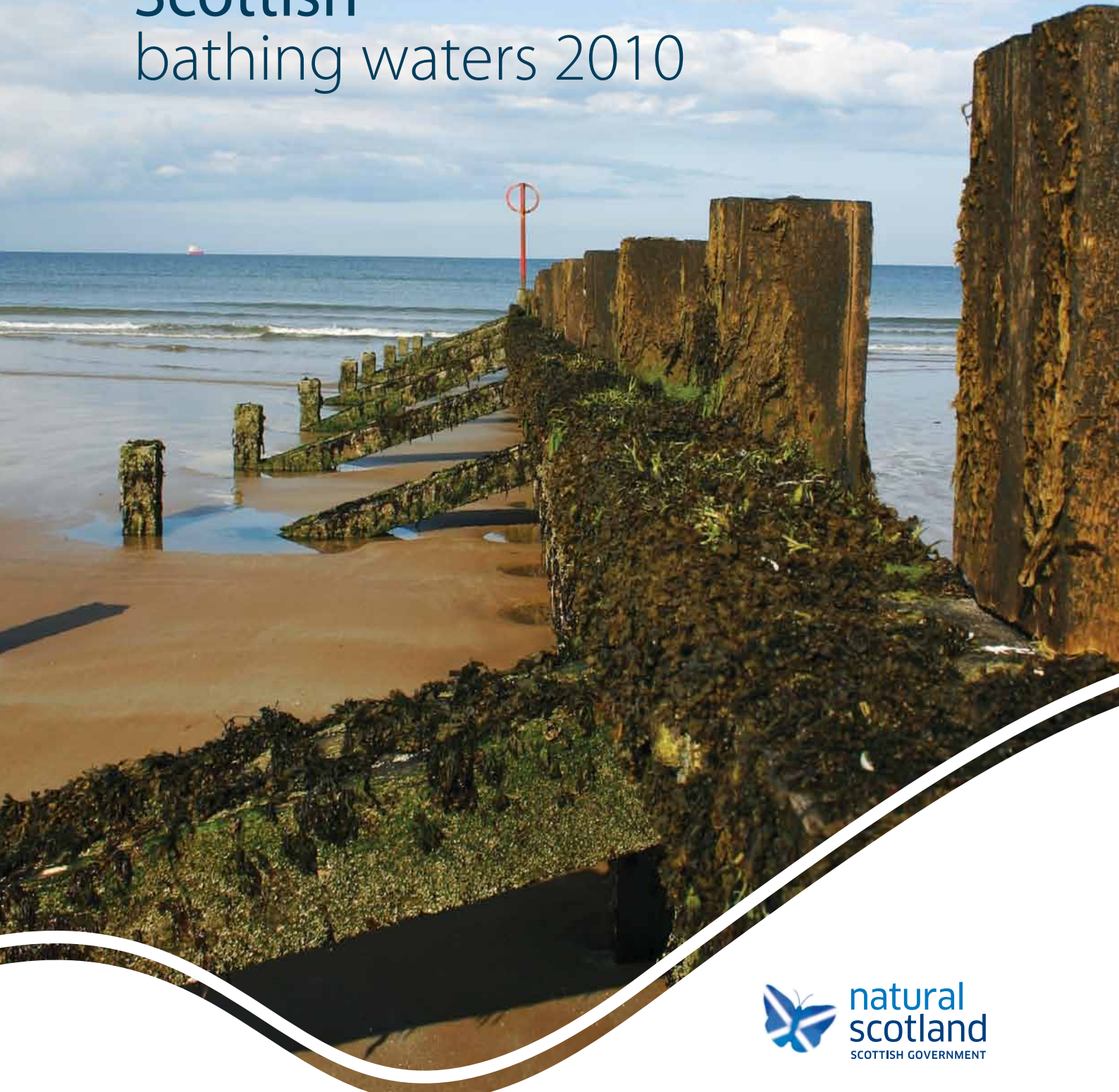


Scottish bathing waters 2010



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Foreword



The 2010 bathing season got off to a positive start with plenty of dry and warm weather in June. Monitoring results held up very well throughout the first month of the bathing season and were in line with the same period last year.

Unfortunately the whole of Scotland experienced a wet July, which affected water quality in some areas. Episodes of abnormally heavy rainfall continued into August in places. As in the previous three seasons, wet weather conditions were a big contributing factor in the failure of four of our bathing waters to meet the mandatory standards.

Despite the wet July, 95% of Scotland's bathing waters achieved at least the mandatory EU standards, and more than half also met the stringent guideline standards. Overall, three more bathing waters achieved mandatory compliance or better than in 2009, although this is partly due to there being two new bathing waters identified by Scottish Ministers which were added to the official list this year. This is an encouraging result given the prolonged period of wet weather in July.

Further good news was that the bathing water at Etrick Bay achieved mandatory compliance after failing for three consecutive years.

The final outcome of the 2010 season is testimony to the joint efforts of the Scottish Government, Scottish Water, the farming community and SEPA to lessen the risks and effect of pollution on nearby water systems and provide the public with good information.

It was another successful season for our predictive signage programme. Again, performance of the signs displaying daily water quality status forecasts at 11 beaches across Scotland was extremely high, with nearly 99% of the predictions being accurate or precautionary. The beach signage network will be extended to a further 12 bathing waters in 2011.

We have been particularly busy this summer implementing the new diffuse pollution general binding rules and have been undertaking a planned programme of farm visits, awareness raising and carrying out detailed inspection of watercourses in prioritised catchments. We will continue to enforce regulations whenever necessary, but we recognise that we can only achieve the required bathing water quality for Scotland by working closely with all our partners. 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. This will be achieved through the river basin planning process now agreed for Scotland by Scottish Government.

We have until 2015 to prepare for and comply with the requirements of the revised Bathing Water Directive. During 2010, we developed and started consulting on drafts of new bathing water profiles which will be available on our website from the end of March 2011. Further reductions in levels of bacterial pollution at our bathing waters are required for Scotland to conform to the more stringent standards of the new directive. We must intensify our efforts to maintain progress and rise to the challenges. If recent climate trends continue we must also learn to cope with intense summer rainfall events.

A handwritten signature in black ink that reads "James C. Curran".

Prof James Curran
Director of Science and Strategy
Scottish Environment Protection Agency

Executive summary

The number of designated bathing waters increased to 82 for the 2010 bathing season, with two new bathing waters identified in Fife at Aberdour Harbour (Black Sands) and Anstruther (Billow Ness).

Despite the mixed weather, with torrential rain at times, 78 bathing waters achieved at least the mandatory standard and 43 of these achieved the highest guideline standard during the 2010 season. With a dry start to the summer, monitoring results from mid May and June were encouraging, unfortunately July turned out to be a wet month across the whole country which affected water quality on occasion. Further episodes of abnormal rainfall were also experienced in some areas during August. Of the 1560 samples analysed in total during the 2010 season, 1189 (76%) were guideline quality and 349 were mandatory quality. Only 22 samples exceeded the current mandatory EU water quality standards – just over 1% of all samples taken.

Across Scotland as a whole July rainfall was almost double the long term average. From data supplied by the Centre for Ecology and Hydrology (CEH) this was the wettest July since 1988 and the third wettest July in a series going back 142 years. Following the long cold start to 2010 most people were probably hoping for better weather over the summer period.

In total, four bathing waters failed to achieve the mandatory standard this season. Our officers responded quickly to investigate the reasons behind each failure. In general the poor results registered this year were recorded after heavy rainfall. Following heavy rainfall, pollutant loads may be increased due to run-off from agricultural or urban land and at some locations wastewater spillages from storm water overflows can adversely affect water quality. Where sewage was the cause, we took swift enforcement action and Scottish Water took prompt corrective measures.

Following each investigation a summary of the findings was published on our website along with the monitoring results. Results from investigations at individual sites are included under the details for each of Scotland's 82 beaches in the main text of this report.

Ettrick Bay bathing water, which is considered to be affected at times by pollution from agriculture, has achieved mandatory status this season after failing to meet the required standard for the last three years. This result reflected reduced levels of pollution during short-term pollution events in the immediate vicinity of the bathing water this year.

Our electronic signage system, providing real-time daily forecasts of predicted water quality at 11 beaches across Scotland, has been successful again this summer. The system was operational for most of the season and displayed correct or precautionary messages nearly 99% of the time. The signage network will be expanded to include a further 12 locations in 2011 and preparations are well underway.

We are continuing to review and expand our work on bathing waters to help implement the new Bathing Water (Scotland) Regulations which came into force in Scotland in May 2008. In 2010, the largest task has been establishing bathing water profiles for each of the 82 identified waters. These profiles will be available on our website from the end of March 2011. Work on predictive modelling has been ongoing with new models set up for the 12 additional signage locations. Prediction models to work to the future water quality standards have been developed and further investigations conducted into the use of rain radar data for predictive modelling.

Reducing diffuse pollution remains a key component in improving water quality in Scotland and we are currently working together with our stakeholders to implement a rural diffuse pollution plan for Scotland. A catchment approach is being taken with work up to 2015 focusing on 14 priority catchments across Scotland.

We and our stakeholders, including Scottish Water, local authorities and farmers, are continuing to increase efforts to improve our bathing waters and meet the tougher challenges required by the revised Bathing Water Directive.

1 SEPA's role

The Scottish Environment Protection Agency (SEPA) is Scotland's environment watchdog. We have statutory powers to prevent, minimise or reduce pollution and to protect or enhance the environment. We are a non-departmental public body, part of the family of public organisations in Scotland which operate at arms length from the government but which are accountable through Scottish Ministers to the Scottish Parliament. We work in partnership with other public bodies and the public, private and voluntary sectors to deliver joined-up services and environmental improvements.

We aim to protect the environment and public health by being an excellent environmental regulator and an effective and influential authority on the environment. We do this through licensing and monitoring activities that can cause pollution and through helping business and industry understand their environmental responsibilities. We help customers comply with legislation, undertake best practice and realise the many economic benefits of good environmental management.

We monitor and report on the state of Scotland's environment, using 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 waters monitoring results [on our bathing waters website](#)¹ in a few days of sample collection and analysis. Water quality monitoring is carried out throughout the bathing season from 1 June to 15 September along with a pre-season sample taken in late May.

1.1 Our commitment to improving bathing water quality

The environment plays an important role in the health and quality of life of people and communities in Scotland. The relationship between environmental quality and health is highly complex, but the environment can have a positive effect on health through providing quality recreational space and creating healthier and more attractive places to live.

The Scottish environment is generally recognised as being of excellent quality and is a treasured resource. It includes beautiful beaches and unspoilt stretches of sands along the east coast and smaller coves set in a more rugged coastline to the north and west. Our beaches are a resource that we should be proud of and strive to protect, enhance and manage.

High-quality bathing waters are an important asset. They enable people to enjoy Scotland's water environment safely and help to promote our important and valuable tourism industry. They are fundamental to sustainable economic growth. 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 one of our four key environmental outcomes that SEPA wants to achieve for Scotland, namely 'Scotland's environment is protected and improving' with the purpose of 'protecting human health and communities'. These outcomes are detailed in our [Annual Operating plan 2010 - 2011](#)². Under these two themes we will strive to achieve high quality bathing waters at the 82 designated sites across Scotland, and full compliance with the [Bathing Waters Directive](#)³. We will improve dissemination of information, for example through the bathing waters signage network, by developing our website and through bathing water profiles, as we continue to prepare to implement the revised bathing waters standards and duties as per the timeline in the [2008 Bathing Waters \(Scotland\) regulations](#)⁴.

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.

We will continue to work with all other relevant authorities to improve compliance with European bathing water standards. Further details for individual waters are given in the Pollution Reduction Plans (PRPs) on our website. In March 2011 the PRPs will be replaced by bathing water profiles as required under the [revised Bathing Water Directive](#)⁵.

¹www.sepa.org.uk/water/bathing_waters.aspx

²www.sepa.org.uk/about_us/publications/annual_operating_plans.aspx

³<http://eur-lex.europa.eu/LexUriServ/site/en/consleg/1976/LJ/01976L0160-20030605-en.pdf>

⁴www.legislation.gov.uk/ssi/2008/170/contents/made

⁵<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF>



1.2 Purpose of this report

This report contributes to our aim of providing useful information on Scotland's environment. It presents the results of water quality monitoring at Scotland's bathing waters, describes the factors underlying the results and outlines site-specific plans for improvement.

Section 2 of the report presents the results of our routine monitoring at Scotland's 82 identified bathing waters during the 2010 bathing season. Information on the ongoing work and plans to ensure further water quality improvements at Scotland's bathing waters is provided in Section 3.

As required by the Bathing Water Directive, the water quality results for the 82 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 member states of the European Union.

1.3 Improving water quality

We aim to continue progress towards achieving high quality bathing waters at the 82 designated sites across Scotland, with the goal of total compliance with the Bathing Water Directive's mandatory standards. We cannot achieve compliance on our own and we will continue to work with all relevant organisations, the agricultural community and the public to achieve this objective. We recognise that partnership working is essential if we are to reduce the risk of urban and rural pollution in our coastal and inland bathing waters to give Scotland and its visitors the high quality of water they are entitled to expect.

We will continue protecting and improving the quality of Scotland's lochs, rivers, estuaries, wetlands, groundwater and coastal waters so that they are sustainable for the future. We are responsible for co-ordinating the management of the water environment through the production of river basin management and area management plans (see Section 1.4). River basin management planning represents a huge step forward in the way in which we safeguard and improve the quality of our water environment across Scotland.

The importance of factors outside our statutory control has become increasingly apparent. The Scottish Government recognised this in its first strategy document published in March 2002, *Scotland's Bathing Waters: A Strategy For Improvement*⁶, 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*⁷. These publications are proving very helpful in enabling problem sources to be tackled.

Sewage remains a significant cause of pollution in coastal waters despite all large continuous sewage discharges to Scottish waters being essentially subject to at least full secondary treatment. Storm overflows to freshwaters and directly to sea continue to be a pollution problem in numerous catchments. Measures to reduce sewage-related problems are in most cases the responsibility of Scottish Water.

SEPA and the Scottish Government work with Scottish Water and the Water Industry Commissioner 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 \(UWWTD\)](#)⁸ and all relevant quality standards.

Continued investment is required in both sewage treatment and in the sewerage infrastructure, particularly storm water overflows. During heavy rainfall, combined sewer overflows which discharge diluted but minimally treated sewage to watercourses and coastal waters, are essential to prevent flooding. To minimise the impact of combined sewer overflows on water quality, we impose conditions requiring solids removal and on the location and frequency of their operation.

In urban areas, sustainable urban drainage systems (SUDS) are increasingly being used to drain new developments. They are designed to avoid pollution of the water environment and include permeable surfaces that allow infiltration of rainwater into the ground, slowing the rate at which it drains to the water environment and trapping and breaking down pollutants in artificial ponds or wetlands that provide the final stage of treatment. There remains, however, 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](#)⁹ by the Scottish Government were published in 2004. Information on SUDS and the latest developments is given [on our website](#)¹⁰.

Diffuse pollution from agricultural sources also poses a significant risk to bathing water quality. Tackling this source requires concerted action across catchments draining to the bathing waters. We will ensure this by working with farmers to raise awareness about the requirement for preventing and reducing pollution and to help them identify appropriate actions for doing so (see Section 3.3 of this document).

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 obliged to display notice boards at these waters giving a variety of information, including the water quality data supplied by SEPA.

1.4 The Water Framework Directive and river basin management planning

The condition of every bathing water is linked to the quality of other waters in its catchment and how we manage the land and pollution source pathways in that catchment. Consequently, integrating land and water management is essential for the effective protection and improvement of the water environment.

⁶www.scotland.gov.uk/Publications/2002/04/14408/1465

⁷www.scotland.gov.uk/Publications/2007/11/15101809/0

⁸http://ec.europa.eu/environment/water/water-urbanwaste/index_en.html

⁹www.scotland.gov.uk/Topics/Environment/Water/bathingwaters/RetrofittingSUDS

¹⁰www.sepa.org.uk/water/water_regulation/regimes/pollution_control/suds.aspx

The Water Framework Directive¹¹ (transposed to Scottish Law under the [Water Environment and Water Services \[Scotland\] Act 2003](#)¹²) established a new, integrated approach to the protection, improvement and sustainable use of Europe's water environment. The [river basin management planning](#)¹³ (RBMP) system is the key mechanism for ensuring integrated management. It represents a huge step forward in safeguarding and improving the quality of our water environment.

The first river basin management plans were published in December 2009. For river basins in Scotland these plans can be found [on our website](#)¹⁴. The plans cover all types of water body (rivers, lochs, estuaries, coastal waters and groundwaters) and:

- describe the current condition of the water environment;
- identify where current or historic activities are adversely affecting the quality of the water environment and the biodiversity it supports;
- detail the actions required to ensure our waters of special value (eg protected for drinking, biodiversity, shellfish-growing or bathing) are up to standard, and to maintain quality where they already meet those standards;
- set out the actions needed to deliver environmental improvements over the next six years, and beyond that to 2027 whilst trying to achieve a balance between protection of Scotland's water environment, sustainable economic development and the protection of the interests of those who depend on our water environment for their quality of life.

For the purposes of river basin management planning, Scotland has also been further divided into 10 areas. Detailed supplementary area management plans can be found [on our website](#)¹⁵. The area management plans focus on local actions and highlight the opportunities for partnership working to ensure that we all benefit from improvements to the water environment. Similar plans have been put in place across Europe.

River basin management planning is a cyclical process and updated plans will be published every six years. The next river basin management plan will be available in 2015.

Bathing waters are classed as protected areas under Annex IV of the Water Framework Directive (WFD). Protected areas are areas which have been identified as requiring special protection because of their sensitivity to pollution or their economic, social or environmental importance. There is a register of protected areas and maps of their locations [on our website](#)¹⁶.

Protected areas must comply with the standards and objectives specified by the directive under which they were established. Unless otherwise stated in the EU legislation under which they were designated, these standards and objectives should be met by 2015. Bathing waters will continue to be protected under the current Bathing Water Directive and by the end of the first river basin planning cycle, the *revised* Bathing Water Directive which states that all waters must achieve a 'sufficient' or better classification by 2015. Bathing waters improvement will be implemented through the river basin management plans.

The Scottish river basin management plans (for the Scotland and Solway Tweed river basin districts) include chapters on protected areas, which describe:

- the links between the WFD and protected areas;
- the current and future state of protected areas;
- actions for protected areas;
- details of specific protected areas.

Actions carried out under river management basin planning to protect and improve water quality will have a positive effect on Scotland's bathing waters.

¹¹http://ec.europa.eu/environment/water/water-framework/index_en.html

¹²www.legislation.gov.uk/asp/2003/3/contents

¹³www.sepa.org.uk/water/river_basin_planning.aspx

¹⁴www.sepa.org.uk/water/river_basin_planning.aspx

¹⁵www.sepa.org.uk/water/river_basin_planning/area_advisory_groups.aspx

¹⁶www.sepa.org.uk/water/protected_areas.aspx



Thurso

1.5 Identification of bathing waters

The Bathing Water (Scotland) Regulations 2008 require Scottish Ministers to annually review the list of designated (identified) bathing waters for Scotland. These regulations transpose the requirements of Article 3 of the revised Bathing Water Directive (2006/7/EC) concerning the management of bathing water quality, which states that "Member States shall annually identify all bathing waters and define the length of the bathing season. They shall do so for the first time before the start of the first bathing season after 24 March 2008."

Ministers are also required to designate sites as bathing waters where they expect a large number of people to bathe, taking past trends, infrastructure or facilities provided and other measures to promote bathing into account.

To meet this obligation, Scottish Ministers designated 20 additional bathing waters in 2008 and de-listed one in light of recommendations provided by the then Bathing Water Review Panel. These changes increased the number of official bathing water sites in 2008 by a third.

In light of the extensive review exercise undertaken in 2008, the large number of new sites designated and as a result and the time needed to implement the new designation process, we recommended – and it was agreed – that no additional sites be designated or de-designated in 2009.

To assist Scottish Ministers in the required annual review process from 2009 onwards and to ensure there is appropriate public participation, the Scottish Government asked SEPA to form and chair a new multi-stakeholder group to review future designations. The new Bathing Waters Designation Panel and designation process became operational in 2009 and considered additional sites for the 2010 season. Two additional bathing waters in Fife, Aberdour Harbour (Black Sands) and Anstruther (Billow Ness), were added to the list of EU identified bathing waters, taking the total up to 82. The designation process and panel will continue to operate on an annual basis. Further information on the designation process is available on the Scottish Government, SEPA and Keep Scotland Beautiful websites (see Annex 4).

Official bathing water designation enables action to be taken to ensure the bathing water meets the directive's standards to protect public health. It is therefore in the interest of owners of non-recognised sites to apply for designation if they meet the appropriate criteria. The new panel will continue to actively promote this.

1.6 Revision of the Bathing Water Directive

The revised Bathing Water Directive (2006/7/EC) came into force on 24 March 2006 and was translated into Scottish law by The Bathing Waters (Scotland) Regulations 2008. The directive introduces a new classification system as well as water quality standards that are substantially more stringent than those of the current directive.

The revised directive classifies bathing waters according to four quality categories: excellent, good, sufficient and poor. The new 'good' standard is broadly equivalent to the existing 'guideline' standards. By 2015, the date by which many other EU WFD quality objectives must also be met, Member States have to ensure that all bathing waters are of 'sufficient' quality or better. Under the new system, quality classifications are to be made using data spread over four years. The first classification will use samples from 2012 to 2015 and as such the new standards will need to be achieved in Scottish bathing waters from 2012.

The revised directive requires that measures are put in place to increase the number of 'good' or 'excellent' bathing waters. If a bathing water is classified as 'poor' for five consecutive years, even if improvement measures have been introduced, permanent advice against bathing must be introduced. Action is also required, where necessary, to tackle cyanobacterial (blue-green algae) blooms, macroalgae (seaweed), marine phytoplankton and other waste from 2011 onwards.

Changes have also been made to the bacterial entities monitored. These arise from recommendations from the World Health Organization (WHO). In place of the current coliform and faecal streptococci standards, the revised directive sets standards for *Escherichia coli* and intestinal enterococci. While slightly altering the microbiological analytical techniques necessary, the differences in the values obtained are anticipated to be minimal. Different numerical quality limits are also set between coastal (marine) and inland (freshwater) bathing waters.

The required sampling frequency under the revised directive is lower than under the current directive. 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. We have undertaken a trial to determine how this might work in practice.

The revised directive emphasises providing information to the public, particularly on the risks bathers might face from pollution. Information is to be provided through bathing water profiles hosted on the internet and via mandatory beach signs. Our electronic signage network, already in place at 11 sites in Scotland (see Section 2.3) will go towards meeting these requirements by providing real-time predictions of bathing water quality. In addition, the electronic signs could enable us to remove, from the overall classification dataset, up to 15% of samples collected during short-term pollution events when there is a public warning system in place to inform prospective bathers of potentially less good water quality. The 'abnormal events' provisions of the current directive will be maintained with revised conditions.

Throughout 2010, we have been preparing and consulting on drafts of the new bathing water profiles required by March 2011. The profiles have been developed from existing pollution reduction plans but also contain important additional information aimed at meeting all the requirements set out in the revised directive and enforced by our regulations.

We have worked closely with the Environment Agency (EA) and the Northern Ireland Environment Agency (NIEA) to develop similar templates and formats for the profiles. We have also participated in an EU workshop and helped prepare EU guidelines on bathing water profiles.

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*¹⁷, which outlined how those challenges would be met. The 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 that will progress under the revised directive. It also identifies the important role SEPA will play.

¹⁷www.scotland.gov.uk/Publications/2006/03/23151924/0



Coldingham

2 2010 bathing water quality results

In 2010, 78 of the 82 identified bathing waters in Scotland (95%) met the EU mandatory standards. Of these, 43 (52%) also met the more stringent guideline standard. Four waters failed to achieve mandatory quality compliance and, although disappointing, this should be considered in the context of the overall number of poor samples across Scotland: just 22 samples out of 1,560 in total.

There was one fewer failing bathing water than in 2009, but also a slightly lower overall proportion of guideline standard bathing waters.

The results, as always, should be considered in the context of summer weather conditions. Whilst there was an encouraging start to the 2010 bathing season it was then affected by a wet July across Scotland and in some areas further episodes of abnormally heavy rainfall in August. More details on this season's weather are given in Section 2.2.

The 'reduced sampling' provision of the Bathing Waters Directive (Annex 3.4) was continued at two sites in 2010 (Dornoch and Gullane – five samples per season). Our policy for reduced sampling is very stringent, with the provision only applied to waters where there have been no guideline standard exceedances of any determinand during the previous bathing season.

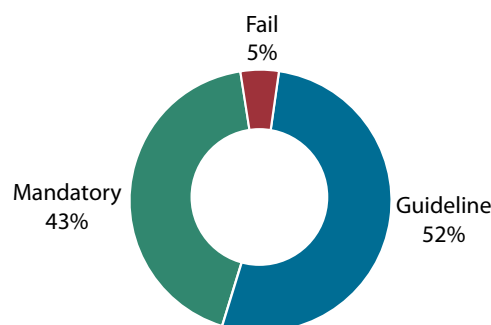
Five sites (Achmelvich, Loch Morlich, Lunan Bay, Machrihanish, and Tentsmuir Sands) were sampled 10 times (rather than the usual 20) due to their geographical remoteness. In 2010 four of these waters met the guideline standards for microbiological determinands while the fifth site, Machrihanish, achieved the mandatory standards.

The microbiological monitoring data from the 82 identified bathing waters in Scotland can be found in Annex 1. The results are summarised below (see also Figure 1 and Map 1):

Of the 82 identified bathing waters:

- 43 met the guideline quality standards of the directive (52%);
- 35 met the mandatory quality standards of the directive (43%);
- 4 failed to achieve the mandatory quality standards of the directive (5%).

Figure 1: 2010 bathing water quality



2.1 Details on each of Scotland's 82 identified bathing waters

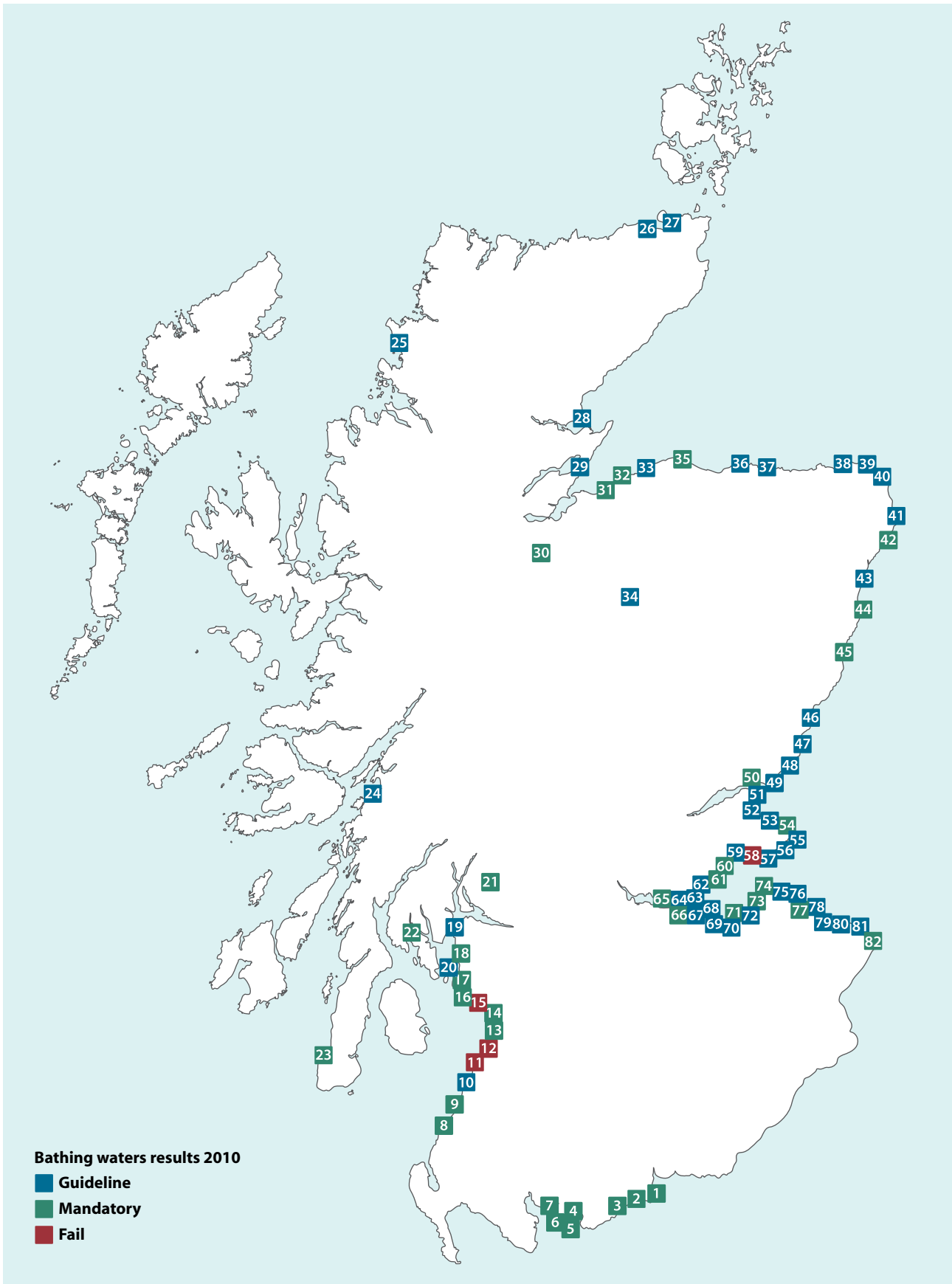
This section contains specific information for each of Scotland's 82 identified waters. It focuses on the underlying factors behind bathing water quality at each site and outlines the plans for improvements. Waters are described in clockwise order around Scotland, starting in the south-west.

In the following paragraphs and tables:

- 'n/s' indicates not sampled;
- 'Mandatory' indicates a pass of the current directive's mandatory standards;
- 'Guideline' indicates a pass of the current directive's more stringent guideline standards;
- 'Fail' indicates a failure to comply with the current directive's mandatory standards.

An asterisk (*) has been used to identify the years where monitoring, and as such an overall assessment, has been carried out at a bathing water prior to designation. In this case the overall assessment is indicative of whether the bathing water would, or would not, have achieved the EU standards had it been designated that year.

Map 1: Results for Scotland's 82 identified bathing waters, 2010



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

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



Sandyhills



Southernness



Saltcoats



Troon



Luss Bay



Irvine

Southernness

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Southernness was designated as an EU bathing water in 1999. In 2010 guideline standards were met in all but one of the bathing water samples during the reasonable weather through June and early July. However, throughout the rest of the bathing season, with the mixed weather conditions, the bathing water often only met mandatory standards.

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

The combined sewer overflows 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 sewage treatment works which need to be addressed. The work at Troqueer sewage treatment works has been delayed and is now scheduled to be completed by Autumn 2010.

The only private wastewater treatment plant is at Southernness, where it serves the caravan park and village. This treatment works was upgraded to secondary treatment with the provision of ultraviolet (UV) disinfection during the bathing season.

Southernness bathing water will be part of SEPA's electronic signage network from 2011 (see Sections 2.3 and 2.4).

Sandyhills

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Fail	Fail	Mandatory

Sandyhills bathing water has a varied compliance history. In 2010 the bathing water achieved mandatory compliance after failing to meet the mandatory standards for three years in a row. The routine monitoring sample collected on 25 August 2010 failed to meet the mandatory standards most likely as a result of diffuse pollution from surrounding land exacerbated by natural sources brought into the bay by tidal action.

This bathing beach is part of our electronic beach signage network which provides daily predicted water quality information to bathers (see Sections 2.3 and 2.4).

The main threat to water quality at Sandyhills bathing water is from agricultural run-off. Composting facilities and biogas plants have been installed to treat slurries and manures. These have received positive feedback from the farming communities involved and the project itself gained positive media coverage.

The land draining to Sandyhills water is located in the larger Stewartry Coastal catchment area which is being studied under our diffuse pollution priority catchment programme (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

There are also some private sewage treatment systems in the catchment, draining directly to the bathing waters. By the start of the 2011 bathing season we will have inspected these assets to ensure that they are working correctly and within licence limits.

Rockcliffe

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Fail	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Before its identification in 1999, the bathing water at Rockcliffe was not consistently of satisfactory quality. However, following Scottish Water's upgrade of the local sewage treatment in 2004, which included the addition of UV disinfection and a storm storage tank, the bathing water has consistently complied with EU mandatory requirements. In particular, the new storm sewage tank has significantly reduced overflows of diluted and screened sewage during very wet weather. The continued mandatory water quality at this bathing water this year is encouraging.

One water quality sample collected in July 2010 failed to meet the mandatory standards. We inspected the local area immediately but no obvious pollution source was found. Since the poor result occurred during the first wet period following an exceptionally long period of dry weather, it is thought that diffuse pollution and wet weather run-off were the likely causes.

As part of the Stewartry Coastal catchment the land draining to Rockcliffe bathing water is being studied under our diffuse pollution priority catchment programme (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Rockcliffe bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Dhoon Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Mandatory	Mandatory	Mandatory

Dhoon bay was designated as an EU bathing water in 2008 and has complied with mandatory water quality standards since designation. In 2010, one sample collected in August failed to meet the mandatory standards. That poor result was thought to be a result of a mixture of land based agricultural and urban derived run-off following wet weather.

The small coastal burns (Mill Hall and Corraford) drain into Dhoon Bay and could be potential microbial pollution sources. However, the main contributory source is judged to be the River Dee with its extensive catchment. The large number of 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.

The land draining to Dhoon Bay bathing water is located in the larger Stewartry Coastal catchment which is part of our priority catchment programme (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

The numerous barrages associated with the Dee hydro system may accumulate diffuse pollutants and potentially release these deposits in a plug. We will work with Scottish Power to reduce sediment flush events and minimise diffuse pollution arising from these. 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 already completed at New Galloway and Kirkcudbright under Scottish Water's Quality and Standards II programme (Q&SII) and work underway through Q&SIII at Castle Douglas has improved discharge quality. We will ensure that all sewage discharges comply with their licence obligations.

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. Whilst Kirkcudbright Creamery has closed, removing this microbial source from the Dee, we will regulate any new industry occupying the site to ensure the bathing waters are afforded protection

Dhoon Bay bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Brighouse Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Brighouse Bay is a small sheltered sandy beach between rocky outcrops. Since 2004 it has consistently achieved mandatory standards.

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. In the past this bathing water has been most contaminated immediately following heavy rainfall events. The recent water quality results are encouraging but we cannot assume that its problems have all been fixed.

A project funded by the Scottish Government, which was 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 mandatory water quality achieved again this year at Brighouse Bay was due to these extensive efforts to reduce agricultural sources of pollution. A Scottish Government evaluation study which investigated the level of improvement achieved from these field-based measures is available on the Scottish Government website.

The land draining to Brighouse Bay bathing water is located in the larger Stewartry Coastal catchment area which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

There have been occasional reports of algal blooms along this coastline during exceptionally sunny and calm weather conditions. Such blooms can be a contributory factor in harbouring microbial pollution.

Brighouse Bay is part of our electronic beach signage network (see Sections 2.3 and 2.4).

Carrick

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Carrick has had rather a variable quality record since its identification as a bathing water in 1999. This year it complied with mandatory standards for the sixth consecutive year. One routine monitoring sample, collected in July, failed to achieve the mandatory standards in 2010. This poor result occurred during the first wet period after an exceptionally long period of dry weather and was thought to be a result of general diffuse pollution and wet weather run-off.

A programme of farm inspections was carried out following the bathing water failure in 2004 (the first in this water's history). It concluded that agricultural run-off from the catchment was unlikely to have been the cause of the failure in this instance. As there are no major sewage inputs nearby, we have considered further possible sources which may pose a risk to this bathing water. These include input from nearby islands which are heavily populated with sea birds and tidal influences carrying diffuse pollutants along the coast from the Cree Estuary or nearby private sewage facilities.

The land draining to Carrick bathing water is located in the larger Galloway Coastal catchment which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

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 Carrick coastline has good exposure to tidal conditions and is generally devoid of calm areas where algal blooms could accumulate.



Girvan

Mossyard

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Mandatory	Fail	Mandatory	Fail	Mandatory	Fail	Guideline	Guideline	Mandatory	Mandatory

Mossyard was newly identified as an EU bathing water in 2008. Because of its general recreational use, we have monitored its water quality since 1999. Water quality dropped from guideline in 2008 to mandatory in 2009 and 2010.

The area is rich in wildlife, with flocks of geese and other bird species occupying Fleet and Wigtown Bays throughout the year. In addition, livestock trample the foreshore across the region. Animal faeces are a known potential source of bacteria, which could affect water quality at 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. 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.

The land draining to Mossyard bathing water is located in the Galloway Coastal catchment area which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

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

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory

The Girvan bathing water enjoyed eight years of mandatory compliance following completion of a major sewerage scheme. In 2007 however, the water failed to achieve the mandatory standard as a consequence of the wet summer and frequent high river flows; conditions recognised as a threat to the bathing water quality. It is pleasing to report that the water quality since 2008 has reverted to mandatory despite the generally wet late summers. 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.

One poor sample in the early part of the season was thought to have been caused in part by a leaking sewer line which was quickly repaired by Scottish Water. There were no further poor samples during 2010.

Maidens

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Fail	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Maidens was identified as an EU bathing water in 2008 and has achieved mandatory compliance ever since. Due to its general recreational use we have monitored water quality at this bathing water 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; 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 of mandatory standard.

Culzean

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Guideline	Mandatory	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Culzean was identified as an EU bathing water in 2008. Once again in 2010 it achieved the stringent guideline standards, as it has done consistently since 2005. Due to its general recreational use we have monitored the water quality at Culzean 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 meet the mandatory or guideline standards.

Heads of Ayr

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Fail	Fail	Mandatory	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Fail	Fail

Heads of Ayr was identified as an EU bathing water in 2008 when it complied with the mandatory standards. However, in 2009 and again in 2010 the bathing water failed to meet the mandatory requirements. Due to its general recreational use we have monitored the water quality at Heads of Ayr 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 from diffuse run-off from agricultural land following rainfall. As in 2009, two samples failed to meet the mandatory standard during 2010. There are a number of possible sources of contamination, which we are currently investigating.

Ayr (South Beach)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Fail

Bathing water quality at Ayr (South Beach) does not consistently comply with the EU mandatory standards. In 2010 the water failed to meet the mandatory standards for the third time in ten years. There were two sample failures during the 2010 bathing season, both of which occurred following rainfall in the river catchments.

Ayr (South Beach) bathing water is part of our electronic signage network (see Sections 2.3 and 2.4). The electronic signs were warning the public of poor water quality on the both days when the non compliant samples were collected during the 2010 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 affect water quality. The rivers Doon and Ayr are part of our priority catchment programme along with the Ayrshire coastal catchment (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Prestwick

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory

Prestwick bathing water enjoyed eight years of mandatory compliance until 2007 when it failed to achieve the required standards as a consequence of the wet summer and frequent high river flows; conditions recognised as a threat to Ayrshire's coastal water quality. The bathing water achieved mandatory compliance again in 2008 despite the generally wet late summer; this quality was maintained in 2009 and 2010.

One sample failed to meet the mandatory standard in August 2010, during a time of high river flows. Diffuse pollution is the likely source of the failure, although the rainfall was not heavy enough for our predictive models to have forecasted poor quality under the current settings.

The land draining to Prestwick bathing water is located in the North Ayrshire Coastal catchment area which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Prestwick bathing waters is part of our signage network (see Sections 2.3 and 2.4).

Troon (South Beach)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Mandatory

This is the tenth successive year that Troon (South Beach) bathing water has complied with either the mandatory or the more stringent guideline standards.

Improvements to the sewerage system in the area have led to a significant reduction in the level of faecal indicators in the water under normal conditions. Recent investigation work has predicted that there are no public sewerage assets likely to impact on this bathing water.

The land draining to Troon (South Beach) bathing water is located in the North Ayrshire Coastal catchment area which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Troon beach is part of our electronic signage network (see Sections 2.3 and 2.4).

Irvine

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Fail	Mandatory	Fail	Fail

For the second year running Irvine bathing water failed to comply with the mandatory bathing water standards in 2010 following two sample fails, one in July and the second in August. Both sample non-compliances followed rainfall and were correctly predicted by our electronic beach signage network (see Sections 2.3 and 2.4) which this bathing water is part of. The public were thus warned of poor water quality on these days.

Irvine bathing water continues to be at risk from diffuse pollution via the rivers Garnock and Irvine both of which are part of our priority catchment programme (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Scottish Water has continued to investigate and model improvement measures to reduce intermittent storm overflow discharges into the Irvine catchment.

Saltcoats/Ardrossan

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Fail	Mandatory

In 2010 Saltcoats/Ardrossan bathing water complied with the mandatory standards. This was an improvement on the previous two years, although one sample collected in June 2010 failed to meet the mandatory requirements. Our investigations revealed that this failure was most likely due to a combination of diffuse urban and agricultural run-off which occurred after a short duration localised rainfall event.

As part of the North Ayrshire Coastal catchment the land draining to Saltcoats/Ardrossan bathing water is being studied under our diffuse pollution priority catchment programme (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Regular checks on key points such as sewer overflows and surface water outfalls were carried out throughout the bathing season.

Saltcoats/Ardrossan bathing water is part of our electronic beach signage network (see Sections 2.3 and 2.4).

Seamill

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Mandatory	Fail	Mandatory	Mandatory	Fail	Guideline	Mandatory	Mandatory	Mandatory	Mandatory

Seamill was identified as an EU bathing water in 2008 and has met mandatory standards for the last four years. Due to its general recreational use we have monitored water quality at this bathing water 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.

Seamill bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Largs (Pencil Beach)

2001*	2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010
Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Largs (Pencil Beach) was newly identified as an EU bathing water in 2006. Due to its general recreational use we have monitored the water quality at this location since 2000. The waters have consistently achieved mandatory compliance since 2003 and 2010 was no exception.

The designated bathing water 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 in the area is sheep grazing, which studies elsewhere in the UK have shown could introduce diffuse sources of faecal indicator bacteria.

The Gogo Water, some 1.2km north of the designated bathing water, may have some influence on bathing water quality under certain tidal states and at times of high river flow. The most likely risk of failure is diffuse run-off during the wet weather and we consider that this water, like the others in Ayrshire, remains vulnerable to pollution caused by storm events.

Largs bathing water will be part of our electronic signage network from 2011 (see Section 2.3 and 2.4).

Lunderston

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline

Lunderston was newly identified as an EU bathing water in 2008. Although the water achieved the stringent guideline standards in 2008 and 2010, it only complied with the mandatory standards in 2009. Due to its general recreational use we have monitored water quality at this bathing water since 1998.

This compact sandy beach is a popular recreation and picnic area next to a local garden centre and is located about five miles from Greenock and 30 miles from Glasgow. Lunderston Bay is in the Clyde Muirshiel Regional Park and is a seaside attraction with free parking, a ranger service, environmental education events and various seaside activities.

We are currently discussing the proposed location of public toilets and offices with Inverclyde Council. The toilets are to be used by Clyde Muirshiel Regional Park at Lunderston Bay. The council are currently pursuing connection to the public sewerage system, however technical difficulties and excessive costs may require the use of a dedicated sewage treatment plant which will need prior SEPA approval.

No significant discharges into the bay currently cause us concern. Inverclyde sewage treatment works, which provides full biological treatment, discharges to Firth of Clyde about 1km north-west of the bay.

Millport Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Mandatory	Guideline

Millport Bay on the Isle of Cumbrae was first identified as a bathing water in 1999. Although the water met the guideline standard in 2007, it only achieved the less stringent mandatory standard in 2008 and 2009.

The new sewage treatment system serving Millport has resulted in improved quality and more reliable compliance with EU standards. It is pleasing to note that the bathing water achieved compliance with the more stringent guideline standards in 2010.

Millport Bay bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Luss Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Luss Bay on Loch Lomond is one of three designated inland bathing waters in Scotland. The water continues to achieve the mandatory bathing water standards.

Scottish Water's UV treatment unit at Luss sewage treatment works improved the effectiveness of discharge disinfection. Diffuse sources of bacterial contamination will be investigated in the Luss catchment area and contact made with relevant persons to attempt to reduce any potential contribution to diffuse pollution in the catchment.

Luss bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).



Nairn



Cullen Bay



Balmedie



Loch Morlich



Cruden Bay



Machrihanish

Ettrick Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Fail	Fail	Fail	Mandatory	Mandatory	Fail	Fail	Fail	Mandatory

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 complying with the mandatory standards in 2005 and 2006, the bathing water again failed to attain the required standards in 2007, 2008 and 2009.

In general, sample exceedances have been linked to significant rainfall in the 48 hours preceding sampling, which is likely to have washed large amounts of bacteria from the surrounding land into the receiving watercourses. In 2010 Ettrick Bay met the mandatory standards again. This apparent improvement in water quality resulted from a reduction in the peak numbers of faecal bacteria detected during short term pollution events this year.

Problems were experienced in mid-2009 with a small private sewage discharge from the cafeteria at the northern end of the beach resulting in localised deposits of sewage debris. Work is ongoing to resolve these problems. Despite this, the recorded failures to meet mandatory standards have been mainly attributed 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.

We have encouraged all farms in the area to adopt practices that will reduce bacterial inputs to local watercourses. We are continuing work with the agricultural sector to promote best practice which should lead to further improvements in the water quality at Ettrick Bay.

The beach will continue to be at risk of failure and hence remains part of our electronic signage project (see Sections 2.3 and 2.4).

Machrihanish

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory

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 peninsula. It is favoured by locals, surfers and other watersports enthusiasts. The bathing water achieved the mandatory standard between 1999 and 2002, before improving to meet the more stringent guideline standards in 2003. From 2003 Machrihanish achieved guideline compliance for seven successive years. Disappointingly, in 2010 the bathing water only managed to achieve mandatory compliance.

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

Ganavan

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Mandatory	Mandatory	Guideline	Guideline	Guideline

Ganavan was identified as a bathing water in 1999. It has achieved guideline compliance for the last three years.

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 sewage treatment works prior to discharge into the Sound of Kerrera. This sewage treatment works serves the resident population of Oban (9,000 rising to 20,000 in summer). We have instructed a local caravan site to upgrade its sewage treatment facility. The bathing water is now believed to be at low risk of failing mandatory standards.

Achmelvich

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline

Achmelvich was designated as a 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 next to a small but popular campsite and caravan park which overlooks the beach. Apart from the caravan park, no public sewerage system operates in this water.

Despite 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 watersports: water-skiing, windsurfing and coasteering are popular on the beach. The implementation of a local beach management guide in 2004 led to dogs being banned from the beach during the peak tourist season.

Compliance with guideline standards can be attributed to the absence of any major discharge into the bathing water. The bathing water is considered to be at low risk of failing mandatory standards.

Thurso

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Mandatory	Mandatory	Guideline	Mandatory	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Guideline

Thurso was designated a bathing water in 2008 but has been sampled for several years before then.

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 mouth of which is at the southerly most reach of the bay and at least 2km from the more northerly open waters of the Atlantic.

Water quality at Thurso bathing water fluctuates between mandatory and guideline status. In 2010 the bathing water achieved guideline compliance despite the failure of a single sample, taken on 11 August, to meet the mandatory standards. The sample failure was attributed to heavy rainfall during the night preceding sample collection which resulted in the operation of the Thurso combined sewage overflow located in the vicinity of the designated water.

During 2009 we began investigating an intermittent discharge of farm and sewage effluent from a farm and cottages east of the town within 500 metres of the bathing water. Some problems have been addressed but regulation is ongoing. Thurso beach has a history of dog fouling but is very popular with walkers.

Dunnet

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Mandatory	Guideline	Guideline	Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline

Dunnet, in Caithness, was identified as a bathing water in 1999 although it has been monitored as a non-designated beach since 1996. Since 1998 the water has complied with the mandatory or more stringent guideline standards.

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 on a new site further from the bathing water in 2006.

In the late summer of 2009 Scottish Water began modification work to the peracetic acid disinfectant dosing plant intended to provide flow proportional peracetic dosing at Dunnet in time for the 2010 bathing season. The modifications were completed on time but Scottish Water were unable to commission the plant due to design and installation problems. Hand-dosing of disinfectant continued for the 2010 season but failed to prevent 13 of the 20 microbiological samples from the discharge failing the CAR licence conditions.

Dornoch

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Dornoch was identified as a bathing water in 1999. Local sewage and agricultural sources of pollution have been gradually reduced and, in 2010, the bathing water met the guideline standards for the thirteenth consecutive year.

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

Rosemarkie

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Mandatory	Mandatory	Guideline

Rosemarkie was designated as a bathing water and sampled for the first time in 2008, when it met the mandatory EU standards.

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

Rosemarkie complied with the guideline standards for the first time in 2010. We are continuing to work with Scottish Water to ensure compliance with bacteriological conditions of their assets in the vicinity.

Dores

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

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 inland bathing waters in Scotland. Dores achieved mandatory compliance for the twelfth successive year in 2010.

The designated area, a relatively small bay around 0.6km long, is popular with tourists particularly in the summer season. An annual concert event, the RockNess Festival, attracts tens of thousands of visitors to the area in June.

In 2004 Scottish Water extended the public sewerage system in Dores village to pick up numerous septic tanks previously identified as a potential risk to water quality and which discharged to either the Allt a' Mhinisteir Burn or Loch Ness. We continue to monitor the Allt a' Mhinisteir Burn and are seeking to find and eliminate remaining pollution sources. This bathing water is expected to continue to meet mandatory standards in the future.

Nairn (Central)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Guideline	Guideline	Mandatory

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 below).

Water quality benefited greatly from the upgrading of the Nairn sewage treatment works in 2000. Unfortunately the disinfection system required by us to ensure adequate protection proved unreliable so a completely new disinfection system was installed in 2004. The bathing waters record of achieving the mandatory or guideline compliance since 1996 was maintained in 2010 when it met the mandatory standards.

The pollution threats to Nairn (Central) are the same as those for Nairn (East) and are described below.

Nairn (East)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Fail	Mandatory	Mandatory	Mandatory	Guideline	Mandatory

Nairn (East) is a pleasant and popular sandy beach. The underlying water quality has remained high for the past five years but may be temporarily influenced by unauthorised discharges and weather-related events. In 2010 the bathing water met the EU mandatory standards.

Bacterial loadings from the River Nairn are considered to pose a significant risk to the bathing beaches at Nairn. Consequently we issued Scottish Water with revised discharge licence consents which require disinfection of effluents at Sunnyside, Croy and Cawdor sewage treatment works prior to discharge. We are continuing to work with Scottish Water to improve discharge quality at the Croy and Cawdor works. The continuous discharges from Brackla septic tank and Sunnyside sewage treatment works have been removed and replaced with intermittent discharges from pumping stations.

The sample collected from Nairn (East) on 11 August 2010 exceeded the mandatory water quality standards. SEPA staff investigated local weather conditions, tidal flow and river conditions. At the time of sampling there were no storm discharges operating from Scottish Water assets in Nairn, and the final effluent from the sewage treatment works was within licensed limits. Following heavy rain the River Nairn increased in flow due to run-off from the catchment. Discolouration was evident and the flow from the river was pushed towards the east beach by a flooding tide. The bathing water was likely to have been affected by diffuse pollution.

Issues remain with the performance of some sewage treatment works in the Nairn area, with bacteriological standards being breached in the 2010 season. In addition, the collection system in Nairn itself has suffered some major problems. Discussions are being held to prevent these issues being carried over into the 2011 season.

Findhorn

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline

Findhorn was designated as an EU bathing water at the start of the 2008 season. The beach, which is located in the Moray Firth at the mouth of Findhorn Bay, receives the River Findhorn as well as several burns. The designated area sits at the end of a sweeping sandy bay and is backed by dunes and a caravan site. It is an important habitat for birds.

In 2008, all samples collected during the bathing season complied with guideline standards. The overall guideline standard was maintained during the 2009 and 2010 bathing seasons.

There are two sewage treatment works (Kinloss and Forres) that discharge into Findhorn Bay. Work to consolidate these discharges and upgrade the treatment works has now been completed and should help to maintain the water quality at Findhorn.

Loch Morlich

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline

Loch Morlich was 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 in the River Spey special area of conservation. Loch Morlich is a shallow loch surrounded by forest, sitting close to the foot of Cairngorm. It is about six miles from Aviemore and is a popular location for bathing and other watersports activities, as well as walking and mountain biking.

Loch Morlich qualifies for reduced sampling due to its remote location and low risk status. The bathing water achieved guideline compliance in 2010 for the third successive season.

Lossiemouth (East)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Mandatory	Mandatory	Mandatory

Lossiemouth (East) was designated as an EU bathing water in 2008 but has been monitored since the 1980s. The designated bathing beach is a long, sandy stretch situated to the east of the town of Lossiemouth on the Moray coast near Elgin. The River Lossie and the Spynie Canal flow along the back of the beach and into the sea at the end of the bathing water. Bathing water quality at Lossiemouth (East) has achieved mandatory compliance every season since designation.

Unfortunately, the sample collected on 25 August 2010 exceeded mandatory standards. Despite some rainfall there were no reported spills from combined sewage overflows at this time. Agricultural diffuse pollution inputs to the River Lossie were considered the most likely cause of the sample failure. Further work is required to determine the source of these inputs.

Lossiemouth (East) bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Cullen Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline

The attractive sandy beach at Cullen is a popular destination for visitors and locals, who value the high standard of the bathing water. Cullen has consistently achieved guideline compliance for the last three years and at least mandatory compliance 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.

Inverboyndie

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Guideline	Guideline

Inverboyndie was designated as a bathing water in 1999. It is a popular tourist area next to a large caravan site. The bathing water achieved the guideline compliance in 2009 and 2010.

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 and the sewage is now pumped to Macduff sewage treatment works where it undergoes full biological treatment followed by UV disinfection. The Inverboyndie outfall has been retained only as a storm and emergency overflow for the pumping station.

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 and discussions with Aberdeenshire Council, these septic tanks have been removed and the site connected to the public sewer. The upgrade has benefited water quality since its completion before the 2008 bathing season.

Rosehearty

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Mandatory	Mandatory	Guideline	Mandatory	Fail	Guideline	Guideline

Rosehearty was identified as a bathing water in 1999. Next 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. In 2010, the bathing water complied with the guideline standards for the second year running.

In 2001 sewage from the town was diverted to the new sewage treatment works at Fraserburgh, which has UV disinfection designed to protect bathing water quality. The pumping station remains at Rosehearty, but is only authorised to discharge screened sewage under certain storm and emergency conditions.

Failure of the bathing water to achieve mandatory standards in 2008 prompted investigative sampling. The investigation found levels of bacteria to be higher at the designated bathing water sample point than elsewhere at the bathing water. It appears that there is little circulation in the area of sampling and the large amounts of seaweed present can harbour bacteria, prolonging their survival. We are considering finding a more representative sampling point for Rosehearty but that is still under review and further data is required before the sampling point can be moved.

Fraserburgh (Tiger Hill)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Mandatory	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	Guideline

This sandy beach next to the town of Fraserburgh is a popular location for surfing as well as for walking and family outings. For the past nine years water quality at the bathing water has fluctuated between mandatory and guideline compliance. In 2010, Fraserburgh (Tiger Hill) complied 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. Water quality at Fraserburgh (Tiger Hill) improved following these changes.

The local Kessock Burn drains to the beach to the west of the monitoring point and is a potential source of bacterial contamination. The main source of diffuse pollution in the catchment of the Kessock Burn is from agricultural land with other diffuse pressures coming from urban run-off, sewage cross connections and septic tanks. Surface water outfalls to the burn, together with farms in the catchment, are inspected regularly to ensure that potential bacterial contamination sources are monitored.

The catchment of the Kessock Burn is located in the larger Buchan Coastal area which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Fraserburgh (Philorth)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Mandatory	Guideline	Guideline

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

Fraserburgh (Philorth) achieved guideline compliance in 2010, but a single sample collected at the end of the season failed to meet the mandatory standards. The sample exceedence has been attributed to the Water of Philorth which discharges to the east of the monitoring point. At the time of sampling, the wind was blowing strongly from the direction of the watercourse and any pollution, most likely a result of agricultural run-off into the river during periods of rainfall, would have moved towards the sampling point. The site was re-sampled the following day and was found to be compliant.

The catchment of the Water of Philorth is located in the larger Buchan Coastal area which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

There are no sewage discharges in the immediate vicinity of the bathing water.

Peterhead (Lido)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Fail	Guideline	Mandatory	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline

Peterhead (Lido) is located in the outer harbour (Bay of Refuge) of the town of Peterhead. This bathing water attracts a diverse range of bathers and watersports enthusiasts with dinghy sailing in the sheltered waters of the bay being particularly popular. Continuing a good compliance record, Peterhead Lido achieved guideline compliance in 2010 with 95% of samples collected being of guideline standard.

With licence conditions designed to protect the bathing water, discharges from the main pumping station to the bay are now only permitted under emergency or storm conditions. Further improvements to this pumping station, carried out under Scottish Water's Quality & Standards III investment programme, were completed before the start of the 2009 season. These improvements included installation of new pumps, control panels, automated emptying of storm tanks and a new low voltage power supply.

Cruden Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory

This bathing water consists of an extensive sandy beach backed by sand dunes next to the small village of Cruden Bay. Overall, the water achieved mandatory compliance in 2010 although there was one exceedence of mandatory standards following a period of very wet weather. The wet weather resulted in an abnormal weather waiver being applied and the sample was not included in the overall compliance assessment.

Sewage from Cruden Bay village has been pumped to Peterhead sewage treatment works since 2003, when an unsatisfactory short outfall was removed. The former sea outfall to mean low water springs was retained as a storm and emergency overflow from the pumping station. 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. With around 60 farms operating in the catchment, diffuse pollution can affect water quality. The catchment of the Water of Cruden is located in larger Buchan Coastal catchment which is part of our priority catchment programme of work (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

The Water of Cruden also receives discharge from the sewage treatment works serving the upstream of the village of Hatton. A sand filter and UV disinfection unit was installed at the Hatton sewage treatment works before the start of the 2006 season to reduce the bacterial loading to the Water of Cruden. After problems with the initial UV disinfection system, which resulted in our issuing an enforcement notice, a replacement system was installed prior to the start of the 2009 bathing season. This new system is performing very well with extremely low bacterial counts now being discharged from the works. Scottish Water intends to pump flows from Hatton to Peterhead sewage treatment works for treatment in the next three years.

Cruden Bay bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Balmedie

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline

This popular expanse of sandy beach is next to Balmedie Country Park about seven miles north of Aberdeen City. It was identified as a bathing water in 1999 and has complied with the mandatory or more stringent guideline standards since then. The failure to continue its five year run of guideline compliance in 2008 may have been a result of the wet summer.

In recent years the bathing water has benefited from the installation of a new sewage treatment works at Balmedie (commissioned before the 2004 season). The sewage treatment works also treats sewage pumped from the nearby villages of Newburgh, Potterton and Belhelvie.

Aberdeen

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Fail	Guideline	Mandatory

Aberdeen has an extensive sandy beach which is a popular recreation area and attracts many walkers, swimmers, surfers and kite surfers. The bathing water achieved mandatory compliance in 2010.

The water failed to achieve the required standards in 2008 as a result of two mandatory exceedances, both following very heavy rainfall. Our electronic signage is provided near the Aberdeen Ballroom to advise bathers of predicted water quality (see Sections 2.3 and 2.4).

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

Scottish Water is working on a drainage area plan for the city. That 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 in the burns and rivers of the bathing water catchment.

Water quality at Aberdeen bathing water can be affected by the River Dee. The River Dee is part of our priority catchment programme (see Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Stonehaven

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Stonehaven is an increasingly popular coastal resort which is well used by watersports enthusiasts. It was identified as a bathing water in 1999 but had been monitored since the 1980s. Stonehaven complied with the mandatory water quality standards in 2010 for the fifth year running.

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

Despite the completion of this scheme in 2008, a single mandatory exceedance occurred following wet weather in late August 2009. On this occasion, levels of bacteria in the nearby River Carron were very high. 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.

Agricultural activity in the River Carron catchment is thought to contribute to diffuse pollution in wet weather. A small microbiological survey carried out in 2009 suggests there are generally higher bacterial counts in the River Carron (in the south) compared with the River Cowie (in the north). This helps to explain the differences in bathing water quality in the vicinity of the River Carron and in the River Cowie in the north.

The location of the sampling point for Stonehaven bathing water was questioned in 2009. After a SEPA investigation it was agreed that, for the start of the 2010 bathing season, the sampling point should be moved to a point more representative of bathing water usage and closer to beach amenities. That will also take it further from the mouth of the Carron.

Stonehaven bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).



Seacliff



Kinghorn



Eymouth



Pease Bay



Aberdour



Elie

Montrose

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The bathing water at Montrose has consistently achieved the stringent guideline standard since 1999.

The commissioning of Montrose sewage treatment works and associated works in January 2002 has ensured that high quality waters are maintained. The treatment plant and few remaining storm overflows (which include storm storage and screening) are designed to be compatible with achieving the Bathing Water Directive's guideline standards. Although guideline compliance was achieved in 2010 the influence of rainfall events is reflected in some of the monitoring results.

Lunan Bay

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline

Lunan Bay was formally identified as an EU bathing water in 2008 but we have monitored it for many years. With the exception of 2008, this bathing water has consistently achieved guideline compliance.

In view of the consistent guideline compliance at this bathing water, 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 maintain guideline standards in 2008. It is recognised that the weather conditions in 2008 were likely to have influenced the results. Sampling remained at 10 times per season in 2009 and 2010.

Arbroath (West Links)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Fail	Mandatory	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline

The identified bathing water at Arbroath (West Links) achieved guideline compliance in 2010 for the fourth time in the last five bathing seasons.

Water quality at this site has substantially improved since the 1990s. The improvement is credited to the pumping of local sewage to Hatton sewage treatment works which was commissioned in 2001. We required Hatton works to be designed to ensure that guideline quality would be achieved at this bathing water.

The disappointing failure in 2002 was tentatively attributed to unplanned combined sewer overflow discharges. Possible sources were investigated and freshwater inputs close to the bathing water were monitored in conjunction with the bathing water in 2003–2004. However, with better Scottish Water maintenance procedures in place by then, these sources were all clean. In 2005 monitoring effort was directed elsewhere, and mandatory or guideline bathing water quality has been maintained ever since.

Carnoustie

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline

All normal sewage flows from the Carnoustie catchment are pumped to the Hatton sewage treatment works for full treatment. We required this works to be designed to ensure guideline quality standards were met at the bathing water. Carnoustie has maintained a good compliance record since the Hatton sewage treatment scheme was completed.

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 bathing water quality is maintained. Achieving guideline compliance in 2008 and 2010, despite the exceptionally wet weather in both years, illustrates the success of this ongoing work.

The temporary dip in bathing water quality in 2002 was attributed 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 failing bathing water sample was traced back to a specific malfunction. We implemented a local environmental improvement action plan before the 2007 bathing season to identify and eliminate remaining potential polluting inputs to the burn and 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.

We have discussed a potential drainage area study at Carnoustie with Scottish Water.

Broughty Ferry

2001*	2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010
Fail	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory

Broughty Ferry was designated as a bathing water in 2006, but we have monitored it since 1997 due to its recreational use.

Before 2002 water quality at Broughty Ferry was often poor. Guideline standards were achieved between 2002 and 2006, but quality dropped to mandatory in 2007 before returning to guideline in 2008 and 2009. Despite receiving an abnormal weather waiver for a failing sample taken in July 2010, the bathing water disappointingly dropped to mandatory compliance again in 2010. It is considered that the weather conditions and rainfall events experienced during the summer were a significant factor in failing to meet the guideline standards.

The apparent slight drops in bathing water quality in 2007 and 2010 were probably a result of higher than average summer rainfall, though the Tay public finance initiative scheme is not designed to deliver guideline 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 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 the Hatton works. 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 2010 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. The beach received a Blue Flag award again in 2009 but unfortunately this award was lost by the end of the 2010 season.

Tentsmuir Sands

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Tentsmuir Sands was formally identified as an EU bathing water in 2008, although we have monitored it for many years. With the exception of 2002 this bathing water has consistently complied with EU guideline standards.

St Andrews (West Sands)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

St Andrews (West Sands) has a good record of complying with EU standards. It has complied with guideline standards for the last 12 years and also holds a Blue Flag quality award. Three abnormal weather waivers were applied to samples collected from the bathing water during the 2010 season. All three replacement samples met the guideline standard.

The sewage treatment works at Kinkell Ness, to which all sewage from St Andrews is pumped, was commissioned in 2001. It has tertiary treatment including UV disinfection (required for both bathing water and shellfish protection), and treated effluent is discharged via a long sea outfall. The sewage treatment works reduces the risk of non-compliance with the Bathing Water Directive at both of the St Andrews bathing waters (see below for East Sands). The sewage treatment works consistently meets its discharge consent conditions, which should ensure continuing guideline bathing water quality.

In January 2008 work to install new storm screens at the Harbour and Bruce Embankment pumping stations in St Andrews was completed.

St Andrews (East Sands)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Mandatory	Mandatory	Guideline	Guideline

St Andrews (East Sands) was designated as a bathing water 1999, although we and our predecessor bodies have monitored it for many years. Between 2003 and 2006 the bathing water complied with guideline standards but quality dropped to mandatory in 2007 and 2008. The bathing water returned to guideline compliance in 2009 and that was maintained in 2010.

The coliform levels at this bathing water exceeded the mandatory standard on three occasions during the 2010 bathing season. However, these samples were all granted abnormal weather waivers and therefore not included in the overall compliance assessment. Replacement samples were taken and all three achieved the guideline standards.

The failure of East Sands to meet guideline standards in 2007 and 2008 was believed to be due to the high levels of coliform bacteria in the Kinness Burn even when storm tank overflows are not discharging. An action plan is ongoing on this watercourse to try to pinpoint the source(s) of contamination.

Kingsbarns

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fail	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory

Kingsbarns was identified as a bathing water in 1999. It complied with guideline standards for eight years running in 2009, so it was very disappointing when it only managed to achieve the mandatory standards in 2010. The failure to reach guideline status this year is thought to have been weather related, as the poorer results occurred following significant rainfall.

Since failing to achieve mandatory compliance in 2001 the sea outfall at Kingsbarns has been extended to the low water mark and the Kingsbarns sewage treatment works upgraded. The sewage treatment works now comprises a submerged media aeration system followed by sand filtration and UV disinfection during the bathing season. This tertiary treatment should ensure guideline compliance, however in a wet bathing season the risk of a drop in quality remains, due to contamination sources outwith the Kingsbarns sewage system.

Crail (Roome Bay)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

First identified as a bathing water in 1999, Crail (Roome Bay) has consistently complied with the stringent guideline bathing water standards. All local sewage sources are pumped to a sewage treatment works at Kilminning which provides adequate protection of these waters.

Anstruther (Billow Ness)

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	2010
Guideline	Guideline	Guideline	Fail	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Anstruther (Billow Ness) was formally identified as a bathing water in 2010 although we have monitored it for several years. This bathing water has consistently complied with guideline standards, apart from in 2004, and is expected to continue doing so.

Elie (Ruby Bay)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Elie (Ruby Bay) was formally identified as a bathing water in 1999, although we began monitoring it in 1998. This bathing water has met the guideline standard every year it has been monitored. It holds a Blue Flag quality award.

Elie (Harbour) and Earlsferry

2001*	2002*	2003*	2004*	2005*	2006*	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Fail

Elie (Harbour) and Earlsferry was formally identified as a bathing water in 2007, although we and our predecessor bodies have monitored since the early 1980s. This bathing water achieved guideline compliance every year until 2009 when it dropped to mandatory.

Unfortunately Elie (Harbour) and Earlsferry failed to meet the mandatory standards in 2010. We and Scottish water are putting in great effort to find the reason why the bathing water failed, and to ascertain the cause of an apparent downwards change in quality since 2008. Indications are that legitimate operation of storm sewage overflows during the wet summer caused the sample failures.

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. The provision of effective screening on the storm overflows has significantly improved the aesthetic quality of the beach, but in wet weather the bacterial content of the storm water discharged can result in poor bathing water quality as recorded in 2010.

Disappointingly Elie (Harbour) beach area lost its coveted Blue Flag status in 2009 due to repeated guideline failures for faecal coliforms and faecal streptococci and this situation will continue following the mandatory failure of the bathing water in 2010.

Leven

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Guideline	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Guideline	Guideline

Leven was formally identified as an EU bathing water in 2008 although we have monitored it for many years. Leven has consistently complied with the mandatory or more stringent guideline standards since 2000. It achieved guideline compliance in 2010 for the second year running, and it holds a blue flag award.

An abnormal weather waiver was granted for the sample collected on 15 July 2010 due to rainfall levels. That exceedance was thought to have resulted from a combination of increased bacterial loads from the River Leven and the Scoonie Burn into which there are various combined sewer overflows and septic tank discharges, and urban and rural run-off following heavy rainfall. The replacement sample was of guideline quality.

The sewerage infrastructure in this area is not designed to achieve EU guideline bathing water quality and therefore guideline status exceeds expectations. Levenmouth sewage treatment works provides tertiary treatment and UV disinfection during the bathing season.

Kirkcaldy (Seafield)

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory

Kirkcaldy (Seafield) was formally identified as an EU bathing water in 2008 although we have monitored it for many years. The water has met at least the EU mandatory standards since 2001, achieving guideline compliance in 2009, but returned to mandatory in 2010 after what was considered a wet bathing season. Two samples were granted abnormal weather waivers during the 2010 season and replaced.

Despite guideline water quality being achieved in three of the last five years, the sewerage infrastructure in this area is not designed to achieve guideline compliance. Mandatory status is a more realistic consistent target for this bathing water. Scottish Water is carrying out upgrade work on assets, which should help improve water quality.

Kirkcaldy (Seafield) bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Kinghorn (Harbour Beach)

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory

Kinghorn (Harbour Beach) was formally identified as an EU bathing water in 2008 although we have monitored it for many years.

This bathing water failed to achieve the mandatory standard 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 mandatory compliance in 2008. Mandatory compliance was maintained in 2009 and 2010.

Scottish Water is targeting assets in the area to identify any improvements required to achieve guideline quality in the future.

Kinghorn (Pettycur)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline

Guideline compliance has been achieved almost consistently at Kinghorn (Pettycur) since 2003. However in 2007 that high standard was narrowly missed and only the mandatory requirements met. The decline in quality was ascribed to increased frequency of storm sewage discharge from the local sewage treatment works due to the unusually wet summer.

New treatment facilities and a long sea outfall pipe at Pettycur were commissioned early in 1993. In 2001 the scheme was extended to treat and discharge all of Kinghorn's sewage through this system. That resulted in much improved water quality at Kinghorn's other beach, Kinghorn Harbour (see above), although guideline quality has not yet been attained there.

Burrtisland

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Burrtisland was identified as a bathing water in 1999. In 2010 Burrtisland maintained its guideline status for the twelfth consecutive year. The beach is well managed and holds a Blue Flag award.

Scottish Water has completed a prolonged series of improvements started by the former Fife Regional Council. Flows from several unsatisfactory outfalls have been diverted to a new sewage treatment works and now discharge via a long sea outfall. An unsatisfactory discharge from Lammerlaws was diverted to the works at the end of 1998 and guideline water quality has been achieved ever since.

The Lochies Road pumping station scheme was completed early in 2003, removing a discharge which was considered to pose a threat to the bathing water quality. 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.

Aberdour (Silver Sands)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The very popular bathing water at Aberdour (Silver Sands) has complied with the EU guideline standards for the past thirteen years and holds a Blue Flag award.

The diversion of Dalgety Bay sewage by means of a pumping station and rising main to Dunfermline sewage treatment works was completed in spring 2003, removing this distant potential risk to bathing water quality.

Aberdour Harbour (Black Sands)

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	2010
Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Fail	Mandatory	Guideline	Mandatory

Newly designated in 2010, this popular bathing water achieved mandatory compliance in 2010. Given its current drainage infrastructure, that is probably the consistently achievable quality level for this bathing water. However in a dry year Aberdour Harbour could achieve the more stringent guideline standard.

Scottish Water operate several wastewater assets in the vicinity of Aberdour Harbour (Black Sands). The Dour Burn discharges to Black Sands, therefore assets which discharge to the Dour Burn are likely to present a risk to bathing water quality. Livestock also have direct access to the Dour Burn.

Portobello (West)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Portobello (West) was identified as a bathing water in 1999. In 2010 it met the EU mandatory standard for the tenth consecutive year.

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

A joint SEPA/Scottish Water working group continues to determine the effect of storm overflows and other inputs to the Figgate Burn with a view to reducing these sources. A programme of upgrading combined sewer overflows was carried out to reduce spill frequency. Several other sources of faecal contamination to the burn have been identified and removed. This has resulted in improved sanitary quality in the Figgate Burn, with parallel improvement in bathing water quality at Portobello (West). Other work is ongoing to identify sources of surface water run-off contamination.

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 required improvements. It was concluded that no further improvements are required at combined sewer overflows in the vicinity of the bathing water and that background bacterial levels in the Figgate Burn are hindering the bathing water from reaching the guideline standard. A sampling programme is continuing for the Figgate Burn to try to trace the source of elevated bacterial levels.

Portobello (West) bathing water will be part of our electronic signage network from 2011 (see Sections 2.3 and 2.4).

Portobello (Central)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Mandatory	Fail	Guideline	Guideline

Portobello (Central) became an identified bathing water in 1999. The bathing water achieved guideline compliance for the first time in 2001, a status which was maintained until 2005. The main reason for the change in status from mandatory in 2000 to guideline 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 debris removal which increased the flow passing on to Seafield and reduced the frequency of overflows at Joppa. Another factor which may have influenced this was the upgrading of Seafield sewage treatment works in 2000 to provide secondary treatment and disinfection of the effluent during the bathing season.

Portobello (Central) met the EU mandatory quality standards in both 2006 and 2007 but failed to achieve that level in 2008. Water quality returned to guideline in 2009 and was maintained in 2010.

Investigations into the failures in 2008 showed that 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. 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 from abandoned mineworkings. Scottish Water installed greater capacity pumps in 2007 to address this issue.

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

This bathing water is part of our electronic signage system despite the fact that the threat from diffuse pollution is relatively small.

Seton Sands

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Guideline

Seton Sands/Longniddry was identified as a bathing water in 1999, and since then compliance has varied between guideline and mandatory standards. The Canty Burn is now sampled at the same time as bathing water samples are collected, in order to provide additional information should any future problems occur as elevated contamination levels have previously been found here. Work to eliminate overflows from dual manholes in the Canty Burn catchment has been completed. Longniddry (see below) became a separately identified bathing water in 2006.

The EU mandatory standard was exceeded at Seton Sands in 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 combined sewer overflow at Seton Sands Caravan Park. Prompt action was taken by Scottish Water to address this problem and the subsequent sample met the required standard.

Close surveillance was carried out on the combined sewer overflows in this area in the 2009 season. Bathing water quality at Seton Sands returned to guideline standard in 2009 and remained so in 2010.

Longniddry

2001*	2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010
Fail	Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Although previously part of the Seton Sands bathing water, Longniddry became a separately identified bathing water in 2006. We have monitored it since 1996. Before 2002, water quality at Longniddry was often poor, but mandatory or guideline quality has been achieved continuously since then. In 2010 the bathing water quality met guideline standards for the seventh consecutive year.

In 2002 a new interceptor sewer was laid to convey the sewage from Longniddry to Edinburgh sewage treatment works. The existing sewage treatment works 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 achieved mandatory status in 2002 and met the more stringent guideline quality standard for the first time in 2004 despite the wet weather that year. This standard has been maintained since.

Gullane

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The very popular and picturesque bathing water at Gullane has complied with the guideline bathing water standards 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 sewage treatment works 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

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline	Mandatory

The quality improvement of the identified bathing water at Yellowcraig in 1999 followed the diversion of sewage from Dirleton to the sewage treatment works and long sea outfall to the east of North Berwick. Before then sewage had discharged at the western end of Broadsands Bay. Following the diversion, Yellowcraig achieved guideline compliance for six consecutive years up to 2004, and it was disappointing that there was a drop in bathing water quality to the mandatory standard in 2005. One possible cause was a nearby surface water discharge which may have been intermittently contaminated although we were not able to confirm this.

In 2006 Yellowcraig returned to guideline bathing water quality and achieved that standard for the following three years. Disappointingly, it only achieved the mandatory standard in 2010. We will carry out further investigations of this bathing water prior to the 2011 bathing season.

Broadsands

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline

Broadsands was formally identified as an EU bathing water prior to the 2008 bathing season. It is next to Yellowcraig and people frequently walk between the two beaches. The bathing water was not monitored before designation. It has complied with the guideline standards each year since 2008 and is expected to continue to meet guideline standards.



Yellowcraig

North Berwick (West)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	Mandatory

We and our 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 sewage treatment works scheme was completed (see below under North Berwick [Milsey Bay]), this bathing water frequently failed to meet required quality standards. While quality improved markedly after that date, occasional problems with the sewage collection and treatment infrastructure remained.

In 2005 North Berwick (West) returned to guideline status, which was maintained in 2006. It was disappointing that the bathing water failed to meet the guideline standard in 2007, albeit by the narrowest of margins. That was partly due to a pump failure at North Berwick sewage treatment works on 15 July 2007, which caused backing up in the main sewers and surcharging onto the beach. We served an enforcement notice on Scottish Water requiring them to investigate the cause of the problem and to take action to resolve it. Scottish Water took prompt action and has put measures in place to prevent any recurrence.

The bathing water returned to guideline status in 2008 but dropped back to mandatory in 2009 when it narrowly missed achieving the higher standard due to three faecal streptococci guideline exceedances. In 2010 the bathing water once again only achieved the mandatory standard.

Scottish Water and SEPA carried out a considerable amount of investigation work following an elevated count of 400 faecal coliforms/100ml in an analysed sample on 21 May 2009. A close circuit television survey was carried out inside a suspected surface water sewer and a choke in the foul sewer was eventually identified which was causing spilling of sewage into this surface water sewer. The choke was cleared and results improved. Further work will be carried out before the 2011 bathing season to check inputs to the sewer.

North Berwick (Milsey Bay)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory

The identified bathing water at North Berwick (Milsey Bay) has complied with guideline standards since 2000. Bathing water quality improved greatly after the commissioning of the North Berwick sewage treatment works and long sea outfall in 1995, although we were disappointed that guideline quality was not achieved until after 1999.

Our investigations before the 2000 bathing season identified two significant sewage sources that could affect water quality at Milsey Bay. They were brought to the attention of Scottish Water for remediation and North Berwick (Milsey Bay) achieved guideline quality for the first time in 2000. That high standard was maintained until 2009 and it was very disappointing that it was not continued in 2010, when only the mandatory compliance was achieved.

Investigative efforts were stepped up at this bathing water after a poor water quality result in early June 2010. Monitoring results suggested the Glen Burn was again a potential source of contamination and a number of investigative surveys were carried out. Elevated faecal indicator organism counts were also detected to the east end of the bathing water. We are currently investigating those results.

Small sewage infrastructure leaks and discharges in 2002 and 2004 illustrate the need for ongoing vigilance. This is particularly true with bathing waters with freshwater inputs and storm sewage infrastructure nearby.

Seacliff

2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010
n/s**	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

**Access restrictions due to foot and mouth disease.

Seacliff was identified as an EU bathing water prior to the 2008 bathing season although we have monitored it for many years. The bathing water is popular with surfers and the water quality is consistently guideline standard.

Dunbar (Belhaven)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline

Dunbar (Belhaven) is a fine sandy beach where, with the exception of 2006, the identified bathing water has achieved guideline compliance every year between 1993 and 2010.

The original West Barns sewage treatment works and long sea outfall were commissioned in 1993. Although the bathing water has generally achieved guideline quality since then, the sewage treatment works and outfall suffered frequent short circuiting and therefore could potentially discharge untreated sewage to the water via the old West Barns outfall and storm overflow. We required Scottish Water to eliminate that pollution source and the consent issued for a new treatment works required Scottish Water to replace the West Barns sewage treatment works by the end of 2005. However, delays in purchasing the necessary land meant that the works were not completed until May 2008.

The new sewage treatment works has been built inland with a discharge to the Biel Water, using the existing long sea outfall as a storm overflow. Using membrane technology means 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)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory

Dunbar (East) was identified as a bathing water in 1999 although we and our predecessor bodies have monitored it for many years previously.

In 2009 Dunbar (East) achieved guideline compliance as it has done every year since sewage from the east side of Dunbar was diverted to the main sewer 13 years ago. It was very disappointing therefore, that Dunbar (East) failed to achieve guideline status in 2010, albeit by the narrowest of margins. We will carry out further investigations at this bathing water prior to the 2011 bathing season.

Achieving overall guideline water quality in 2009 was due to concentrated efforts to deal with a pollution incident during July. The sample taken on 13 July 2009 showed elevated bacterial concentrations. Prompt investigations by Scottish Water identified and cleared a choked sewer. Subsequent samples achieved guideline quality.

Whitesands

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline

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

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. Disappointingly, it failed to meet guideline standards by the narrowest of margins in 2004. That was possibly a result of the wet weather increasing local surface water contamination. This site is not near any significant sewage inputs.

Guideline status was restored in 2005 and maintained in 2006 and 2007. Unfortunately this bathing water again dropped to mandatory in 2008, once again failing to achieve guideline standard by the narrowest of margins. The drop was probably a result of the unusually wet weather.

Quality at this bathing water returned to guideline in 2009 and this was continued in 2010. Additional work has been carried out to investigate potential sources of contamination and samples were again taken from outfalls during the 2010 bathing survey.

Thorntonloch

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The bathing water at Thorntonloch has consistently complied with guideline standards since 1999, when it was first identified as an EU bathing water. The strong tidal currents present (particularly at the west side of the bay) during certain tide and wind combinations can be potentially hazardous for bathers.

In view of its consistent guideline status, monitoring frequency was reduced in 2004 and 2005 (as permitted by the Bathing Water Directive) from 20 samples a year to five. Unfortunately one of the five samples taken in 2005 exceeded one of the directive's guideline quality standards. Guideline status was maintained but, in accordance with our precautionary procedure, the sampling frequency returned to 20 times in 2006.

Pease Bay

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The popular bathing and surfing beach at Pease Bay was designated as an EU bathing water in 1999. It has achieved guideline compliance every year since designation, reflecting the very high quality of the bathing water.

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 round so that it meets the required standards during the bathing season. We monitor the plant, which discharges to the Pease Burn.

In 2009 the operator installed UV treatment, which is operated during the bathing season. During 2010 some operational problems were highlighted with the sewage treatment works. The current operator has been working closely with us to improve the situation.

The sewage from Cockburnspath (1.5km inland) is pumped to a sewage treatment works at Cove Village where, together with the sewage from Cove, 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 sewage treatment works is disinfected before being discharged. Work was carried out in 2006 to increase the capacity of this sewage treatment works to accommodate sewage from a new housing development in Cockburnspath.

The catchments draining to Pease Bay, namely the Pease and Cockburnspath Burns, are part of the Eye Water priority catchment (see Eyemouth below and Section 3.3). We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

Coldingham

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The very popular bathing and surfing beach at Coldingham was identified as a bathing water in 1999 but was monitored previously. With the exception of 2000, the bathing water has achieved guideline compliance each year since 1996.

Since 2004 sewage from Coldingham has been collected and pumped to the sewage treatment works at Eyemouth where it receives full treatment before being discharged to the North Sea.

In 2010 Coldingham received a Blue Flag award for excellent water quality and environment management.

Eyemouth

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Fail	Mandatory	Guideline	Mandatory

Eyemouth was identified as an EU bathing water in 1999 and met the stringent guideline standard for the first time in 2009. Unfortunately in 2010 the bathing water narrowly missed achieving the guideline standard for a second year after a parameter exceedence on the final sample of the season. On a positive note it met the mandatory standard and there were no failed samples during the season. This shows good progress as the water had failed to achieve mandatory standard in 2005 and 2007. The poor water quality samples in 2005 and 2007 were collected during or following heavy rainfall events.

Our investigations into instances of poor water quality at Eyemouth suggest that it can largely be attributed to high levels of bacteria in the Eye Water, a river which discharges into the North Sea 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.

We sample the Eye Water regularly and have found it to contain high levels of bacteria, especially during and following heavy rainfall events. The Eye Water was strongly implicated as the cause of the 2005 and 2007 bathing water failures. Storm overflows discharging from Eyemouth's sewerage network into the Eye Water during wet weather may also be a contributory factor. The catchment is largely agricultural however, and run-off from agricultural grazing land where livestock have direct access to watercourses is thought to be responsible for the elevated levels of bacteria sometimes occurring in the Eye Water.

We have visited all farms in the Eye catchment and met with the agricultural community to raise awareness. In June 2008 and May 2010 our officers walked the entire Eye catchment and assessed it for any breaches of the diffuse pollution General Binding Rules. Significant numbers of sites were identified as being high risk of causing bacteriological contamination of the watercourses in the catchment; in general, these are sites where livestock have direct access to watercourses. Water sampling was carried out at a number of these sites to verify the impact.

Work in the Eye catchment continues as part of our diffuse pollution mitigation strategy (see Section 3.3). In view of the risk that Eyemouth may still occasionally fail bathing water standards, the Eye Water has been designated as a priority catchment. We are focusing work in the priority catchments to identify possible diffuse pollution sources, raise awareness and achieve compliance with the diffuse pollution general binding rules.

We have carried out extensive investigations with Scottish Water to determine the sources of high bacteria levels in the North Burn. This includes sampling and camera surveys. We determined, through microbial source tracking analysis, that most of the bacteria present in the North Burn was of human origin. A large number of foul sewerage discharges which were wrongly connected to the North Burn have been removed to the foul sewer. Scottish Water is continuing to investigate one further potential source. Further sampling will be carried out during 2010 to determine whether all the sources have been removed.

Eyemouth beach is part of our electronic signage network (see Sections 2.3 and 2.4).

2.2 Summer weather in 2010

The bathing water season got off to a fine start weather-wise, with both May and June seeing a lot of dry and, at times, warm weather. Prestwick, for example, recorded less than 40% of the average rainfall in both months. July though turned out to be a very wet month across the whole of Scotland. August saw an improvement in weather conditions; rainfall was near or below average but it was not as warm or as sunny as would normally be expected for that month.

The three graphs below show rainfall in the period January to September 2010, compared with long-term average values. Harelaw is representative of the Edinburgh area, and the stations at Ashgrove in North Ayrshire and Strathkinness in Fife are typical of the south-west and south-east, respectively. The wet weather in July and the below average rainfall before July is evident at all three locations (Figures 2 to 4).

Figure 2: Daily and monthly rainfall recorded in 2010 compared with the 1961-1990 long-term monthly averages for the SEPA rainfall station at Harelaw (East Lothian)

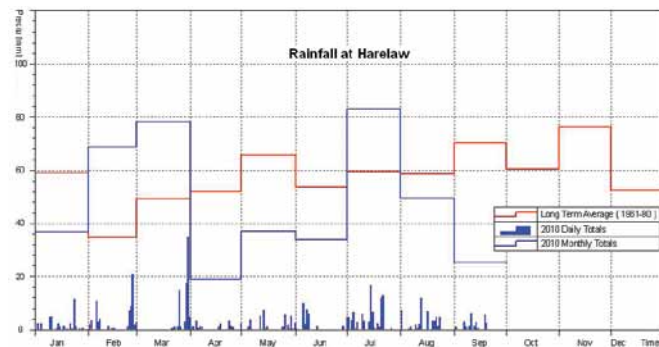


Figure 3: Daily and monthly rainfall recorded in 2010 compared with the 1961-1990 long-term monthly averages for the SEPA rainfall station at Ashgrove (North Ayrshire)

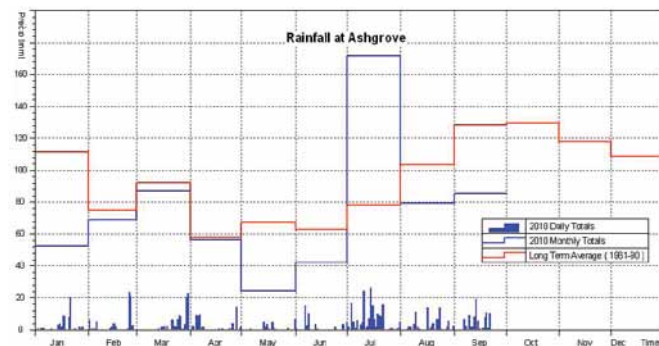
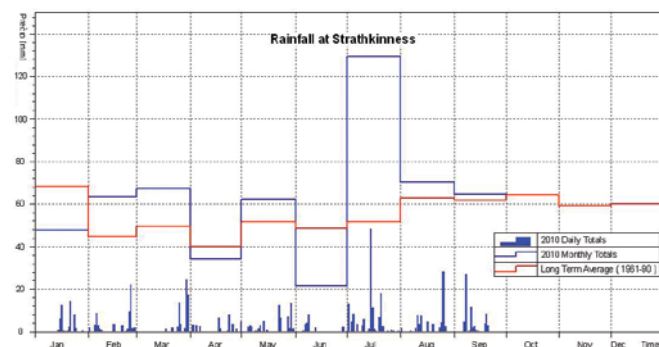


Figure 4: Daily and monthly rainfall recorded in 2009 compared with the 1961-1990 long-term monthly averages for the SEPA rainfall station at Strathkinness (Fife)



May

For much of May high pressure lay to the west of the UK and ensured that northerly winds predominated, bringing dry but often cool conditions across the country. The west coast and Borders areas saw the best of the weather. There was a very warm spell around 20 to 24 of May when Leuchars in Fife recorded 26.2°C and Eskdalemuir in the Borders 25.0°C. May was a dry month across the whole of Scotland. Rainfall totals ranged from 51% of average in the Clyde area to 98% of average in the north-east. The north-east was something of an exception as the Tay, Forth and Tweed catchments all received less than 60% of long term average for the month.

By the end of May river flows in some parts of the country, especially to the west, were already below the 95th percentile.

June

In June high pressure was firmly centred over the country, blocking off any Atlantic frontal systems and ensuring that dry, warm conditions prevailed. Mean temperatures for the month were significantly above average, generally by 1–2 °C. Again rainfall was well below normal for the month. Scotland as a whole received 42mm of rain, equivalent to 53% of long term average. All parts of Scotland received less than 50mm for the month. A few isolated but very intense thunderstorms were recorded which resulted in high rainfall totals for a few individual locations.

2010 had started with a long spell of cold weather in the most severe winter since 1962–63. Less noticeable perhaps was that the first 6 months of the year were relatively dry with April being the only month recording above average rainfall. The prolonged dry spell along with generally warm weather ensured that river flows fell steadily after the first week of April and this recession continued, interrupted by occasional minor peaks, right through until the end of June.

Low river flows, similar to or less than those in May, continued into June. Drought conditions were reached in some areas as flows fell to the 98th percentile or below.

July

All this changed in July, when the high pressure was replaced by a succession of low pressure systems. Some of these lows were very deep for the time of year and brought unseasonably wet and windy weather in the first part of the month. July was a dull month overall and turned out to be very wet indeed. Over Scotland as a whole July rainfall was almost double the long term average. From data supplied by The Centre for Ecology and Hydrology (CEH) July 2010 was, for Scotland as a whole, the wettest July since 1988 and the third wettest July in a series going back 142 years. Kirkcaldy, on the east coast, recorded 140mm for the month, equal to 235% of long term average, while on the other side of the country the rainfall station at Ashgrove in Ayrshire recorded 172mm or 220% of long term average. The National Severe Weather Warning Service (NSWWS) issued 18 flash warnings during the month, all for heavy rain in various parts of Scotland.

Due to the preceding dry spell, river flows in July were not as high as might be expected from the rainfall figures. Newton Stewart on the River Cree recorded a mean flow for the month of 13.3m³ equivalent to 179% of long term average. In the Edinburgh area the gauging station at Murrayfield on the Water of Leith recorded a mean flow for the month of 0.96m³ representing 120% of long term average.

Generally mean river flows for July 2010 were not as high as those recorded in July 2009. However, in the Dundee area, parts of Fife and some areas of the south-west, the mean flows recorded in July 2010 were higher than those of July 2008 and July 2009.

August

August saw a general improvement in the weather. Over much of the country rainfall totals for the month were below average. The gauge at Ashgrove recorded a total of 79.2mm for August, equivalent to 77% of the long term average. Even in areas which had above average rainfall it was not a particularly wet month. For example the rainfall station at Cullen recorded an August total of 84mm equivalent to 106% of the long term average. Some of the rain was fairly heavy and thunderstorms were reported on a number of occasions. The NSWWS issued 13 flash warnings of heavy rainfall in August.

Over most of Scotland August was a cool and dull month. The west was the only part of the country to receive more sunshine than normal.

River flows for August showed marked differences across the country. Towards the south mean flows for the month were well below average. The gauging station at Eyemouth Mill in the south-east of the country recorded a mean flow for the month of 0.19m³ equal to only 33% of the long term average for the month. In the south-west Robstone on the Girvan recorded 39% of long term for the month. In contrast, flows recorded on rivers draining to the Moray Firth were well above average. The gauging station at Firhall on the Nairn recorded a mean flow of 5.04m³ which represents 183% of long term average. Similarly, Sherriffmills on the Lossie recorded 186% of long term average for August.

September

The first half of September proved to be very unsettled with strong winds, showers and spells of more persistent rain. The three graphs below show flows recorded in 2010 compared with long-term averages for the gauging stations at Friars Carse on the River Nith, Shewalton on the River Irvine and Kemback on the River Eden. In all three cases the above average flows of July followed a general recession through the previous three months (Figures 5 to 7).

Figure 5: Daily mean flows for 2010 compared with long-term monthly averages for the period of record for the SEPA gauging station at Friar Carse on the River Nith

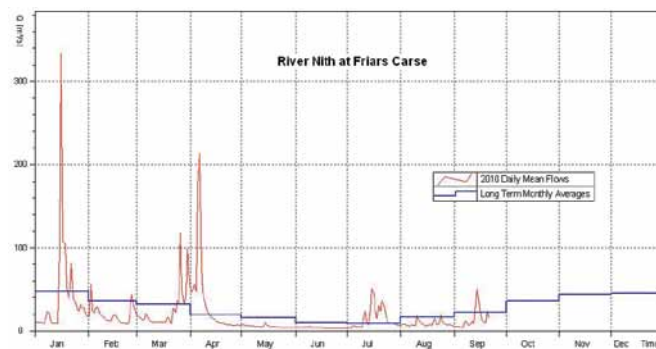


Figure 6: Daily mean flows for 2010 compared with long-term monthly averages for the period of record for the SEPA gauging station at Shewalton on the River Irvine

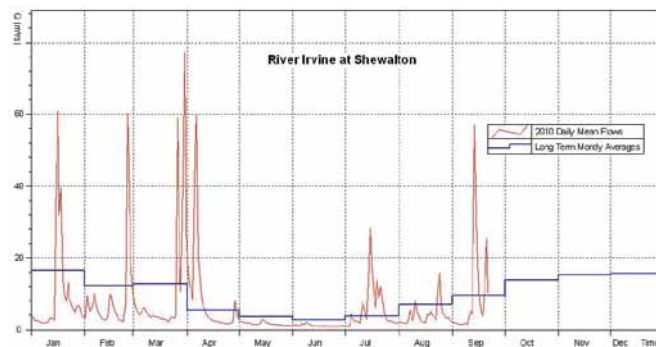
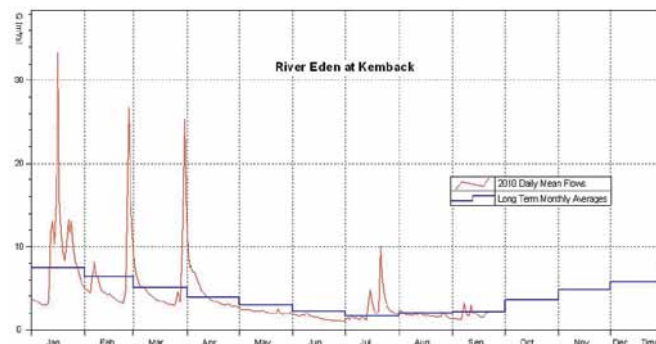


Figure 7: Daily mean flows for 2010 compared with long-term monthly averages for the period of record for the SEPA gauging station at Kemback on the River Eden



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

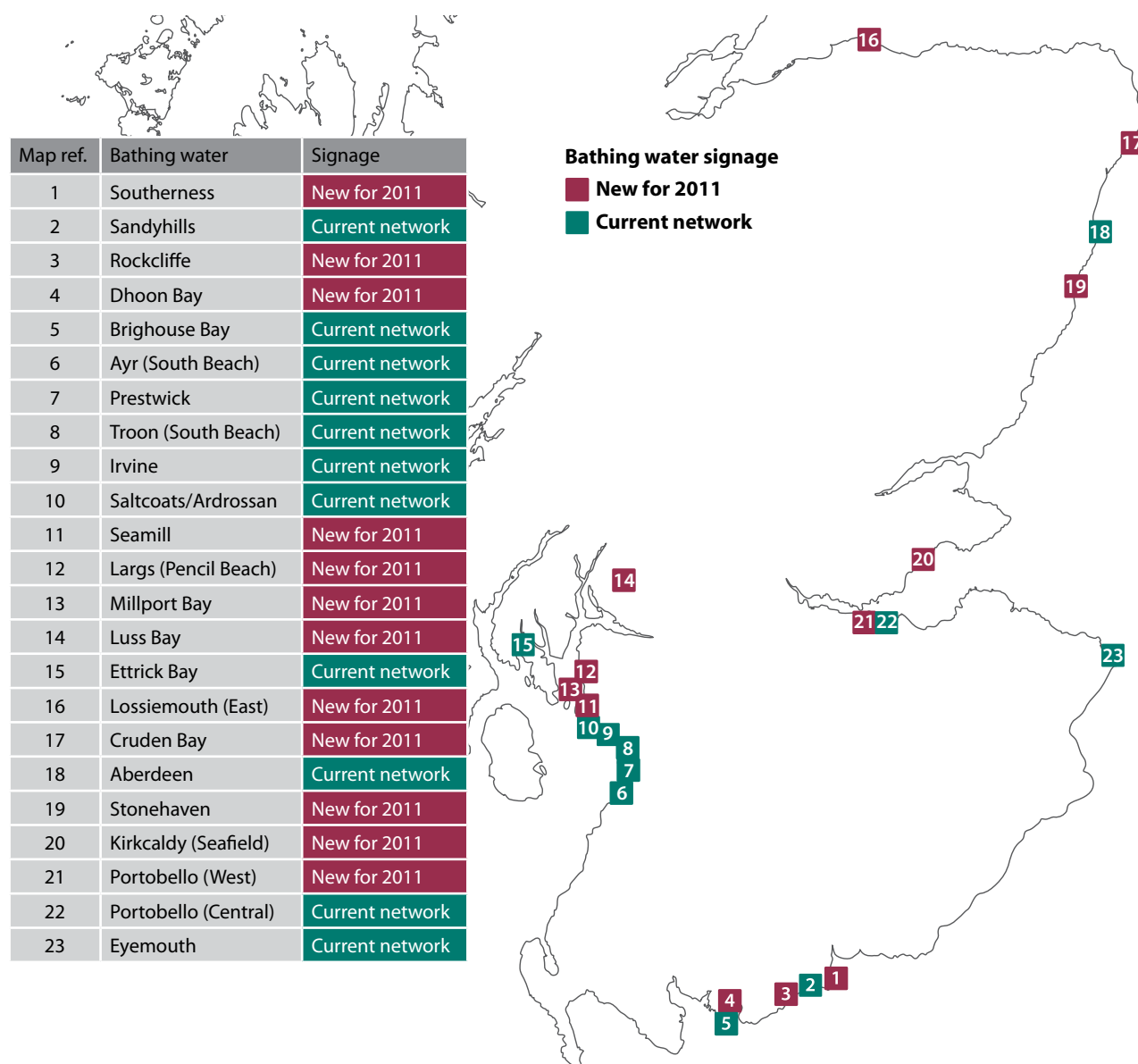
Providing information on bathing water quality to the public is an important part of the revised Bathing Water Directive. Our real-time bathing water quality prediction and electronic signage network is a leading example of how this can be achieved. The system puts Scotland at the forefront of this public information provision. The current signage network helps to keep bathers up-to-date by providing daily forecasts of predicted water quality at 11 of Scotland's beaches.

We have identified 12 additional beaches where we intend to install further electronic signage, expanding the network to 23 bathing waters in total (Map 2).

The bathing waters to be included in the expanded network are: Southernness, Rockcliffe, Dhoon Bay, Seamills, Millport, Largs, Luss, Cruden Bay, Lossiemouth (East), Stonehaven, Kirkcaldy and Portobello (West).

Work is already underway on the ground to plan and install the new signs in time for the 2011 bathing season. SEPA are nearing completion of models for predicting water quality at these additional signage waters.

Map 2: EU Identified bathing waters that are or will be part of SEPA's electronic signage network from 2011



Although generally of a high quality, the 11 bathing waters in the current network, and the 12 additional bathing waters for the 2011 network, were selected because they were previously found to be at risk of not meeting European standards during or after wet weather. The electronic message signs allow water quality predictions to be shown, indicating either mandatory quality (good) or risk of water failing to meet the mandatory standard (poor).

The 11 electronic signs in the current network were operational throughout this year's bathing season. There were only two non-operational days across all sites due to a software problem, and seven additional days missing at Portobello (Central) due to an electronic fault on the sign. Forecasts were available on our website on all days.

The electronic signs were updated with daily water quality forecasts using our extensive rainfall and hydrological information network to inform 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 our website](#)¹⁸.

The signs displayed additional messages again this year, alternating between displaying daily water quality status and reminders to keep beaches tidy. Following a request from the Whale and Dolphin Conservation Society, the sign at Aberdeen beach displayed an additional message: "Dolphins may be seen offshore. Enjoy them, but give them space".

2010 was the sixth year in which we were fully responsible for the real-time electronic signage. The work was initially funded by the Scottish Government and piloted jointly in 2003–2004.

We provide scientific advice, technical input and manage the daily operation of the sign network. We have developed additional systems to provide wider access to the same information through our website, telephone information line and a text messaging service. A firm of consulting engineers has been sub-contracted to manage civil engineering and field work and to provide technical support. In addition, relevant local authorities and Clean Coast Scotland have also been consulted and provide advice.

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.

2.4 Predictions and results

In the 2010 bathing season, 86% of the days, on average, were predicted as having mandatory or better water quality (good or excellent conditions against the current EU standards). This is a slightly higher figure than in 2004 (81%), 2007 (80%), 2008 (78%) and 2009 (74%), which were all wetter than average summers, almost the same as 2006 (87%) and slightly lower than 2005 (90%). The proportion of good quality days predicted is a direct effect of rainfall conditions during the bathing season.

The signage at the 11 locations indicated correct or protective precautionary conditions to the public 99% of the time. Of the 211 samples collected from the sites with signage during the 2010 bathing water season, the prediction models correctly predicted measured water quality on 88% of occasions (Figure 8). This success rate is higher than in 2009 and comparable to the previous four years.

In 2010 signage correctly predicted 6 of the 9 measured events when water quality failed the mandatory standard (Figure 9). Although this is a lower number of correctly predicted events than in 2009, the total number of measured events was fewer in 2010; 9 in 2010 compared to 14 in 2009. A full investigation was undertaken in all cases whenever an exceedance had not been correctly predicted. Where appropriate, the knowledge gained will be used to make improvements to the prediction models.

¹⁸www.sepa.org.uk/water/bathing_waters/bathing_water_signage.aspx

Figure 8: Bathing waters signage performance and validation of daily predictions

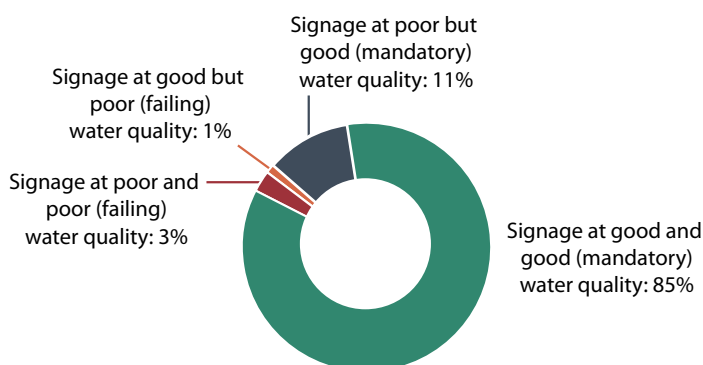
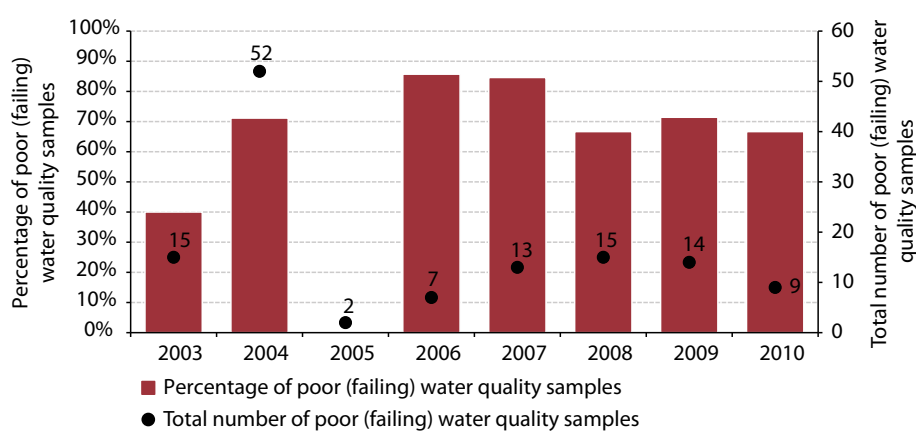


Figure 9: Validation of failed water quality samples, 2003–2010



2.5 Ongoing improvements

In 2010 we have continued to develop and improve our bathing waters predictive modelling capability.

- Investigations have been completed into extending our prediction system to new locations. In total 12 new sites have been selected, based on compliance results and the outcome of initial modelling studies. The locations and infrastructure for the new signs are being investigated and the procurement process for the new signage is well underway.
- We are continuing to develop and test new smarter prediction models, using decision tree systems. The results for the 11 current signage locations and the 12 new signage locations have been very encouraging and work is continuing to refine and finalise these, including trialling the addition of site specific variables such as wind, tide and sunshine.
- Using rain radar to improve bathing water quality predictions had been investigated previously in a research project *Methods of Estimating Impacts of Rainfall on Bathing Beach Quality*¹⁹ funded by the [Scotland and Northern Ireland Forum for Environmental Research \(SNIFFER\)](#)²⁰.

The project reported in August 2008 and we have since prepared a plan to use recent access improvements to rain radar data. Unfortunately there was insufficient funding available to support an implementation project requested for 2010. Despite that, progress has been made with initial tests conducted into including rain radar data in the decision tree models. Results of these tests have been promising with an apparent increase in prediction power. We hope that we will be able to use direct rain radar data in a few years time, which will further enhance our hydrological information and improve catchment spatial coverage for prediction models at bathing water catchments.

- Our signage system and general approach to bathing water quality prediction and information systems remains at the forefront of the provision of information of this type in the UK and Europe.

¹⁹www.sniffer.org.uk/Resources/UKLQ07/Layout_Default/0.aspx

²⁰www.sniffer.org.uk

3 Further improvements to water quality

3.1 Investment by Scottish Water

Previous Bathing Waters reports have highlighted the accelerated investment from Scottish Water in its Quality and Standards (Q&S) programmes since 2000. The Q&S programmes are the means by which the Scottish Water capital investment programme is identified, funded and delivered.

Significant investment in water and drainage infrastructure has been made in previous investment periods – Q&S I (2000–2002), Q&S II (2002–2006) and Q&S IIIa (2006–2010) – with the aim of improving bathing waters compliance.

The main focus of the Q&S IIIa investment programme was to identify and reduce the effects of unsatisfactory intermittent discharges in Ayrshire (Meadowhead and Stevenston sewerage networks) and Edinburgh. Although solutions have been implemented in Edinburgh, not all improvements have been completed in Ayrshire. As such, this work has been carried forward into the current investment period, Q&S IIIb (2010–2015).

In addition, the Q&S IIIb (2010–2015) investment programme includes 37 bathing water studies. These are being undertaken to determine the improvements required to achieve compliance with the revised Bathing Waters Directive. Any required solutions will also be implemented during this investment period.

A summary of the major works carried out by Scottish Water in 2010 is presented in Table 1.

Table 1: Summary of major works by Scottish Water

Bathing water	Description of works
Kinloss/Forres	Flows from Kinross sewage treatment works were diverted to Forres sewage treatment works in the spring of 2010. Before the transfer, Scottish Water carried out extensive modelling and investigative studies to demonstrate to us that the receiving works would have sufficient capacity. The diverted flow is now subject to increased treatment. As a result of these changes Kinross sewage treatment works was downgraded to a pumping station and a discharge to the bathing water catchment was removed. Due to the considerable storage capacity at both sites, an increase in spill frequency from the combined sewage overflow is unlikely.
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 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 of this work have been used to inform solutions to the problems associated with the combined sewer overflows. Some combined sewer overflows have already been upgraded by having screens installed, and work on a major scheme to transfer storm sewage from Irvine and Kilmarnock to Gailes has also been started. This scheme is due for completion in 2013.
Southernness	Upgrade work at Troqueer sewage treatment works has continued to proceed and will be completed by autumn 2010. When completed, these works, along with Dalscone sewage treatment works, will provide full treatment for greater pass forward flows, thereby reducing the spill frequencies at storm overflows.

3.2 Private sewage treatment systems

As highlighted in Section 2.2 in 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 it may have to be paid for by a householder or a developer.

3.3 SEPA's plans to reduce sources of diffuse pollution

Diffuse pollution is the largest pollution pressure on the water environment in Scotland, but it can be difficult to identify and control. The risk of diffuse pollution is worse during rainfall because nutrients, soil, chemicals and faecal bacteria can be washed from land into the surrounding water environment. For small areas this might not be an issue, but combined across whole river catchments these pollutants can significantly affect water quality, including in EU designated bathing waters. Land and run-off management practices play a pivotal role in diffuse pollution mitigation.

Implementation is underway of the rural diffuse pollution plan for Scotland, which sees SEPA working with other members of the [Diffuse Pollution Management Advisory Group \(DPMAG\)](#)²¹. DPMAG was created as a statutory group under section 17 of the [Water Environment and Water Services \(Scotland\) Act 2003\(WEWS\)](#)²² to ensure input from a cross-section of rural, environmental and biodiversity interests, and to help create robust governance, decision-making and a co-ordinated framework for tackling diffuse pollution.

The rural diffuse pollution plan was developed to ensure key stakeholders in Scotland work in a co-ordinated way to reduce diffuse pollution from rural sources. A two tiered approach has been developed. It includes:

- a national campaign of awareness raising, guidance, training and inspections in relation to the effects of diffuse pollution;
- a targeted catchment approach (the priority catchment approach) with a sequential process of evidence gathering, awareness raising and farm visits to identify hotspots, target measures and provide one to one advice.

Through the national campaign, DPMAG will ensure the co-ordination of activities to reduce diffuse pollution across Scotland. It is expected that the national awareness raising campaign will help prevent deterioration of the water environment and will enable water quality improvements. The Scottish Government Rural Payment and Inspection Directorate, Scottish Natural Heritage and Forestry Commission Scotland staff will, as part of Scotland's Environmental and Rural Services (SEARS), raise awareness of diffuse pollution and the regulations through completing a compliance assessment on farms and forestry sites while undertaking their own inspection work. They will highlight the most commonly found rural diffuse pollution problems, helping land managers to identify and address the risks. This will inform future training and awareness raising approaches for both the national and the targeted catchment approach.

The catchment approach is being taken in fourteen diffuse pollution priority catchments (Box 1) in the first river basin cycle which runs until 2015. Catchments have been selected using a risk-based method where water bodies or protected areas are significantly failing standards due to rural diffuse pollution. High priority has been given to areas affecting human health, such as catchments draining to EU designated bathing waters (Box 1). Candidate priority catchments have also been proposed for future river basin cycles, which include more of Scotland designated bathing waters.

Box 1: Diffuse pollution priority catchments in the first river basin cycle

Buchan Coastal	River Doon
Eye Water	River Garnock
Galloway Coastal	River Irvine
River Ayr	River South Esk
River Dee (Grampian)	River Tay
River Deveron	River Ugie
North Ayrshire Coastal	Stewartry Coastal

Priority catchments associated with bathing water catchments are shown in bold

²¹www.sepa.org.uk/water/river_basin_planning/diffuse_pollution_mag.aspx

²²www.scotland.gov.uk/Topics/Environment/Water/WFD/WEWSAct

In these 14 catchments we will be working with land managers (farmers, foresters, golf course and sports field managers as well as others who work the rural land) to achieve compliance in all sectors with the diffuse pollution General Binding Rules (GBRs).

We have been assessing the 14 catchments against compliance with the diffuse pollution GBRs and are currently in a programme of awareness raising with local land managers and partner organisations to encourage best practice and compliance with the diffuse pollution GBRs. To date SEPA staff have walked 2425km of river in Scotland's priority catchments. Along with evidence of good practice, such as riparian buffer strips and provision of fencing and water troughs, issues have been identified with the storage and application of fertiliser, keeping of livestock, cultivation of land and the application of agro chemicals (pesticides and herbicides). The total number of diffuse pollution GBR breaches currently recorded is 2572, which is at least 1 breach for every km walked, underlining the need for a proactive and integrated education and awareness raising programme.

3.4 Future developments

In 2010 we continued to be involved in two key areas of work focusing on the development of molecular methods and improving the capability of predictive models for signage.

Developing molecular methods

We have worked 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 national microbial source tracking (MST) project started in 2008 and was aimed at testing new analytical tools for identifying sources (quantitative and semi-quantitative) of faecal contamination indicators at bathing waters.

The objectives of this collaborative UK project were 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 project was completed in 2009. The outputs have delivered some success by providing specialist laboratory methods which are analytically robust and reliable and can identify sources of faecal indicators (e.g. human, cow, sheep, dog, avian). However it is also clear that MST has to be used with caution as the sampling variables and bathing water environments are more complex than had been first envisaged.

Notwithstanding the limitations of the technique, if used in the correct way it can:

- enable fuller understanding of sources of potential contamination (e.g. 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 the collaborative UK project were to further improve the sensitivity and reliability of the genotyping technique. 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 and 2009 bathing water season we collected a series of samples from a few prioritised sites at times of elevated microbiological pollution for testing using MST. These preserved samples will be analysed by the specialist MST techniques now available from the Environment Agency and the results will help us plan pollution improvements for future seasons. The methods will be developed so that they can be transferred or offered as a routine laboratory service to the project partners.

Rapid methods testing project

The rapid methods testing project, facilitated by UKWIR and led by the Environment Agency with a consortium of other organisations including SEPA is now complete. The project was generally successful with methods, which are directly comparable to the longer, culture-based, standard microbiology methods, developed for further testing.

The aim of the project was to develop rapid methods to analyse water samples for *Escherichia coli* and intestinal enterococci. Such rapid methods were successfully developed to provide next morning (9am) results from samples delivered to a laboratory by 5pm. However, obtaining same day results for samples delivered by 9am was possible for *Escherichia coli* only.

So far the rapid method has only been tested on a small number of samples collected close to the laboratory used for analysis. The next steps in evaluating this method are: trialling of the method on samples from around the country to examine logistics and to analyse a sub-set of routine samples to check equivalence and reproducibility.

Such rapid methods will be particularly helpful as operational tools providing prompt quantitative evidence to support decision making following breaches of mandatory water quality standards, for example as a result of a short-term pollution incident, enabling the rapid re-opening of bathing waters.

Improving the capability of predictive models for signage

Predictive modelling

We have continued to work in-house to develop new modelling tools which will enhance the accuracy of our bathing water quality predictions for real time signage. These new more complex models will be operational from 2012 to make predictions against the tighter revised Bathing Water Directive standards. This timescale is inline with the implementation timetable for the revised Bathing Water Directive. Although we will not report under the revised standards until 2015, changes to the way in which bathing waters will be classified from 2015 means that in 2015 waters will be classified using data from 2012 to 2015 (Section 1.6).

The new models we are developing use decision trees to predict a target value, in this case bathing water quality class based on multiple predictor variables. Both categorical and numeric variables can be used as inputs to these models and interactions between these variables can be explored. Predictive performance of the new models can be improved by applying weightings to the target values enabling, for example, the prediction of poor water quality to be prioritised over the prediction of good water quality. Multiple decision trees can be used within a single model enhancing its predictive power.

4 Conclusions

In 2010, 78 (95%) of Scotland's 82 designated bathing waters complied with the EU bathing water quality standards, with more than half (43, representing 52%) achieving the most stringent guideline standard. Four bathing waters failed to meet the required standards this season. Three of these bathing waters failures were driven by wet weather, the other by polluting inputs discharging to the sea and local burns. These results are comparable to 2009, when the wet period in the later half of the summer resulted in five mandatory failures, but are in contrast to the full mandatory compliance of 2006, a year which was reasonably dry. Again, 2010 saw a continuation of the substantial progress made in many aspects of the bathing water environment over the last 20 years.

There were two additions to the list of designated beaches in 2010 compared to 2009. The new bathing waters, both in Fife, were Anstruther (Billow Ness) and Aberdour Harbour (Black Sands). The Bathing Waters Designation Panel, chaired by SEPA, will continue to consider applications for new designations annually.

The revised Bathing Water Directive seeks greater public participation in its implementation. It puts more emphasis on providing information to bathers, particularly on the risks bathers might face from pollution. This will be achieved by the new bathing water profiles which, in line with the implementation timeline of the revised directive, will be available on our website from March 2011. In 2010 we developed and consulted on a template for the bathing water profiles and established, for further consultation, draft profiles for each of the 82 bathing waters.

The revised Bathing Water Directive changes the parameters and standards used to assess bathing water quality, classifying waters as excellent, good, sufficient or poor. The standards are significantly more stringent than those of the current directive and all bathing waters are required to be sufficient or better by 2015. The data to be used for annual classification of a bathing water with change from a single one year period to a rolling four year period.

We, 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 the government on best practice for the many aspects and challenges of the revised directive.

Our electronic prediction and signage network, currently covering 11 of Scotland's bathing waters, provides a real-time warning system to inform prospective bathers of potentially less than good water quality. In 2010 the system again successfully provided daily forecasts throughout the bathing season. Similar to previous years, the signs indicated correct or precautionary conditions on 99% of days. The signage network will be expanded to a further 12 beaches (making 23 in total) in time for the 2011 bathing season.

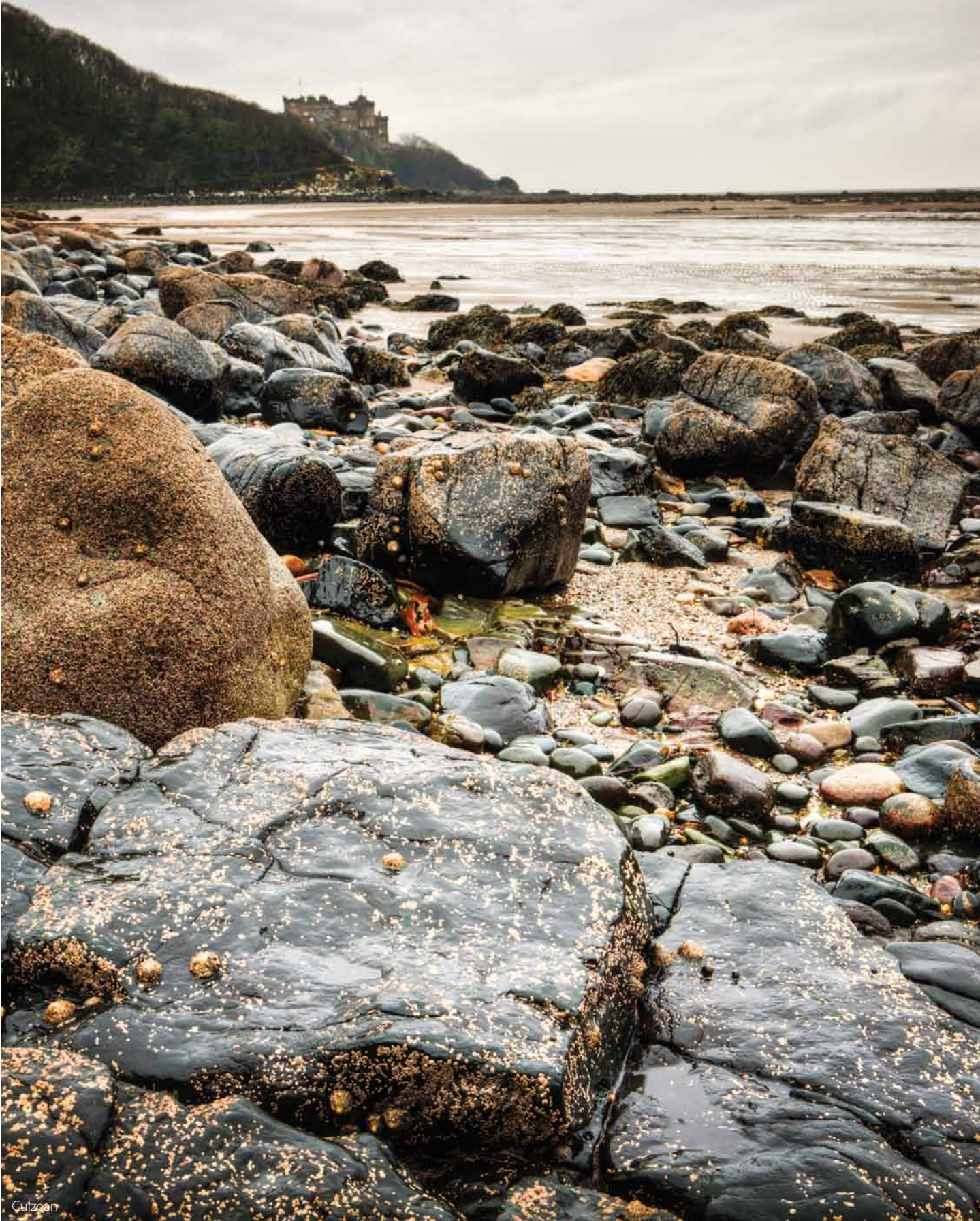
The real-time signage system may facilitate the use of the legitimate discounting provision in the revised directive. This provision allows up to 15% of samples, taken during short-term pollution events, to be discounted from the bathing water classification on the proviso that the public have been warned that water quality is potentially less than good.

Despite a slight dip in recent years, a result of wet summers, the longer-term trend is one of improving bathing water quality. This trend reflects the considerable efforts made by us and our partners to bring about substantial environmental improvements. As we move towards classification of our bathing waters under the more stringent standards of the revised directive, further improvements are required if we are to meet the target of all bathing waters classified as sufficient or better by 2015. Improvement work will continue, driven forward under the Water Framework Directive via river basin management planning.

Accelerated investment made by Scottish Water under its Quality and Standards programmes has resulted in significant upgrades in Scotland's sewerage and drainage infrastructure, much of it aimed at improving bathing waters compliance. The current investment programme (Q&SIIIb), running from 2010 to 2015, includes 37 bathing water studies. Aimed at determining the improvements required to achieve compliance with the more stringent standards of the revised Bathing Waters Directive, these studies are a precursor to the implementation of solutions during this and the next investment period. Outstanding improvements to reduce the effects of unsatisfactory intermittent discharges in Ayrshire have also been carried forward to Q&SIIIb. The Q&S programme looks set to result in continued progress in bathing water quality.

Diffuse pollution remains the largest pollution pressure at several Scottish bathing waters. It can also be the most difficult to identify and control. Implementation of the rural diffuse pollution plan for Scotland is currently underway and we are working with other members of the Diffuse Pollution Management Advisory Group (DPMAG) to help create a co-ordinated framework for tackling diffuse pollution. A two tier approach involving a national campaign of awareness and engagement and target action in specific priority catchments is being employed. Priority catchments have been selected using a risk based method to identify water bodies and protected areas that are failing standards due to rural diffuse pollution. The range of measures to mitigate diffuse pollution includes the Diffuse Pollution Regulations under CAR, funding under the Scotland Rural Development Programme, Scotland's Environmental and Rural Services and the river basin planning process. These 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, National Farmers Union Scotland, the Scottish Government and Scottish Natural Heritage to reduce diffuse agricultural sources.

Some of the new beach management duties are already in place. More duties, along with the tighter bathing water standards will be upon us in just two years' time. There is clearly more to do and we must all intensify our efforts to maintain progress if we are to achieve the target of all bathing waters being sufficient or better by 2015.



Culzean

Annex one: 2010 Monitoring data from Scotland's 82 identified bathing waters

Bathing water	Local Authority	No. of sample results	EC mandatory standard		EC guideline standard			Overall quality
			No of TC* ≤ 10000/100ml	No. of FC* ≤ 2000/100ml	No of TC* ≤ 500/100ml	No. of FC* ≤ 100/100ml	No. of FS* ≤ 100/100ml	
Southernness	D&G	20	20	20	19	12	18	Mandatory
Sandyhills	D&G	20	20	19	16	10	14	Mandatory
Rockcliffe	D&G	20	19	19	14	7	15	Mandatory
Dhoon Bay	D&G	20	20	19	14	8	18	Mandatory
Brighthouse Bay	D&G	20	20	20	15	14	18	Mandatory
Carrick	D&G	20	20	19	17	12	19	Mandatory
Mossyard	D&G	20	20	20	18	13	17	Mandatory
Girvan	SA	20	19	19	15	12	14	Mandatory
Maidens	SA	20	20	20	18	12	18	Mandatory
Culzean	SA	20	20	20	20	19	20	Guideline
Heads of Ayr	SA	20	18	18	13	10	16	Fail
Ayr (South Beach)	SA	20 (+1AWW ^s) [†]	18	18	13	9	14	Fail
Prestwick	SA	20	19	19	18	14	17	Mandatory
Troon (South Beach)	SA	20	20	20	19	16	17	Mandatory
Irvine	NA	20 (+1AWW ^s) [†]	19	18	17	13	16	Fail
Saltcoats/Ardrossan	NA	20	19	19	16	13	15	Mandatory
Seamill	NA	20	20	20	17	14	18	Mandatory
Largs (Pencil Beach)	NA	20	20	20	15	13	17	Mandatory
Lunderston	Inv	20	20	20	19	16	19	Guideline
Millport Bay	NA	20	20	20	18	18	18	Guideline
Luss Bay	A&B	20	20	19	13	4	11	Mandatory
Ettrick Bay	A&B	20	20	20	15	12	18	Mandatory
Machrihanish	A&B	10	10	10	9	7	9	Mandatory
Ganavan	A&B	20	20	20	17	16	18	Guideline
Achmelvich	H	10	10	10	10	10	10	Guideline
Thurso	H	20	20	19	19	18	19	Guideline
Dunnet	H	20	20	20	18	18	19	Guideline
Dornoch	H	5	5	5	5	5	5	Guideline
Rosemarkie	H	20	20	20	19	18	18	Guideline
Dores	H	20	20	20	12	13	15	Mandatory
Nairn (Central)	H	20	20	20	14	12	13	Mandatory
Nairn (East)	H	20	20	19	15	13	19	Mandatory
Findhorn	Moray	20	20	20	20	20	20	Guideline

Bathing water	Local Authority	No. of sample results	EC mandatory standard		EC guideline standard			Overall quality
			No of TC* ≤ 10000/ 100ml	No. of FC* ≤ 2000/ 100ml	No of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	
Loch Morlich	H	10	10	10	10	10	10	Guideline
Lossiemouth (East)	Moray	20 (+1AWW ^s) [†]	19	19	12	13	13	Mandatory
Cullen Bay	Moray	20	20	20	19	17	18	Guideline
Inverboyndie	Aber	20 (+1AWW ^s) [†]	20	20	17	17	19	Guideline
Roseheartly	Aber	20	20	20	19	18	18	Guideline
Fraserburgh (Tiger Hill)	Aber	20	20	20	19	20	18	Guideline
Fraserburgh (Philorth)	Aber	20	20	19	18	16	18	Guideline
Peterhead (Lido)	Aber	20	20	20	19	19	19	Guideline
Cruden Bay	Aber	20 (+1AWW ^s) [†]	20	20	16	13	15	Mandatory
Balmedie	Aber	20	20	20	17	16	20	Guideline
Aberdeen	ACC	20	20	20	14	14	18	Mandatory
Stonehaven	Aber	20	20	20	15	14	16	Mandatory
Montrose	Angus	20	20	20	18	20	20	Guideline
Lunan Bay	Angus	10	10	10	9	9	10	Guideline
Arbroath (West Links)	Angus	20	20	20	20	19	19	Guideline
Carnoustie	Angus	20	20	20	18	17	20	Guideline
Broughty Ferry	DC	20 (+1AWW ^s) [†]	19	19	17	13	18	Mandatory
Tentsmuir Sands	Fife	10 (+1AWW ^s) [†]	10	10	10	10	10	Guideline
St Andrews (West Sands)	Fife	20 (+3AWW ^s) [†]	20	20	19	18	19	Guideline
St Andrews (East Sands)	Fife	20 (+3AWW ^s) [†]	20	20	19	17	19	Guideline
Kingsbarns	Fife	20 (+2AWW ^s) [†]	20	20	20	18	17	Mandatory
Crail (Roome Bay)	Fife	20 (+1AWW ^s) [†]	20	20	20	19	20	Guideline
Anstruther, Billow Ness	Fife	20	20	20	19	18	19	Guideline
Elie (Ruby Bay)	Fife	20	20	20	20	20	20	Guideline
Elie (Harbour) and Earlsferry	Fife	20	20	18	17	17	19	Fail
Leven	Fife	20 (+1AWW ^s) [†]	20	20	19	19	19	Guideline
Kirkcaldy (Seafield)	Fife	20 (+2AWW ^s) [†]	20	20	16	14	17	Mandatory
Kinghorn (Harbour Beach)	Fife	20 (+2AWW ^s) [†]	20	20	17	12	15	Mandatory

Bathing water	Local Authority	No. of sample results	EC mandatory standard	EC mandatory standard	EC guideline standard	EC guideline standard	EC guideline standard	Overall quality
			No of TC* ≤ 10000/ 100ml	No. of FC* ≤ 2000/ 100ml	No of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	
Kinghorn (Pettycur)	Fife	20 (+1AWW [§]) [†]	20	20	20	18	19	Guideline
Burntisland	Fife	20	20	20	20	19	20	Guideline
Aberdour (Silver Sands)	Fife	20 (+1AWW [§]) [†]	20	20	20	17	19	Guideline
Aberdour (Harbour)	Fife	20 (+1AWW [§]) [†]	20	20	19	18	17	Mandatory
Portobello (West)	CofE	20	20	20	18	15	15	Mandatory
Portobello (Central)	CofE	20	20	20	19	17	18	Guideline
Seton Sands	EL	20	20	20	20	20	19	Guideline
Longniddry	EL	20	20	20	19	17	19	Guideline
Gullane	EL	5	5	5	5	5	5	Guideline
Yellowcraig	EL	20	20	20	20	15	19	Mandatory
Broad Sands	EL	20	20	20	20	19	18	Guideline
North Berwick (West)	EL	20	20	20	20	13	18	Mandatory
North Berwick (Milsey Bay)	EL	20	20	19	17	13	17	Mandatory
Seacliff	EL	20	20	20	20	20	20	Guideline
Dunbar (Belhaven)	EL	20	20	20	20	20	20	Guideline
Dunbar (East)	EL	20	20	20	19	15	18	Mandatory
Whitesands	EL	20	20	20	20	20	19	Guideline
Thorntonloch	EL	20	20	20	20	19	20	Guideline
Pease Bay	SB	20	20	20	20	20	20	Guideline
Coldingham	SB	20	20	20	19	18	18	Guideline
Eyemouth	SB	20	20	20	17	16	17	Mandatory

*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
Aber	Aberdeenshire
ACC	Aberdeen City Council
CofE	City of Edinburgh
D&G	Dumfries and Galloway
DC	Dundee City
EL	East Lothian
H	Highland
Inv	Inverclyde
NA	North Ayrshire
SA	South Ayrshire
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 sampling frequency, analysis methods, bathing areas inspection and the interpretation of results. It also requires that results obtained in abnormal circumstances are excluded.

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. 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 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 was finalised in December 2009. The WFD will replace seven existing directives and will provide the context in 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 sets of water quality standards:

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

The variable nature of our environment is recognised by the legislation which allows some of the samples taken have to not 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.

For the site to achieve a mandatory level pass, 95% of samples taken during the bathing season must comply with the mandatory coliform quality standards. Waters which do not meet this standard are classified as failing.

Guideline values (excellent quality)

In addition to the mandatory standards, there are guideline values for the two coliform groups and faecal streptococci bacterial quality indicators. These guideline values are more stringent than the mandatory standards and, if achieved, indicate very good bathing water quality.

Abnormal weather

Under Article 5.2 of the current directive (**76/160/EEC**), 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 2010, leading to 24 sample results being disregarded and later replaced.

Exceptional geographic conditions

Under Article 8, the requirements of the current directive (**76/160/EEC**) 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 2010, six identified bathing waters in Scotland held waivers for colour and 80 waivers for transparency, though not all these waivers were applied.

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 for total and faecal coliforms, transparency, colour, mineral oils, detergents (officially, surface-active substances reacting with methylene blue) and 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. Following the improvements made to Scottish bathing waters, 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. We 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 2010 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. The latter must therefore be applied properly to agricultural land in order to avoid 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 current directive (76/160/EEC) 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 compliance	Interpretations	Total coliforms	Faecal coliforms	Faecal streptococci
Guideline	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 streptococci per 100 ml
	Based on five samples:	Must have at least four samples with less than, or equal to, 500 total coliforms per 100 ml	Must have at least four samples with less than, or equal to, 100 faecal coliforms per 100 ml	Must have five samples with less than, or equal to, 100 streptococci per 100 ml
Mandatory	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 one sample with greater than 10,000 total coliforms per 100 ml	Can only have one sample with greater than 2,000 faecal coliforms per 100 ml	The directive contains no mandatory standard for faecal streptococci
	Based on five samples:	Must have no samples with greater than 10,000 total coliforms per 100 ml	Must have no samples 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
CCS	Clean Coast Scotland
CEH	Centre for Ecology and Hydrology
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.
DPMAG	Diffuse Pollution Management Advisory Group
EC	European Commission (of the EU)
EIAP	Environmental Improvement Action Plan
EU	European Union
Faecal coliforms (FC) and faecal streptococci (FS)	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.
GBRs	General Binding Rules. The diffuse pollution GBRs provide a statutory baseline of good practice and their implementation will help to improve water quality.
Guideline value/standard	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.
KSB	Keep Scotland Beautiful
Mandatory value/standard	A value specified in EU legislation as a minimum standard that Member States must observe.
MSC	Marine Conservation Society
MST	Microbial Source Tracking. Concept of tracing the origin of faecal pollution using microbiological, genotypic, phenotypic and chemical methods.
NFUS	National Farmers Union Scotland
NSWWS	National Severe Weather Warning Service
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	Our profile of a bathing water indicating the bathing water area, potential sources and risks of pollution and including measures for improvement.
Q&S Scottish Waters Quality and Standards Program	Scottish Water's capital investment programme aimed at helping secure the future of services for their customers through delivering environmental improvements, reduced supply interruptions and better quality drinking water.
RBMP	River basin management planning
Secondary sewage treatment	The treatment of sewage by a biological process (eg 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.
SEARS	Scotland's Environment and Rural Services. Partnership that brings together nine public bodies aiming to provide Scotland's rural land managers, with an efficient and effective service.
SEPA	Scottish Environment Protection Agency
SNIFFER	Scotland and Northern Ireland Forum for Environmental Research
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 (TC)	A count of all the coliform type bacteria present in a sample of water.
UID	Unsatisfactory Intermittent Discharges. An overflow on the sewer network that required to be improved so as to meet environmental standards for the water body into which it discharges or which it affects.
UKWIR	UK Water Industry Research
UV disinfection	The irradiation of treated sewage effluent with ultraviolet light in order to render the final effluent substantially disinfected.
UWWTD	Urban Waste Water Treatment Directive
Water Industry Commission	Appointed by the Scottish Government, the Water Industry Commission's remit is to promote the interests of Scottish Water's customers.
WEWS	Water Environment and Water Services (Scotland) Act 2003
WFD	Water Framework Directive
WHO	World Health Organization

Annex four: Sources of additional information on bathing water quality

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

Our [website](#)²³ contains a wide collection of information on us, as well as the text of previous Scottish bathing waters reports. The results from the monitoring programme for identified bathing waters are published on our website as they are produced throughout the bathing water season. Bathing water profiles will also be available on the website from March 2011.

Several other organisations complement our role in promoting high standards of bathing water quality. The Scottish Government is responsible for implementing the directive in Scotland and for 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 protecting 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 (KSB) 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 2010 six current Blue Flag beaches in Scotland achieved this and should therefore retain their Blue Flag status:

- Aberdour (Sliver Sands);
- Burntisland;
- Coldingham;
- Elie (Ruby Bay);
- Leven;
- St Andrews (West Sands).

A seventh beach, Broughty Ferry, achieved Blue Flag status at the start of the season but unfortunately lost this status by the end of the season due to a number of samples achieving only the mandatory standards.

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 us in 2003 to produce a poster template for local authorities to display bathing water results at beaches in a consistent manner.

<p>Water Authority Scottish Water, Castle House, 6 Castle Drive, Carnegie Campus, Dunfermline, KY11 8GG 0845 601 8855 www.scottishwater.co.uk</p>	<p>Scottish Government Victoria Quay Edinburgh EH6 6QQ 0131 244 0396 eqcat@scotland.gsi.gov.uk www.scotland.gov.uk/Topics/Environment/Water/bathingwaters</p>	<p>Keep Scotland Beautiful, The Blue Flag Award and Clean Coast Scotland Islay House, Livilands Lane, Stirling, FK8 2BG 01786 471333 www.keepsotlandbeautiful.org</p>
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Information on bathing water quality in England and Wales can be obtained from the Environment Agency and, in Northern Ireland, from the Northern Ireland Environment Agency.

<p>Environment Agency 08708 506 506 enquiries@environment-agency.gov.uk www.environment-agency.gov.uk</p>	<p>Northern Ireland Environment Agency Calvert Place 23 Castle Place Belfast BT1 1FY 028 9025 4754 EP@doeni.gov.uk www.ni-environment.gov.uk</p>	<p>Marine Conservation Society Gloucester Road, Ross-on-Wye, Herefordshire, HR6 5BU 01989 566017 www.mcsuk.org</p>
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²³www.sepa.org.uk

Annex five: SEPA offices

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Dingwall Technical Building

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Maps showing the location of our offices can be viewed [on our website](#).