faecal streptococci
Pass - Guideline	E (Excellent)	Directive states:	80% of samples should not exceed 500 total coliforms per 100 ml.	80% of samples should not exceed 100 faecal coliforms per 100 ml.	90% of samples should not exceed 100 faecal streptococci per 100 ml.
		Based on 20 samples:	Must have at least 16 samples with less than, or equal to, 500 total coliforms per 100 ml.	Must have at least 16 samples with less than, or equal to, 100 faecal coliforms per 100 ml.	Must have at least 18 samples with less than, or equal to, 100 faecal streptococci per 100 ml.
Pass - Mandatory	G (Good)	Directive states:	95% of samples should not exceed 10,000 total coliforms per 100 ml.	95% of samples should not exceed 2,000 faecal coliforms per 100 ml.	The Directive contains no mandatory standard for faecal streptococci.
		Based on 20 samples:	Can only have 1 sample with greater than 10,000 total coliforms per 100 ml.	Can only have 1 sample with greater than 2,000 faecal coliforms per 100 ml.	The Directive contains no mandatory standard for faecal streptococci.

Annex Three: Glossary of terms and abbreviations

CAR Controlled Activities Regulations

Combined sewer overflows (CSOs) Overflow pipes designed to operate during periods of high rainfall to relieve pressure on sewerage systems and so prevent flooding. CSOs allow rainwater and diluted but minimally treated sewage (usually screened to remove solids) to bypass treatment works and flow directly into rivers and coastal waters.

Diffuse pollution Pollution arising from land use activities (urban and rural) that are dispersed across a catchment or sub-catchment, and do not arise as a process effluent, municipal sewage effluent, or an effluent discharge from farm buildings.

EC European Commission (of the EU)

EU European Union

Excellent quality This indicates that a bathing water met guideline value quality standards in the current EU Bathing Water Directive over the season as a whole.

Faecal coliforms and faecal streptococci Types of bacteria found in sewage and animal excreta whose presence in high numbers indicates poor water quality. Although not necessarily disease-causing themselves, high levels of these indicator bacteria at a site indicate that disease-causing organisms may be present.

GBR General Binding Rules

Good quality This indicates that a bathing water met mandatory value quality standards in the current EU Bathing Water Directive over the season as a whole.

Guideline value A value specified in EU legislation as a recommended standard, more stringent than the minimum mandatory standard.

Identified bathing water A bathing water identified by the Scottish Government under the terms of the revised EU Bathing Water Directive.

PEPFAA Code Code of Good Practice for the Prevention of Environmental Pollution from Agricultural Activity

Point source pollution Pollution from a discrete source such as a discharge pipe or a slurry storage tank.

Poor quality This indicates that a bathing water failed to meet mandatory value quality standards in the EU Bathing Water Directive over the season as a whole.

Preliminary treatment The treatment of waste water to remove solids by means such as screens, macerators and/or grit separators.

Primary sewage treatment The treatment of waste water to settle out suspended solids in primary sedimentation tanks. It is normal for waste water to receive preliminary treatment prior to sedimentation.

PRP Pollution Reduction Plans – SEPA's profile of a bathing water indicating the bathing water area, potential sources and risks of pollution and including measures for improvement. These are available on the SEPA website.

SAC Scottish Agricultural College

Secondary sewage treatment The treatment of sewage by a biological process (e.g. percolating filters or activated sludge) resulting in the further reduction of suspended solids, ammonia and biochemical oxygen demand (BOD).

Sea outfall pipe A pipe which conveys and discharges treated waste water into coastal or estuarine waters.

Sewerage The network of pipes, drains and pumps which conveys sewage effluent from homes to sewage treatment works.

SEPA Scottish Environment Protection Agency

STW Sewage treatment works – the same as a waste water treatment works (WWTW)

SUDS Sustainable urban drainage systems

Tertiary sewage treatment Further treatment of effluent generally using sand sewage treatment filter beds, very fine screening or disinfection processes.

Total coliforms A count of all the coliform type bacteria present in a sample of water.

UV disinfection The irradiation of treated sewage effluent with ultraviolet light in order to render the final effluent substantially disinfected.

Water Industry Commission Appointed by the Scottish Government, the Water Industry Commission's remit is to promote the interests of the Scottish Water's customers.

Annex Four: Sources of additional information on bathing water quality

Technical queries or enquiries about SEPA's bathing water quality monitoring programme should be directed to your local SEPA Office (see Annex 5 for details).

SEPA's website (www.sepa.org.uk) contains a wide collection of information on SEPA, as well as the text of previous Scottish bathing waters reports. The results from the monitoring programme for identified bathing waters are placed on SEPA's website as they are produced throughout the bathing water season.

A number of other organisations complement SEPA's role in promoting high standards of bathing water quality. The Scottish Government is responsible for implementing the directive in Scotland and establishing policy and strategy. It has also funded and co-funded research to help achieve compliance

The Marine Conservation Society (MCS), the UK charity dedicated to the protection of the marine environment and its wildlife, publishes the Good Beach Guide every year which lists all identified and many non-identified bathing waters around the entire UK coastline. The recommended beaches can be viewed at www.goodbeachguide.co.uk.

In Scotland, the charity Keep Scotland Beautiful administers the Seaside Awards for beaches. These awards recognise beaches that are clean, safe and which comply with the Bathing Water Directive's mandatory standards. As well as the Seaside Awards, Keep Scotland Beautiful administers the International Blue Flag Campaign in Scotland on behalf of the Foundation for Environmental Education. The Blue Flag is acknowledged in 36 countries around the world. The programme is designed to raise environmental awareness and increase good environmental practise amongst tourists, local communities and beach and marina operators.

The Blue Flag award requires water quality to be guideline standard. In 2008 five beaches in Scotland achieved and retained Blue Flag status:

- Aberdour (Silver Sands)
- Montrose
- Burntisland
- St Andrews (West Sands)
- Elie (Harbour) and Earlsferry

Clean Coast Scotland (CCS) is a partnership bringing together 13 different government and non-government bodies to co-ordinate and raise the profile of Scottish beaches and bathing waters. CCS worked with SEPA in 2003 to produce a poster template for local authorities to display bathing water results at beaches in a consistent manner.

Water Authority
Scottish Water,
Castle House,
6 Castle Drive,
Carnegie Campus,
Dunfermline,
KY11 8GG

Tel: 0845 601 8855

www.scottishwater.co.uk

Scottish Government
Victoria Quay
Edinburgh EH6 6QQ
Tel: 0131 244 0396

waterdivision@scotland.gsi.gov.uk

www.scotland.gov.uk/bathingwaters

Keep Scotland Beautiful and Clean Coast Scotland
Islay House,
Livilands Lane,
Stirling,
FK8 2BG

Tel: 01786 471333

www.keepscotlandbeautiful.org

The website address for the Blue Flag and Seaside Awards is: www.keepscotlandbeautiful.org
Information on bathing water quality in England and Wales can be obtained from the Environment Agency and, in Northern Ireland, from the Environment and Heritage Service:

Environment Agency
enquiries@environment-agency.gov.uk

Tel: 08708 506 506
www.environment-agency.gov.uk

Environment and Heritage Service
ep@doeni.gov.uk
Environment Protection
Calvert House
23 Castle Place
Belfast BT1 1FY

Tel: 028 9025 4754
www.ehsni.gov.uk

Marine Conservation Society
Gloucester Road,
Ross-on-Wye,
Herefordshire,
HR9 5BU

Tel: 01989 566017

www.mcsuk.org

Annex Five: SEPA offices

Corporate Office
Erskine Court,
Castle Business Park,
Stirling
FK9 4TR
Tel: 01786 457700
Fax: 01786 446885

Aberdeen Offices
Greyhope House
Greyhope Road
Torry,
Aberdeen
AB11 9RD
Tel: 01224 248338
Fax: 01224 248591

Aberdeen
Leading Light Building
142 Sinclair Road
Torry
Aberdeen
AB11 9PR
Tel: 01224 248338
Fax: 01224 248591

Arbroath Office
62 High Street
Arbroath
DD11 1AW
Tel: 01241 874370
Fax: 01241 430695

Ayr Office
31 Miller Road
Ayr KA7 2AX
Tel: 01292 294000
Fax: 01292 611130

Dingwall Office
Graesser House
Fodderty Way
Dingwall Business Park
Dingwall IV15 9XB
Tel: 01349 862021
Fax: 01349 863987

Dingwall Technical Building
Strathpeffer Road
Dingwall
IV15 9QY
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Fax: 01349 863987

Dumfries Office
Rivers House
Irongray Road
Dumfries DG2 0JE
Tel: 01387 720502
Fax: 01387 721154

East Kilbride Offices
5 Redwood Crescent
Peel Park
East Kilbride
G74 5PP
Tel: 01355 574200
Fax: 01355 574688

East Kilbride
Orbital House
3 Redwood Crescent
Peel Park
East Kilbride
G74 5PR
Tel: 01355 574200
Fax: 01355 574688

Edinburgh Office
Clearwater House
Heriot Watt Research Park
Avenue North
Riccarton
Edinburgh
EH14 4AP
Tel: 0131 449 7296
Fax: 0131 449 7277

Elgin Office
28 Perimeter Road
Pinefield
Elgin
IV30 6AF
Tel: 01343 547663
Fax: 01343 540884

Fort William Office
Carr's Corner Industrial Estate
Lochybridge
Fort William
PH33 6TL
Tel: 01397 704426
Fax: 01397 705404

Fraserburgh Office
Shaw House
Mid Street
Fraserburgh
AB43 9JN
Tel: 01346 510502
Fax: 01346 515444

Galashiels Office
Burnbrae
Mossilee Road
Galashiels
TD1 1NF
Tel: 01896 754797
Fax: 01896 754412

Glasgow Office
Law House
Todd Campus
West of Scotland Science Park
Maryhill Road
Glasgow
G20 0XA
Tel: 0141 945 6350
Fax: 0141 948 0006

Glenrothes Office
Pentland Court
The Saltire Centre
Glenrothes
KY6 2DA
Tel: 01592 776910
Fax: 01592 775923

Lochgilphead Office
2 Smithy Lane
Lochgilphead
PA31 8TA
Tel: 01546 602876
Fax: 01546 602337

Newton Stewart Office
Penkiln Bridge Court,
Minnigaff
Newton Stewart
DG8 6AA
Tel: 01671 402618
Fax: 01671 404121

Orkney Office
Norlantic House
Scotts Road
Hatston, Kirkwall
Orkney KW15 1RE
Tel: 01856 871080
Fax: 01856 871090

Perth Offices
7 Whitefriars Crescent
Perth PH2 0PA
Tel: 01738 627989
Fax: 01738 630997

Perth
Strathearn House
Broxden Business Park
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Perth PH1 1RX
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Fax: 01738 630997

Shetland Office
The Esplanade
Lerwick
Shetland ZE1 0LL
Tel: 01595 696926
Fax: 01595 696946

Stirling Office
Bremner House
Castle Business Park
Stirling
FK9 4TF
Tel: 01786 452595
Fax: 01786 461425

Thurso Office
Thurso Business Park
Thurso, Caithness
KW14 7XW
Tel: 01847 894422
Fax: 01847 893365

Western Isles Office
2 James Square
James Street
Stornoway
Isle of Lewis
HS1 2QN
Tel: 01851 706477
Fax: 01851 70351