

Scottish bathing waters 2011



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Foreword



Giving people better information about water quality allows them to make informed choices. This key component of the revised Bathing Water Directive, informing and involving the public on a range of bathing waters issues, has been fully embraced in Scotland. To ensure we make progress towards these aims, this year SEPA implemented a number of exciting new public information and health protection initiatives.

In March this year we published online profiles for each of Scotland's 83 designated bathing waters. Written in accordance with the requirements of the revised Bathing Water Directive, they are intended to provide useful information to the public and include:

- a description, map and photograph of the bathing water;
- information on potential pollution sources and risks to water quality;
- descriptions of measures being taken to improve water quality;
- information on the reporting of and responding to any pollution incidents;
- local contact details for sources of further information.

Next year, in addition to the online profiles, summary information will be displayed at all bathing waters across Scotland.

The directive requires that all bathing waters where a large number of people are expected to bathe (and permanent advice against bathing has not been issued) are identified annually. Last season, Monifieth was put forward for designation by the local council with strong local community support. The application and supporting evidence was considered by a multisector panel, who recommended designation of Monifieth to the Scottish Government's Minister for Environment and Climate Change. The minister granted designated status for 2011 and we are delighted to report that this bathing water achieved a clear guideline pass this season.

This year, we expanded our daily prediction and signage system with 12 new beach message signs and we are now providing daily water quality forecasts at 23 locations across Scotland. This season was amongst the best yet for the accuracy of our bathing water predictions and advisory notices. On 99% of days, the daily advice given to the public was correct, or precautionary, and we correctly predicted 85% of poor samples at locations with bathing water signs. While we had teething problems with some of the new software, end-of-season testing is now underway to resolve these for the start of the 2012 season.

We are always seeking new ways of effective communication. The successful launch of our trial smartphone app this season means that this is now likely to be made a permanent addition to our communication tools.

This year, the mandatory standard for bathing water quality was met by 95% of Scotland's 83 bathing waters and nearly half met the more stringent guideline standard. It is widely accepted that Scotland's changeable weather patterns and heavy summer rains can have a negative impact on water quality. Relatively sunny, and mostly dry weather for May and June meant that initial bathing water quality was good but, as in previous years, heavy rainfall later in the season led to a downturn in bathing water quality.

Water quality improvements are needed for Scotland to conform to the more stringent standards of the new directive, especially as monitoring results in 2012 will count towards our first reporting of the new bathing water quality classifications in 2015. We must intensify our efforts to maintain progress and rise to the challenges. We cannot achieve compliance on our own and we will continue to work with the Scottish Government, Scottish Water, the agricultural community and the public to give Scotland and its visitors the high quality of water they are entitled to expect.

A handwritten signature in dark ink that reads "James C. Curran". The script is fluid and cursive.

Professor James Curran
Chief Executive
Scottish Environment Protection Agency

Executive summary

In 2011 79 of Scotland's 83 bathing waters achieved the mandatory standard for bathing water quality and almost half met the more stringent guideline standard. The bathing water season got off to an excellent start during the early weeks and, despite wet weather sweeping across much of the country in July and August, our bathing waters achieved a similar number of passes to last year. There was also notable progress made at some locations. Ettrick Bay on Bute (for years one of our worst performing bathing waters) comfortably passed and, indeed, was only two results short of meeting 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 26 samples out of 1,558 in total. It is widely accepted that Scotland's changeable weather patterns and heavy summer rains can have a detrimental impact on water quality. SEPA 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 as a result of run-off from agricultural or urban land, and, at some locations, wastewater spillages from storm water overflows can adversely affect water quality. Following each investigation, a summary of the findings was published on our website, along with the monitoring results.

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 may face from pollution. Recent improvements to our information provision have been substantial. Our world-leading daily water quality prediction system for bathing water quality has been expanded to 23 sites which, after roads and rail, is one of the largest integrated message systems in the country. We have online profiles for all 83 bathing waters and this year we launched a trial smartphone app.

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 used for the annual classification of a bathing water will change from a single, one year period to a rolling, four year period; therefore, data from next season will count towards our first compliance report in 2015.

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.

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, running from 2010 to 2015, includes 37 bathing water studies.

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.

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.



1 Improving bathing water quality

Good water quality is important for our bathing waters. Clean, safe beaches are essential to tourism and the leisure pursuits of the people of Scotland, which provide valuable income to many seaside communities.

It is vital that the environment is protected and improved by firm, but fair, environmental regulation, both to encourage economic development and to protect communities and human health.

1.1 SEPA's role

As Scotland's environment watchdog, we aim to protect the environment and human health by being an excellent environmental regulator and an effective and influential authority on the environment, limiting climate change and preparing Scotland for a sustainable future.

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.

Bathing waters feature in our key environmental outcome 'Scotland's environment is protected and improving', detailed in our [Annual Operating plan 2010–2011](#)¹. We will strive to achieve high quality bathing waters at the 83 designated sites across Scotland and full compliance with the [Bathing Waters Directive](#)².

This report presents the overall results of water quality monitoring at Scotland's bathing waters, describes the factors underlying the results and outlines site-specific plans for improvement. Individual bathing waters monitoring results are placed on our [bathing waters web pages](#)³ within a few days of sample collection and analysis throughout the bathing season.

¹ www.sepa.org.uk/about_us/publications/annual_operating_plans.aspx

² <http://eur-lex.europa.eu/LexUriServ/site/en/consleg/1976/L/01976L0160-20030605-en.pdf>

³ www.sepa.org.uk/water/bathing_waters.aspx

1.2 Working with our partners

We aim to continue progress towards achieving high quality bathing waters at the 83 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).

The importance of factors outside our statutory control has become increasingly apparent. The Scottish Government's strategy document [*Better bathing waters: meeting the challenges of the revised Bathing Water Directive in Scotland*](#)⁴ is the most recent in a series of publications which are 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 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:

- that 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 \(UWWTD\)](#)⁵ 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 being increasingly 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. Information on SUDS and the latest developments is given [on our website](#)⁶.

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).

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.

Water quality results for the 83 identified bathing waters are reported annually 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.

⁴ www.scotland.gov.uk/Publications/2007/11/15101809/0

⁵ http://ec.europa.eu/environment/water/water-urbanwaste/index_en.html

⁶ www.sepa.org.uk/water/water_regulation/regimes/pollution_control/suds.aspx

1.3 The Water Framework Directive and river basin management planning

The condition of bathing waters is linked to the quality of other water bodies in its catchment as well as how land and pollution source pathways are managed. Consequently, integrating land and water management is essential for the effective protection and improvement of the water environment.

The [Water Framework Directive](#)⁷ (transposed to Scottish Law under the [Water Environment and Water Services \[Scotland\] Act 2003](#)⁸) established a new, integrated approach to the protection, improvement and sustainable use of Europe's water environment. The [river basin management planning](#)⁹ (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](#)¹⁰. 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 (e.g. 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 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 been divided into 10 areas. Detailed supplementary area management plans can be found [on our website](#)¹¹. 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 that 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](#)¹².

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.

⁷ http://ec.europa.eu/environment/water/water-framework/index_en.html

⁸ www.legislation.gov.uk/asp/2003/3/contents

⁹ www.sepa.org.uk/water/river_basin_planning.aspx

¹⁰ www.sepa.org.uk/water/river_basin_planning.aspx

¹¹ www.sepa.org.uk/water/river_basin_planning/area_advisory_groups.aspx

¹² www.sepa.org.uk/water/protected_areas.aspx

1.4 The revised 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 with more stringent water quality standards and puts an emphasis on providing information to the public. Whilst we will first report water quality under the revised directive in 2015, other parts of the directive must be implemented earlier and some are already in place.

2011	2012	2015
Publication of bathing water profiles Publication of monitoring calendar Action, where required, on cyanobacterial (blue-green algae) blooms, macroalgae (seaweed), marine phytoplankton and other waste	Switch to new parameters New abnormal situation rules to apply Implementation of signage and discounting Summary information to be posted at beach locations	Report water quality standards against the revised Bathing Water Directive

New classifications and objectives

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. Under the new system, quality classifications are to be made using data covering four years, with the first classification in 2015 using samples from 2012 to 2015.

By 2015, member states have to ensure that all bathing waters are of 'sufficient' quality or better. 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.

What we measure

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.

Sampling program

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 may work in practice.

Public information

The revised directive emphasises providing information to the public, particularly on the risks that bathers may face from pollution. This year, a bathing water profile has been produced and posted on our website for each of Scotland's designated bathing waters. These are intended to provide useful information to the public and are written in accordance with the requirements of the revised Bathing Water Directive. Each profile includes:

- a description, map and photograph of the bathing water;
- information on potential pollution sources and risks to water quality;
- descriptions of measures being taken to improve water quality;
- information on reporting and responding to any pollution incidents;
- local contact details for sources of further information.

In 2012, summary information will be posted at bathing water locations via mandatory beach signs.

Our electronic signage network at 23 sites across Scotland (see Section 2.3) provides real-time predictions of bathing water quality. These 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 the revised conditions.

Designation of bathing waters

The Bathing Water (Scotland) Regulations 2008 require Scottish Ministers to annually review the list of designated bathing waters for Scotland. In 2009, to assist ministers and to ensure there is appropriate public participation, the Scottish Government requested SEPA to form a multi-stakeholder group to review future designations.

The directive states that a bathing water is one where a large number of people are expected to bathe and a permanent bathing prohibition, or permanent advice against bathing, has not been issued. Generally, a 'large' number of bathers (approximately 150 people) will be found at popular, well-used beaches and lakes where bathing is encouraged and facilities for bathers may have been provided.

Any organisation or individual can put forward a bathing water to be considered for designation. The applicant will need to provide good information about the number of beach users, both in and around the water, throughout the bathing season. This is usually in the form of photographic evidence of people in the water or a survey of user numbers.

Once the application and supporting evidence has been received, it will be considered by a multisector panel, chaired by SEPA, who will make recommendations to the Scottish Government's Minister for Environment and Climate Change. The minister will then decide which beaches are designated before the next bathing water season.

Further information on the designation process is available on the Scottish Government, SEPA and Keep Scotland Beautiful websites (see Annex 3).

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.

Case study: Monifieth

February 2010

We received an application for designation of the bathing water at Monifieth from the local council with strong local community support.

June–September 2010

Further user number surveys were undertaken and we undertook some investigatory water quality monitoring.

October 2010

The multi-stakeholder panel, chaired by SEPA met and recommended designated status for Monifieth to the Minister for Environment.

March 2011

The minister wrote to SEPA, designating Monifieth a bathing water for the 2011 season, beginning 1 June.

2 Bathing water quality, 2011

2.1 Water quality results

In 2011 95% of Scotland's 83 bathing waters achieved the mandatory standard for bathing water quality and nearly half 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 26 samples out of a total of 1,558.

It is widely accepted that Scotland's changeable weather patterns and heavy summer rains can have a deleterious impact on water quality. This year, relatively sunny and mostly dry weather for May and June meant that initial bathing water quality was good but, as in previous years, heavy rainfall later in the season led to a downturn in bathing water quality (Section 2.3). Overall, 17 samples (eight of which were failing results) had been taken on seven dates under abnormal weather (defined as worse than a one in five year event). These 17 samples were waived and replaced, as required by current EU rules.

The 'reduced sampling' provision (five samples per season) of the Bathing Waters Directive was applied at Dornoch, Gullane and Achmelvich in 2011, in keeping with our stringent policy of no guideline standard exceedance of any determinant during the previous bathing season. Additionally, some sites were sampled 10 times (rather than the usual 20) because of their geographical remoteness (Annex 2).

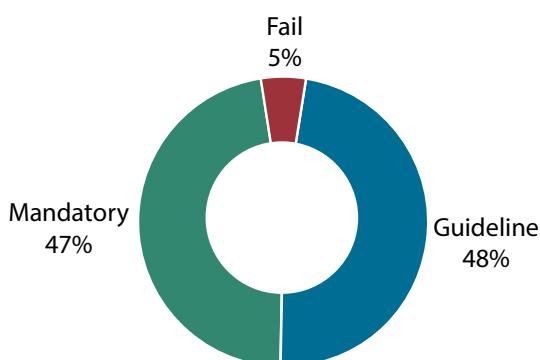
In summary, of the 83 identified bathing waters:

- 40 (48%) were classified as being of guideline quality for EU compliance;
- 39 (47%) were classified as being of mandatory quality for EU compliance;
- 4 (5%) were classified as being of failing quality for EU compliance.

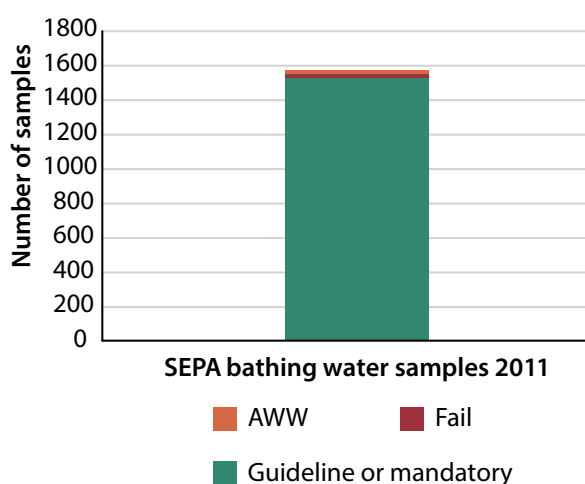
A further breakdown of the microbiological monitoring data from the 83 identified bathing waters in Scotland can be found in Annex 1.

Figure 1: Scotland's 2011 bathing water classifications

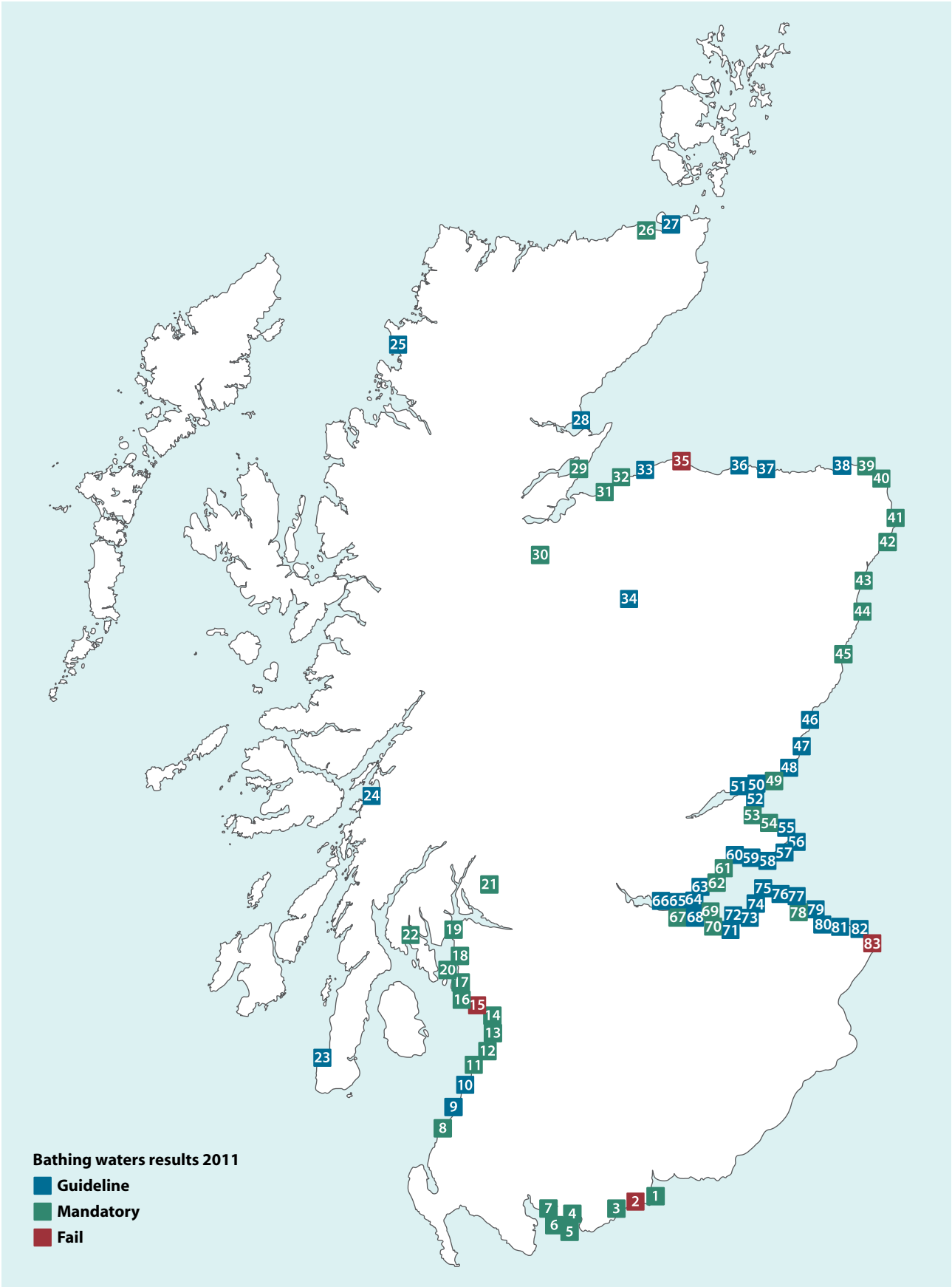
2011 bathing water quality



Individual samples results 2011



Map 1: Individual sample results, 2011



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

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



How we collect bathing water samples

By the end of the 2011 season, SEPA samplers had collected over 1,500 compliance samples from 83 bathing waters across Scotland. In addition, a further 1,634 investigational samples were taken which were used to provide supporting spatial information and for pollution source monitoring. The official monitoring calendar is set in advance and, where possible, a sampler will visit multiple sites in a day.

First thing in the morning, sterilised prelabelled bottles (to ensure no contamination) are collected from the laboratories along with relevant paperwork and protective equipment before heading off to the first bathing water of the day. Samples are always taken at the predefined location, which is selected as the area of beach that is most well used and representative of the bathing water area as a whole. After carefully wading out to safe depth—depending on the state of the sea but preferably beyond the wave breaking zone—a bathing water sample is taken at a depth of about 30 centimetres below the surface. This is performed using a sampling pole to minimise the risk of contamination.

Back on dry land, visual assessments, such as weather and wind conditions, the presence and abundance of seaweed, and litter and sewage debris, are also recorded. The number of people on the beach and in the water are counted and anything else that the sampling officer feels may impact on the quality of the water is noted.

Any rivers that discharge onto, or near, the bathing beach are also usually sampled. This can provide useful evidence of a pollution source if the bathing water sample records a high result.

Once the samples have been collected, they are stored in a darkened cool box for transportation to the laboratory. Our samplers have to ensure that they are back at the laboratory so that analysis can commence within six hours of the first sample being taken.



Details on each of Scotland's 83 identified bathing waters

This section contains specific information for each of Scotland's 83 identified waters. It focuses on the underlying factors behind bathing water quality at each site and outlines 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.



Southernness

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Southernness was designated as an EU bathing water in 1999. In 2011 guideline standards were met in all but two of the bathing water samples during the reasonable weather through June and July. However, throughout the rest of the bathing season, with the mixed weather conditions, the bathing water often only met mandatory standards.

Although there are no publically owned sewage treatment works discharging in the immediate vicinity of the bathing beach, it is possible that far field-storm discharges from sewage works and sewer network serving Dumfries may impact Southernness. Detailed model studies are currently being undertaken to better understand the contribution of these potential sources.

There is only one private wastewater treatment plant in the Southernness catchment which serves both the caravan park and village. This treatment works has secondary treatment with the provision of ultraviolet (UV) disinfection during the bathing season.

Southernness bathing water is now part of SEPA's electronic signage network (see Section 2.3).

Sandyhills

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Fail	Fail	Mandatory	Fail

Sandyhills bathing water has a varied compliance history. In 2011 the bathing water failed to meet mandatory compliance—the fourth failure in the last five years. Two routine samples collected in August failed to meet the mandatory standards—most likely as a result of mobilisation of bacteria from agricultural and urban sources as a result of flash rainfall.

There are some private sewage treatment systems in the catchment draining directly to the bathing waters; however, the main threat to bathing water quality at Sandyhills is thought to be from agricultural run-off combined with flashy, intermittent rainfall over the summer months, the effects of which did not meet the wet weather waiver criteria. In addition to the small burns draining directly into Sandyhills Bay, the effects from the larger River Nith and River Urr catchment contributions are currently being modelled to identify impacts. Some additional monitoring is to be undertaken within the catchment prior to the 2012 bathing season in an attempt to identify the most significant source of microbial inputs.

The land draining to the Sandyhills bathing water is located in the larger Stewartry Coastal catchment area which is being studied under our diffuse pollution priority catchment programme due to commence in early 2012 (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.

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

Rockcliffe

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fail	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Rockcliffe has consistently complied with EU mandatory requirements following Scottish Water's upgrade of the local sewage treatment in 2004 to include UV disinfection and a storm storage tank. In particular, the storm sewage tank has significantly reduced the occurrence of overflows of dilute, screened sewage during very wet weather helping the bathing water to meet mandatory standards.

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 is now part of our electronic signage network (see Section 2.3).

Dhoon Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Mandatory	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 2011 one sample collected in August failed to meet the mandatory standards; this was thought to be the result of bacteria being mobilised from agricultural sources.

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 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 during the bathing season to minimise diffuse pollution arising from these.

There are a number of public wastewater treatment works and many small private septic tank discharges within the River Dee, all of which are potential microbial sources. Work has been completed at Castle Douglas, New Galloway and Crossmichael under Scottish Water's Quality and Standards II and III programmes. The storm sewage overflows and sewage pumping station overflows serving the town of Kirkcudbright and its sewage works may pose a risk to Dhoon Bay owing to their geographical proximity; this issue is being studied by Scottish Water.

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.

Dhoon Bay bathing water is now part of our electronic signage network (see Section 2.3).

Brighouse Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Brighouse Bay is a small, sheltered, sandy beach between rocky outcrops. It has consistently achieved mandatory standards since 2004.

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 caused by 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.

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. The success of this project should be reflected in the findings of the priority catchment work to be undertaken in 2012.

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 and, combined with the topographical layout of the bay, such material once trapped, does not receive tidal flushing.

Brighouse Bay is part of our electronic beach signage network (see Section 2.3).

Carrick

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Carrick has had a rather variable quality record since its identification as a bathing water in 1999. This year, it complied with mandatory standards for the seventh consecutive year.

Work undertaken in 2005 concluded that agricultural run-off from the catchment was unlikely to have been the cause of the failure observed in the previous year. Given that there are no major sewage inputs nearby, possible sources which may pose a risk to this bathing water 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.

Mosyard

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Fail	Mandatory	Fail	Mandatory	Fail	Guideline	Guideline	Mandatory	Mandatory	Mandatory

Mosyard was newly identified as an EU bathing water in 2008. Because of its general recreational use, we have monitored its water quality since 1999. The bathing water has met the mandatory standard for the last three years.

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 Mosyard 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 Mosyard Farm and Sandgreen caravan sites are treated via private septic tank and soakaway systems. The nearby Auchenlarie Holiday Park has upgraded the sewage treatment system with a new inlet screen and reed bed treatment system to improve the discharges into Wigtown Bay.

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

Girvan

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory

Girvan bathing water consists of a flat bay, two kilometres in length. Most of the beach is sandy but there is some shingle. In 2011 this bathing water again complied with the mandatory standard.

Maidens

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline

Maidens was identified as an EU bathing water in 2008 but owing to its general recreational use, we have monitored water quality at this bathing water since 1998. In 2011 Maidens met the guideline standard for the first time, after a consistent history of mandatory compliance.

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).

Culzean

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Culzean was identified as an EU bathing water in 2008. In 2011 it once again achieved the stringent guideline standards, as it has done consistently since 2005. Owing 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 its wildlife. The bathing water is very popular with visitors to Culzean Country Park and Maidens village.

Heads of Ayr

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Fail	Mandatory	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Fail	Fail	Mandatory

Heads of Ayr was identified as an EU bathing water in 2008. Owing to its general recreational use we have monitored the water quality at Heads of Ayr since 2000. In 2011 the bathing water achieved compliance with the mandatory standards. There was one sample exceedance of the mandatory standard taken in July. Despite follow up investigations, no reason for the failure could be determined.

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.

Ayr (South Beach)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Fail	Mandatory

In 2011 Ayr (South Beach) bathing water achieved mandatory compliance. One sample taken in June exceeded the mandatory standard. The exceedance was most likely caused by very heavy rainfall the previous evening.

Ayr (South Beach) bathing water is part of our electronic signage network (see Section 2.3). The electronic sign correctly warned the public of poor water quality on the day when the noncompliant sample was taken this 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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	Mandatory	Mandatory	Mandatory

Prestwick bathing water again achieved mandatory compliance in 2011. One sample exceeded the mandatory standard in June 2011; the exceedance occurred after heavy rain, which was the most likely cause.

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 Section 2.3). The electronic sign correctly warned the public of poor water quality on the day when the noncompliant sample was taken this season.

Troon (South Beach)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Mandatory	Mandatory

This is the eleventh successive year that Troon (South Beach) bathing water has complied with either the mandatory or the more stringent guideline standards. A single sample taken in June exceeded the required standard. This failure was investigated by SEPA but no reason was identified.

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 Section 2.3).

Irvine

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Fail	Mandatory	Mandatory	Fail	Mandatory	Fail	Fail	Fail

For the third year running, Irvine bathing water failed to comply with the mandatory bathing water standards. Two samples exceeded this standard, one in June and a second in August. Heavy rainfall mobilising pollutants from both agricultural and urban land are the most likely causes of these exceedances. Both noncompliant samples followed rainfall and were correctly predicted by our electronic beach signage network (see Section 2.3), 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 an ongoing project to improve sewer overflows discharging to the River Irvine. In 2013, when complete, this project will significantly reduce the frequency and duration of sewer overflow events.

Saltcoats/Ardrossan

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Fail	Mandatory	Mandatory

In 2011 Saltcoats/Ardrossan bathing water complied overall with the mandatory standards. One sample collected in June 2011 exceeded these requirements. Investigations revealed that this failure was most likely caused by a combination of diffuse urban and agricultural run-off that 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. Work being carried out to improve sewer overflows discharging to the River Irvine should also reduce the impact that these overflows have on the bathing water.

Saltcoats/Ardrossan bathing water is part of our electronic beach signage network (see Section 2.3). The electronic sign correctly warned the public of poor water quality on the day when the noncompliant sample was taken this season.

Seamill

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Fail	Mandatory	Mandatory	Fail	Guideline	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Seamill was identified as an EU bathing water in 2008 and has met mandatory standards since. Because of 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 was part of our electronic signage network for the first time this season (see Section 2.3).

Largs (Pencil Beach)

2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010	2011
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Largs (Pencil Beach) was newly identified as an EU bathing water in 2006. Because of its general recreational use, we have monitored the water quality at this location since 2000. The waters have consistently achieved mandatory compliance since 2003.

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 1.2 km 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 was part of our electronic signage network for the first time this season (see Section 2.3).

Lunderston Bay

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory

Lunderston Bay was newly identified as an EU bathing water in 2008. Because of its general recreational use, SEPA has monitored water quality at this bathing water since 1998. The water achieved the stringent guideline standards in 2008 and 2010, and complied with the mandatory standards in 2009 and during this season.

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 within Clyde Muirshiel Regional Park and is a seaside attraction with free parking, a ranger service, environmental education events and various seaside activities.

SEPA is currently discussing the proposed location of public toilets and offices at the bay with Inverclyde Council. The facilities are to be used by Clyde Muirshiel Regional Park. The council are currently pursuing connection to the public sewerage system, which would be SEPA's preferred option.

Inverclyde sewage treatment works, which provides full biological treatment, is the most significant nearby discharge which discharges to Firth of Clyde about 1 km north-west of the Lunderston Bay.

Millport Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Mandatory	Guideline	Mandatory

Millport Bay on the Isle of Cumbrae was first identified as a bathing water in 1999. The water consistently meets the mandatory standard and met the more stringent guideline standard in 2007 and 2010. In July 2011 there was a single exceedance of the mandatory standard. Whilst no obvious reason for the failure could be identified, it is likely that rain on both the day of sampling and the previous day mobilised pollutants from both urban and agricultural sources.

The new sewage treatment system serving Millport has resulted in improved quality and more reliable compliance with EU standards.

Millport Bay bathing water was part of our electronic signage network for the first time in 2011 (see Section 2.3).

Luss Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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 ultraviolet (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 was part of our electronic signage network for the first time in 2011 (see Section 2.3).



Rosemarkie



Dores



Thurso



Aberdeen Beach



Cullen Bay

Ettrick Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fail	Fail	Fail	Mandatory	Mandatory	Fail	Fail	Fail	Mandatory	Mandatory

Ettrick Bay on Bute was designated a bathing water in 1999. In 2011 it achieved the mandatory standard for a second consecutive year after failing for three years and having a mixed record prior to that.

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. The improved performance in water quality noted in 2010 was investigated and was found to have resulted from a reduction in the peak numbers of faecal bacteria detected during short term pollution events, and a similar pattern was observed again this season.

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 Section 2.3).

Machrihanish

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline

Machrihanish was identified as an EU bathing water in 1999. The bay is a 5 km 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 first achieved the guideline standards in 2003, following the diversion of sewage from the small communities of Machrihanish, Stewarton and Drumlemble across to Campbeltown sewage treatment works for full treatment. It has maintained this standard every year since, with one exception in 2010.

Ganavan

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Guideline	Mandatory	Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline

Ganavan was identified as a bathing water in 1999. It has achieved guideline compliance for the last four 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). The bathing water is now believed to be at low risk of failing mandatory standards.

Achmelvich

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline	Guideline

Achmelvich was designated as a bathing water and sampled for the first time in 2008. It has consistently met the guideline standard.

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.

Thurso

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Guideline	Mandatory	Mandatory	Guideline	Mandatory	Guideline	Mandatory	Guideline	Mandatory

Thurso was designated as a bathing water in 2008 but has been sampled for several years before then. The water quality fluctuates between mandatory and guideline status.

The bathing water is less than 1 km 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 2 km from the more northerly open waters of the Atlantic.

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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline	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. This was 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 was 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 site licence conditions. Despite this, a guideline classification was achieved for the 2010 season and Dunnet achieved this standard again in 2011.

Investigations have since revealed that the pipe discharges outwith the designated bathing waters (which was not as had been previously thought). Discussions and modelling are on-going with a view to possibly relaxing the microbial conditions on the CAR licence. Modelling is to be submitted to SEPA who will assess all the available information and, if necessary, set appropriate standards for the protection of the bathing waters.

Dornoch

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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 the guideline standard is now consistently met.

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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Mandatory	Mandatory	Guideline	Mandatory

Rosemarkie was designated as a bathing water and sampled for the first time in 2008, and has since met the mandatory or the guideline standard.

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

On 11 August there was a single exceedance of the mandatory standard. The Rosemarkie Burn, which flows into the designated bathing water, was in spate at the time the sample was taken, following high rainfall. The burn contained relatively high levels of bacteria and it was observed that the bathing water in the area where the sample was taken was both brown and peaty, and low in salinity. This indicates that the bathing water was probably subject to inputs of bacteria from diffuse sources within the catchment of the Rosemarkie Burn, e.g. farm animals or private sewage discharges.

We are continuing to work with Scottish Water to ensure compliance with bacteriological conditions of their assets in the vicinity.

Dores

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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 consistently achieves mandatory compliance.

The designated area, a relatively small bay around 0.6 km long, is popular with tourists particularly in the summer season. An annual concert event, the Rock Ness 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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Guideline	Guideline	Mandatory	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 water consistently meets the mandatory or guideline standard.

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

Nairn (East)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Fail	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	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 2011 the bathing water met the mandatory standards.

Bacterial loadings from the River Nairn have the potential to impact on the bathing beaches at Nairn. Consequently we issued Scottish Water with revised discharge licences 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.

Issues remain with the performance of some sewage treatment works in the Nairn area, with bacteriological standards being breached in the 2011 season. Discussions are being held to prevent these issues being carried over into the 2012 season.

Findhorn

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline	Guideline

Findhorn was designated as an EU bathing water at the start of the 2008 season. The guideline standard has been consistently met since. 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.

Work to consolidate and upgrade the Kinloss and Forres sewage treatment works has now been completed and sewage from Kinloss is now pumped to Forres for treatment. This has contributed to the maintenance of the water quality at Findhorn bathing water.



Loch Morlich

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Guideline	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 2011 for the fourth successive season.

Lossiemouth (East)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Mandatory	Mandatory	Mandatory	Fail

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.

In 2011 Lossiemouth (East) failed the mandatory compliance standards, after three years of meeting these since designation. Three exceedances of the mandatory standards were recorded on 20 July, 3 August and 11 August 2011. On each occasion, rainfall recorded in the area preceding sampling is likely to have washed large amounts of bacteria from the surrounding land into the River Lossie.

Lossiemouth (East) bathing water is now part of our electronic beach signage network (see Section 2.3). All the mandatory exceedances were correctly predicted this season and the information was available on our website.

Cullen Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	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 four 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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Guideline	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 has achieved the guideline compliance since 2009.

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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Mandatory	Mandatory	Guideline	Mandatory	Fail	Mandatory	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 2011 the bathing water complied with the guideline standards for the second year running.

In 2001 sewage from the town of Rosehearty was diverted to a new sewage treatment works at Fraserburgh, where it undergoes full biological treatment and ultra violet disinfection prior to discharge through a new outfall to sea approximately 3 km east of the bathing water. Bacteriological monitoring of the effluent from the works has shown that the disinfection treatment is extremely effective. However, if treatment failure occurs, the Fraserburgh works is a potential risk to the bathing water quality at Rosehearty.

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 continuing to seek a more representative sampling point for Rosehearty which is still under review and further data is required before the sampling point can be moved.

Fraserburgh (Tiger Hill)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	Guideline	Mandatory

This sandy beach next to the town of Fraserburgh is a popular location for surfing as well as for walking and family outings. The bathing water fluctuates between mandatory and guideline compliance.

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 3 km 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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Mandatory	Guideline	Guideline	Mandatory

Located at one end of the sandy bay that links Fraserburgh and Philorth, this beach is a popular recreational and windsurfing area. The bathing water varies between guideline and mandatory compliance.

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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fail	Guideline	Mandatory	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory

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 mandatory compliance in 2011.

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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fail	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	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 2011. There was a single exceedance of the mandatory standard on 28 June. The high bacterial count in the Water of Cruden and the lower salinity of the sample indicates the failure was most likely a result of diffuse pollution from the catchment following a period of rainfall. Gulls in the sampling area may have also had some impact on the bathing water quality. Scottish Water assets in the area were operating normally at the time the sample was taken and in the days before.

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 of Cruden. 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.

Cruden Bay bathing water joined our electronic signage network in 2011 (see Section 2.3). The exceedance was correctly predicted by our models and the information made available to the public.

Balmedie

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory

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.

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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Fail	Guideline	Mandatory	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 2011.

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 Section 2.3).

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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Fail	Mandatory	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 2011, for the sixth 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.

A single mandatory exceedance occurred following wet weather on 22 June. Whilst investigations found no record of spills or problems on the sewerage network, there were high counts of bacteria in the River Carron indicating the problem was mainly riverine although investigation of the catchment found no specific issues.

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. There is a gull colony at the bathing water, mainly concentrated at the mouth of the River Carron where gulls roost at low tide. Faecal inputs from these birds, and a raft of mallards that inhabit the mouth of the River Carron, pose a potential threat to the bathing water quality at Stonehaven.

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 was moved to be more representative of bathing water usage and closer to beach amenities. This also took it further from the mouth of the Carron.

Stonehaven bathing water joined our electronic signage network in 2011 (see Section 2.3). The mandatory exceedance was correctly predicted and the information made available to the public.



Yellow Craig



Gullane



Kingsbarns



Tentsmuir



North Berwick (Milsey Bay)

Montrose

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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.

Lunan Bay

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	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 has hence remained at 10 times per season.

Arbroath (West Links)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fail	Mandatory	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline

The identified bathing water at Arbroath (West Links) achieved guideline compliance for the fourth successive year.

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.

Carnoustie

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Mandatory

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.

Weather conditions during 2011 influenced compliance at Carnoustie though, once again, issues with the Carnoustie public sewerage system were raised with Scottish Water. We have discussed a potential drainage area study at Carnoustie with Scottish Water.

Monifieth

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	Guideline

Monifieth was designated as a new bathing water and sampled as such for the first time in 2011. Historical data from Monifieth prior to the construction of the Tay public finance initiative scheme showed there were some potential risks to water quality but these have been reduced by the construction of the scheme. It should be noted that the Tay public finance initiative scheme was not designed to deliver guideline standard at Monifieth beach; however, the result this year is to be welcomed.

Broughty Ferry

2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline

Broughty Ferry was designated as a bathing water in 2006, but we have monitored it since 1997 as a result of its recreational use. Guideline standards have been achieved in most years since 2002, with dips to the mandatory standard in 2007 and 2010.

The apparent slight drops in bathing water quality in 2007 and 2010 were probably the result of higher than average summer rainfall, although 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.

Tentsmuir Sands

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Guideline	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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory

St Andrews (West Sands) has a good record of complying with EU standards. It has complied with guideline standards for the last 12 years. However, because of wet weather, the quality dropped to mandatory standard in 2011. Whilst this drop in water quality unfortunately means this bathing water will lose its long held blue flag, the water quality at this site remains at a comparatively high standard. The measured water quality breached the guideline standard by only two additional times to that allowed, with the final two exceedances being particularly minor.

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.

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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Guideline	Guideline	Mandatory	Mandatory	Guideline	Guideline	Mandatory

St Andrews (East Sands) was designated as a bathing water in 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. However, as a result of wet weather, the quality again dropped to mandatory standard in 2011.

This season, the coliform levels at this bathing water exceeded the mandatory standard on 20 July. Following a rainfall event, it is likely that run-off from nearby land into the nearby burns may have contributed to bacterial loads in the bathing water. Sewer assets were operating as normal and within licence conditions. As such, it is likely that pumping stations were discharging into the Kinness Burn as they reached capacity.

Kingsbarns

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline

Kingsbarns was identified as a bathing water in 1999. It complied with guideline standards for eight consecutive years up to 2009, so it was very disappointing when it only managed to achieve the mandatory standards in 2010. The failure to reach guideline status was thought to have been weather related, as the poorer results occurred following significant rainfall. It returned to guideline standard in 2011.

The Kingsbarns sewage treatment works comprises a submerged media aeration system followed by sand filtration and UV disinfection during the bathing season. This tertiary treatment has been designed to not compromise mandatory compliance; however, in a wet bathing season, the risk of a drop in quality remains as a result of contamination sources outwith the Kingsbarns sewage system.

Crail (Roome Bay)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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)

2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	2010	2011
Guideline	Guideline	Fail	Guideline	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, with the exception of 2004, and is expected to continue doing so.

Elie (Ruby Bay)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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

2002*	2003*	2004*	2005*	2006*	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Fail	Guideline

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

In 2010 Elie (Harbour) and Earlsferry failed to meet the mandatory standards. We, and Scottish Water, put in great effort to find the reason why the bathing water failed and to ascertain the cause of an apparent downward 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 6 mm 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 was recorded in 2010.

Elie (Harbour) and Earlsferry returned to overall guideline standard in 2011; however, it did record a single sample exceedance in August. Joint investigations between SEPA and Scottish Water did not reveal any asset point source which would account for this exceedance and so, unfortunately, the cause is likely to remain unknown.

Leven

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Mandatory	Guideline	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 2011 for the third year running and it holds a Blue Flag award.

The sewerage infrastructure in this area is not designed to compromise mandatory 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)

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	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.

Kirkcaldy (Seafield) bathing water joined our electronic signage network this season.

Kinghorn (Harbour Beach)

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Fail	Mandatory	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 because of 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 which has been maintained since.

Kinghorn (Pettycur)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline

New sewage treatment facilities and a long sea outfall pipe at Pettycur were commissioned in 1993, and the scheme was extended to treat and discharge all of Kinghorn's sewage through this system. Guideline compliance has been achieved almost consistently at Kinghorn (Pettycur) since 2003.

This season there was a single sample exceedance on 13 June. Joint investigations between SEPA and Scottish Water did not reveal any asset point source which would account for this exceedance. There are not considered to be any farms or agricultural activities in the locality which would result in contaminated run-off affecting the bathing water. The water quality returned to the expected excellent standard three days later. Whilst this demonstrated that the pollution event had passed, the cause is likely to remain unknown.

Burntisland

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

Burntisland was identified as a bathing water in 1999. In 2011 Burntisland maintained its guideline status for the thirteenth consecutive year. The beach is well managed and holds a Blue Flag award.

This season there was a single sample exceedance on 5 August. Joint investigations between SEPA and Scottish Water did not though reveal any asset point source which would account for this exceedance.

Aberdour (Silversands)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

The very popular bathing water at Aberdour (Silversands) has complied with the EU guideline standards for the past 14 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)

2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	2010	2011
Mandatory	Guideline	Guideline	Guideline	Guideline	Fail	Mandatory	Guideline	Mandatory	Guideline

Newly designated in 2010, this popular bathing water achieved guideline compliance in 2011.

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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Portobello (West) was identified as a bathing water in 1999. The bathing water consistently meets the EU mandatory standard.

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 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.

Whilst we recognise that a program of upgrading work has been undertaken, further investigation and survey requirements have been identified and discussions with Scottish Water are ongoing to establish what proposals there are to take this forward.

Portobello (West) bathing water is now part of SEPA's electronic signage network (see Section 2.3).

Portobello (Central)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Mandatory	Mandatory	Fail	Guideline	Guideline	Guideline

Portobello (Central) became an identified bathing water in 1999. The bathing water has achieved guideline compliance for the last three years, following a departure from this standard from 2006 to 2008.

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 because of additional flow in the sewer from abandoned mine-workings. Scottish Water installed greater capacity pumps in 2007 to address this issue.

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

Seton Sands

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory

Seton Sands/Longniddry was identified as a bathing water in 1999, and since then compliance has varied between guideline and mandatory standards. Longniddry (see below) became a separately identified bathing water in 2006.

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. Sewer overflows to the Canty Burn occurred during 2011 and discussions are ongoing with Scottish Water in terms of the action it proposes to take to deal with this.

Longniddry

2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory

Although previously part of the Seton Sands bathing water, Longniddry became a separately identified bathing water in 2006. This year saw a departure from the previously consistent guideline standard by the narrowest of margins.

In 2002 a new rising main was laid to convey sewage from Longniddry to Edinburgh sewage treatment works (STW). The STW was converted to a transfer pumping station which was designed not to spill more than three times per bathing season. 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.

Gullane

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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 to build a new long sea outfall and to extend the outfall for the discharge of storm sewage was completed early in 2004. This provides further protection of the bathing waters in this area.

Yellow Craig

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline

The quality improvement of the identified bathing water at Yellow Craig 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 Broad Sands Bay. Following the diversion, Yellow Craig consistently met the guideline standard, with dips to mandatory only in 2005 and 2010.

Broad Sands

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
n/s	n/s	n/s	n/s	n/s	n/s	Guideline	Guideline	Guideline	Guideline

Broad Sands was formally identified as an EU bathing water prior to the 2008 bathing season. It is next to Yellow Craig 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.

North Berwick (West)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Mandatory	Guideline	Guideline	Mandatory	Guideline	Mandatory	Mandatory	Guideline

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 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 recent years, North Berwick (West) has consistently met the guideline or mandatory standard. Recently, Scottish Water have taken action to minimise the risk of overflow arising from dual manholes around the Links Road area and appropriate action in the longer term is under discussion.

North Berwick (Milsey Bay)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline

The identified bathing water at North Berwick (Milsey Bay) achieved guideline standard in 2011 which, apart from a dip to the mandatory standard in 2010, has been consistently achieved since 2000. Bathing water quality improved greatly after the commissioning of the North Berwick sewage treatment works and long sea outfall in 1995.

Investigative efforts were stepped up at this bathing water after a poor water quality result in June 2010. Monitoring results at the time suggested the Glen Burn had been a potential source of contamination and a number of investigative surveys were carried out. There were no specific problems reported in 2011.

Seacliff

2002*	2003*	2004*	2005*	2006*	2007*	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline

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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Mandatory	Guideline	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.

West Barns preliminary treatment plant and Long Sea outfall was commissioned in 1993. In 2008 West Barns was converted to a pumping station and a new treatment plant using membrane technology for disinfection was commissioned. Treated effluent is discharged to the Biel water and the long sea outfalls are now used for storm overflows from West Barns pumping station.

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)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Guideline	Mandatory	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. Achieving overall guideline water quality that season was as a result of 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.

It was very disappointing, therefore, that Dunbar (East) failed to achieve guideline status in 2010 and again in 2011, albeit by the narrowest of margins.

Investigations in 2011 identified a sewer overflow at Dunbar East that SEPA would expect Scottish Water to address. Scottish Water have made a commitment to further investigative work and the timescale and scope of this is under discussion.

Whitesands

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline	Mandatory	Guideline	Guideline	Guideline

Whitesands achieved guideline compliance from 1988 to 2011, with dips to mandatory standard in 2004 and 2008, both by the narrowest of margins. Both dips were considered to be the result of wet weather, although this site is not near any significant sewage inputs.

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

Thorntonloch

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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.

Pease Bay

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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 private 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 operated during the bathing season. During the 2011 bathing season, the site had a number of sample failures which were attributed to operational problems with the sewage treatment works. The operator has been working to improve the situation and in September 2011 the sewage treatment works was upgraded to address operational problems.

The sewage from Cockburnspath (1.5 km inland) is pumped to a sewage treatment works at Cove Village where, together with the sewage from Cove, it receives secondary treatment prior to discharge to the North Sea about 1.5 km north of the bathing water. During the bathing season, the effluent from the sewage treatment works is UV 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 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

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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 secondary treatment before being discharged to the North Sea.

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

Eyemouth

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mandatory	Mandatory	Mandatory	Fail	Mandatory	Fail	Mandatory	Guideline	Mandatory	Fail

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. In 2011 Eyemouth failed to achieve mandatory standard. The poor water quality samples in 2005, 2007 and 2011 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 that 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, on occasion, to contain 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, 2007 and 2011 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.

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.

During 2011, some 52 farms have been visited in the Eye Water catchment and both steading and field inspections were carried out to assess compliance with the General Binding Rules. At this stage, all water margins were walked and in the Eye catchment over 150 breaches of General Binding Rule 19 (the keeping of livestock) were recorded. The vast majority of these were significant poaching of riverbanks by livestock. The majority of these breaches were recorded in the upper Eye catchment, where livestock farming is more prevalent. SEPA is continuing to work with the agricultural sector to remediate these breaches which pose a significant risk to bathing water quality at Eyemouth.

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 has confirmed that all identified cross connections have been removed.

Prior to 2011, Eyemouth Freezers Limited discharged its trade effluent from processing and freezing peas and broad beans to Eyemouth's public sewer network where it was treated at Eyemouth STW and discharged to the North Sea via a long sea outfall. In 2011 Eyemouth Freezers Limited applied to disconnect from the public sewer network and discharge screened effluent from its process directly to the North Sea via the existing long sea outfall serving Eyemouth STW. SEPA, being satisfied that there is unlikely to be an impact on the marine environment, approved the application in June 2011. During the 2011 bathing season, Eyemouth Freezers Limited transported its effluent from the factory to the long sea outfall via road tanker; however, Eyemouth Freezers Limited intends to construct a pipeline from the factory to the outfall before the start of the 2012 bathing season.

Eyemouth beach is part of our electronic signage network (see Section 2.3).

2.2 Summer weather

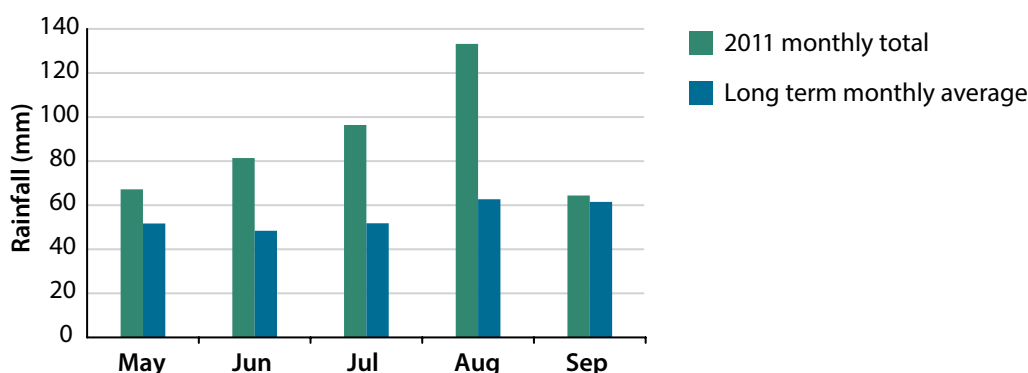
Rainfall totals in May were higher than average throughout Scotland, particularly in the north-west where monthly totals were up to three times the average figure, and a number of SEPA gauges recorded the highest total for May for the period of record.

Nationally, the rainfall total for June was around average, but there were some intense thunder storms in the south-east and notably on 22 June, where Edinburgh experienced localised surface water flooding and some local gauges recorded their highest 24 hour total for the month of June.

Although high pressure conditions were experienced at the beginning and end of July, mid-July was more unsettled with some areas impacted by short-duration summer storms. For example, localised surface water flooding was experienced in Perth on the 16 July. Rainfall totals in July displayed a lot of variation across Scotland, with the north and north-west receiving lower than average figures. In particular, Orkney and Shetland received less than half the usual average figure. This is in contrast to the Cairngorms and Borders where received monthly totals were higher than average.

The unsettled theme of the summer continued into August, with monthly average totals being well exceeded throughout Scotland. Intense and prolonged rainfall was widely experienced between the 10 and 11 August, resulting in some localised flood problems (particularly in the north and south-east). High 24 hour totals were also recorded in the north between the 27 and 28 August.

Figure 2: Monthly recorded rainfall in 2011 at Strathkinness, Fife compared with the long term monthly averages (1961-1990)



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

This year, we expanded our daily water quality prediction and signage system with 12 new beach message signs in addition to the existing 11 locations from previous years. This means that SEPA can now provide 'live' daily water quality forecasts at 23 locations across Scotland during the bathing season.

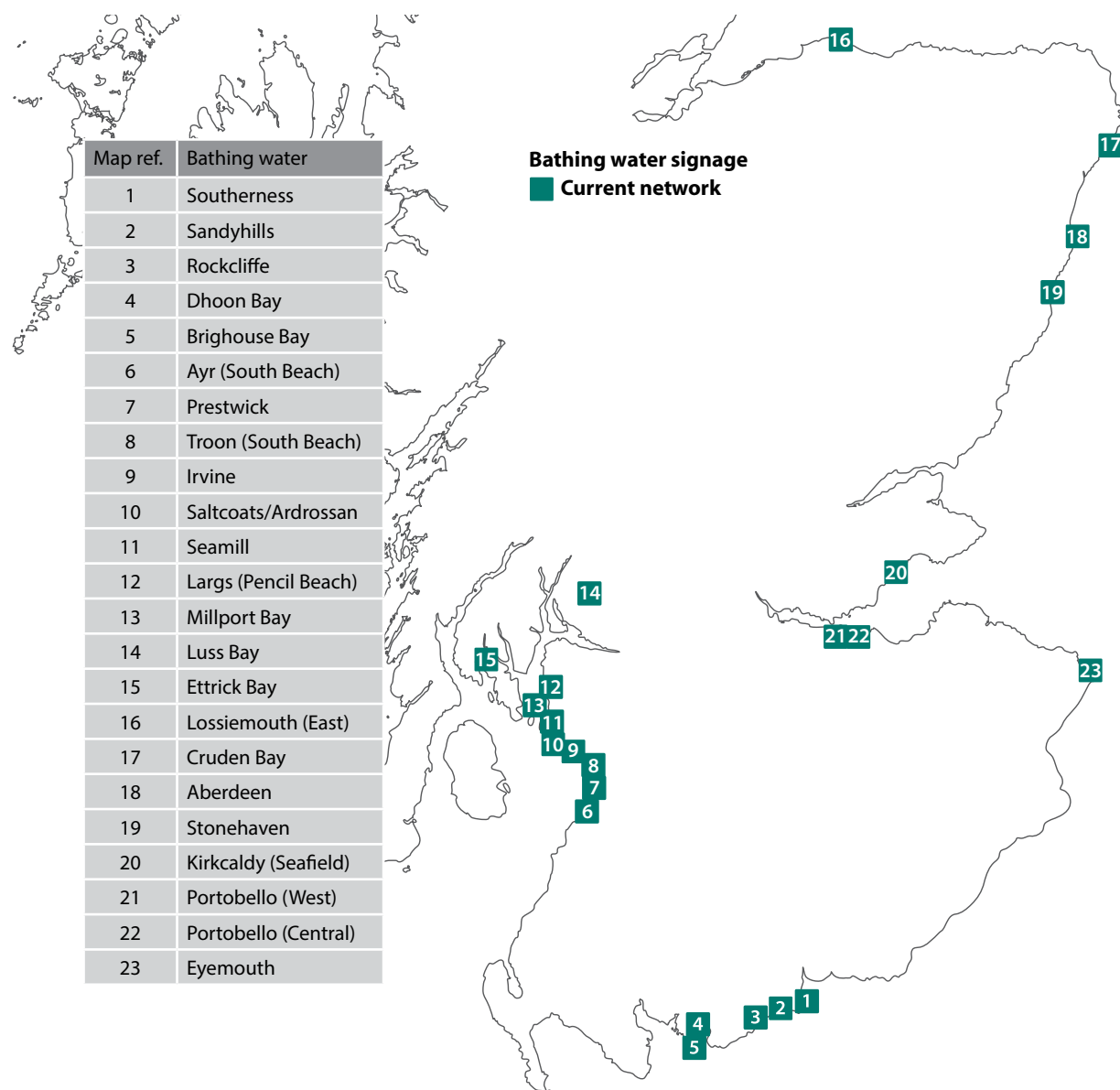
Although generally of a high quality, these locations were selected because they were previously found to be at risk of not meeting European standards during, or after, wet weather. The electronic signs are updated daily with water quality forecasts, indicating either mandatory quality ('good') or risk of water failing to meet the mandatory standard ('poor'), using our extensive rainfall and hydrological information network to inform decisions. Further information on the background to the system and details of the advisory messages are available [on our website](http://www.sepa.org.uk/water/bathing_waters/bathing_water_signage.aspx)¹³.

SEPA has been fully responsible for the real-time prediction and electronic signage system since 2005. Initially, it was funded by the Scottish Government and jointly piloted in 2003–2004. We use our in-house scientific information and technical systems to run the daily operation of the sign network and are assisted by subcontractors for civil engineering consultancy, installation and technical maintenance of the electronic signs. This season, we experienced problems with the functionality of some of the signs at beach locations as a result of teething problems with some of the new software and mobile phone communication coverage. End of season testing is now underway to resolve these for the start of the 2012 season.

¹³ www.sepa.org.uk/water/bathing_waters/bathing_water_signage.aspx

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.

Map 2: EU identified bathing waters that are part of SEPA's electronic signage network



Maximising information opportunities

All of our signs have the capacity to alternate between displaying daily water quality status and additional information. Whilst the standard alternative message is a reminder to keep beaches tidy, we are happy to include appropriate bespoke messages. Currently, additional beach specific messages include information about safeguarding dolphins at Aberdeen, a request to not feed gulls at Eyemouth and advice about car park opening and closing hours at Kirkcaldy (Seafield). Please contact us if you have further ideas for useful information that can be displayed using this resource.

This season we launched a trial smartphone app. Its success means this is now likely to be a permanent addition to our communication outlets. As before, all users can also still access water quality predictions via our beachline telephone service (08452 30 30 98) or by visiting our website.

Hydrometry and bathing waters signage

The prediction of water quality at bathing beaches is based on a daily assessment of hydrometric data. Known as hydrometry, this science is concerned with the measurement of the quantity of water in the environment. Measuring rainfall and river flows allows the detection of conditions that are known to increase the risk of pollution entering rivers and coastal waters.

SEPA maintains, and operates, an extensive national hydrological network for Scotland. Rainfall intensity and volume is measured using a tipping bucket rain gauge and river levels are recorded at river gauging stations using a variety of sensors. Hydrometry staff visit each station once a month to check the calibration of equipment and to carry out routine maintenance.

Recorded monitoring data is stored at each station on a data-logger and is then automatically interrogated from SEPA offices using telecommunications systems. The data is reviewed every morning during the bathing water season by hydrometric staff who check for anomalies before producing a prediction for water quality. This prediction is then uploaded onto electronic signs at beach locations, as well as our internet and smartphone systems.

Overall, 33 rain gauges and 11 river gauges are used for bathing water quality predictions. The network for four sites in south-west Scotland is shown in Figure 3. The full process from data collection to water quality prediction is shown in Figure 4.

Hydrometric data can also be analysed retrospectively to help understand any poor water quality that may be detected from SEPA's routine sampling.

Hydrometry support for daily predictions and signage in numbers

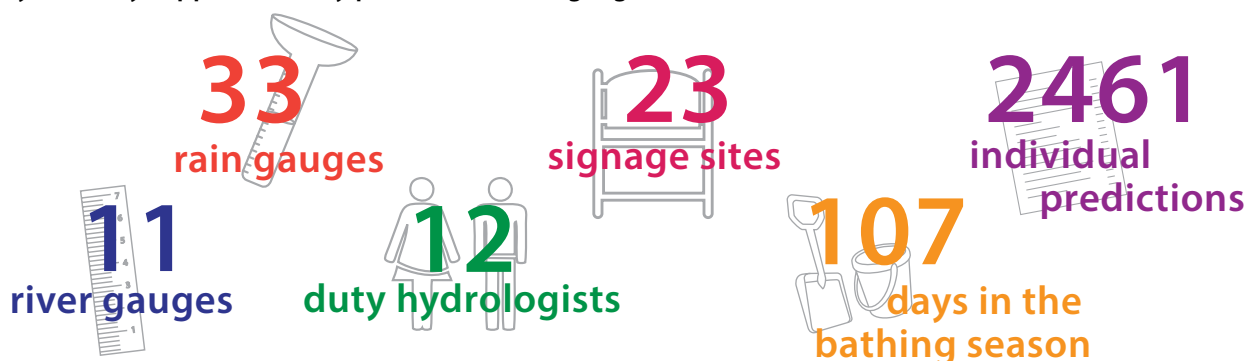


Figure 3: The hydrometry network for water quality predictions at four bathing water sites in south-west Scotland

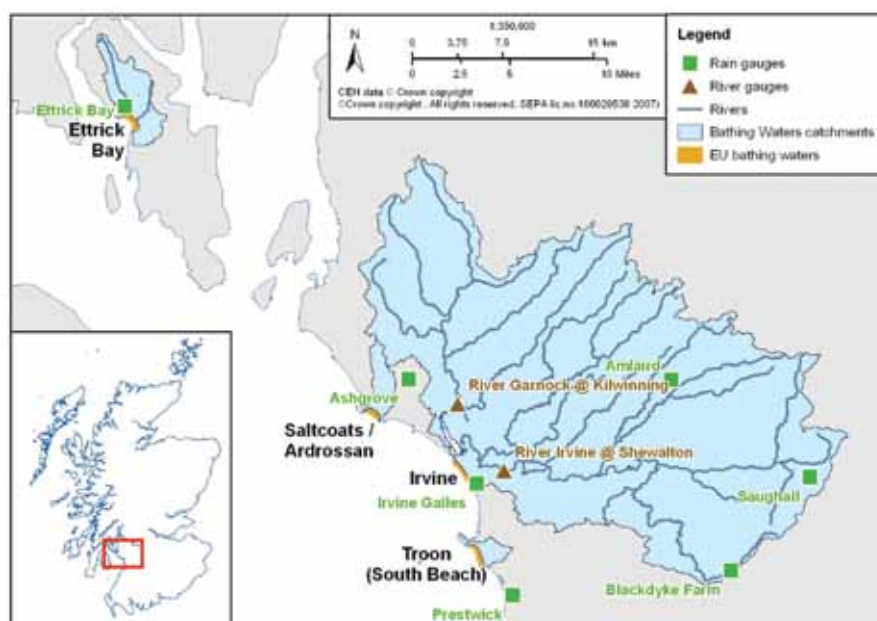


Figure 4: Water quality predictions: using data for public information



Signage accuracy and modelling developments

This season was amongst the best yet for the accuracy of our bathing water predictions and advisory notices. On over 99% of days, the daily advice given to the public was correct or precautionary and we correctly predicted 85% of poor samples at locations with bathing water signs.

Figure 5: Bathing waters signage performance and validation of daily predictions

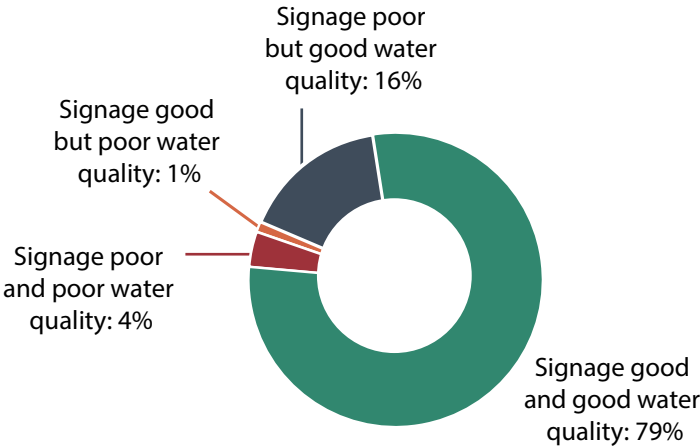
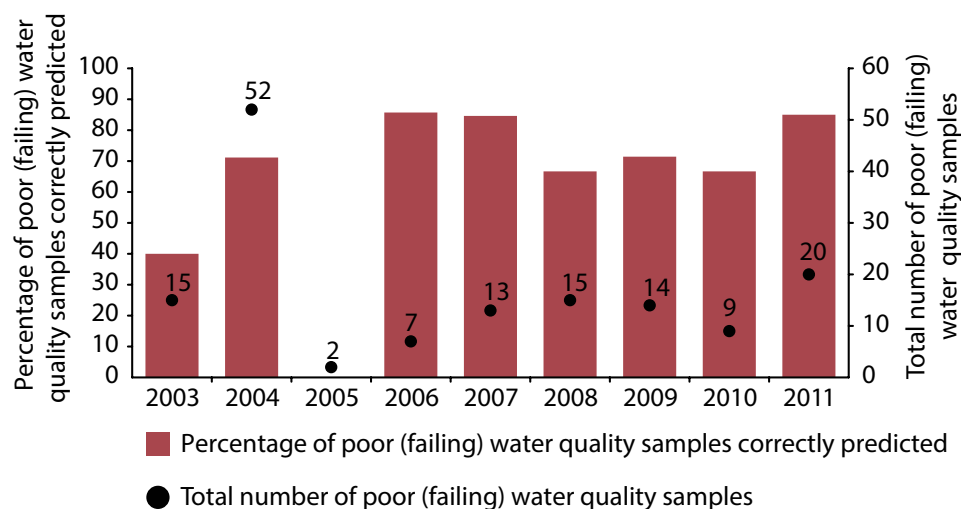


Figure 6: Validation of poor water quality samples



In 2012 we will be making our water quality predictions against the tighter standards of the revised Bathing Water Directive. We are finalising the development and testing of new smarter prediction models using decision-tree systems for implementation next year.

2.4 Analytical developments

We have worked with the Environment Agency (EA) 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.

We also worked with the Environment Agency and the Northern Ireland Environment Agency on a project to develop new, more rapid analytical methods for the new indicator organism groups outlined in the revised Bathing Water Directive.

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 was also made in extending the level of discrimination so that different sources can be isolated. Human (sewage), cattle, dogs and avian (specifically common coastal birds) sources were 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 and 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 were 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.

Between the 2008 and 2010 bathing water seasons, we collected a series of samples from a few prioritised sites at times of elevated microbiological pollution for testing using MST. A selected subset of these preserved samples were analysed at the Environment Agency's specialist MST laboratory. The results of these samples have given us useful additional information on sites of interest which it is hoped will help us plan pollution improvements for future seasons. The methods were developed so that they can be transferred or offered as a routine laboratory service to the project partners. In 2011 it was decided to develop this service in-house to help with the increased demand for analysis and to reduce costs. The methodology is currently being commissioned, with a target completion date of March 2012.

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 that 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 (09:00) results from samples delivered to a laboratory by 17:00. However, obtaining same-day results for samples delivered by 09:00 was only possible for *E. coli*.

Such rapid methods may be 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; however, advances in faecal indicator bacteria analysis using chromogenic media (see below), where results are available next day, may make this tool less advantageous.

New microbiological methods for the new indicator organisms in the Revised Bathing Water Directive

The current Bathing Water Directive specifies three groups of bacteria for analysis. These are: total coliforms, faecal coliforms and faecal streptococci. Whilst these organisms have proved very useful over the life of the 1976 directive, leading to vastly improved bathing water quality, they are imprecise groups that contain many species of bacteria, many of which are naturally-occurring and have no particular relevance to human health and protection for bathers.

The revised bathing water directive replaces the three indicators listed above with two narrowly-defined indicator groups: *Escherichia coli* and intestinal enterococci. These organisms, and their parametric limits in the revised bathing water directive, have been chosen as they have been shown by a number of epidemiological exposure trials to be related to human health risk assessment in bathing waters.

The directive also specifies analytical methods for the organisms. Whilst these methods could be used, they have a disadvantage in that they can take up to 72 hours for a confirmed result, which is counter to one of the new directive's aims—i.e. to inform the public about water quality as rapidly as possible. The directive allows alternative methods to be used if they can be proved to be equivalent.

In 2008 SEPA, the Environment Agency and the Northern Ireland Environment Agency carried out a joint equivalency trial on alternative analytical methods. This trial led to the development of alternative methods for the two indicators that produced confirmed results within 24 hours of analysis. The new methods use chromogenic media which are specific for the organisms being investigated. With chromogenic media, target bacteria are able to enzymatically cleave chromogenic substrates in the medium, which creates a coloured reaction within the bacterial colonies produced. Non-target organisms are not able to produce this reaction.

Currently, SEPA is in the final stages of validation of these methods which should be operational and United Kingdom Accreditation Service (UKAS) accredited in time for the 2012 bathing season.

3 Working with our partners

3.1 Investment by Scottish Water

Previous bathing water reports have highlighted the accelerated investment by 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 39 bathing water studies. These are being undertaken to determine if improvements to Scottish Water assets are required to achieve compliance with the revised Bathing Waters Directive. Any required solutions will also be implemented during this investment period.

A list of the bathing waters being studied by Scottish Water as part of the Q&S IIIb (2010–2015) investment programme is presented in Table 1.

Table 1: Q&S IIIb (2010–2015) Scottish Water Bathing Water studies

Aberdeen	Kinghorn (Harbour Beach)	North Berwick (West)
Ayr (South Beach)	Kirkcaldy (Seafield)	Portobello (Central)
Broad Sands	Largs (Pencil Beach)	Portobello (West)
Carnoustie	Leven	Prestwick
Cruden Bay	Loch Morlich	Rockcliffe
Dhooan Bay	Lossiemouth (East)	Rosehearty
Eyemouth	Lunderston Bay	Rosemarkie
Findhorn	Luss Bay	Saltcoats/Ardrossan
Ganavan	Maidens	Seamill
Girvan	Millport Bay	Southernness
Heads of Ayr	Nairn (Central)	Stonehaven
Inverboyndie	Nairn (East)	Thurso
Irvine	North Berwick (Milsey Bay)	Troon (South Beach)

3.2 Private sewage treatment systems

As highlighted 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

In Scotland's river basin plans, SEPA identified that rural diffuse pollution was the largest polluting pressure on the water environment in Scotland preventing the organisation from meeting its targets under the Water Framework Directive. 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 may not be an issue, but, combined across whole river catchments, these pollutants can significantly affect water quality, including EU-designated bathing waters. Land and run-off management practices play a pivotal role in diffuse pollution mitigation.

The rural diffuse pollution plan for Scotland has been successfully implemented, which has seen SEPA working with other members of the [Diffuse Pollution Management Advisory Group \(DPMAG\)](#)¹⁴. DPMAG was created as a statutory group under section 17 of the [Water Environment and Water Services \(Scotland\) Act 2003 \(WEWS\)](#)¹⁵ 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.

The national awareness raising work undertaken by the Scottish Government Rural Payment and Inspection Directorate, Scottish Natural Heritage and Forestry Commission Scotland staff as part of Scotland's Environmental and Rural Services (SEARS) will, along with the production of customer guidance, workshops and press articles, help prevent deterioration of the water environment and enable water quality improvements. SEARS compliance assessment visits on farms and forestry sites have highlighted rural diffuse pollution problems and, through the inspection process, land managers are helped to identify and address the risks. The findings of these inspections are being used to help target training and awareness raising on a national and/or catchment scale.

The targeted catchment approach is being taken in 14 diffuse pollution priority catchments (Box 1) in the first river basin cycle, which runs until 2015. Catchments were selected using a risk-based methodology where water bodies or protected areas were significantly failing standards as a result of rural diffuse pollution. These were then prioritised based on the risk to human health and the environment. Highest priority was given to areas with failing bathing waters which could impact on human health, such as those catchments listed in bold in Box 1. Candidate priority catchments have also been proposed for future river basin cycles, which include more of Scotland's 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.

Further information on individual catchments can be accessed via the SEPA website under [Diffuse Pollution](#)¹⁶.

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

¹⁵ www.scotland.gov.uk/Topics/Environment/Water/15561/WFD/WEWSAct

¹⁶ www.sepa.org.uk/water/river_basin_planning/dp_priority_catchments.aspx

In these 14 catchments, we are working with land managers (farmers, foresters, golf course and sports field managers, as well as others who work the rural land) and other stakeholders fostering workable partnerships. Partnership working has allowed knowledge transfer and developed engagement strategies to promote and achieve compliance in all sectors with the diffuse pollution General Binding Rules (GBRs).

A targeted, three-staged approach into combating the diffuse pollution issues in these catchments is underway.

- Stage 1.** Evidence gathering through catchment walking. Catchment walking in all 14 areas has been completed, covering a distance in excess of 5,600 km. Evidence of good practice, such as riparian buffer strips and the provision of fencing and water troughs, have been identified; however a significant number of non-compliances of the diffuse pollution GBRs have also been found, averaging approximately one breach per kilometre. These breaches relate to inappropriate storage and application of fertiliser, issues relating to the keeping of livestock, cultivation of land and the application of agro-chemicals (both pesticides and herbicides).
- Stage 2.** Awareness raising in each catchment, guided by the information collected through the catchment walks and available science, is being rolled out. Targeted awareness campaigns ranging from on-farm events and evening meetings to press articles have been undertaken. In catchments that impact bathing waters, the impacts of the catchment activities on these areas has been highlighted.
- Stage 3.** Engagement. Farms in the 14 catchments will be visited by a SEPA officer during the first river basin cycle. This visit involves the officer discussing the diffuse pollution issues on the farm with the land manager and discussing suitable mitigation measures that may provide solutions to combat the issues. These visits are underway in a number of the priority catchments; by the end of 2011 it is expected that in excess of 700 farms will have been visited, with over 300 of these farms being located in designated bathing water catchments. Land managers are being asked to agree to, and work towards, tackling those diffuse pollution issues identified on the farm during the visit.

Annex one: 2011 Monitoring data from Scotland's 83 identified bathing waters

			EC mandatory standard		EC guideline standard			
Bathing water	Local Authority	No. of sample results	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	Overall quality
Southernness	D&G	20	20	20	18	15	19	Mandatory
Sandyhills	D&G	20	20	17	11	8	15	Fail
Rockcliffe	D&G	20	20	20	11	6	17	Mandatory
Dhoon Bay	D&G	20	20	19	14	10	19	Mandatory
Brighthouse Bay	D&G	20	20	20	17	9	19	Mandatory
Carrick	D&G	20	20	20	20	15	19	Mandatory
Mossyard	D&G	20	20	20	19	15	19	Mandatory
Girvan	SA	20	20	20	20	15	18	Mandatory
Maidens	SA	20	20	20	20	18	19	Guideline
Culzean	SA	10	10	10	10	10	10	Guideline
Heads of Ayr	SA	20	20	19	15	14	17	Mandatory
Ayr (South Beach)	SA	20	19	19	12	9	16	Mandatory
Prestwick	SA	20	19	19	19	16	17	Mandatory
Troon (South Beach)	SA	20	20	19	18	15	17	Mandatory
Irvine	NA	20	20	18	14	11	15	Fail
Saltcoats/Ardrossan	NA	20	20	19	17	14	17	Mandatory
Seamill	NA	20	20	20	18	14	16	Mandatory
Largs (Pencil Beach)	NA	20	20	20	16	13	17	Mandatory
Lunderston Bay	Inv	20	20	20	17	15	20	Mandatory
Millport Bay	NA	20	20	19	13	12	15	Mandatory
Luss Bay	A&B	20	20	20	15	9	17	Mandatory
Ettrick Bay	A&B	20	20	20	16	14	17	Mandatory
Machrihanish	A&B	10	10	10	9	9	10	Guideline
Ganavan	A&B	20	20	20	18	16	20	Guideline
Achmelvich	H	5	5	5	5	5	5	Guideline
Thurso	H	20 (+1 AWW ^S) [†]	20	20	18	15	18	Mandatory
Dunnet	H	20	20	20	18	17	18	Guideline
Dornoch	H	5	5	5	5	5	5	Guideline
Rosemarkie	H	20	20	19	18	15	18	Mandatory
Dores	H	20	20	20	12	13	17	Mandatory
Nairn (Central)	H	20	20	20	15	9	12	Mandatory
Nairn (East)	H	20 (+1 AWW ^S) [†]	20	20	14	11	20	Mandatory
Findhorn	Moray	20	20	20	17	17	20	Guideline

			EC mandatory standard		EC guideline standard			
Bathing water	Local Authority	No. of sample results	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	Overall quality
Loch Morlich	H	10	10	10	10	10	10	Guideline
Lossiemouth (East)	Moray	20	18	17	11	10	11	Fail
Cullen Bay	Moray	20	20	20	19	17	18	Guideline
Inverboyndie	Aber	20	20	20	17	17	20	Guideline
Rosehearty	Aber	20	20	20	19	18	18	Guideline
Fraserburgh (Tiger Hill)	Aber	20	20	20	17	15	16	Mandatory
Fraserburgh (Philorth)	Aber	20	20	20	19	14	17	Mandatory
Peterhead (Lido)	Aber	20	20	20	19	17	17	Mandatory
Cruden Bay	Aber	20	20	19	11	9	16	Mandatory
Balmedie	Aber	20	20	20	13	12	13	Mandatory
Aberdeen	ACC	20	20	20	15	14	18	Mandatory
Stonehaven	Aber	20	19	19	11	10	13	Mandatory
Montrose	Angus	13	13	13	12	12	13	Guideline
Lunan Bay	Angus	10	10	10	9	8	10	Guideline
Arbroath (West Links)	Angus	20	20	20	19	19	18	Guideline
Carnoustie	Angus	20	20	20	19	15	20	Mandatory
Monifieth	Angus	20	20	20	20	19	19	Guideline
Broughty Ferry	DC	20	20	20	17	16	20	Guideline
Tentsmuir Sands	Fife	10	10	10	10	10	10	Guideline
St Andrews (West Sands)	Fife	20	20	20	17	14	19	Mandatory
St Andrews (East Sands)	Fife	20	19	19	17	13	19	Mandatory
Kingsbarns	Fife	20	20	20	18	16	18	Guideline
Crail (Roome Bay)	Fife	20	20	20	20	20	20	Guideline
Anstruther (Billow Ness)	Fife	20 (+1 AWW ^S) [†]	20	20	19	17	20	Guideline
Elie (Ruby Bay)	Fife	20	20	20	20	19	19	Guideline
Elie (Harbour) and Earlsferry	Fife	20 (+1 AWW ^S) [†]	19	19	19	19	19	Guideline
Leven	Fife	20 (+2 AWW ^S) [†]	20	20	18	17	20	Guideline
Kirkcaldy (Seafield)	Fife	20	20	20	19	14	19	Mandatory

			EC mandatory standard		EC guideline standard			
Bathing water	Local Authority	No. of sample results	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	Overall quality
Kinghorn (Harbour Beach)	Fife	20 (+1 AWW [§]) [†]	20	20	15	15	16	Mandatory
Kinghorn (Pettycur)	Fife	20	20	19	18	16	19	Guideline
Burntisland	Fife	20 (+1 AWW [§]) [†]	20	19	19	17	20	Guideline
Aberdour (Silversands)	Fife	20 (+2 AWW [§]) [†]	20	20	19	19	20	Guideline
Aberdour Harbour (Black Sands)	Fife	20 (+2 AWW [§]) [†]	20	20	19	19	19	Guideline
Portobello (West)	CofE	20 (+1 AWW [§]) [†]	20	20	16	12	17	Mandatory
Portobello (Central)	CofE	20 (+1 AWW [§]) [†]	20	20	17	17	19	Guideline
Seton Sands	EL	20	20	20	17	15	19	Mandatory
Longniddry	EL	20	20	20	16	16	17	Mandatory
Gullane	EL	5	5	5	5	5	5	Guideline
Yellow Craig	EL	20	20	20	19	17	19	Guideline
Broad Sands	EL	20	20	20	20	18	20	Guideline
North Berwick (West)	EL	20	20	20	19	19	18	Guideline
North Berwick (Milsey Bay)	EL	20	20	20	20	16	19	Guideline
Seacliff	EL	20	20	20	20	20	20	Guideline
Dunbar (Belhaven)	EL	20 (+1 AWW [§]) [†]	20	20	18	16	19	Guideline
Dunbar (East)	EL	20 (+1 AWW [§]) [†]	20	19	17	15	15	Mandatory
Whitesands	EL	20	20	20	19	18	19	Guideline
Thorntonloch	EL	20	20	20	19	18	19	Guideline
Pease Bay	SB	20	20	19	17	17	19	Guideline
Coldingham	SB	20	20	20	19	19	19	Guideline
Eyemouth	SB	20 (+1 AWW [§]) [†]	20	18	16	15	18	Fail

*FC = faecal coliforms

*FS = faecal streptococci

*TC = total coliforms

[†]AWW = Abnormal Weather Waiver

[§]20 (+x AWW) 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 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 2011, leading to 17 sample results (eight of which were failing 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 the 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 previously 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 2011 72 identified bathing waters in Scotland held waivers for transparency. None were required this year for colour.

Sampling frequency

The minimum frequency of sampling is prescribed in the Annex to the Bathing Water Directive. Normally, checks must 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 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. Thus, it 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 2011 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 not 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 properly applied 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: Sources of additional information on bathing water quality

[Our website](#)¹⁷ contains a wide collection of information about us, current bathing water profiles and 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.

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. It lists all identified and many non-identified bathing waters around the entire UK coastline. The recommended beaches can be viewed [online](#)¹⁸.

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 44 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. At the start of the 2011 bathing water season, six bathing waters held a Blue Flag in Scotland:

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

Water Authority Scottish Water, Castle House, 6 Castle Drive, Carnegie Campus, Dunfermline, KY11 8GG 0845 601 8855 www.scottishwater.co.uk	Scottish Government Victoria Quay Edinburgh, EH6 6QQ 0131 244 0396 eqcat@scotland.gsi.gov.uk www.scotland.gov.uk/Topics/Environment/Water/15561/bathingwaters	Keep Scotland Beautiful Wallace House 17-21 Maxwell Place Stirling, FK8 1JU 01786 471333 www.keepsotlandbeautiful.org
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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.

Environment Agency 08708 506 506 enquiries@environment-agency.gov.uk www.environment-agency.gov.uk	Northern Ireland Environment Agency Calvert Place 23 Castle Place Belfast, BT1 1FY 028 9025 4754 EP@doeni.gov.uk www.doeni.gov.uk/niea	Marine Conservation Society Gloucester Road Ross-on-Wye Herefordshire, HR6 5BU 01989 566017 www.mcsuk.org
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¹⁷ www.sepa.org.uk

¹⁸ www.goodbeachguide.co.uk

Annex four: SEPA offices

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