SEPA
Scottish Environment Protection Agency

Scottish bathing waters

2014-2015

natural scotland
SCOTTISH GOVERNMENT

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Front cover: Achmelvich, Highlands

Foreword

The 2014 results for bathing waters in Scotland mark the end of one era of reporting and the beginning of a new one under the revised Bathing Waters Directive. In a year yielding commendable water quality results, we continued to work closely with key partners to make further improvements and to widen public access to water quality information.

2014 is the final year that we will report Scotland's bathing water quality under the original 1976 Directive, adding to annual records initiated in 1988. Since then, substantial water quality improvements have been achieved, the number of designated bathing waters has tripled, and we have a much improved understanding of both the environment and measures for tackling pollution pressures on water quality.

It is particularly pleasing to note that all bathing waters originally designated in 1988, and almost all those designated more recently, have been brought up to the mandatory or guideline European water quality standard. This is a vast improvement from the first year of monitoring, when 13 of the then 28 designated sites failed. The improvement is testimony to our work with Scottish Water and our pollution control activities in prioritised rural catchments.

During the 2014 bathing season we experienced some fantastic beach weather and it was a reasonably dry, warm and sunny summer. The final 1976 Directive results in 2014 confirmed that 98% of sites met the required standards, but more will have to be done as we move forward using tighter standards and new classification methods applicable from 2015.

For the 2015 bathing water season, a new system - standardised across all European bathing waters – will commence in Scotland when the revised 2006 Bathing Water Directive comes into full effect. Bathing water quality will be described by one of four water quality classification types, which will be based on several years of monitoring data, to indicate the status of normal water quality condition for each location.

Under the revised directive classifications, which are considerably more stringent, over 75% of Scotland's existing bathing waters would already be 'excellent', 'good' or 'sufficient'. We expect further improvements in 2015, but some bathing waters are still unlikely to reach the 'sufficient' classification in the short term. Our challenge, therefore, is to build upon the progress made under the previous Directive to achieve corresponding improvements in 2015 and beyond through further investment and infrastructure improvements.

Encouragingly, access to water quality information for the public has never been better. In 1988 sample results were reported as an end-of-season outcome, whereas today the latest results are available via our website throughout the season. Daily water quality predictions are accessible from electronic information signs at 23 beaches as well as from SEPA's website, mobile website and Beachline telephone service. These real-time water quality predictions allow people to make informed choices about whether to swim, paddle or stick to the beach.

It is clear that the challenges for our bathing waters in 2015 and beyond are considerable. We will continue to work closely with the Scottish Government and key partners to provide public information at our bathing waters and to protect, manage and improve areas where water quality is at risk.

David Pirie
Director of Science and Strategy

Executive summary

Scotland's 84 designated bathing waters achieved a mandatory pass rate of 98% this year, with 46 bathing waters additionally reaching the higher guideline standard. Only two beaches (Heads of Ayr and Lunan Bay) failed for the overall 2014 season, despite Scotland experiencing the tail end of a hurricane in August.

This is the last time reporting will take this format which has been used since the introduction of the current Bathing Water Directive, delivering 27 years of monitoring, better pollution control and improved environmental management systems for our designated bathing waters. From 2015, reporting will be against the new, more stringent, classifications of 'excellent', 'good', 'sufficient' and 'poor'. As these classifications are based on a rolling four-year dataset, the first classification will use data from 2012-2015 seasons.

Our daily water quality prediction and public water quality information service had its best season ever this year. The daily advice given to the public on water quality was correct or precautionary on 99% of days and 88% of poor water quality events were correctly predicted in real time with warning messages displayed to the public. Our service started two weeks earlier this year, in mid-May, to provide enhanced bather protection and coverage during this pre-season period when statutory compliance samples are taken.

Collieston in Aberdeenshire was awarded designated bathing water status by the Scottish Government after a strong application from the Local Authority, supported by a local community group, that demonstrated high usage. Collieston achieved the mandatory standard in its first year of designation.

Ettrick Bay, a site which previously frequently failed the mandatory quality standard, met the guideline standard for the first time in 2014, demonstrating that measures to improve water quality pay off in the long term.

Our partners have an essential role in helping Scotland achieve compliance with the Bathing Waters Directive and we will continue to work with the Scottish Government, Scottish Water, the agricultural community and other relevant organisations. 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, giving Scotland and its visitors the high quality of water and information which they are entitled to expect.

Bathing water sampling

1 Improving bathing water quality

1.1 About us

The Scottish Environment Protection Agency (SEPA) is Scotland's environmental regulator. Our purpose is to protect and improve the environment, including the sustainable management of natural resources. We also contribute to improving the health and wellbeing of people in Scotland and to achieving sustainable economic growth.

SEPA is a non-departmental public body, accountable through Scottish Ministers to the Scottish Parliament. We have been advising Scottish ministers, regulated businesses, industry and the public on environmental best practice for over a decade.

We implement the Bathing Waters Directive and our duties are described in The Bathing Waters (Scotland) Regulations 2008. Activities that we undertake are to:

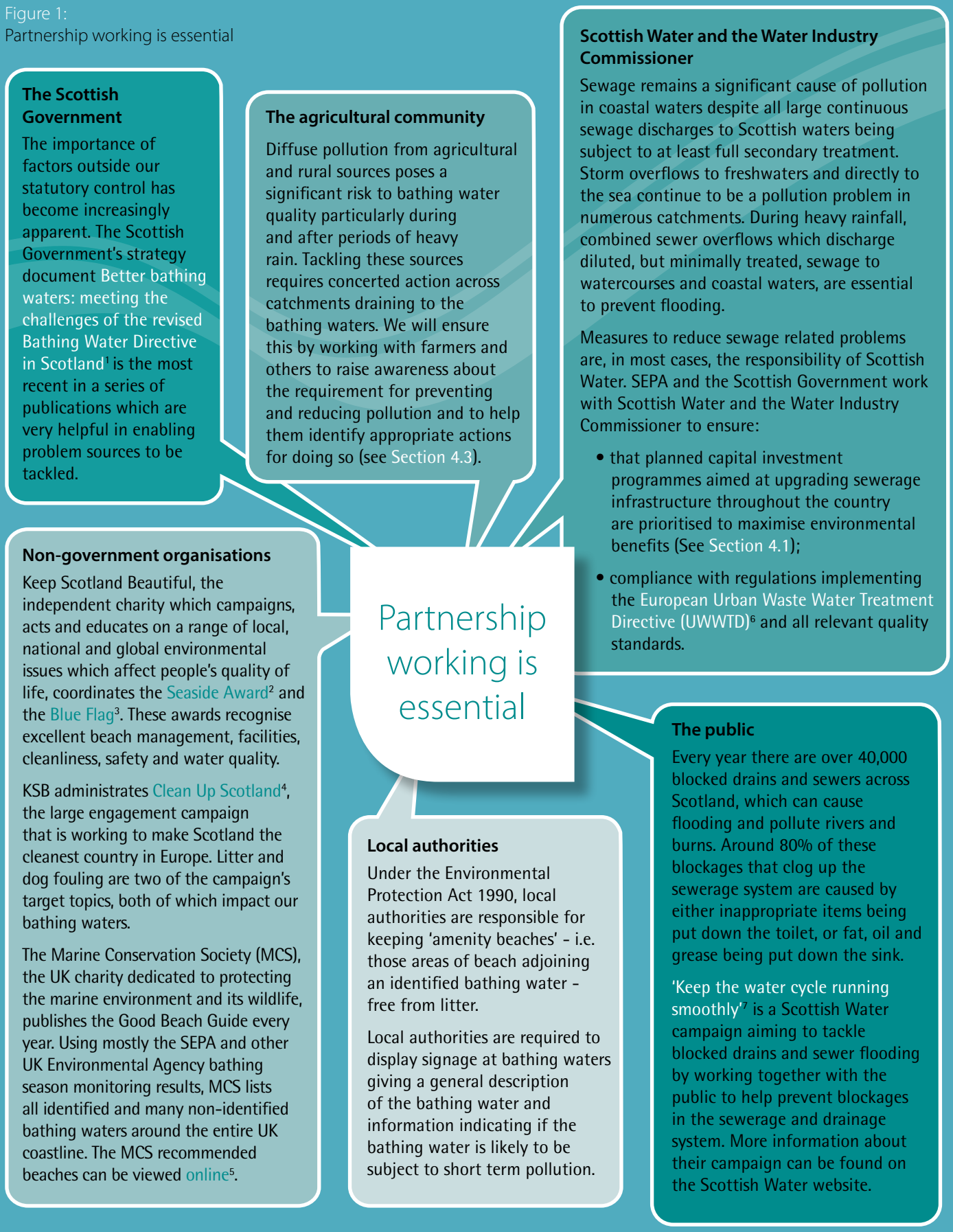
- Sample and assess Scotland's 84 designated bathing waters regularly throughout the bathing water season for faecal indicator organisms, cyanobacterial (bluegreen algae) blooms, macroalgae (seaweed), marine phytoplankton and other waste.
- Disseminate these results via our website during the bathing water season and report to Europe annually. We investigate promptly if our routine sampling of bathing waters identifies problems with any of these parameters and liaise with partner organisations both to resolve the problem and to provide relevant information and advice to the public.
- Provide real-time daily predictions of bathing water quality at 23 sites across Scotland via our electronic signage network, website, mobile website and Beachline services.
- Publish bathing water profiles and provide summary information for display at bathing water locations to Local Authorities.
- Co-ordinate the management of the water environment through the production of river basin management and area management plans.

Information on all of these activities, and the roles of our partners, are given in this report.

1.2 Our partners

Our partners have an essential role in helping Scotland achieve compliance with the Bathing Waters Directive and we will continue to work with all relevant organisations, the agricultural community and the public to achieve this objective (Figure 1). 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, giving Scotland and its visitors the high quality of water and information which they are entitled to expect. Contact details for all these organisations can be found in Annex three.

Figure 1:
Partnership working is essential



1 www.gov.scot/Publications/2006/03/23151924/0
2 www.keepscotlandbeautiful.org/local-environmental-quality/beach-awards/
3 www.blueflag.org/menu/awarded-sites/2014/northern-hemisphere/scotland
4 www.cleanupscotland.com
5 www.goodbeachguide.co.uk
6 http://ec.europa.eu/environment/water/water-urbanwaste/index_en.html
7 www.scottishwater.co.uk/you-and-your-home/your-home/keep-the-water-cycle-running-smoothly

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 their catchments 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[8] (transposed to Scottish Law under the Water Environment and Water Services (Scotland) Act 2003[9]) established a new, integrated approach to the protection, improvement and sustainable use of Europe's water environment. The river basin management planning (RBMP)[10] system is the key mechanism for ensuring integrated management.

The first river basin management plans for Scotland were published in December 2009 and can be found on our website[10]. These plans are now due for review and the updated plans will be published in December 2015.

The river basin plans cover all types of water body (rivers, lochs, estuaries, coastal waters, groundwaters and wetlands) 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 all of Scotland's waters, including those of special value, (e.g. those protected for drinking, biodiversity, shellfish growing or bathing) are up to standard, and to maintain quality where they already meet those standards;
- strike a balance between sustainable management of Scotland's waters and protecting the interests of those who depend on the water environment for their well-being and livelihoods.

Consultation on proposals for the second river basin planning cycle are on-going as part of a wider engagement process with a range of businesses and stakeholders with interests in the water environment.

Protecting and maintaining bathing water quality

Bathing waters are classed as protected areas under Annex IV of the Water Framework Directive (WFD). Protected areas are those 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[11] on our website.

Protected areas must comply with the standards and objectives specified by the directive under which they were established. Bathing waters will continue to be protected under the revised Bathing Water Directive, which states that all waters must achieve a 'sufficient' or better classification by end 2015. By implementing actions in the river basin plans to improve and protect water quality, we will contribute to achieving and maintaining this level of protection for bathing waters in Scotland.

St Andrews (East Sands), Fife

8 www.gov.scot/Topics/Environment/Water/15561/WFD
9 www.legislation.gov.uk/asp/2003/3/contents
10 www.sepa.org.uk/environment/water/river-basin-management-planning/
11 www.sepa.org.uk/environment/water/monitoring/protected-areas/

Water quality improvements under Directive 76/160/EEC

The final year of grading bathing waters under Directive 76/160/EEC as mandatory, guideline or fail was 2014 and in 2015 the final implementation steps for the revised Bathing Water Directive come into effect. So what progress have we seen over the years since 1988, when current monitoring records began for a Directive first passed in 1976?

Since 1988 we have seen the number of designated bathing waters triple from 28 to 84. This is, in part, due to the introduction of a formal process of application and assessment for new designations. One of the key criteria for designation is the number people using the bathing water.

All the bathing waters originally designated in 1988 and 1994 reached the mandatory or guideline standard in 2014. These improvements have been driven by Scottish Water infrastructure investment and the priority catchments rural diffuse pollution programme.

Almost all of those designated more recently have also met those standards and work is ongoing to bring about the improvements required.


Carnoustie, Angus

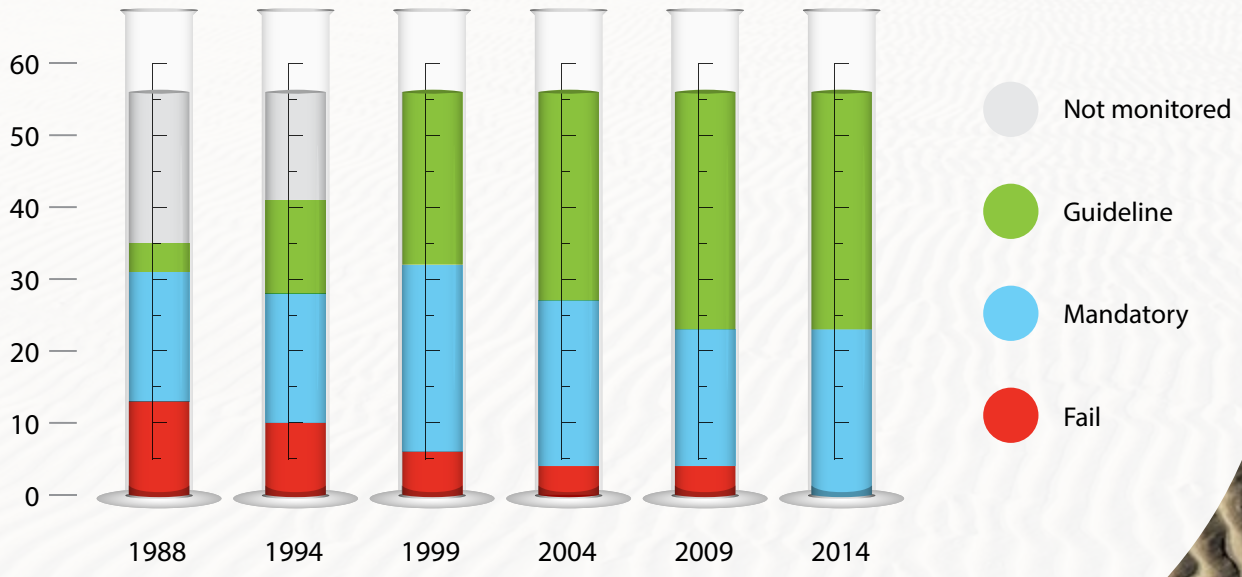


Figure 2:
Bathing water results under the current Directive for sites designated in 1999 or earlier

2 The 2006 Bathing Water Directive

After the 2015 season the way we describe bathing water quality at all our bathing waters will change. A new system, standardised across all European bathing waters, will be applied in Scotland when the final implementation steps for the revised Bathing Water Directive come into effect. So what does this new directive mean for Scotland's bathing waters?

Bathing water quality will be described by a quality classification statement which will be based on several years of monitoring. This will indicate the status of the normal water quality condition for each location, rather than the current one-year system which relies on a limited number of single samples, with results posted a few days after sampling.

Under the revised Bathing Water Directive:

- classifications will be calculated at the end 2015 for display at the start of the 2016 season (and on-going annually);
- the previous standards of mandatory and guideline have been replaced by water quality classifications of excellent, good, sufficient and poor, based normally on a four-year data set;
- there is increased assessment, and action when required, of on-site conditions to assess other potential risks to public health, including monitoring freshwater influences (extent and microbial levels), algal blooms, seaweed and marine phytoplankton;
- the total number of samples used for classification over four years is much increased from the single year approach and better describes the general quality of each location;
- water quality classification applies for the whole season;
- a percentile statistic is used, which is more scientifically robust;
- the overall condition of a location is described through bathing water profiles.

Timeline of revised Directive implementation

In March 2006 the revised Bathing Water Directive (2006/7/EC)[12] came into force. This was enacted in Scotland by the Bathing Waters (Scotland) Regulations 2008 which came into effect in May 2008. Key features include increased provision of public information and tighter microbiological standards to be met by 2015.

Different parts of the directive have been implemented over the last few years, but the most significant water quality assessment changes come into force in 2015.

2011	2012	2015	2016
Publication of bathing water profiles Publication of monitoring calendar Action, where required, on cyanobacterial (bluegreen algae) blooms, macroalgae (seaweed), marine phytoplankton and other waste	Switch to two new microbial parameters as standard across the EU Summary information from each bathing water profile to be posted at beach locations Implementation of real-time short term pollution signage advice and discounting New abnormal situation rules to apply	Report the first new EU water quality classifications by the end of 2015 against the revised Bathing Water Directive standards and calculation methods	Post the annual water quality classes and information symbols at all beaches from the start of each season – on going Rolling classifications using (normally) four years monitoring data will be reported annually

12 www.gov.scot/Topics/Environment/Water/15561/bathingwaters/BWD2

2.1 Sampling changes

Following recommendations from the World Health Organization (WHO), changes have been made across the EU to the type of water quality indicator bacteria monitored. In place of the previous coliform and faecal streptococci standards, the revised directive sets standards for *Escherichia coli* (*E. coli*) and intestinal enterococci. These have more stringent, health-related standards, making compliance with the new directive significantly tighter.

Sampling schedules (the monitoring calendar) are now set in advance of the bathing season, but there is now a five day window, including the date in the monitoring calendar, when a sample can be taken. At sites which have daily real time forecasting of bathing water quality and electronic beach message signage we can use the allowed five day sampling window to avoid sampling when the sign gives a warning of poor water quality and we have actively advised against bathing. Most of the time, and indeed at all non-signage sites, we sample on the date in the monitoring calendar unless there is an unexpected operational reason (for example, a vehicle breakdown). In 2014 there were four occasions when this five day provision was used.

The general sample frequency per season will be maintained close to present rates, although the directive allows for reduced sampling. Because classifications will normally be calculated on four years of data - and at most sites will be based on around 72 data points rather than the annual 20 single samples used up until 2014 - the confidence in final class values will be high.

2.2 Longer term classes and designation

In the event of five consecutive 'poor' classifications, "permanent" advice against bathing must be put in place and a sign will state that this is the case, giving the reasons for this decision. In effect, the site will no longer be a designated bathing water until conditions improve and can be shown to meet at least the sufficient EU class conditions.

The first year this could happen, if anywhere, will be at the start of the 2021 season. Permanent advice against bathing may also be given between 2015 and 2020 if achieving 'sufficient' is considered to be infeasible or disproportionately expensive.

2.3 Public information

The revised directive emphasises providing information to the public, particularly on the risks that bathers may face from pollution.

A bathing water profile is available on our website for each of Scotland's designated bathing waters. These profiles 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.

Since 2012, annual summary information has been provided to local authorities to post at bathing water locations via mandatory beach signs. This summary of the bathing water profile includes details of the bathing water season, information on potential pollution sources and risks to water quality, and any relevant advice on swimming after storms.

Our electronic signage network spanning 23 sites across Scotland (Section 3.3) provides real-time predictions of bathing water quality. Having a public warning system in place, via these electronic signs, to inform prospective bathers of potentially poorer water quality enables us to remove occasional samples collected during short-term pollution events from the overall classification dataset, as these are unrepresentative of the normal classification condition.

A separate closure sample must have been taken to demonstrate that the event has ended and management measures must be in place to prevent, reduce or eliminate the causes of the pollution. The directive indicates that a maximum of 15% of the samples used to assess the classification of a bathing water can be disregarded from the assessment and, if necessary, replaced. Fifteen samples out of the 1581 total were discounted using this provision in 2014.

2.4 Abnormal situations

An abnormal situation is defined by the revised Bathing Water Directive as an event, or combination of events, impacting on bathing water quality at the location concerned and not expected to occur on average more than once every four years. During an abnormal situation the monitoring calendar can be suspended so that samples that assess classification of the bathing water are not taken. This is because they are unrepresentative of the water quality of a bathing water.

When an abnormal situation is in force, signs must be put up by the beach controller warning the public of the nature and expected duration of the pollution. One abnormal situation was declared in Scotland in 2014. This was at Nairn East when there was a problem at the local wastewater treatment plant.

2.5 Designation of bathing waters

The Bathing Water (Scotland) Regulations 2008 require Scottish Ministers to annually review the list of designated bathing waters for Scotland.

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. Once the application and supporting evidence has been received, it will be considered by a multi-sector panel, which we chair, 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 our website and the Scottish Government and Keep Scotland Beautiful websites (see Annex three).

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.

Designations for the 2014 bathing water season

Collieston in Aberdeenshire was awarded designated bathing water status by the Scottish Government after a strong application from the local authority, supported by the local community group, that demonstrated high usage.

North Berwick, East Lothian


Findhorn, Moray

3 Bathing water quality 2014

3.1 Water quality results

Scotland's Environment website hosts the Scottish designated bathing waters data visualisation tool[13], which allows users to access and visualise a range of information associated with designated bathing waters in Scotland. *E. coli*, Intestinal Enterococci and salinity data is available from 2005 and cyanobacterial (bluegreen algae) blooms, macroalgae (seaweed), marine phytoplankton and other waste information is available from 2012. Initial estimates of potential 2015 classifications are shown, although it is important to be cautionary about these as during the first year of the four-year assessment period from 2011 to 2014 parts of the revised Bathing Water Directive were not available for implementation.

Weather, and specifically severe rainfall events, can have a significant, localised impact on water quality. The 2014 results, for example, were influenced positively in some cases by the dry and sunny weather and negatively in other cases by torrential downpours affecting Scotland during the summer months. For example in one significant storm event in August which was the aftermath of former Hurricane Bertha.

During 2014, fifteen samples were taken on dates during predicted short-term pollution when appropriate public signage and information was in place. These samples were discounted and, where necessary, replaced as required by EU rules and the 2008 Bathing Water (Scotland) Regulations.

Due to their prior long term excellent water quality, Achmelvich, Dornoch, Gullane and Seacliff were only sampled five times in 2014, under the 'reduced sampling' provision of the Bathing Waters Directive. Geographical remoteness, and the corresponding resource required for collecting water quality samples, meant that Machrihanish, Ganavan, Loch Morlich and Lunan Bay were sampled 10 times rather than the usual 20.

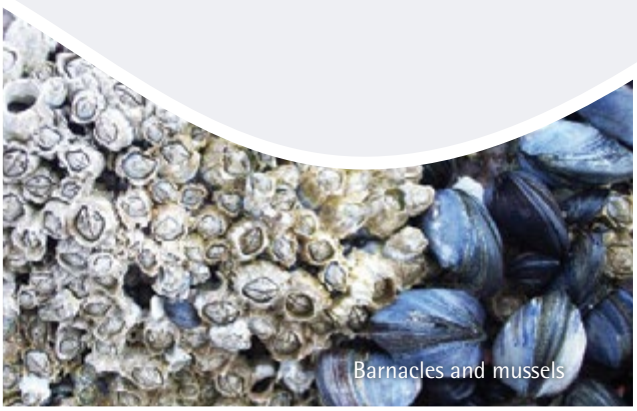
The two bathing waters that failed the mandatory bathing water quality standard were Heads of Ayr and Lunan Bay.

- Heads of Ayr suffered three instances of poor water after heavy rainfall. Under these conditions, this bathing water is currently susceptible to mobilised pollutants from agricultural land and urban areas.
- Lunan Bay only reported one poor water quality result, when a sample was taken in the aftermath of Hurricane Bertha. As this bathing water was only sampled 10 times during the season, due to geographical remoteness, that one event meant an overall poor result for the season. Lunan Bay will have increased sampling in 2015.

Ettrick Bay met the guideline standard for the first time in 2014. Having consistently failed the mandatory quality standard until 2005, it had then met this standard (albeit not consistently) until 2013. This latest improvement in water quality is a result of catchment changes, the priority catchments rural diffuse pollution programme (Section 4.3) and effective use of short-term pollution provisions in the Directive.

13 www.environment.scotland.gov.uk/get-interactive/data/bathing-waters/


Bathing water sampling, Maidens, South Ayrshire


Barnacles and mussels


Lunan Bay, Angus

Water quality results

Of Scotland's 84 identified bathing waters, in 2014:

- **46** (55%) were classified as being of guideline quality for EU compliance;
- **36** (43%) were classified as being of mandatory quality for EU compliance;
- **2** (2%) were classified as failing the mandatory quality for EU compliance.

Figure 3: Scotland's 2014 bathing water classification

A further breakdown of the microbiological monitoring data from the 84 identified bathing waters in Scotland can be found in Annex one. Individual bathing water monitoring results were placed on our bathing waters web pages throughout the bathing season, within a few days of sample collection and analysis.

Water quality results for our identified bathing waters are reported annually to the European Commission. The commission publish the results as part of its annual report on the overall quality of bathing waters throughout the member states of the European Union.

Site specific details for compliance and catchment changes affecting bathing water quality at Scotland's designated bathing waters are available in Annex four of this report.

Map 1:
Individual sample results 2014

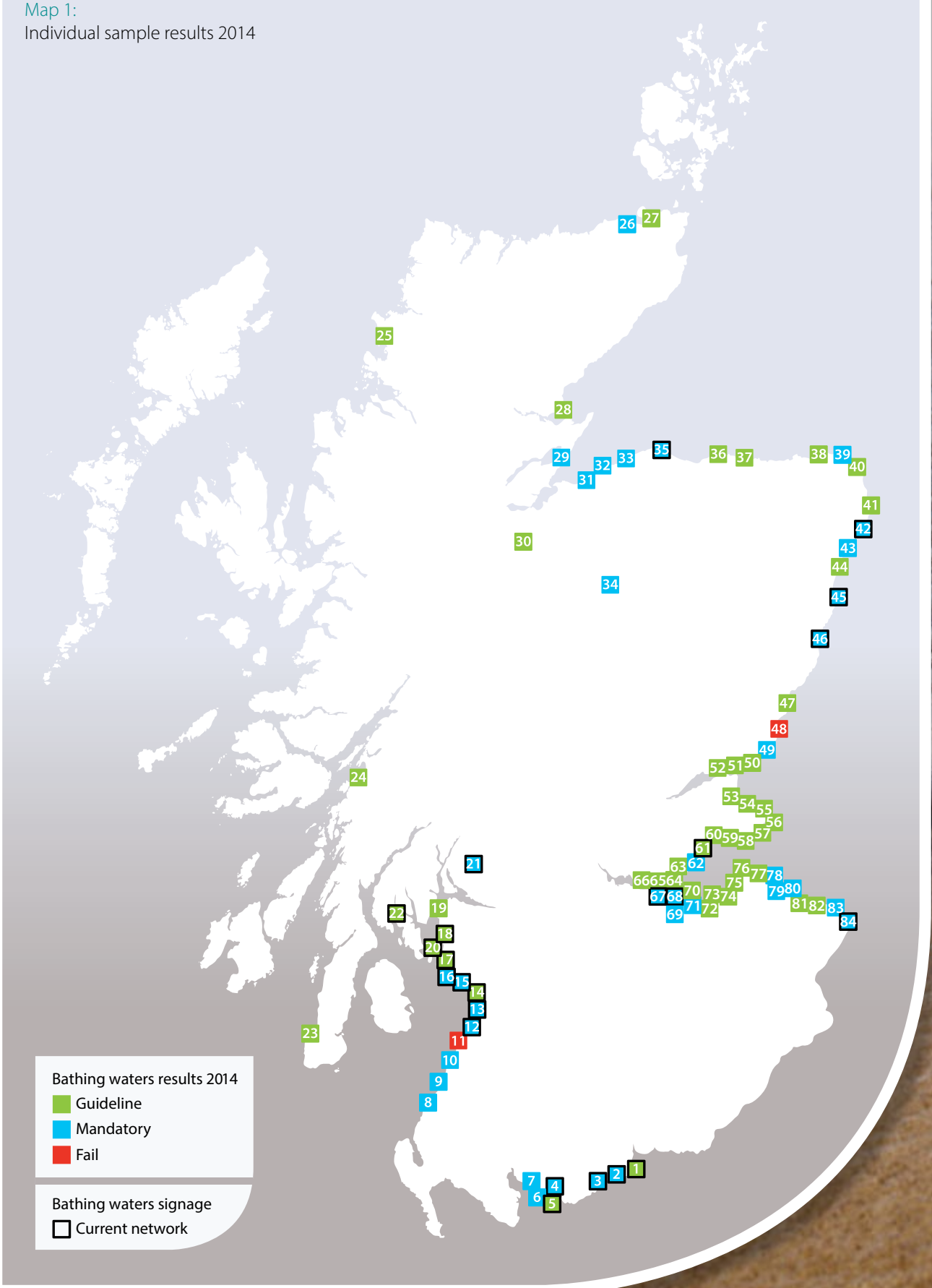
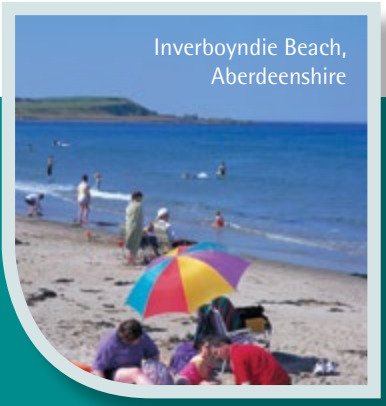


Figure 3: Scotland's 2014 bathing water compliance results

Map ref.	Bathing water	Result
1	Southerness	Guideline
2	Sandyhills	Mandatory
3	Rockcliffe	Mandatory
4	Dhoon Bay	Mandatory
5	Brighouse Bay	Guideline
6	Carrick	Mandatory
7	Mossyard	Mandatory
8	Girvan	Mandatory
9	Maidens	Mandatory
10	Culzean	Mandatory
11	Heads of Ayr	Fail
12	Ayr (South Beach)	Mandatory
13	Prestwick	Mandatory
14	Troon (South Beach)	Guideline
15	Irvine	Mandatory
16	Saltcoats/Ardrossan	Mandatory
17	Seamill	Guideline
18	Largs (Pencil Beach)	Guideline
19	Lunderston Bay	Guideline
20	Millport Bay	Guideline
21	Luss Bay	Mandatory
22	Ettrick Bay	Guideline
23	Machrihanish	Guideline
24	Ganavan	Guideline
25	Achmelvich	Guideline
26	Thurso	Mandatory
27	Dunnet	Guideline
28	Dornoch	Guideline
29	Rosemarkie	Mandatory
30	Dores	Guideline
31	Nairn (Central)	Mandatory
32	Nairn (East)	Mandatory
33	Findhorn	Mandatory
34	Loch Morlich	Mandatory
35	Lossiemouth (East)	Mandatory
36	Cullen Bay	Guideline
37	Inverboyndie	Guideline
38	Rosehearty	Guideline
39	Fraserburgh (Tiger Hill)	Mandatory
40	Fraserburgh (Philorth)	Guideline
41	Peterhead (Lido)	Guideline
42	Cruden Bay	Mandatory
43	Collieston	Mandatory
44	Balmedie	Guideline
45	Aberdeen	Mandatory
46	Stonehaven	Mandatory
47	Montrose	Guideline
48	Lunan Bay	Fail
49	Arbroath (West Links)	Mandatory
50	Carnoustie	Guideline
51	Monifieth	Guideline
52	Broughty Ferry	Guideline
53	St Andrews (West Sands)	Guideline
54	St Andrews (East Sands)	Guideline
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)	Guideline
62	Kinghorn (Harbour Beach)	Mandatory
63	Kinghorn (Pettycur)	Guideline
64	Burntisland	Guideline
65	Aberdour (Silversands)	Guideline
66	Aberdour Harbour (Black Sands)	Guideline
67	Portobello (West)	Mandatory
68	Portobello (Central)	Mandatory
69	Fisherrow Sands	Mandatory
70	Seton Sands	Guideline
71	Longniddry	Mandatory
72	Gullane	Guideline
73	Yellowcraig	Guideline
74	Broad Sands	Guideline
75	North Berwick (West)	Guideline
76	North Berwick (Milsey Bay)	Guideline
77	Seacliff	Guideline
78	Dunbar (Belhaven)	Mandatory
79	Dunbar (East)	Mandatory
80	Whitesands	Mandatory
81	Thorntonloch	Guideline
82	Pease Bay	Guideline
83	Coldingham	Mandatory
84	Eyemouth	Mandatory


Inverboyndie Beach, Aberdeenshire

3.2 Summer weather

June rainfall was less than the long term average throughout Scotland and the north-west was particularly dry, receiving less than half the average. No notable rainfall events were recorded. June was also very warm and, notably, Stornoway Airport recorded its warmest June in 140 years.

July was also a warm and dry month with no notable recorded rainfall events. South-east Scotland was particularly dry with only Orkney and Shetland recording slightly over the average rainfall figure.

August was a very unsettled and wet month with the period from the 9th to the 12th being particularly stormy in the north. This storm stemmed from the remnants of ex-hurricane Bertha. Much of northern Scotland received over twice the monthly average and one rain gauge in Moray recorded a very large 24 hour total of 145.8 mm on 11 August.

The dry settled weather returned for September with no notable rainfall events.

These figures are based on both our own gauge records and Met Office climate summaries.


Aberdeen

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

In 2014 we provided live daily water quality forecasts at 23 locations (highlighted on Map 1 in Section 3.1) across Scotland during the bathing season via our daily water quality prediction and public water quality information service. We had our best season ever for prediction accuracy, correctly predicting the highest percentage of poor water quality days (measured against the formal reporting limit in the 1976 Directive) since the service started in 2003.

Our service started from the earlier date of 15 May in 2014 to cover the two week period prior to the start of the season when pre-season samples are taken. These pre-season samples are a statutory requirement and are used in calculating bathing water classification.

As in 2013, our models were calibrated with the decision trigger value for poor water quality predictions being lowered from a count of 2,000 or more *E. coli* (cfu/100ml) - the formal reporting limit in the 1976 Directive - to a count of 1,000 or more *E. coli* and/or intestinal enterococci (cfu/100ml). These working limits were considered appropriate for the transition period between Directives.

Against these tighter limits, the daily advice given to the public on water quality was still correct or precautionary on 99% of days. We correctly predicted 69% of poor samples at locations with bathing water signs against this new limit, up from 60% in 2013.

The revised directive allows us to discount samples taken on dates under predicted short-term pollution where there has been appropriate public signage and information. Under the phased implementation this has been allowed from 2012. As such fifteen samples were discounted and, where necessary, replaced as required by EU rules and the 2008 Bathing Water (Scotland) Regulations.

Our responsibilities

We are fully responsible for the real-time prediction and electronic signage system. We use our extensive rainfall and hydrological information network and our technical systems to inform the water quality predictions and to run the daily operation of the signage service. We are assisted by subcontractors for civil engineering consultancy, installation and technical maintenance of the electronic signs.

Although generally of a high quality, these locations were selected for bathing waters signage because they were previously found to be at risk of not meeting European standards during, or after, wet weather. This service is 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. Further information on the background to the system and details of the advisory messages are available on our website[14].

14 www.sepa.org.uk/environment/water/bathing-waters/bathing-water-quality-predictions/

Maximising information opportunities

All of our signs have the capacity to alternate between displaying daily water quality status and additional information.

While the standard alternative message is a reminder to keep beaches tidy, we can also accommodate appropriate bespoke messages to provide useful information as discussed and agreed with local authorities or beach managers.

This season predictions were available on our new smartphone application, our Beachline telephone service (08452 30 30 98) and our website, in addition to the electronic signs at bathing water locations.

3.4 Analytical developments

During 2014, we further developed our Microbial Source Tracking (MST) service. This genomic analytical service, based on quantitative (Real Time) polymerase chain reaction (qPCR) analysis of DNA from water samples, gives us the potential to apportion the relative sources of faecal pollution in the water.

During the 2014 bathing season, when a bathing water compliance sample was collected a parallel sample was taken for potential MST analysis. If analysis of the compliance sample detected high levels of *E. coli* and/or Intestinal Enterococci, indicating poor water quality, the parallel sample underwent MST analysis.

Interpretation of the results of the MST analysis, when used to complement our routine follow up investigations, allows us to obtain better information on the causes of the high *E. coli*/Intestinal Enterococci levels during these poor water quality events.

By incorporating this type of analysis into our routine monitoring, we can help build a picture of the pressures impacting upon Scotland's bathing waters. This will enable us to better target resources and ensure more efficient remediation. During 2014, the time-consuming nature of the MST test meant the analysis was carried after the end of the bathing season. We hope to build this test into our routine analysis in the future, enabling some "in-season" MST analysis.

To date, this service uses 'markers' that allow us to provide information on whether sources of faecal pollution are of human, agricultural (ruminant) or 'other' origin. Work is ongoing at the moment to develop a bird marker, and it is hoped this will be in place very soon.

We also hope to develop the service further in the future, to include more markers for other potential sources of faecal pollution, for example from dogs and pigs.

Seamill, North Ayrshire

4 Working with our partners

4.1 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 process is 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. In October 2013, Scottish Water set out their draft business plan proposals for the period 2015-2021 (Q&SIV).

The main bathing water 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 in Edinburgh. Although solutions were implemented in Edinburgh by 2010, not all the improvements in Ayrshire were completed by 2010 and as such, this work was carried forward into the current investment period, Q&SIIIb (2010-2015).


Ayr (South Beach), South Ayrshire

In addition to improvements to the Meadowhead and Stevenston sewerage network, the Q&SIIIb investment period includes 41 bathing water studies. These are being undertaken to determine whether improvements to Scottish Water assets are necessary to achieve compliance with the requirements of the revised Bathing Waters Directive. Scottish Water will begin to implement any required solutions during this investment period but most of these are unlikely to be completed before Q&SIV begins and will be carried over into that period. Some of the Q&SIIIb bathing water studies have generated a requirement for further detailed investigations to confirm asset impacts and these have also been initiated during the Q&SIIIb period.

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

Table 1: Q&SIIIb (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
Dhoon Bay	Lossiemouth (East)	Rosehearty
Eyemouth	Lunderston Bay	Rosemarkie
Findhorn	Luss Bay	Saltcoats/Ardrossan
Ganavan	Maidens	Seamill
Girvan	Millport Bay	Southerness
Heads of Ayr	Nairn (Central)	Stonehaven
Inverboyndie	Nairn (East)	Thurso
Irvine	North Berwick (Milsey Bay)	Troon (South Beach)
Dunbar East	Fisherrow	

The results of these studies have shown that previous investment to meet the requirements of the current Bathing Water Directive will allow most bathing waters to meet the new minimum standards of the revised directive. However, in seven bathing waters (Largs, Seamill, Saltcoats/Ardrossan, Irvine, Kirkcaldy, Rockcliffe and Portobello West), the studies have identified improvements to Scottish Water assets that are needed to support these locations achieving the minimum sufficient status under the revised directive.

Asset enhancement at Largs, Seamill and Saltcoats/Ardrossan bathing waters will be completed by the 2016 bathing season. Improvements at Irvine and Rockcliffe are expected to be completed by the 2017 and 2018 bathing seasons, respectively.

Further investigation of Scottish Water assets at Portobello West and Kirkcaldy bathing waters is required in Q&SIIIb and into Q&SIV to confirm the extent of asset enhancement. The Q&SIIIb bathing water studies indicated that significant improvements to the existing collection, transfer and discharge facilities may be required to meet the minimum 'sufficient' status of the revised directive at these two bathing waters. As such, the completion of any required improvements at these bathing waters is expected later in the investment period. Scottish Water's delivery plan for Q&SIVa (2015- 2021) takes this into account and makes allowance to complete all enhancement works which may be required.

At Prestwick, Heads of Ayr and Ayr (South) bathing waters, there is a complex interaction of diffuse and point source contributions which require further modelling. A detailed river modelling study of the River Ayr and River Doon is being progressed in Q&SIIIb and will inform possible asset enhancement requirements in Q&SIV.

A further Q&SIIIb bathing water study has been initiated at Dunbar East as performance at this bathing water has been deteriorating over recent years. This study has been completed and recommendations are being considered by SEPA.

Fisherrow bathing water was designated for the first time in 2013. An additional Q&SIIIb study of this bathing water has been commenced but is awaiting the completion of the Edinburgh Integrated Catchment Study.

Q&SIV (2015-2021) investment is planned to update the water quality models at 11 bathing waters. The Q&SIIIb studies have demonstrated that these bathing waters are prevented from achieving the required 'sufficient' status under the revised Bathing Water Directive due to the bacterial contribution from agricultural runoff and from Scottish Water discharges. The interactions between these sources are complex and require more detailed investigation to clarify the relative contribution from these sources. The updated modelling in Q&SIV will support future decision making with regard to Scottish Water asset enhancement and will follow a monitoring programme by both SEPA and Scottish Water. We will monitor the success of the innovative catchment management programme on diffuse pollution levels, and Scottish Water will install flow/event monitors on key discharges by 2015, to confirm how these operate and that current modelling assumptions are robust.

There will also be one new bacterial water quality study in Q&SIV (2015-2021) at Strathclyde Loch to inform discussions on recreational water use options.

4.2 Private sewage treatment systems

As highlighted in the results for individual bathing waters, not all sewage treatment facilities 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.

4.3 Our plans to reduce sources of diffuse pollution

Diffuse pollution is identified as the largest pollution pressure on the water environment in Scotland, accounting for 18% of our downgraded water bodies and impacting on many protected areas. Diffuse pollution is complex making it difficult to identify and control. The potential for diffuse pollution is increased during rainfall events resulting in nutrients, soil, chemicals and faecal bacteria being washed from land into the surrounding water environment. For individual or small areas this might not result in an issue, but combined across whole river catchments these pollutants can significantly affect water quality, including in EU designated bathing waters. Land management practices reducing land run-off and livestock access to the water environment play a pivotal role in diffuse pollution mitigation.

The rural diffuse pollution plan for Scotland has successfully been implemented and is in its final stages of completion as we approach the end of cycle one of Scotland's River Basin Plans. Throughout this time SEPA has worked closely with other members of the Diffuse Pollution Management Advisory Group (DPMAG)[15]. The implementation process has been acknowledged by the EU Environment Commissioner as an exemplar of the Water Framework Directive (WFD) implementation. Scotland's collaborative approach is unique within Europe, engaging and delivering tailored guidance to land managers in specific catchments.

The rural diffuse pollution plan has seen significant changes in how SEPA and other organisations approach the problem of rural diffuse pollution. Over the duration of the first river basin planning cycle awareness of rural diffuse pollution has been increased across Scotland. This was achieved through training workshops (with over 400 being attended and run by SEPA staff), the production of specific farmer guidance ("know the rules"), along with articles in farming magazines and papers.

Our priority catchment approach has been on-going in 14 areas across Scotland (Box 1) since 2010. In December 2014 we reached our target of completing one-to-one visits to all land managers identified in the areas of these catchments that were of concern to SEPA.

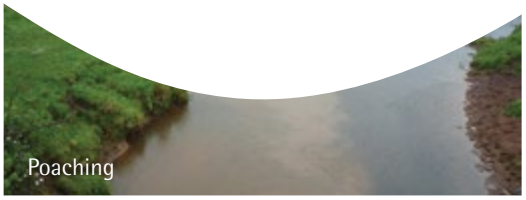
Box 1: Diffuse pollution priority catchments in the first river basin cycle

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

Further information on individual catchments can be accessed via our website under diffuse pollution.

15 www.sepa.org.uk/environment/water/river-basin-management-planning/who-is-involved-with-rbmp/dpmag/


Diffuse pollution model


Poaching


Buffer strip

Cows grazing

In these 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 – for example, positive partnerships have been developed between SEPA and members of the local branches of NFUS and Scottish Water. This partnership working has allowed knowledge transfer, developing methods to achieve compliance in all sectors with the diffuse pollution General Binding Rules (GBRs).

The priority catchment approach has seen significant milestones being achieved, increasing our understanding of diffuse pollution sources in rural areas and of mitigation measures that will help to minimise these issues in the future.

Catchment walking

All 14 catchments were walked by our staff with help from Scottish Water and local fishery bailiffs. A total of 5,600 km of named watercourses have been walked in these 14 catchments building an excellent evidence base for what is happening on the ground in terms of good and bad practice. A significant number of non-compliance with the diffuse pollution GBRs were recorded, averaging approximately one non-compliance per kilometre.

Awareness raising

Awareness raising has been ongoing in the 14 priority catchments since 2011, with our staff attending over 400 events. These events have been attended by over 10,000 farmers, consultants, advisors and regulators. In relevant areas, the impacts of catchment activities on bathing waters have been highlighted to land managers.

Engagement (one-to-one farm inspections)

All one-to-one visits were completed in Scotland's 14 priority catchments. Over 3,306 one-to-one visits were completed by SEPA staff with help from some Scottish Water colleagues and the findings from each visit were discussed with the land manager to identify possible methods of mitigation and funding. In six priority catchments, 501 revisits were undertaken and the findings were encouraging. Approximately 88% of land managers had either completed, or were in the process of completing, required mitigation measures on the ground. A small proportion, ~10%, of those who received a first revisit had not undertaken any remedial action and will require further follow-up visits. Significant changes were observed in some of our bathing water catchments, with land managers excluding livestock from the water environment by providing alternative watering facilities and fencing. Changes to the grazing management of livestock and increased slurry provision on farms (enabling better timing of slurry applications) have also been observed.


Ardrossan, North Ayrshire

Annex one: 2014 Monitoring data from Scotland's 84 identified bathing waters

Bathing water	Local Authority	No of sample results	Overall quality
Southerness	D&G	20	Guideline
Sandyhills	D&G	20	Mandatory
Rockcliffe	D&G	19 (+1 disc)	Mandatory
Dhoon Bay	D&G	20	Mandatory
Brighouse Bay	D&G	20	Guideline
Carrick	D&G	20	Mandatory
Mossyard	D&G	20	Mandatory
Girvan	SA	20	Mandatory
Maidens	SA	20	Mandatory
Culzean	SA	20	Mandatory
Heads of Ayr	SA	20	Fail
Ayr (South Beach)	SA	18 (+2 disc)	Mandatory
Prestwick	SA	19 (+1 disc)	Mandatory
Troon (South Beach)	SA	20	Guideline
Irvine	NA	17 (+3 disc)	Mandatory
Saltcoats/Ardrossan	NA	20	Mandatory
Seamill	NA	20	Guideline
Largs (Pencil Beach)	NA	20	Guideline
Lunderston Bay	Inv	20	Guideline
Millport Bay	NA	20	Guideline
Luss Bay	A&B	20	Mandatory
Ettrick Bay	A&B	19 (+1 disc)	Guideline
Machrihanish	A&B	10	Guideline
Ganavan	A&B	10	Guideline
Achmelvich	H	5	Guideline
Thurso	H	20	Mandatory
Dunnet	H	20	Guideline
Dornoch	H	5	Guideline
Rosemarkie	H	20	Mandatory
Dores	H	20	Guideline
Nairn (Central)	H	20	Mandatory
Nairn (East)	H	19	Mandatory
Findhorn	Moray	20	Mandatory
Loch Morlich	H	10	Mandatory
Lossiemouth (East)	Moray	19 (+1 disc)	Mandatory


Ganavan, Argyll and Bute

Bathing water	Local Authority	No of sample results	Overall quality
Cullen Bay	Moray	20	Guideline
Inverboyndie	Aber	20	Guideline
Rosehearty	Aber	20	Guideline
Fraserburgh (Tiger Hill)	Aber	20	Mandatory
Fraserburgh (Philorth)	Aber	20	Guideline
Peterhead (Lido)	Aber	20	Guideline
Cruden Bay	Aber	19 (+1 disc)	Mandatory
Collieston	Aber	20	Mandatory
Balmedie	Aber	20	Guideline
Aberdeen	ACC	19 (+1 disc)	Mandatory
Stonehaven	Aber	19 (+1 disc)	Mandatory
Montrose	Angus	20	Guideline
Lunan Bay	Angus	10	Fail
Arbroath (West Links)	Angus	20	Mandatory
Carnoustie	Angus	20	Guideline
Monifieth	Angus	20	Guideline
Broughty Ferry	DC	20	Guideline
St Andrews (West Sands)	Fife	20	Guideline
St Andrews (East Sands)	Fife	20	Guideline
Kingsbarns	Fife	20	Guideline
Crail (Roome Bay)	Fife	20	Guideline
Anstruther (Billow Ness)	Fife	20	Guideline
Elie (Ruby Bay)	Fife	20	Guideline
Elie (Harbour) and Earlsferry	Fife	20	Guideline
Leven	Fife	20	Guideline
Kirkcaldy (Seafield)	Fife	20	Guideline
Kinghorn (Harbour Beach)	Fife	20	Mandatory
Kinghorn (Pettycur)	Fife	20	Guideline
Burntisland	Fife	20	Guideline
Aberdour (Silversands)	Fife	20	Guideline
Aberdour Harbour (Black Sands)	Fife	20	Guideline
Portobello (West)	CofE	19 (+1 disc)	Mandatory
Portobello (Central)	CofE	19 (+1 disc)	Mandatory
Fisherrow Sands	EL	20	Mandatory
Seton Sands	EL	20	Guideline
Longniddry	EL	20	Mandatory
Gullane	EL	6	Guideline
Yellowcraig	EL	20	Guideline


Dornoch, Highlands

Bathing water	Local Authority	No of samples	Overall quality
Broad Sands	EL	20	Guideline
North Berwick (West)	EL	20	Guideline
North Berwick (Milsey Bay)	EL	20	Guideline
Seacliff	EL	5	Guideline
Dunbar (Belhaven)	EL	20	Mandatory
Dunbar (East)	EL	20	Mandatory
Whitesands	EL	20	Mandatory
Thorntonloch	EL	20	Guideline
Pease Bay	SB	20	Guideline
Coldingham	SB	20	Mandatory
Eyemouth	SB	20 (+1 disc)	Mandatory

Disc = Discounted

20 (+x Disc) denotes 20 samples used for compliance, plus x discounted

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


Troon, South Ayrshire


Cullen, Moray

Annex two: Current legislation and results assessment

EU Bathing Water Directives 76/160/EEC and 2006/7/EC

Directive 76/160/EEC 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 measures. The directive lays down requirements for sampling frequency, analysis methods, bathing areas inspection and the interpretation of results.

The Bathing Waters (Scotland) Regulations 2008 introduces the requirements of the revised Bathing Waters Directive (2006/7/EC), 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.

The period 2012 to 2014 is a transition phase where parts of both directives apply.

Related legislation

Under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 as amended, we issue 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 1976 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.

During this transition phase until 2014 we report each year against the standards prescribed in Directive 76/160/EEC, as per previous years. The data will also be used to report in 2015 to the standards prescribed in the revised directive using data from the four year period 2012 to 2015. We now measure using the revised directive parameters of *Escherichia coli (E. coli)* and intestinal enterococci (IE) that are transferable on a near 1:1 basis with the previous parameters faecal coliforms and faecal streptococci.


Kingsbarns, Fife

Mandatory standards (good quality)

Mandatory standards during the period 2012 to 2014 apply to the quality indicator *Escherichia coli*, previously known as faecal coliforms (FC). 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 *Escherichia coli* and intestinal enterococci (previously reported as faecal streptococci) bacterial quality indicators. These guideline values are more stringent than the mandatory standards and, if achieved, indicate very good bathing water quality.

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. 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, we 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 2014 are identified in Annex one.

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.

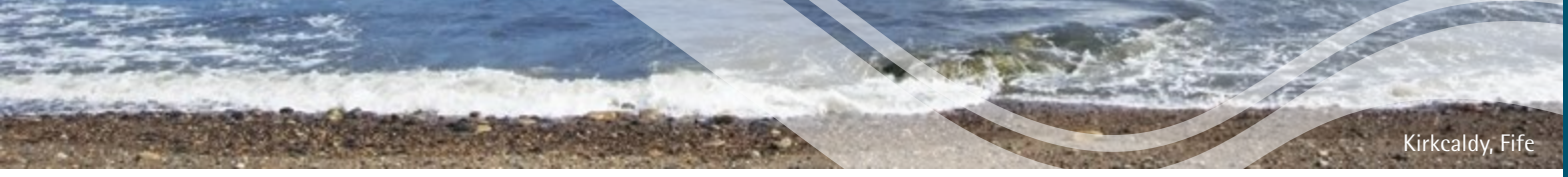

Kirkcaldy, Fife

Table 2: Interpretation of microbiological values for bathing waters in the period 2012 to 2014

	Escherichia coli (previously faecal coliforms)	Intestinal enterococci (previously faecal streptococci)
Mandatory / Imperative pass (M)	95% of samples should not exceed 2,000 *E. coli* per 100 ml If a site is sampled 20 times, at least 19 samples must meet this criteria If a site is sampled less than 20 times, all samples must meet this criteria	The 1976 directive contains no mandatory standard for this parameter
Guideline pass (G)	80% of samples should not exceed 100 *E. coli* per 100 ml If a site is sampled 20 times, at least 16 samples must meet this criteria Proportional reductions apply at sites with reduced sampling	90% of samples should not exceed 100 intestinal enterococci per 100 ml If a site is sampled 20 times, at least 18 samples must meet this criteria Proportional reductions apply at sites with reduced sampling


Cows feeding

Sewage outlet

Seabird

Scientists, Angus Smith building


Kinghorn, Fife

Annex three: Partner organisations

Scottish Government

Victoria Quay,
Edinburgh, EH6 6QQ
0131 244 0396
eqcat@scotland.gsi.gov.uk
www.gov.scot/Topics/Environment/Water/15561/bathingwaters

Water Authority

Scottish Water,
Castle House, 6 Castle Drive, Carnegie Campus,
Dunfermline, KY11 8GG
0845 601 8855
www.scottishwater.co.uk

Keep Scotland Beautiful

First Floor, Glendevon House, The Castle Business Park,
Stirling, FK9 4TZ
01786 471333
beach@ksbscotland.org.uk
www.keepscotlandbeautiful.org

Marine Conservation Society

Wolf Business Park, Alton Road,
Ross-on-Wye, Herefordshire, HR9 5NB
01989 566017
info@mcsuk.org
www.mcsuk.org

Information on bathing water quality in other parts of the UK can be obtained from the relevant agency:

Environment Agency

National Customer Contact Centre
PO Box 544
Rotherham, S60 1BY
03708 506 506
enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk/bathingwaters

Natural Resources Wales

Ty Cambria,
29 Newport Road,
Cardiff, CF24 0TP
0300 065 3000
enquiries@naturalresourceswales.gov.uk
http://naturalresourceswales.gov.uk/splash?orig=/marine/bathing-water-quality

Northern Ireland Environment Agency

17 Antrim Road, Tonagh,
Lisburn, Co Antrim, BT28 3AL
0845 302 0008
waterinfo@doeni.gov.uk
www.doeni.gov.uk/niea/water-home/quality/bathingqualityni.htm


Troon, South Ayrshire

Annex four: Individual bathing waters information

A dash in the right hand column indicates that there were no significant changes in this catchment that would affect bathing water quality.

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Southerness	After meeting the mandatory standard consistently up to 2012, this beach has met the more stringent guideline standards for the last two years.	Proactive one-to-one farm visits were undertaken in the catchment during September and October 2014. These visits look to identify diffuse pollution sources and pathways by which potential pollutants could reach the water environment and impact on bathing waters. All actual and potential polluting sources are discussed with the land manager and mitigation measures agreed with them to reduce the likelihood of diffuse pollution arising from their activities and reduce the risk of bacterial pollution on water quality in the future.
Sandyhills	Sandyhills again met the mandatory standard, for the third successive year, after a varied compliance history in previous years.	Proactive one-to-one farm visits were undertaken in the catchment during June and July 2014.
Rockcliffe	Rockcliffe met the mandatory standard this season, as it has done every year since 2004.	Proactive one-to-one farm visits were undertaken in the catchment during June and July 2014. Upgrade works were undertaken at Rockcliffe STW which included the installation of a new UV plant. At Dalbeattie STW upgrade works were undertaken to ensure compliance with consent conditions.
Dhoon Bay	Dhoon Bay has complied with mandatory water quality standards since designation in 2008.	Proactive one-to-one farm visits were undertaken in the catchment during in May and June 2014. At Kirkcudbright, work has been undertaken in the catchment to identify and reduce saline intrusion into the sewer drainage network.
Brighouse Bay	Having met the mandatory standard consistently between 2004 and 2012 this beach has met the more stringent guideline standard for the last two years.	Proactive one-to-one farm visits were undertaken in the catchment during May and June 2014.
Carrick	Carrick met the mandatory standard this year. It has met this standard or higher since 2005.	Proactive one-to-one farm visits were undertaken in the catchment during May 2014.
Mossyard	Mossyard met the mandatory quality standard this season. It has met this standard or the higher guideline standard since 2007.	Proactive one-to-one farm visits were undertaken in the catchment during May 2014.

Saltcoats, North Ayrshire

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Girvan	In 2014 this bathing water again complied with the mandatory standard, as it has done since 2008. There was a single sample exceedance in early July, SEPA investigated this failure and were unable to determine any source for the elevated levels of bacteria.	–
Maidens	Maidens met the mandatory standard in 2014. It has achieved this standard or better since 2003.	–
Culzean	Culzean met the mandatory standard this season after having met the stringent guideline standards consistently since 2005.	–
Heads of Ayr	Heads of Ayr failed the mandatory standard for the bathing water Directive in 2014, recording three separate exceedances; one in May and two in August. In all cases it is thought that localised rainfall mobilised pollutants from surrounding agricultural and urban land and this, possibly in combination with other existing sewage discharges, was the most likely cause of the failures. At the time of the exceedance in May elevated bacteria levels were also detected in Carwinshoch Burn which flows into the bay at the southern end of the bathing water.	Improvements to the drainage system at Craig Tara are planned for 2015. However, unfortunately some of these improvements may not be complete before the end of next year's bathing season.
Ayr (South Beach)	In 2014 Ayr (South Beach) achieved mandatory compliance for the fourth successive year.	There has been significant 'fencing off' of watercourses flowing through agricultural land in the Ayr catchment. This will prevent livestock from accessing the burns and should thus reduce the bacterial loading in these watercourses. A significant number of farms in catchment have increased their slurry storage above the 6 month regulatory requirement to allow better and more target application of slurry to land. Some fencing work has also been carried out in the River Doon catchment.
Prestwick	Prestwick bathing water again achieved mandatory compliance in 2014, as it has done since 2008.	Improvements to Prestwick Esplanade Sewage Pumping Station should make this station more reliable and reduce the number of overflow events. This will also reduce the loading on Pow Burn Sewage Pumping Station at Prestwick, resulting in fewer sewer overflow events at this station. Proactive one-to-one farm visits were undertaken in the catchment in 2013-14.


Thurso, Highlands

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Troon (South Beach)	Troon (South Beach) met the guideline standard this season. This bathing water has complied with either the mandatory, or the more stringent guideline standards, for over ten years.	–
Irvine	Irvine met the mandatory bathing water standard for the third year in a row. There were two exceedances of the mandatory standard in May and one in August. The exceedances were attributed to heavy rainfall mobilising pollutants from the surrounding agricultural and urban land, in addition to existing sewage discharges. In all cases our electronic sign displayed a warning, advising against bathing, as our daily prediction models had correctly predicted poor water quality. Therefore, these results will not count towards bathing water compliance.	Minor improvements have been made to the new storm sewage interceptor system in Irvine and Kilmarnock. These should ensure that the system operates as designed. Proactive one-to-one visits were completed in both the Irvine and Garnock catchments between July and December 2014.
Saltcoats/ Ardrossan	Saltcoats met the mandatory standard in 2014, as it has done since 2010.	Improvements have been made to Saltcoats Sewage Pumping Station which was found not to be operating correctly. Investigations have been ongoing into sewer flooding to determine if any improvements can be made in this area. Diffuse pollution improvement work was carried out in the area before the 2014 bathing water season.
Seamill	Seamill met the stringent guideline standards in 2014, having met the mandatory standard or better since 2006.	Diffuse pollution improvement work was carried out in the area before the 2014 bathing water season.
Largs (Pencil Beach)	This beach met the more stringent guideline standard for the third year in a row, having consistently met mandatory standards or better since 2003.	–
Lunderston Bay	Lunderston met the guideline standard in 2014. It has consistently met the mandatory standard, or the higher guideline standard, for over 10 years.	–
Millport Bay	Millport met the higher guideline standard for the second time since 2010. It has consistently met either mandatory or guideline standards for over 10 years.	Some improvements have been made to the sewage pumping stations in Millport to improve their performance.
Luss Bay	In 2014 Luss Bay again met the mandatory standard, continuing an unbroken run of compliance of over eleven years.	–

Dunnet, Highlands

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Ettrick Bay	In 2014 Ettrick Bay achieved the guideline standard for the first time, after consistently meeting the mandatory standards since 2010. Prior to this Ettrick Bay had failed the mandatory standards for three years. There was a single sample exceedance in July 2014. It is most likely that the failure is a result of heavy rainfall mobilising bacterial pollutants from the fields surrounding Ettrick Bay. This was supported by elevated bacterial counts in samples taken from nearby streams on the same day. Our electronic sign had correctly displayed a poor water quality prediction warning on this occasion and bathing was not advised. This sample has therefore been removed from our compliance dataset.	–
Machrihanish	Machrihanish achieved the guideline standards this season, for a second year running. This bathing water has consistently met either the mandatory or guideline bathing water standards for over ten years.	–
Ganavan	In 2014 Ganavan continued to achieve the guideline water quality standard, as it has done since 2008.	–
Achmelvich	Achmelvich again met the guideline standard as it has done since sampling started in 2008.	–
Thurso	Thurso met the mandatory standard in 2014. The water quality at this site fluctuates between this and guideline status.	–
Dunnet	This beach met the guideline standard for the fifth consecutive year. It has met this or the mandatory standard for over eleven years.	–
Dornoch	The guideline standard was again met at Dornoch, as it has been for over eleven years.	–
Rosemarkie	Rosemarkie met the mandatory standard in 2014. It has met this or the guideline standard consistently since monitoring started in 2008.	–


Nairn, Highlands

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Dores	Dores achieved the guideline standard this year after consistently achieving mandatory compliance since its designation. There was a single sample exceedance in early July. This was most likely attributable to stormy weather conditions, causing sediment disturbance, as the conditions determined that the sample had to be taken in the breaking zone. Whilst there was a high bacterial count within the bathing water sample, the sample from the upstream burn contained a low bacterial count, indicating the failure was not due to riverine inputs.	–
Nairn (Central)	Nairn (Central) met the mandatory standard in 2014. It has met this or the higher guideline standard for over eleven years.	–
Nairn (East)	Nairn (East) met the mandatory standard in 2014. It has met this or the higher guideline standard since 2006. This was an Abnormal Situation at Nairn (East) from 29 July 2014 to 4 August 2014 when there was a problem at the local wastewater treatment plant (Section 2.4)	–
Findhorn	Findhorn met mandatory standards in 2014. It has met either the mandatory or guideline standards every year since 2006.	–
Loch Morlich	Loch Morlich met the mandatory standard for the third consecutive year, having met the more stringent guideline standard from 2008 to 2011.	–
Lossiemouth (East)	Lossiemouth (East) met the mandatory standard in 2014, after meeting the guideline standard for the first time in its compliance history last year. There was a single sample exceedance in August, which was attributed to heavy rainfall in the area in the days preceding sampling. Our electronic sign at Lossiemouth had correctly displayed a poor water quality prediction warning on this occasion and bathing was not advised. This sample has therefore been removed from our compliance dataset.	–
Cullen Bay	Cullen Bay met the guideline bathing water standard in 2014, as it has done for five of the six preceding years.	–
Inverboyndie	Inverboyndie met the guideline standard in 2014. This beach has fluctuated between mandatory and guideline compliance over the last eleven years.	–


Findhorn, Moray

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Rosehearty	Rosehearty met the guideline standard in 2014 for the fifth consecutive year.	Proactive one-to-one farm visits were completed in the catchment during 2014.
Fraserburgh (Tiger Hill)	Fraserburgh (Tigerhill) met the mandatory standard in 2014. It has consistently met this or the guideline standard for over eleven years.	Proactive one-to-one farm visits were completed in the catchment during 2014. These visits look to identify diffuse pollution sources and pathways by which potential pollutants could reach the water environment and impact on bath waters. All actual and potential polluting sources identified are discussed with the land manager and mitigation measures agreed with them to reduce the likelihood of diffuse pollution arising from their activities and reduce the risk of bacterial pollution on water quality in the future. At this bathing water it is hoped that this work will lead to a reduction in the bacterial load to the bathing water from the Kessock Burn.
Fraserburgh (Philorth)	Fraserburgh (Philorth) met the guideline standard in 2014. It has consistently met this or the mandatory standard for over eleven years.	Proactive one-to-one farm visits were completed in the catchment during 2014. At this bathing water it is hoped that this will lead to a reduction in the bacterial load to the bathing water from the Waters of Philorth.
Peterhead (Lido)	Peterhead (Lido) met the guideline standard in 2014. It has consistently met this or the mandatory standard since 2003.	Proactive one-to-one farm visits were completed in the catchment during 2014.
Cruden Bay	Cruden Bay met the mandatory standard in 2014 for the sixth consecutive year.	Proactive one-to-one farm visits were completed in the catchment during 2014.
Collieston	Newly designated in 2014, Collieston met the mandatory standard. There were a number of guideline failures in 2014. An investigation into potential sources is intended prior to the next bathing water season.	
Balmedie	Balmedie met the guideline standard in 2014. It has consistently met this or the mandatory standard for over 11 years.	Proactive one-to-one farm visits were completed in the catchment during 2014.
Aberdeen	Aberdeen met the mandatory standard in 2014. It has met this or the guideline standard for over eleven years, with the exception of 2008 when it recorded a failure.	Proactive one-to-one farm visits were completed in the catchment during 2014.
Stonehaven	Stonehaven achieved the mandatory bathing water standard in 2014. With the exception of 2012, it has consistently met this standard since 2006.	–


Loch Morlich, Highlands

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Montrose	Having met the lower mandatory standard in 2012, which was attributed to the very wet conditions that year, Montrose has again met the higher guideline standard for the last two years as it had done for over ten years prior to the summer of 2012.	–
Lunan Bay	Lunan Bay failed the mandatory standard in 2014. Prior to this it has consistently achieved guideline compliance, with the exception of 2008, when the mandatory standard was met. There was a single sample exceedance in August this year which was most likely to have been caused by higher levels of diffuse pollution run-off in the Lunan Water, due to extremely heavy rainfall, from the tail end of Hurricane Bertha, in the days preceding sampling. Elevated rainfall levels across the area caused rivers to be in spate, with an associated increase in the level of diffuse pollution run-off which can impact adversely on bathing water quality.	Additional samples have been taken following the 2014 bathing season in an effort to better understand the levels and sources of faecal indicator organisms in the Lunan Water in the vicinity of the beach and their impact on bathing water quality.
Arbroath (West Links)	Arbroath (West Links) met mandatory standards in 2014, following six years of achieving guideline compliance. There was a single mandatory exceedance in August. This was most likely attributable to a combination of sewer overflow discharges in Arbroath, and higher levels of diffuse pollution run-off in the Elliot Water, caused by extremely heavy rainfall, from the tail end of Hurricane Bertha, in the days preceding sampling. Elevated rainfall levels across the area caused rivers to be in spate, with an associated increase in the level of diffuse pollution run-off which can impact adversely on bathing water quality.	–
Carnoustie	Carnoustie met the guideline standard in 2014. It has consistently met this or the mandatory standard for over eleven years. There was a single mandatory exceedance in August which was most likely attributable to a combination of combined sewer overflow discharges and higher levels of diffuse pollution run-off in the Lochty and Barry Burns, caused by extremely heavy rainfall in the area, from the tail end of Hurricane Bertha, in the preceding days before sampling was undertaken. Elevated rainfall levels across the area caused rivers to be in spate, with an associated increase in the level of diffuse pollution run-off which can impact adversely on bathing water quality.	–


Lossiemouth, Moray

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Monifieth	Newly designated in 2011, Monifieth achieved guideline standard after meeting the mandatory standard in 2012 and 2013.	–
Broughty Ferry	Broughty Ferry met the guideline standard in 2014. This bathing water has achieved mandatory, or the higher guideline standard, consistently for over 11 years.	–
St Andrews (West Sands)	St Andrews (West Sands) returned to the guideline standard in 2014 after three years at the mandatory standard. It consistently met the more stringent guideline standard from 1999 to 2010.	–
St Andrews (East Sands)	St Andrews (East Sands) achieved guideline standard in 2014. This site has consistently met the mandatory or higher guideline standard for over 11 years.	–
Kingsbarns	Kingsbarns met the higher guideline standard in 2014, as it has done over the previous ten years, with the exception of 2010 and 2012 when it met the less stringent mandatory standard.	–
Crail (Roome Bay)	Crail (Roome Bay) again met the highest guideline standard as it has consistently done for over 10 years.	–
Anstruther (Billow Ness)	Anstruther (Billow Ness) met the guideline standards in 2014, as it has done every year since 2005, with the exception of the very wet summer of 2012 when it met the mandatory standard.	–
Elie (Ruby Bay)	Elie (Ruby Bay) again met the highest guideline standard as it has consistently done for over 11 years.	–
Elie (Harbour) and Earlsferry	Elie (Harbour) and Earlsferry met the higher guideline standard in 2014 for the fourth year in a row.	–
Leven	Leven again met the more stringent guideline standard in 2014, as it has done for the last five years, with the exception of the very wet summer of 2012, when it met the mandatory standard.	–
Kirkcaldy (Seafield)	Kirkcaldy met the guideline standard in 2014. This site has consistently met this or the mandatory standard for over 11 years.	–
Kinghorn (Harbour Beach)	Kinghorn (Harbour Beach) met the mandatory standard in 2014 as it has consistently done since 2008.	–

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Kinghorn (Pettycur)	The guideline standard was met at Kinghorn (Pettycur), as has been the case for over 11 years with the exception of 2007, when the mandatory standard was obtained.	During 2014, on occasion high levels of faecal indicator bacteria were measured in the Kinghorn Burn which discharges directly onto the beach. Additional monitoring of this burn is planned for 2015 in an effort to better understand the levels and sources of these bacteria.
Burntisland	Water quality at Burntisland continued to meet the guideline standard as it has for over 10 years.	–
Aberdour (Silversands)	Aberdour (Silversands) again met the higher guideline standard in 2014, as it has done for over 11 years, with the exception of the very wet summer of 2012.	–
Aberdour Harbour (Black Sands)	In 2014 Aberdour Harbour (Black Sands) met the guideline water quality standard. It has consistently met the mandatory or guideline standard since its designation in 2010.	–
Portobello (West)	Portobello (West) met the mandatory standard in 2014 as it has consistently done for over 11 years. There was a single sample exceedance in early June. This was most likely attributable to urban diffuse run-off after a period of heavy rainfall, causing CSO's to spill in the Braid/Figgate Burn. Our electronic sign at Portobello West had correctly displayed a poor water quality prediction warning on this occasion and bathing was not advised. This sample has therefore been removed from our compliance dataset.	–
Portobello (Central)	Portobello (Central) met the mandatory standard in 2014, following five years of meeting guideline standards. Prior to this in 2008 it failed to meet Bathing Water standards and met mandatory standards in 2007 and 2006.	–
Fisherrow Sands	Newly designated in 2013, Fisherrow Sands has met the mandatory standard of bathing water quality for the last two years. There was a single sample exceedance in early June. This exceedance was most likely attributable to urban diffuse run-off after a period of heavy rainfall, causing CSO's to spill in the Brunstane Burn.	–
Seton Sands	Seton Sands met the higher guideline standard in 2014. This beach has fluctuated between this and the mandatory standard for over eleven years.	–


Yellowcraig, East Lothian

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Longniddry	Longniddry dropped to mandatory standard in 2014. This bathing water has met guideline standards since 2006, with the exception of 2011 when it met the mandatory standards.	–
Gullane	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.	–
Yellowcraig	Yellowcraig consistently meets guideline or mandatory standards and met the guideline standard this season.	–
Broad Sands	This site has complied with the guideline standards each year since 2008.	–
North Berwick (West)	North Berwick (West) met the guideline standard in 2014. This beach has met this or mandatory standard for over eleven years.	–
North Berwick (Milsey Bay)	The identified bathing water at North Berwick (Milsey Bay) returned to guideline standards in 2014, which it has met consistently since 2000, with the exception of 2013 when it dropped to mandatory.	–
Seacliff	The bathing water quality at Seacliff is consistently of guideline standard, and maintained this standard this year.	–
Dunbar (Belhaven)	Water quality at Dunbar (Belhaven) dropped from its normal guideline level and met the mandatory standard this season. With the exception of 2006, when the mandatory standard was met, this bathing water consistently achieved guideline compliance every year between 1993 and 2013.	–
Dunbar (East)	Dunbar (East) met the mandatory standard in 2014. Over the past four years this bathing water has varied between mandatory and guideline standards; prior to this period it consistently met the guideline standards. There was a single sample exceedance in early June. This exceedance was most likely attributable to urban diffuse run-off after a period of heavy rainfall.	–
Whitesands	Whitesands met the mandatory standard this season. This bathing water has complied with either the mandatory or the more stringent guideline standards for over eleven years.	–


Pease Bay, Scottish Borders

Bathing water	Compliance 2014	Catchment changes affecting bathing water quality, 2014
Thorntonloch	The bathing water at Thorntonloch has consistently complied with guideline standards since 1999.	–
Pease Bay	Pease Bay has achieved guideline compliance every year since designation in 1999, reflecting the very high quality of the bathing water. There was a single sample exceedance in August. This was most likely attributable to higher levels of diffuse pollution run-off in the Pease Burn and Cockburnspath Burn, caused by very heavy rainfall in the region over the preceding days before sampling was undertaken.	The first re-visits to non-compliant farms were made following their one-to-one visits undertaken prior to the 2014 bathing water season. Significant change was observed in the catchment with large areas of water course now successfully fenced off and alternative livestock drinking water provided, thereby removing livestock access to the Eye water and its tributaries. Some outstanding work is still needed on a couple of units.
Coldingham	Coldingham met the mandatory standards in 2014. With the exception of 2012, Coldingham has consistently achieved the higher guideline standard over the past ten years.	–
Eyemouth	Eyemouth again met the mandatory standard in 2014, following a period of mixed compliance. There was a single mandatory exceedance in July. SEPA could find no explanation for this exceedance. Whilst rainfall was recorded several days before this sample was taken, the amount measured was lower than would be expected to affect water quality. There was an additional mandatory exceedance in August. This was most likely attributable to higher levels of diffuse pollution run-off in the Eye Water, caused by heavy rainfall in the region over the preceding days before sampling was undertaken. Our electronic sign at Eyemouth had correctly displayed a poor water quality prediction warning on this occasion and bathing was not advised. This sample has therefore been removed from our compliance dataset.	The first revisits to non-compliant farms were made following their one-to-one visits undertaken prior to the 2014 bathing water season. Significant change was observed in the catchment with large areas of water course now successfully fenced off and alternative livestock drinking water provided, thereby remove livestock access to the Eye water and its tributaries. Some outstanding work is still needed on a couple of units.

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