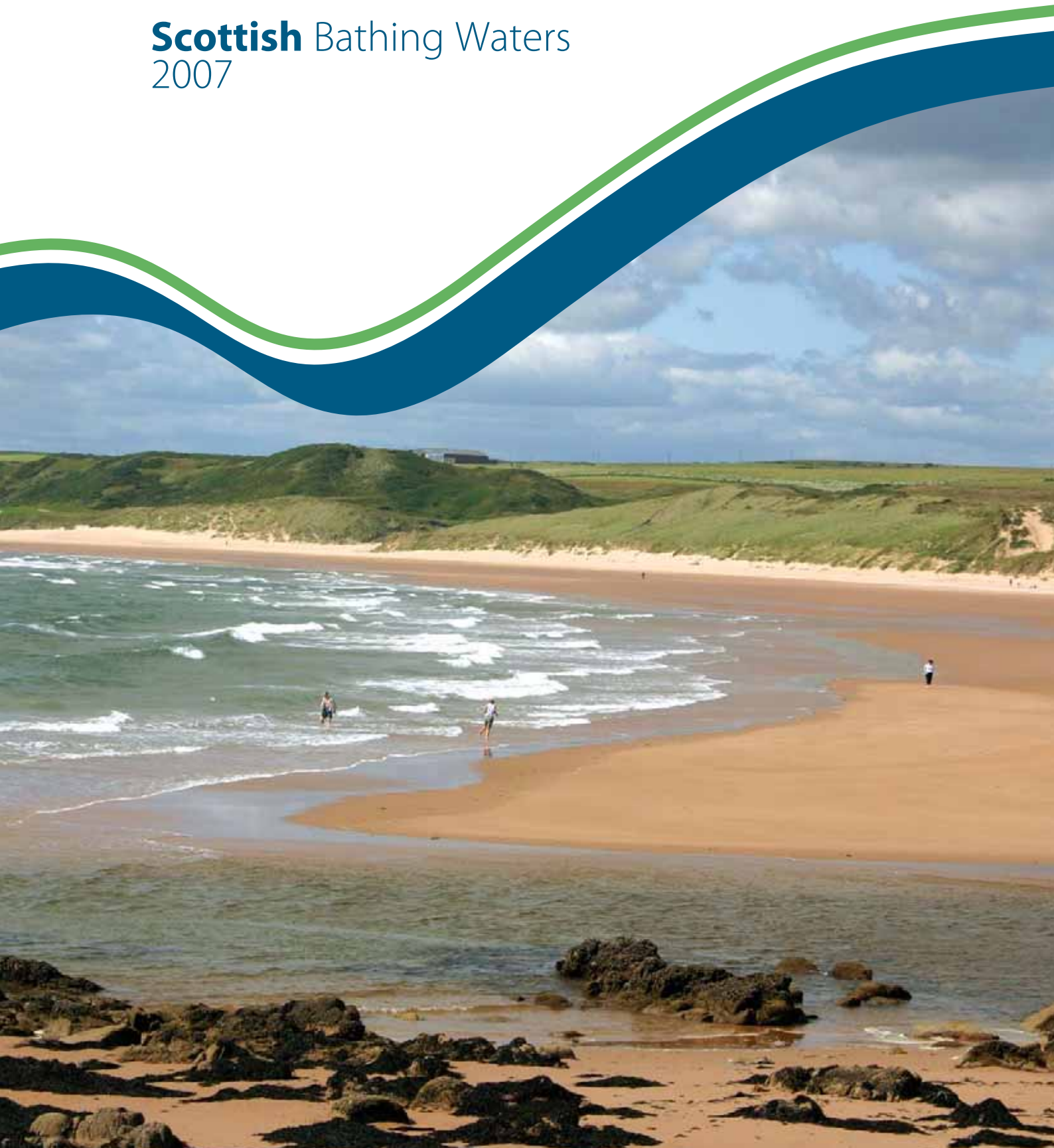
SEPA
Scottish Environment Protection Agency

Scottish Bathing Waters 2007



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Foreword

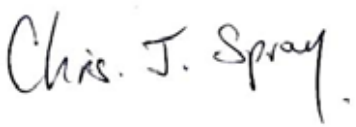
In 2006 I had the pleasure of reporting good news, with the first time achievement of 100% compliance of European water quality standards for all of Scotland's EU designated bathing waters. This was a substantial milestone event and a real environmental success for Scotland. Unfortunately results this year were not quite as good since, like the rest of the UK, Scotland's bathing season was dominated by extremely wet weather. Coastal rainfall at Scotland's bathing areas reached some of the highest levels we have seen for over 30 years.

Despite the exceedingly wet weather this summer, 89% of bathing waters achieved the EU standard and nearly half of Scotland's beaches, 29 out of 61, still managed to achieve the more stringent excellent (guideline) standard. This is testimony to the joint work and efforts of the Scottish Government, Scottish Water, the farming community and SEPA to lessen the impact on nearby watercourses that flow towards bathing waters.

At certain sites SEPA maintains beach signs displaying information on the expected quality of the local bathing water. These live predictions are based on detailed knowledge of the inflowing watercourses combined with accurate weather data. At five of the beaches that did not achieve the basic good (mandatory) standard this summer, bathers were informed on a daily basis of predicted water quality via these electronic messages. The predictive accuracy of these signs remains extremely high, with 99% of the daily messages given being accurate or precautionary.

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

It is clear that we must all work harder to further improve the underlying levels of bacterial pollution. Not least because we need to reduce overall baseline levels to meet the tighter standards that will be required during 2012 to 2015 – the first assessment period for the revised Bathing Water Directive.



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Director of Environmental Science
Scottish Environment Protection Agency

Executive Summary

In 2007, almost half of Scotland's bathing waters achieved the highest 'excellent' water quality status despite coastal areas experiencing their wettest summer in over 30 years. This is testimony to the work done by the joint efforts of the Scottish Government, Scottish Water, the farming community and Scottish Environment Protection Agency (SEPA) to lessen the pollution pressures on bathing waters and to provide the public with good information.

Unlike last year, which saw the first time achievement of 100% compliance in Scotland with the European Bathing Water Directive, seven bathing waters beaches failed for this year's season. Last year's good results were in part attributed to the summer being drier than average. This had helped minimise the run-off of faecal contamination from farms and farmland, and reduced the occurrence of discharges from storm sewer overflows. Unfortunately the bathing water quality results this year reflect the particularly adverse weather seen during most of the summer – notably the high rainfall with frequent and torrential downpours at a number of sites throughout Scotland.

The poor results were generally recorded by SEPA when heavy rain had preceded sample collection. Heavy rain can produce high levels of surface water run-off and drainage overflows, and is one of the main causes of failure this season. However, rainfall cannot be blamed for all the results. Where sewage was the cause, SEPA took swift enforcement action and Scottish Water took prompt corrective measures. A few poor samples were caused by pollution from agriculture and SEPA hopes that this will be reduced through the new General Binding Rules for diffuse pollution.

Despite the failures the season had a number of highlights:

- SEPA's bathing water quality prediction and signage system was a particular success during this wet summer. The conditions were not ideal for a successful bathing water season but bathers were kept up-to-date on water quality each day at ten of Scotland's beaches. SEPA would like to see the system rolled out to many more of our identified beaches and Scottish Government have announced funding for this.
- Millport beach on Greater Cumbrae received its best ever result and first 'excellent' status thanks to recent improvement made by Scottish Water to nearby sewage infrastructure. Similar improvements saw the Highland site of Dunnet return to excellent status despite the exceedingly wet weather.
- SEPA is working with others across the UK to use new DNA fingerprinting techniques to confirm the source of bacteria (whether animal or human in origin) and to develop more rapid analysis methods.

While the weather was mostly responsible for the short pollution events that resulted in poor samples, it is important to continue to take steps to reduce the risks and the impacts of such events. We also have to meet the tougher challenges brought by a new Bathing Water Directive. This will require SEPA and its stakeholders – including Scottish Water, local authorities and farmers – to increase their efforts to improve our bathing waters. The Scottish Government is already looking at ways to stem diffuse pollution and will be consulting shortly on proposals for a new bathing water regime.

1 Introduction

1.1 SEPA's role in bathing water quality

The Scottish Environment Protection Agency (SEPA) is the independent environmental regulator for the government and people of Scotland. Established by the Environment Act 1995, SEPA is accountable to the Scottish Parliament via Ministers.

SEPA's main aim is to protect the environment and be an effective regulator. We aim to reduce pollution, promote the sustainable use of resources, and protect and improve the quality of our land, air and water. We publish environmental data and information, deliver important public information services and promote good environmental practice.

As well as publishing this report, SEPA places the results of its monitoring of bathing waters results on its website within a few days of sample collection throughout the bathing season from 1 June to 15 September plus a pre-season sample in late May.

1.2 SEPA's commitment to improving bathing water quality

SEPA recognises the immense economic value of Scotland's relatively unspoiled environment. High-quality bathing waters are important for a wide variety of interests and help to promote the important and valuable tourism industry within Scotland. All possible sources of pollution must be recognised and controlled in order to protect and, where necessary, improve the quality of waters.

SEPA will continue working with all other relevant authorities to improve on this year's results and to return to full compliance with European bathing water standards (a Scottish Government commitment). Section 3 of this report provides specific information about ongoing work to promote attainment of current quality standards and to achieve the more stringent new European standards. Further details for individual waters are given in the 'Pollution Reduction Programmes' (PRP) maintained by SEPA for all recognised bathing waters, and available on the website.

The water environment includes all groundwater, rivers, lochs, transitional waters (e.g. estuaries), coastal waters and surrounding wetlands in addition to identified bathing waters. SEPA's long-term aim is that all water environments should achieve at least good ecological status or potential under the Water Framework Directive and where relevant, meet specific standards for WFD 'protected areas' which include all designated bathing waters. In general terms, good status means that waters only show slight change from what would be expected in undisturbed conditions. Where good status or protected area standards are not met (or are 'at risk'), then specific 'programmes of measures' for improvement will be included in the WFD 'River Basin Management Plans'. It is envisaged that for bathing waters, these will be based upon the existing PRP referred to above.

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

1.3 Purpose of this report

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

The results of SEPA's routine monitoring in 2007 are presented in Section 2. This gives details for Scotland's 61 identified bathing waters and a summary for 36 other waters that were monitored routinely during the 2007 bathing season.

Section 3 provides more information about the work streams and plans necessary to ensure further water quality improvements.

As required by the Bathing Water Directive, the water quality results for the 61 identified bathing waters have been reported to the European Commission (EC). The Commission will publish the results as part of its annual report on the overall quality of bathing waters throughout the countries of the European Union.

1.4 Improving water quality

SEPA's view on environmental protection priorities for Scotland is set out in its Corporate Strategy (the latest version is available on the SEPA website). This commits SEPA to make continual progress towards total compliance with the Bathing Water Directive's mandatory standards. This compliance is not something that SEPA can achieve on its own and it will continue to work with all relevant organisations, the agricultural community and the public to attain this goal. Only by working in partnership can SEPA give Scotland and its visitors the high quality of bathing water they are entitled to expect in the 21st century.

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

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

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

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

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

In respect of urban areas, the principles embodied in the successful Sustainable Urban Drainage Systems (SUDS) manual[1] are increasingly limiting urban diffuse pollution from new developments. However, there remains a large problem of contaminated surface water run-off from existing urban areas. It is encouraging that the Scottish Government has undertaken an evaluation of retrofitting SUDS to urban areas near to bathing waters.[2]

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

[1] www.sepa.org.uk/dpi/suds/index.htm
[2] www.scotland.gov.uk/Topics/Environment/Water/bathingwaters/RetrofittingSUDS

1.5 Identification of bathing waters

Bathing waters are designated under the Directive by Scottish Ministers. At the request of the Scottish Government, Clean Coast Scotland set up the Bathing Water Review Panel to aid Ministers in determining which sites (both existing and future) merit designation. SEPA is a member of this panel. This move followed from recommendations made as a result of the then Scottish Executive's consultation in 2004 on the identification process.

Sites eligible for designation must meet several criteria, the most important of these being evidence of usage (as required by the Directive) and appropriate management. Official designation provides for 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 the owners of non-recognised sites to apply for designation where they meet the appropriate criteria.

The Panel's role is to seek and consider applications for official identification and to examine existing bathing waters for possible de-designation where there is only very low usage. It then puts its recommendations to Ministers for consideration.

The Panel made its first recommendations in 2005. As a result of these, Ministers approved the recognition of three new bathing waters – Broughty Ferry, Largs (Pencil Beach) and Longniddry – bringing the total number of official bathing waters to 63 for 2006. No de-designations were made.

Following applications made after the 2006 bathing water season, the Panel made its second set of recommendations. As a result of these, Ministers chose to de-designate three sites (Morar, Shell Bay and Turnberry) and to split an existing bathing water into two – Elie (Harbour and Ruby Bay) becoming Elie (Ruby Bay) and Elie (Harbour) and Earlsferry. This reduced the number of official bathing waters to 61 for 2007. These waters are the focus of this report.

The Panel sought applications following the 2007 bathing season and is expected to make its recommendations to Scottish Ministers by the end of 2007.

The requirements of the revised Bathing Water Directive (see Section 1.6) in terms of identifying future bathing waters come into force from March 2008. Scottish Ministers will then be required to consider designation for all bathing waters where a large number of people are expected to bathe. This will include sites identified in the 2004 consultation. In addition, the Panel's review process is expected to uncover any other waters currently not designated but which should be identified as bathing waters on the basis of their usage. Ministers will announce their decision on designations for the 2008 season once the new requirements have come into effect.

The Bathing Water Review Panel will operate only until April 2008. The process by which identifications are made after this date is being considered as part of the Scottish Government's consultation paper, Better Bathing Waters for All, on the transposition of the revised Bathing Water Directive into national law.

Further information on the designation process is available on the Scottish Government's website (see Section 3.3).

1.6 Revision of the Bathing Water Directive

The revised Bathing Water Directive (2006/7/EC), which came into force on 24 March 2006, introduces water quality standards that are substantially more stringent than those of the current Directive. The text of the revised Directive can be found on the EU's website.[3]

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

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

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

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

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

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

The strategy announced the Government's intention to transpose the Directive through legislation. In November 2007 the Scottish Government issued its proposals for the draft Bathing Water (Scotland) Regulations 2008 in its consultation paper, Better Bathing Waters for All. This consultation sets out the Government's legal means for meeting the Directive's requirements and SEPA's future role under the Regulations.

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

2 2007 bathing water quality results

2.1 Results overview

In 2007, 54 of the 61 identified bathing waters in Scotland met the EU mandatory standards. Of these, 29 waters (48%) also met the guideline standard.

It is disappointing that the compliance results are not as good as last year when full mandatory compliance was achieved, but this must be considered in the context of the extraordinarily wet weather recorded through much of Scotland during the bathing season (see Section 2.3).

Despite the heavy rainfall in 2007, 29 of the 61 bathing waters achieved the highest 'excellent' water quality status. This compares with 34 of 63 beaches making this guideline grade in 2006.

The 'reduced sampling' provision of the Bathing Waters Directive (Annex 3.4), which applied for the first time in 2004 to just three designated waters, was applied at 11 sites in 2007. As well as an increase in general water quality prior to this season, this provision was in response to the reduced sampling measures now accepted by the bodies responsible for both the Blue Flag and Seaside Awards in Scotland.

Although all reduced sampling sites maintained their overall 'excellent' quality classification, some recorded exceedances of the guideline standard for individual samples. In line with SEPA policy, any reduced sampling sites that exceeded the guideline level of any determinand (no matter how minor an exceedance) will return to the full schedule of 20 samples in 2008.

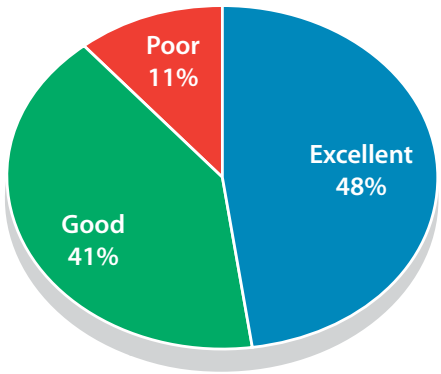
The full set of microbiological monitoring data from the 61 identified bathing waters in Scotland can be found in Annex 1. The results are summarised below (see also Figure 1, and Maps 1 and 2):

Of the 61 identified bathing waters:

- 29 met the guideline quality standards of the Directive and are of 'excellent' quality (48%);
- 25 met the mandatory coliform quality standards of the Directive and are of 'good' quality (41%);
- 7 failed the mandatory coliform quality standards of the Directive and are of 'poor' quality (11%).

To put this into context, this was due to 24 poor samples out of around 1,200 samples in total.

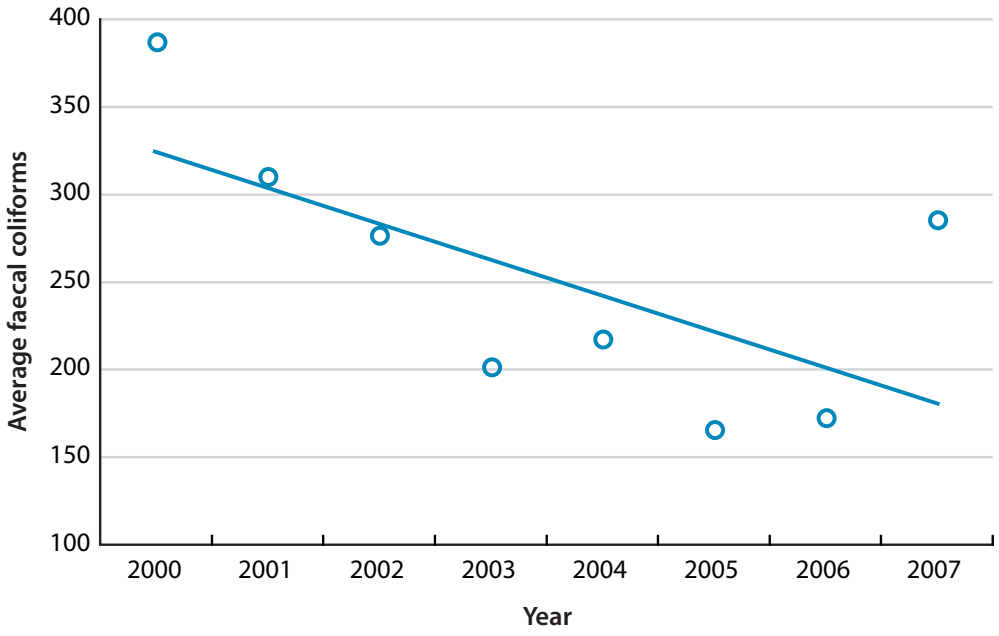
Figure 1: Scotland's 2007 bathing water results



The number of waters meeting specific quality targets is considered a good measure of water quality, but the combined result of all samples taken during the season can provide useful additional information.

Since 2005 SEPA has published the average faecal coliform concentrations for all the samples taken from identified waters each year since 2000. Last year saw a continuing underlying improvement trend over the seven years between 2000 and 2006. This year the average level rose to above that seen from 2002 onwards. But despite the wet weather this season, the average was below that recorded in 2000 and 2001 – a testament to the ongoing improvements. The overall trend in still down as demonstrated by the slope of the trendline in Figure 2 applied to data from 2000 to 2007.

Figure 2: Annual average faecal coliform concentration for all samples from the 60 continuously designated EU bathing waters, 2000–2007*



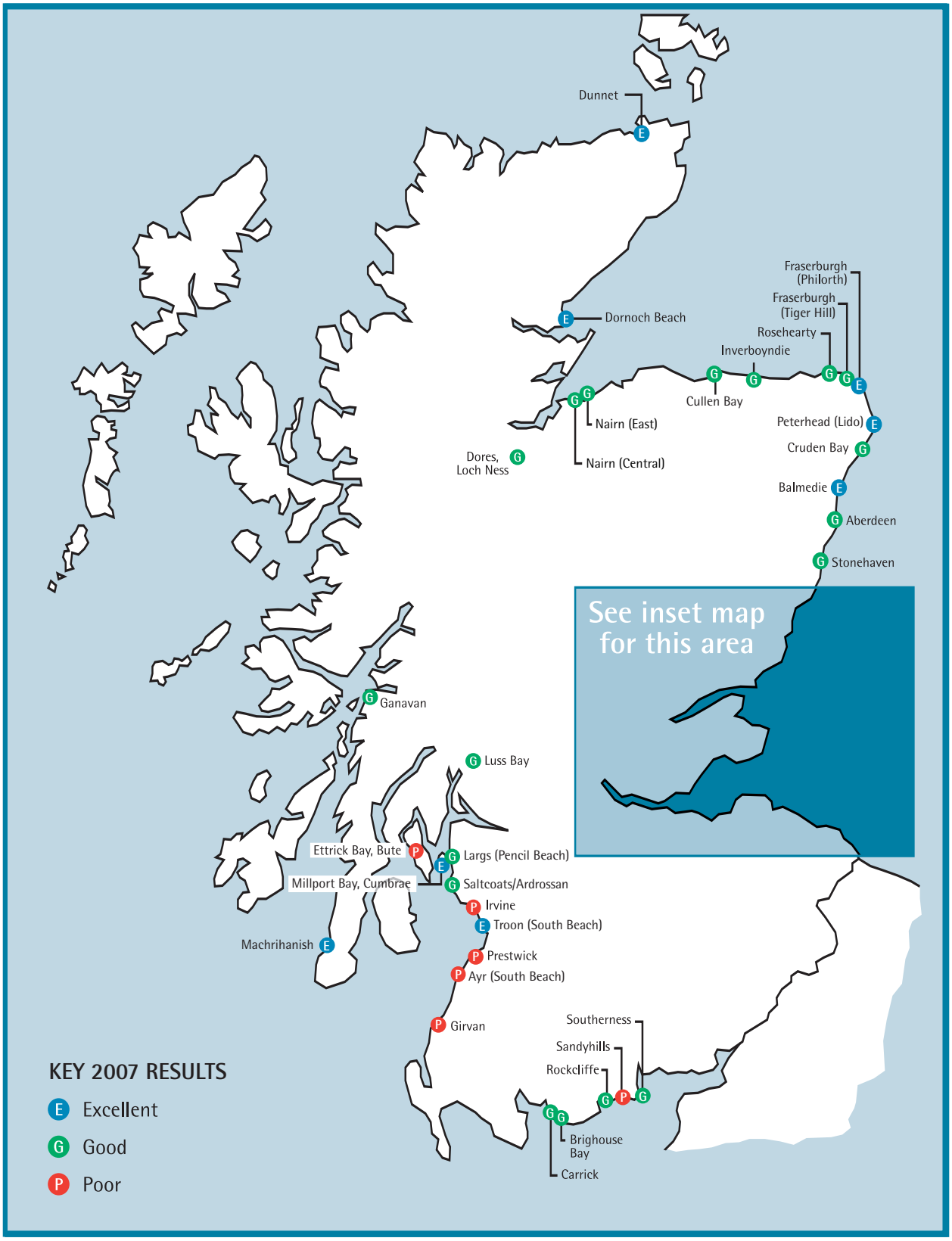
*Concentrations at the three bathing waters no longer monitored during 2007 were taken at 2006 levels.

2.2 Details for each of Scotland's 61 identified bathing waters

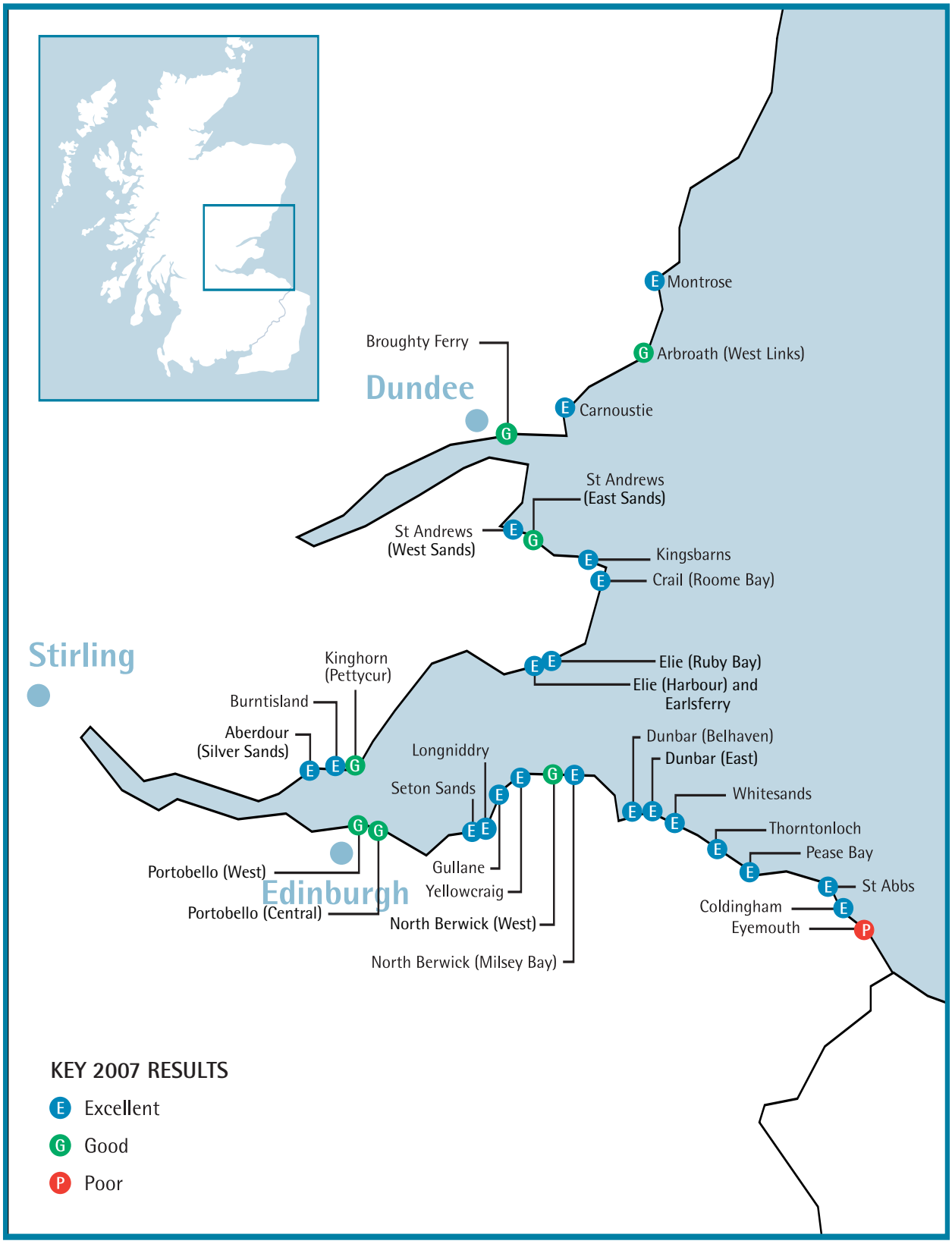
This section contains specific information for each of Scotland's 61 identified waters. It also focuses on the underlying factors behind bathing water quality at each site and outlines the plans for improvements. Waters are described in clockwise order around Scotland, starting in the south west.

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

Map 1: Results for Scotland's 61 identified bathing waters 2007



Map 2: Results for Scotland's 61 identified bathing waters 2007 (south east area)




Sandyhills

Southerness

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Poor	Good	Good	Poor	Good	Good	Good

Southerness was designated as an EU bathing water in 1999. In 2007 all samples passed at least the EU mandatory standards, with most of them meeting the more stringent guideline values.

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

The combined sewer overflows (CSOs) in the Troqueer catchment of Dumfries were upgraded in 2005 to provide better screening and to reduce the frequency of overflows. However, there are still issues with overflow frequency at two outfalls on the Troqueer network and premature overflows of settled sewage at Troqueer STW which need to be addressed. The only private wastewater treatment plant is at Southerness where it serves the caravan park and village. This discharge was upgraded to full treatment at the end of 2005.

Sandyhills

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Good	Poor	Poor	Good	Good	Good	Good	Good	Poor

Sandyhills bathing water has a varied history of compliance and unfortunately achieved poor water quality in 2007.

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

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

Rockcliffe

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Poor	Good	Poor	Poor	Good	Good	Good	Good

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

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


Rockcliffe

Brighouse Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Good	Good	Good	Good	Poor	Good	Good	Good	Good

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

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

A project funded by the Scottish Government, which was completed in 2005, involved extensive fencing of watercourses and provision of alternative livestock watering points. Two farm wetlands were also introduced. This work sought to reduce poaching (trampling) of riverbanks and livestock excreta entering the Brighouse Burn. It is not yet clear if the good overall water quality achieved again this year in Brighouse Bay was due to these extensive efforts to reduce agricultural sources of pollution. A Scottish Government evaluation study is investigating the level of improvement achieved from these field-based measures and due to report in 2008.

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

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

Carrick

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Good	Excellent	Poor	Good	Good	Good

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

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

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

Girvan

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor

Bathing water quality at Girvan improved substantially following the completion of successive phases of major new sewerage and sewage treatment schemes during the 2001 season. This resulted in eight years of good quality up to 2006, with over half of samples achieving guideline quality. It was always recognised that the influence of river water under high flow was a continuing risk and, unfortunately due to the wet summer in 2007, Girvan was again poor quality under high river flow conditions.


Prestwick

Ayr (South Beach)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Good	Good	Poor

Ayr (South Beach) bathing water was unfortunately poor quality in 2007. This occurred during days of particularly wet weather when the rivers Ayr, Doon and coastal burns were in high flow.

The town's sewage is now pumped to Meadowhead STW for full treatment before discharge via a long outfall. Remedial work to remove cross connections of foul drainage into surface water sewers in the town has continued.

Diffuse urban pollution remains a concern and weekly checks were carried out during the bathing season on surface water outfalls and sewer overflows in order to identify any pollution at an early stage. As diffuse pollution can still be a problem, this bathing water is part of SEPA's electronic signage network.

Prestwick

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor

Prestwick recorded poor quality for the 2007 season, which was disappointing after eight good years. These poor quality events occurred on days following particularly heavy rainfall (also seen on the same days at Ayr and Girvan). These short-term poor events had been predicted and indicated by SEPA's electronic signage.

The bathing water at Prestwick does not have any direct sewage outfalls nearby, though there are storm overflows. Sewage from the town is pumped to Meadowhead STW for full treatment. Because of its past quality record, this bathing water is part of the SEPA electronic signage system.

Troon (South Beach)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Good	Poor	Good	Good	Excellent	Good	Excellent	Good	Excellent

After commissioning of the new Meadowhead STW, the bathing water at Troon was of excellent quality for the first time in 2003. Excellent status was also achieved in 2005 and again in 2007. The latter is particularly encouraging given the problems related to the wet weather noted elsewhere during 2007.

These results confirm the improvement trends coincident with the increasing treatment at Meadowhead STW.

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

Irvine

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Poor	Good	Good	Good	Good	Poor	Good	Good	Poor

The bathing water at Irvine was unfortunately poor status in 2007 following the same periods of heavy rainfall that caused poor quality at other Ayrshire beaches. The flow in the rivers Garnock and Irvine was particularly high and river water was noted as a significant component of the bathing water at the time of sampling.

The new biological treatment plant at Meadowhead STW and an extended sea outfall were completed and commissioned in 2002. Scottish Water is continuing to investigate and model the most effective improvement measures in order to reduce intermittent storm overflow discharges into the Irvine catchment.

The poor status attained during 2007 confirmed the remaining threat from diffuse agricultural and urban pollution.

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


Irvine


Saltcoats/Ardrossan

Saltcoats/Ardrossan

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Good	Poor	Poor	Good	Good	Good	Good	Good	Good

Before 2001 Saltcoats/Ardrossan beach had a poor history of bathing water quality standards compliance, but since 2002 the bathing water has maintained a good standard – even during the wet summer of 2007.

This improvement is attributed mainly to the sewage treatment works completed at Stevenston Point in 2002. However, the monitoring results sometimes illustrate the vulnerability of the beach to high bacterial levels after rainfall. As elsewhere in Ayrshire, work continues to reduce pollution from urban drainage and intermittent discharges.

As there is still a threat to quality from diffuse pollution sources, this bathing water is part of SEPA's electronic beach signage network.

Largs (Pencil Beach)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	n/s	Good	Good	Poor	Good	Good	Good	Good	Good

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

The designated bathing water area consists of a number of sandy beach areas with a mix of grass and pebble shore strips interspersed by rocky outcrops. There are two small coastal burns – the Coalpit Burn and a smaller, unnamed tributary – draining directly into the designated bathing water area. These burns drain a relatively small catchment which comprises mostly hill, moorland and a golf course. The main farming activity is sheep grazing, which studies elsewhere in the UK have shown could introduce diffuse sources of faecal indicator bacteria.

The nearest sizeable riverine input, Gogo Water, is about 1.2 km north of the designated bathing water area and drains onto Largs shore just south of Largs pier. The Gogo Water may have some influence on bathing water quality under certain tidal states and at times of high river flow.

No samples failed to meet the mandatory bacterial standard in 2007 even following very wet weather. The most likely risk of failure is still diffuse run-off during the wet weather and SEPA considers that this water, like the others in Ayrshire, remains vulnerable to pollution caused by storm events.

Millport Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Poor	Good	Good	Good	Good	Good	Excellent

Millport Bay on the Isle of Cumbrae was first identified as a bathing water in 1999. Significantly it attained excellent quality status for the first time in 2007.

This excellent result is due to the improvements carried out by Scottish Water. Old septic tanks serving Millport were abandoned before the 2005 season and all sewage is now intercepted and pumped to a new treatment plant which discharges outside the bathing area. This new treatment scheme has transformed the bathing water quality from marginal compliance with EU standards to overall excellent status.

Ettrick Bay

Luss Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Good	Good	Good	Good	Good	Good

As in previous years Luss Bay on Loch Lomond attained good quality status in 2007, and this year no individual samples exceeded the limit values.

Diffuse pollution remains a concern in the catchment with probable contributing sources including agricultural run-off from fields, significant numbers of birds roosting (including swans) in the area and four surface water discharges from nearby roads and car parks which discharge directly onto the bathing water beach.

UV light disinfection became operational at Luss STW during 2007. Initial operational feedback from Scottish Water and SEPA monitoring confirmed that the UV treatment appears to have been effective.

Ettrick Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor

Ettrick Bay on Bute was identified as a bathing water in 1999 and, for six years, failed badly to meet the Directive's quality standards. After two years of good quality, the bathing water returned to poor quality this season.

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

All farmers in the area have been encouraged to adopt practices that should lead to a reduction in bacterial pollution of the local streams. All the farms in the catchment have been inspected as part of SEPA's agricultural pollution reduction programme. Remedial action was requested and implemented at a number of farms found to have a problem with excess surface water draining from contaminated yard areas. In addition the Scottish Agricultural College has carried out advisory/assessment visits to all farms as part of a Scottish Government project, recommending further remedial measures to reduce the risk of pollution. Scottish Government invested in improvements at a number of farms.

Despite these continuing improvements, water quality is still predictably threatened by diffuse pollution. This bathing water therefore remains part of SEPA's electronic signage project.

Machrihanish

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent

Machrihanish was identified as an EU bathing water in 1999. It achieved good quality until 2003 and has met excellent quality standards for five successive years. This step change followed the diversion by pumping of sewage from the small communities of Machrihanish, Stewarton and Drumlemble to Campbeltown STW for full treatment. Provided potential agricultural pollution sources in the area are kept under control, satisfactory quality should now be maintained.


Ganavan


Dores

Ganavan

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Good	Good	Excellent	Good	Good	Good

Ganavan was identified as a bathing water in 1999 and achieved good quality in 2007. A Scottish Water pumping station pumps sewage from the Ganavan public system to Oban for treatment at the STW prior to discharge into the Sound of Kerrera. This STW serves the resident population of Oban (9,000 rising to 20,000 in summer). Despite this scheme, the local bathing water is not consistently meeting guideline standards and a local caravan site has been required by SEPA to upgrade its sewage treatment facility.

Dunnet

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Poor	Excellent	Good	Excellent	Good	Excellent	Excellent	Good	Good	Excellent

Dunnet, in Caithness, was identified as a bathing water in 1999. Good or excellent quality has been recorded every year since 1998. The input of sewage from Castletown previously affected the quality of the bathing water in Dunnet Bay. As part of ongoing investment to improve water quality in the area, Scottish Water installed a sewage treatment works in 2006 on a new site further from the bathing water. This year the bathing water achieved excellent quality.

Scottish Water provides disinfection which reduces bacterial concentrations to a very low level. However, the adequacy of the septic tanks serving the small settlement at Dunnet and a caravan park at the northern end of the bay is under review. Other potential pollution sources have been checked this year but no new sources found.

Dornoch

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Dornoch was identified as a bathing water in 1999. Local sewage and agricultural sources of pollution have been progressively reduced and, in 2007, it achieved excellent quality again for the tenth consecutive year. The beach continues to be a popular destination for visitors and locals who value the high quality of the bathing water.

Dores

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Good	Good	Good	Good	Good	Good

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

Scottish Water extended the public sewerage system in the village in 2004 to pick up numerous septic tanks previously identified as a potential risk to water quality and which discharged to either the Minister Burn or Loch Ness. In the quest to attain guideline quality standards, SEPA continues to monitor the Minister Burn and is seeking to find and eliminate remaining pollution sources.


Nairn (Central)


Cullen Bay

Nairn (Central)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Good	Excellent	Excellent	Good	Excellent	Good	Excellent	Good	Good

Nairn (Central) was identified as a bathing water in 1999. To ensure it would be adequately protected SEPA required disinfection of the effluent from Nairn STW. However, the disinfection system proved unreliable and a completely new disinfection system was installed in 2004. The record of good or excellent quality since 1996 was maintained with good quality in 2007.

Nairn (East)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Poor	Good	Excellent	Good	Good	Excellent	Excellent	Poor	Good	Good

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

Continuing bacterial loadings from the River Nairn are also considered sufficient to pose a risk to the bathing beaches at Nairn. Consequently Scottish Water was issued with revised discharge licence consents setting more stringent conditions on four STWs on the River Nairn. These consents effectively require disinfection of the effluents prior to discharge. Disinfection systems have been installed at Sunnyside, Croy and Cawdor but issues remain with the discharge quality from these systems and SEPA continues to work with Scottish Water to improve discharge quality. There is still also a problem with the discharge from the Brackla septic tank. SEPA is monitoring the situation and expects the problem to be eliminated by the start of the 2008 bathing season.

Cullen Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent	Excellent	Good

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

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


Inverboyndie


Rosehearty

Inverboyndie

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Good	Excellent	Good	Good	Excellent	Excellent	Good	Excellent	Good

Inverboyndie was identified as a bathing water in 1999. The beach is a popular tourist area as it is adjacent to a large caravan site. It achieved good bathing water quality in 2007. The beach was clearly affected by the wet summer and one sample result was recognised as abnormal on 6 August 2007 following torrential rainfall across the area.

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

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

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

Rosehearty

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Excellent	Good	Good	Good	Excellent	Good	Good	Excellent	Good

Adjacent to the village of Rosehearty, this beach is becoming more popular with wildlife enthusiasts after recent sightings of basking sharks and whales off the coast. Rosehearty was identified as a bathing water in 1999. It achieved good bathing water quality in 2007. The exceedance of mandatory standards on 30 July 2007 was thought to be influenced by localised heavy rainfall in the area, though an abnormal weather waiver was not granted. A small ditch draining onto the beach has been investigated but was found to contain low numbers of bacteria.

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


Fraserburgh (Tiger Hill)


Peterhead (Lido)

Fraserburgh (Tiger Hill)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Poor	Good	Good	Poor	Good	Excellent	Good	Excellent	Excellent	Good

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 was of good quality in 2007.

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.

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

Fraserburgh (Philorth)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent

Fraserburgh (Philorth) returned to excellent water quality in 2007 after narrowly missing out on this high standard last season. This continued the outstanding compliance record since the bathing water was first identified in 1999.

The beach is a popular recreational and windsurfing area located at one end of the sandy bay that links Fraserburgh and Philorth. There are no sewage discharges in the immediate vicinity of the bathing water and the Water of Philorth discharges some distance to the east of the monitoring point.

Peterhead (Lido)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Excellent	Good	Poor	Excellent	Good	Excellent	Excellent	Excellent

Peterhead (Lido) is located within the outer harbour (Bay of Refuge) of the town of Peterhead. This bathing water attracts a diverse range of water sports enthusiasts with dinghy sailing in the sheltered waters of the bay being particularly popular. Peterhead Lido achieved excellent bathing water quality in 2007 for the third year running, continuing a good compliance record at this bathing water.

Improvements to the sewerage infrastructure were completed before the 2003 season including increased storage capacity at the main pumping station and a better telemetry system. Discharges from the pumping station are now permitted only under emergency or storm conditions, with the licence conditions designed to protect the bathing water. Further improvements to this pumping station, including the installation of new pumps, are planned under Scottish Water's Quality & Standards 3 investment programme and should be completed before the start of the 2009 season.


Cruden Bay


Balmedie

Cruden Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Good	Poor	Good	Poor	Good	Good	Good	Good	Good

This extensive sandy beach next to the small village of Cruden Bay achieved good bathing water quality for the fifth year running in 2007. This highlighted the marked improvement in compliance since sewerage improvement plans came into effect prior to the 2003 season. Sewage from the village is now pumped to Peterhead STW and an unsatisfactory short outfall has been removed. The former outfall is retained only as a storm and emergency overflow.

Diffuse pollution still prevents guideline standards being achieved. The Water of Cruden flows into the sea at one end of the bathing water. As well as draining an agricultural catchment, it receives treated sewage effluent from a sewage treatment works serving the village of Hatton. Sixty farms in the catchment have been visited and, where necessary, remedial measures implemented.

UV disinfection was installed at Hatton of Cruden STW before the start of the 2006 season to reduce the bacterial loading to the Water of Cruden. However, the UV disinfection is not achieving the required kill rate and SEPA has taken enforcement action to address this problem. A large septic tank discharge at Bridgend has also been removed from the Water of Cruden in favour of discharge to soakaway. These measures are expected to help the bathing water achieve excellent water quality in years to come.

Balmedie

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent

This popular expanse of sandy beach is next to Balmedie Country Park about seven miles north of Aberdeen. It was identified as a bathing water in 1999 and achieved excellent water quality in 2007 for the fifth successive year. On account of its outstanding record, the beach was selected for reduced monitoring (as prescribed by the EU Bathing Water Directive) and was sampled only five times during the 2007 season.

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

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


Aberdeen


Stonehaven

Aberdeen

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Good	Good	Good	Good	Good	Good	Excellent	Good

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 good quality in 2007. UV disinfection of the final effluent at the at Persley STW continues in order to reduce the bacterial loading to the River Don.

Improvements to the sewerage network have seen a reduction in combined sewage discharges from the Kings Links overflow and the installation of two mechanical screens, two static screens and seven event recorders. Five other sewer overflows have been eliminated. Electronic signage is provided near the Aberdeen Ballroom beach to advise bathers of predicted water quality.

Scottish Water is working on a drainage area plan for the city. This will identify further improvements to the drainage network and remaining CSOs which are required to increase the quality of effluent discharging to the streams and rivers in the vicinity of the bathing waters. The drainage study will ensure that pollution control measures are targeted effectively.

Stonehaven

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	Poor	Poor	Good	Good	Good	Good	Good	Poor	Good	Good

Stonehaven is an increasingly popular coastal resort which is well used by water sports enthusiasts. It was identified as a bathing water in 1999 but had been monitored since the 1980s. Despite only part-time disinfection of the final effluent (see below), Stonehaven again recorded good quality in 2007.

In order to comply with the Urban Waste Water Treatment Directive, improvements to the local public sewerage infrastructure were planned to take place by 2004. Sewage effluent from Stonehaven was to be pumped to the main Aberdeen treatment plant and long sea outfall at Nigg Bay. However, serious delays occurred when Scottish Water failed to secure planning permission for the pumping station.The planning refusal was overturned after a Public Inquiry and plans for installation of the new facilities are now progressing with works due to be complete before the 2008 season. For the last few years to provide some protection of the bathing waters prior to completion of the connection to Nigg, Scottish Water continued to disinfect the sewage effluent discharged via the Stonehaven outfall on incoming tides during the bathing water season. The disinfection, using hypochlorite solution, is not carried out on the ebb tide as this could deter salmon from running up the adjacent rivers.

Montrose

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

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


Carnoustie

Arbroath (West Links)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Good	Good	Excellent	Poor	Good	Excellent	Excellent	Excellent	Good

The identified bathing water at Arbroath (West Links) was good quality in 2007. The substantial improvement since the 1990s is ascribed to the pumping of local sewage to Hatton STW which was commissioned in 2001. SEPA required this works to be designed to ensure that excellent quality would be achieved at Arbroath (West Links).

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

Carnoustie

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent

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

The local Lochty Burn has been identified as an occasional source of pollution and the complexity and age of the Carnoustie public sewerage system requires continued vigilance and investigative effort to ensure that excellent bathing water quality is maintained. Its achievement in 2007, despite the exceptionally wet weather illustrates the success of this ongoing work.

The temporary dip in bathing water quality in 2002 was ascribed to contamination from local surface water inputs, which were affected by increased rainfall. Continuing investigations have lead 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, which outflows into the bathing water. Further remedial work was carried out on the sewerage system in 2006 after a poor quality bathing water sample was traced back to a specific malfunction. A local Environmental Improvement Action Plan (EIAP) was implemented by SEPA prior to the 2007 bathing season to seek out and eliminate remaining potential polluting inputs to the burn, to minimise the risk of future poor quality events. With the cooperation of local residents the direct discharges of septic tank effluent to the Lochty burn from the Clayholes and Carlogie areas were removed.

St Andrews (West Sands)

Broughty Ferry

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Poor	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Good

Broughty Ferry became an identified bathing water in 2006 but had been monitored by SEPA since 1997 because of its recreational use. Before 2002 water quality at Broughty Ferry was often poor. Excellent quality was achieved between 2002 and 2006 but only good quality in 2007. This apparent slight drop in bathing water quality was probably as a result of the higher than average summer rainfall though the Tay public finance initiative (PFI) scheme is not designed to deliver excellent quality at Broughty Ferry. Increased rainfall can lead to greater run-off from urban and arable land, and also increases the likelihood of sewage system overflows.

Since 2002 all normal sewage flows from the Dundee area have been pumped to Hatton STW for full treatment. As part of the same project, six crude sewage discharges in the Broughty Ferry area were intercepted and taken to a new pumping station at Broughty Castle from where flows are passed forward to Hatton STW. Storm storage was provided at the pumping station and a new outfall installed to allow the discharge of screened storm sewage. At the start of the 2007 season Broughty Ferry held a Blue Flag quality award, which recognised both the quality of the bathing water and the facilities provided by the local authority. However, it will lose this status because only EU mandatory standards were achieved during 2007.

St Andrews (West Sands)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

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

St Andrews (East Sands)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Good	Poor	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Good

This bathing water was identified in 1999, although SEPA and its predecessors had monitored it for many years. Between 2003 and 2006 the bathing water achieved excellent quality, but was only good quality in 2007. The new STW described above for St Andrews (West Sands) reduces the risk of non-compliance with the Directive at both the St Andrews bathing waters.

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


Crail (Roome Bay)


Elie (Harbour) and Earlsferry

Kingsbarns

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Kingsbarns was identified as a bathing water in 1999. It achieved excellent quality for the sixth year running in 2007.

Kingsbarns has a small STW with effluent discharging via a short outfall to the north of the bathing water. The reason for the poor quality in 2001 was thought to be an unusual combination of weather and tidal conditions directing the effluent plume into the bathing water. To ensure compliance in 2002, Scottish Water added chemical disinfection as an interim measure and increased the length of the outfall. A new STW was commissioned in the spring of 2006. This consists of a submerged aerated media system followed by sand filtration and UV disinfection of the final effluent during the bathing season. This tertiary treatment should ensure continuing excellent water quality.

Crail (Roome Bay)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

Elie (Ruby Bay)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Elie (Ruby Bay) was formally identified as a bathing water in 1999, although SEPA began monitoring in 1998. The bathing water has achieved excellent quality each year.

Elie (Harbour) and Earlsferry

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Elie (Harbour) and Earlsferry was formally identified as a bathing water in 2007 although it has been monitored by SEPA and its predecessors since the early 1980s. The bathing water has achieved excellent quality each year since 1998. The Elie Harbour beach is managed and holds a Blue Flag award.


Kinghorn (Pettycur)


Burntisland

Kinghorn (Pettycur)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Poor	Good	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Good

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

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

Following a poor sample in 2006, SEPA will continue to monitor the Pettycur Water to detect any discharges from the emergency outlet at the STW. If discharge occurs, then further investigation will take place and enforcement action taken if appropriate.

Burntisland

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Burntisland is another of the bathing waters identified in 1999. Before then untreated sewage was discharged via several short outfalls, causing gross pollution.

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

In 2007 Burntisland maintained its excellent bathing water quality for the ninth consecutive year. Burntisland beach is well managed and holds a Blue Flag award.

Aberdour (Silver Sands)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

Portobello (West)

Portobello (West)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Good	Good	Poor	Good	Good	Good	Good	Good	Good	Good

Portobello (West) was identified as a bathing water in 1999. In 2007 it was of good quality for the sixth consecutive year. There was one mandatory exceedance on 2 August 2007 which was considered to be due to heavy rain causing CSOs to operate.

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

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

To further improve this bathing water to guideline standard, a study group has been set up to investigate the reasons for the current failure to achieve this quality. A full review of all unsatisfactory intermittent discharges in the catchment is being carried out and a new tidal waters model is being set up, which will be used in conjunction with a freshwater model of the Figgate Burn to identify the improvements required. The group has concluded that no further improvements are required at CSOs in the vicinity of the bathing water and that background bacterial levels in the Figgate Burn were hindering the bathing water from reaching excellent quality. A further sampling programme is planned for the Figgate Burn to try to trace the source of these elevated bacterial levels.

Portobello (Central)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good

Portobello (Central) became an identified bathing water in 1999. After a sewer overflow in May 2000 the water authority carried out investigative work on the Joppa sewer. This resulted in removal of debris from the sewer, increasing the flow passing on to Seafield and reducing the frequency of overflows at Joppa. These and other improvements by Scottish Water have reduced the occurrence of storm sewage overflows. The bathing water achieved excellent quality for the first time in 2001, a status which was maintained until 2005. Portobello (Central) was good quality in both 2006 and 2007.

There was one exceedance of the mandatory standards on 25 June 2007, which was considered to be due to heavy rain causing CSOs to operate. It is likely that this exceedance was due to problems with the pumps at the Joppa sewage pumping station. These have been required to operate above their design capacity due to additional flow in the sewer because of minewater from abandoned mineworkings. The Coal Authority is currently examining ways to reduce this minewater flow. In the meantime Scottish Water has installed new pumps of greater capacity to reduce the spill frequency at the pumping station.

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


Seton Sands


Gullane

Seton Sands

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Good	Excellent	Excellent	Good	Excellent	Excellent

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

In 2002 a new interceptor sewer was laid to convey the sewage from Longniddry to Edinburgh STW. The existing STW at Longniddry became a storm treatment works with a design overflow spill frequency of only once every five years. The impact of this improvement and work funded partly by residents to convey sewage from Seton Mains to this sewerage system is best measured by the fact that the bathing water at Longniddry Bents met the excellent quality standard for the first time in 2004 despite the wet weather that year. This was maintained in 2007.

Longniddry

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Poor	Poor	Poor	Poor	Good	Good	Excellent	Excellent	Excellent	Excellent

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

Gullane

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

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


Yellowcraig

Yellowcraig

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent

The improvement in quality of the identified bathing water at Yellowcraig in 1999 followed diversion of sewage from Dirleton to the STW and long sea outfall to the east of North Berwick. Prior to this it had discharged at the western end of Broad Sands Bay. Following this diversion, Yellowcraig achieved excellent quality for six consecutive years up to 2004, and it was very disappointing that there was a drop in bathing water quality to good in 2005.

Investigations were made in 2005 and potential causes identified. A more detailed investigation was carried out prior to the 2006 bathing season. There is a surface water discharge nearby which may be intermittently contaminated, but SEPA has not yet been able to confirm this.

In 2007 Yellowcraig once again achieved excellent bathing water quality - perhaps suggesting that the 2005 result was atypical.

North Berwick (West)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Poor	Good	Good	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Good

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

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

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

North Berwick (Milsey Bay)

Dunbar (Belhaven)

North Berwick (Milsey Bay)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

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

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

Dunbar (Belhaven)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent

Dunbar (Belhaven) is a fine sandy beach where the identified bathing water achieved excellent status every year between 1993 and 2005. In 2007 Dunbar (Belhaven) once again achieved excellent bathing water quality, perhaps suggesting that 2006 was a statistical aberration.

The current West Barns STW and long sea outfall were commissioned in 1993. Since then the bathing water has mostly achieved excellent quality. However, the STW and outfall have suffered frequent short circuiting with the result that untreated sewage can be discharged via the old West Barns outfall and storm overflow. SEPA has required Scottish Water to eliminate this source of pollution. The consent issued for a new treatment works required Scottish Water to replace the current West Barns STW by the end of 2005. However delays in concluding the terms of the necessary land acquisition mean that the works will not now be completed until spring 2008. The new works is being built inland with a discharge to the Biel Water utilising the existing long sea outfall as a storm overflow. The use of membrane technology means that the high quality of effluent required for bathing water compliance will be achieved without the need for additional disinfection, thus further safeguarding the quality of this bathing water.

Whitesands

Dunbar (East)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

In 2007 Dunbar (East) again achieved excellent quality as it has done every year since sewage from the east side of Dunbar was diverted to the West Barns STW 12 years ago.

Whitesands

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent

Whitesands achieved excellent status each year from 1988 to 2003, though it was formally identified as a bathing water prior to the 1999 season.

Disappointingly Whitesands only achieved good status in 2004, failing to meet excellent by the narrowest of margins. This was possibly a result of the wet weather increasing local surface water contamination. This site is remote from any significant sewage inputs. Excellent status was restored in 2005 and maintained in 2006 and 2007.

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

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The bathing water at Thorntonloch has been excellent quality each year since 1988, although it was only identified as a EU bathing water prior to the 1999 bathing season. The bathing water quality is consistently of excellent quality, although strong tidal currents are present particularly at the west side of the bay during certain tide and wind combinations which can be potentially hazardous for bathers.

In view of its consistently excellent status, the frequency of monitoring was reduced in 2004 and 2005 (as permitted by the bathing Water Directive) from 20 samples a year to five. One of the five samples taken in 2005 exceeded one of the Directive's guideline quality standards. Overall excellent status was maintained but, in accordance with SEPA's precautionary procedure, the sampling frequency returned to 20 times in 2006. Excellent bathing water quality was maintained in 2007.

Pease Bay

St Abbs

Pease Bay

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

The caravan park at the Bay installed a new sewage treatment works before the start of the 2006 bathing season. The plant uses membrane reactor technology which provides bacteriological treatment of the effluent all year around so that it meets mandatory standards. The discharge is made to the Pease Burn and is monitored by SEPA during the bathing season. Samples of the effluent collected in 2007 indicate it is of very high quality.

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

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

St Abbs

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
n/s	n/s	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

St Abbs was identified as a bathing water in 1999, having never previously been sampled by SEPA. St Abbs was identified because of its use for water sports, particularly scuba diving. There is no safe or explicitly permitted bathing area at St Abbs. For the sixth year in succession St Abbs has attained excellent status.

Until 2004 sewage from St Abbs was discharged to the North Sea via four outfalls. There were also a few untreated sewage discharges, although these were small with some serving individual households. In March 2004 Scottish Water completed a programme of work to collect most of the sewage from St Abbs and pump it to the STW at Eyemouth where it now receives full treatment before being discharged to the North Sea.


Coldingham

Coldingham

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

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

Eyemouth

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Good	Poor	Poor	Poor	Good	Good	Good	Good	Poor	Good	Poor

Eyemouth was identified as a bathing water in 1999. Eyemouth STW provides secondary treatment to waste water from Eyemouth, St Abbs, Coldingham and Ayton before discharge to the North Sea through a long sea outfall located south of the bathing water. It is not regarded as a threat to bathing water quality.

The bathing water at Eyemouth has unfortunately failed to meet mandatory standards on a number of occasions. Two poor quality samples in 2005 followed heavy rainfall and high flows in the Eye Water. The river was strongly implicated as the cause of the pollution. This was again the case in 2007, though there were three failing samples this year which had a far higher than average summer rainfall.

SEPA investigations into the sources of the faecal indicator organisms in the Eye Water found that it is affected by:

- storm overflows that discharge from Eyemouth's sewer network to the Eye Water during wet weather;
- run-off from agricultural grazing land in the Eye catchment during wet weather;
- livestock having direct access to the Eye Water and its tributaries.

SEPA is working with Scottish Water and the agricultural community to reduce these sources.

A survey of the entire Eye catchment was scheduled to take place during the 2007 bathing season but unfortunately had to be postponed in light of the restrictions following the foot and mouth disease outbreak in Surrey. This exercise aimed to identify areas at high risk of causing pollution such as sites where livestock have direct access to the watercourse. This exercise will be rescheduled as soon as conditions permit.

The North Burn, a culverted watercourse that runs through Eyemouth and discharges into the bathing water, has also been found to be contaminated with sewage – posing a threat to bathing water quality. Scottish Water has carried out extensive investigations into the sources of contamination over the last few years and has removed a large number of foul sewer discharges from this watercourse. SEPA continues to sample the North Burn during the bathing season but, despite significant improvements during 2007, evidence of sewage contamination was still found. SEPA and Scottish Water will continue to monitor the North Burn until it is clear that all sources of contamination have been identified and addressed.

In view of the predictable conditions at Eyemouth, SEPA may extend its electronic signage network to include this bathing water in 2008 if funds are available.

2.3 Summer weather 2007

The official bathing water season started on 1 June 2007. Expectations were high as it had been preceded by a the relatively warm and dry late spring, which was reflected in the good and excellent results reported for all the pre-season bathing water samples taken in May.

But almost immediately in the first week in June, the summer deteriorated for the rest of the month and heavy rainfall events continued throughout July and much of August.

SEPA analysis of data from 16 rainfall stations near beaches across Scotland shows that, on average, this summer was the wettest in more than 30 years. To some extent this average across Scotland hides the reality of frequent and extreme localised downpours where, for example, one rain gauge reported a one in 321 year event.

Overall June had notable wet spells in central Perthshire, Aberdeenshire and Edinburgh with total rainfall above 300 mm. The interval of weather patterns was substantially more unsettled than usual. July was wetter than August. The summer rainfall totals were mostly well above the long-term average across Scotland since 1976, and only the north-west Highlands and Shetland had drier and below average rainfall.

Under Article 5.2 of the Bathing Water Directive, results must be excluded from consideration if they are the consequence of abnormal weather conditions. It is interesting that the requirement of the revised Bathing Waters Directive (see Section 1.6) refers to a four-year return period rather than the five-year return guidance currently used by SEPA.

Two events justified application of the abnormal event provision in 2007. These lead to five 'poor' sample results being disregarded and re-sampling undertaken. These were at:

- Nairn (Central) and Nairn (East) on 4 June;
- Cullen, Inverboyndie and Stonehaven on 6 August.

These events had clear impact on several other waters along the Moray coast (including a landslip at the coastal village of Pennan), but were less extreme at the other sites.

A further three extreme events were recorded during 2007 leading to the exclusion and re-sampling of five 'good' results. These were at:

- Portobello (Central) and Portobello (West) on 1 June;
- Pease Bay on 20 June;
- St Andrews (East Sands) and St Andrews (West Sands) on 21 June.

Deletion of these 'good' results had no influence on the final mandatory pass of these bathing waters for the season.

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

An important part of the revised Bathing Water Directive (see Section 1.6) is the emphasis given to providing information on bathing water quality to the public. The SEPA signage network is a leading example of how this can be achieved and puts Scotland at the forefront of this public information provision.

SEPA's bathing water quality prediction and signage system was a particular success during this wet summer. Although conditions were not ideal for a successful bathing water season, bathers were kept up-to-date each day on predicted water quality conditions at ten of Scotland's beaches.

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

2007 was the third year in which SEPA was fully responsible for the real-time electronic signage at ten beaches across Scotland. The work was initially funded by the Scottish Government and piloted jointly with it in 2003-2004.

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

From June to mid September, SEPA issued daily water quality forecasts using its extensive rainfall and hydrological information network to make sign message management decisions. The sign status was then recorded via a computer control station which enabled switching to the relevant version of text message. Further information on the background to the system and details of the text messages are available on SEPA's website.[4]

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.

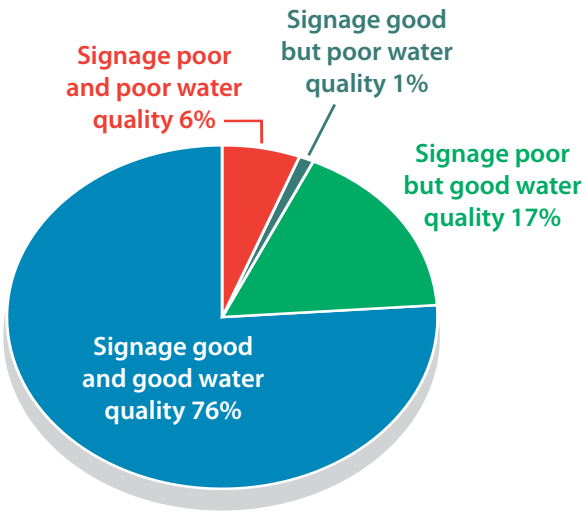
Predictions and results

During the 2007 bathing season 80% of the days, on average, were predicted as having good or better water quality. Though less than in 2006 and 2005 (87% and 90% respectively), it is a similar figure to that recorded in 2004 (81%) – the last wetter than average year.

As in 2005 and 2006, the signage at the ten locations indicated correct or protective precautionary conditions to the public 99% of the time. Of the 190 compliance samples taken from the sites with signage during the bathing water season, the project correctly predicted measured water quality on 82% of occasions (Figure 3). While this is lower than in the previous two seasons, this was largely due to an increase in precautionary forecasts, i.e. when the sign predicts poor water quality but the measured water quality is good. The main reason for these additional precautionary forecasts was the persistently high river flows observed this season.

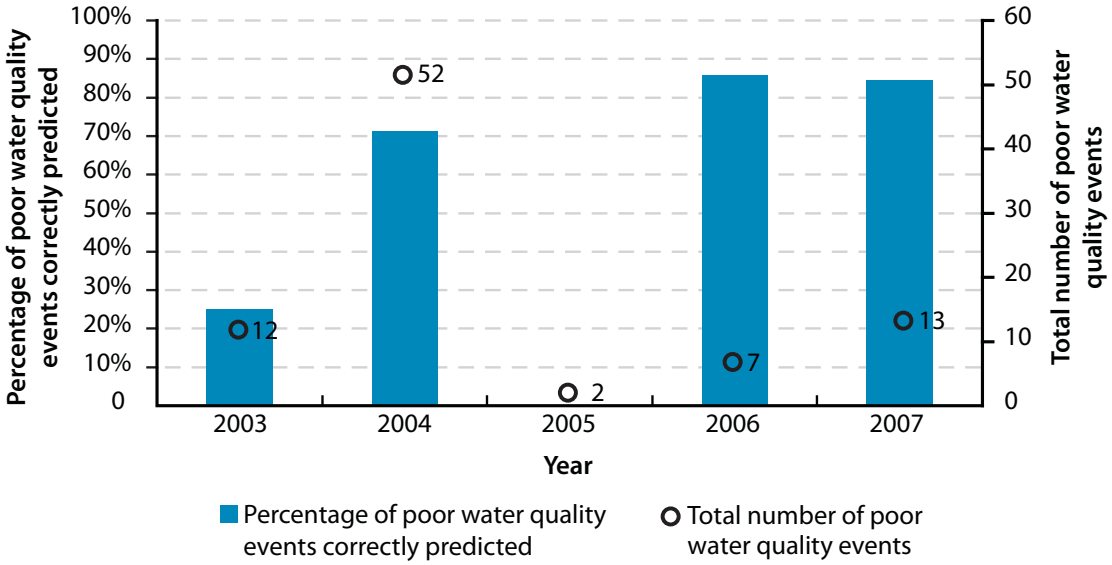
In 2007 signage correctly predicted 11 of the 13 (85%) measured poor water quality events. This was a similar result to 2006 and a substantial improvement on previous years (see Figure 4).

Figure 3: Bathing waters signage performance and validation of daily predictions



[4]www.sepa.org.uk/data/bathingwaters/index.htm

Figure 4: Correct prediction of poor water quality events 2003–2007



Ongoing work

SEPA further developed and improved its bathing waters predictive modelling capability during 2007. For example, predicted rainfall accumulations were used in addition to preceding rainfall for the first time. While the forecast made in the morning is normally representative of water quality conditions for the entire day, very heavy rainfall during the day can cause same day deterioration in water quality at some sites due to a short catchment response time. Informing potential water users of this deterioration ensures they have the most up-to-date information available when deciding whether to use the water.

The use of rain radar to improve bathing water quality predictions is being investigated in a project called 'Methods of Estimating Impacts of Rainfall on Bathing Beach Quality' funded by the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER). The project will report in 2008.

Predictions at some sites have already taken into account continuing improvements to bathing water quality and this is intended to be an ongoing process. Improvements can result from upgrades to Scottish Water's sewerage infrastructure and sewage treatment, private sewage disposal schemes (where relevant) or reductions in pollution from agriculture.

2.5 Results summary for other coastal and inland waters

During the 2007 bathing waters season SEPA monitored 36 other coastal, estuarine and inland sites for bacterial water quality. The locations of these waters are shown in Maps 3 and 4.

The purpose of this additional monitoring varies. In some cases, it was instigated to review the need for improvements to discharge arrangements; in these cases, monitoring can be withdrawn once the required works are in place. In other cases, monitoring is requested by the local authority in order to obtain the data necessary for a beach to apply for a Keep Scotland Beautiful award. This requires that EU bacterial standards to be met.

SEPA plans to review regularly the list of other waters monitored in order, to reduce their number so that resources can be freed up to undertake more investigative microbiological monitoring work at EU bathing waters.

As an additional means of enabling more investigative work to be undertaken, the monitoring frequency at these other waters was reduced to ten samples per season for all sites except two. Here the consistently excellent water quality allowed the sampling to be reduced to five per season – as with some of the designated bathing waters.

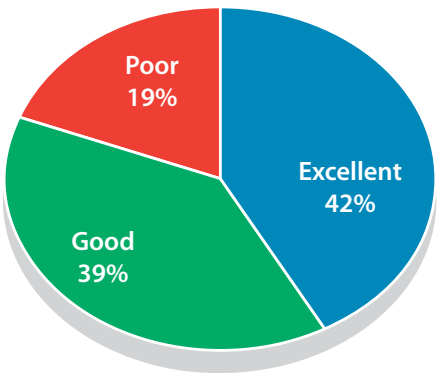
Although these waters are not identified bathing waters, SEPA assesses the monitoring results from these sites in the same way. This is because compliance with the quality standards of the Bathing Water Directive is also part of its overall coastal waters quality classification scheme. To be of excellent or good quality, these other waters must therefore meet the guideline or mandatory standards of the Bathing Water Directive respectively.

Results are given in detail in Annex 2 and are summarised in Figure 5. Of the 36 sampling sites in 2007:

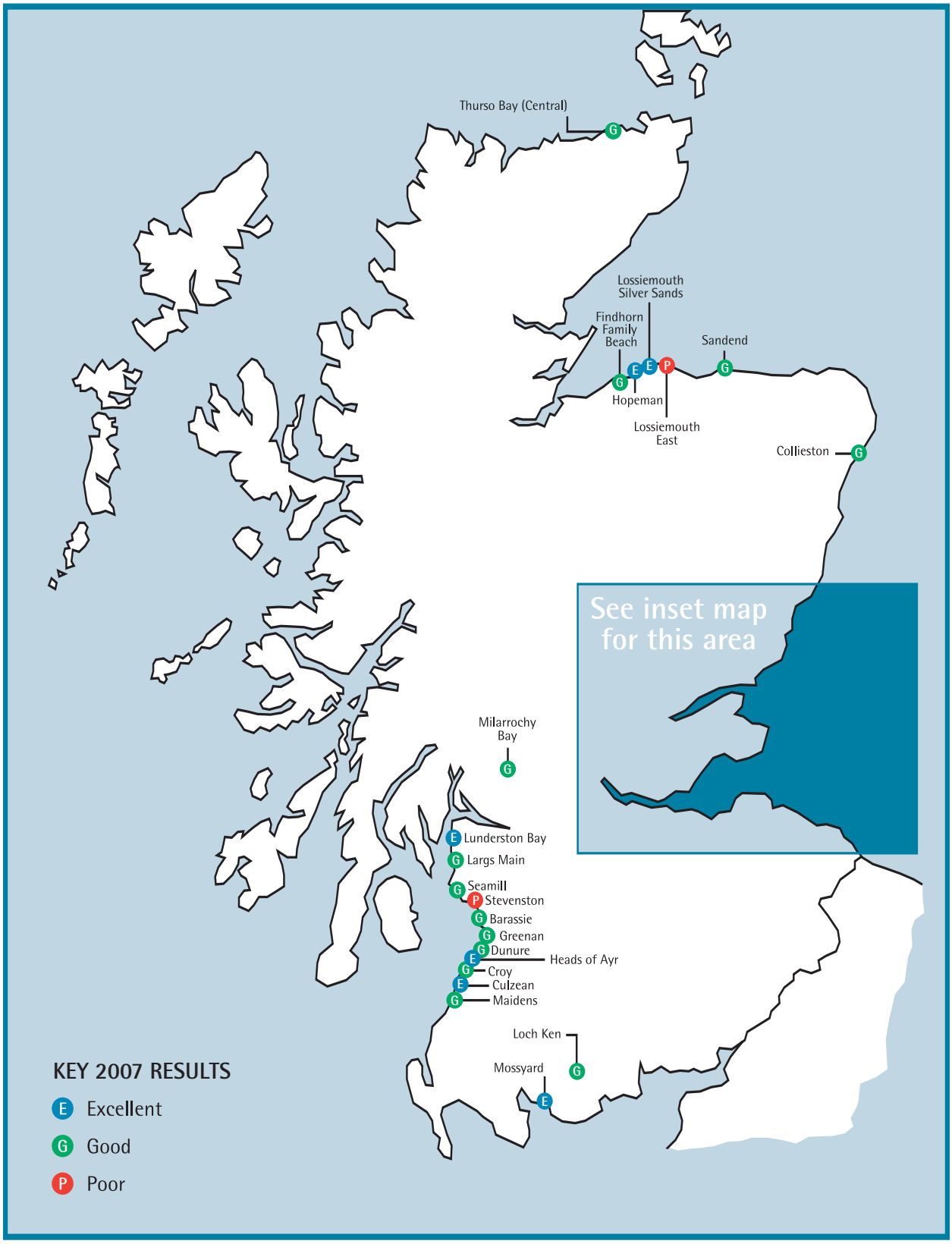
- 15 (42%) were classified as being of excellent quality;
- 14 (39%) were classified as being of good quality;
- 7 (19%) were classified as being of poor quality.

Comparisons with other seasons could be misleading due to some of these other waters becoming designated bathing waters and sampling being discontinued at other sites. A direct comparison that can be made is the number of waters meeting the excellent standard. Despite the wet weather this season, 15 sites met the excellent standard – slightly down from 19 sites last year and 17 in 2005. Although this slight drop is disappointing, it is pleasing to see how well so many of these sites performed despite the wet weather.

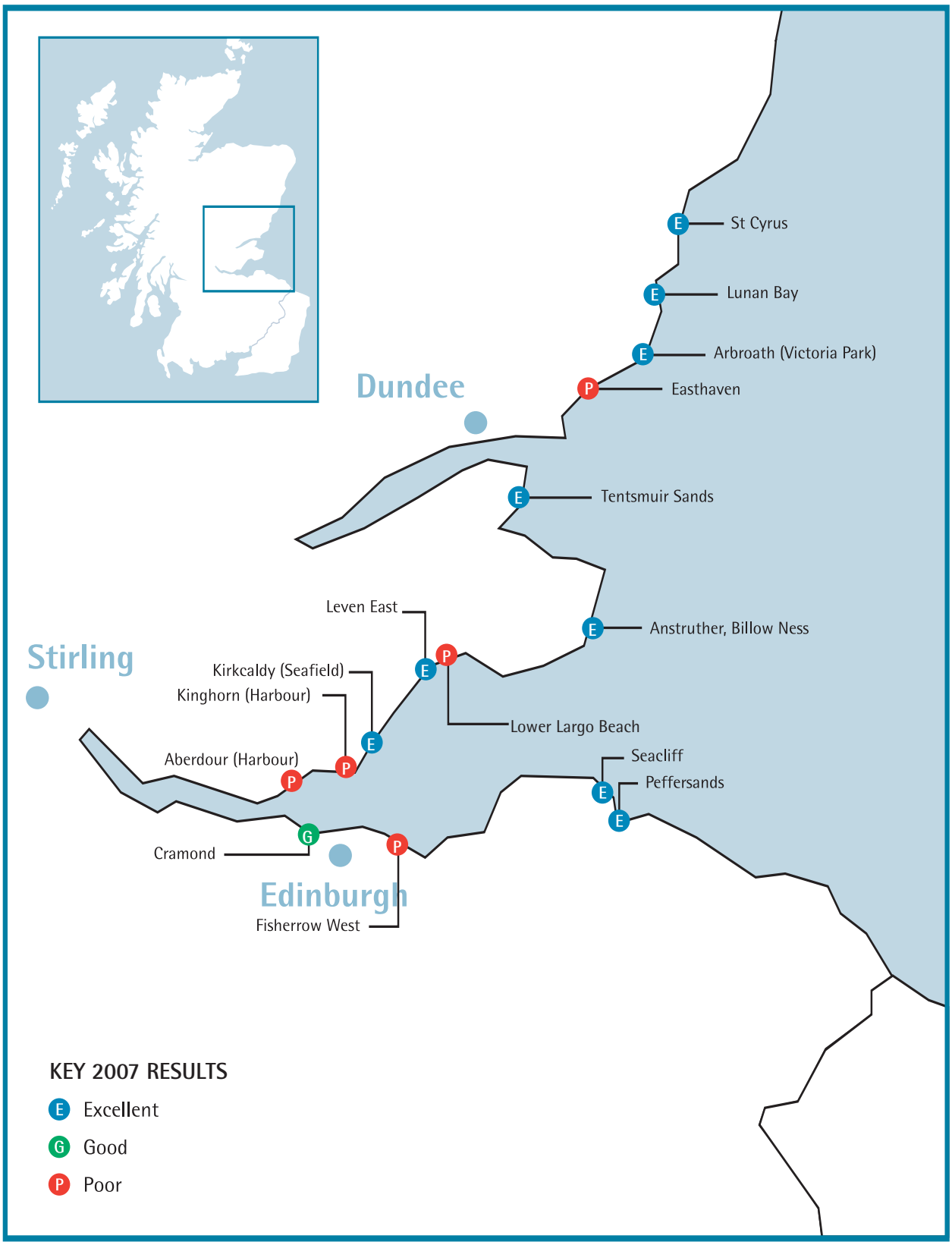
Figure 5: Classification of other monitored waters



Map 3: Location and results of other waters monitored by SEPA during 2007



Map 4: Location and results of other waters monitored by SEPA during 2007 (south east area)



3 Further improvements to water quality

3.1 Investment by Scottish Water

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

The situation is now substantially improving, particularly with the introduction of the Quality and Standards (Q&S) process for setting the capital expenditure plans for Scottish Water and its predecessor authorities. Q&S 1 covered a two-year period from April 2000 to March 2002, delivering an investment in water and sewerage infrastructure of £740 million. This was complemented by a further £380 million invested in Public Private Partnership (PPP) schemes, although these generally tackled only the larger discharges. However, much more remained to be done to achieve adequate environmental quality protection.

Q&S 2 covered the four-year period from April 2002 to March 2006. It consisted of an unprecedented scale of investment of £1.8 billion to upgrade and enhance drinking water supply and sewerage provision in Scotland. SEPA worked with Scottish Water to identify all those schemes within the programme necessary to improve the quality of bathing waters and to ensure these were scheduled for completion as early as possible, with interim temporary solutions being put in place where appropriate.

In 2001, 27 bathing waters were identified as being still at risk of failure as a result of public sewage discharges and the works described below were consequently included within the Q&S 2 programme. However, not all the projects scheduled for completion were commissioned on time. Further works are planned in the next stage of the capital investment programme, Q&S 3, which runs from 2006 to 2012.

Southerness: This bathing water had not previously been considered at risk of failure as a result of Scottish Water discharges. However, monitoring of the River Nith and the failure to achieve good status in 2004 indicated that the Dumfries sewerage networks (some 15–20 km upstream) may have an impact. The improvement projects currently being undertaken in Dumfries will deal mainly with debris, but will also reduce the spill frequency and duration of some storm overflows. There is still a risk of failure of the bathing water and the upgrading of sewerage networks highlighted under the Q&S 3 programme began in 2006.

Rockcliffe: Permanent disinfection was installed, monitored and operational prior to the 2004 bathing season. A new pumping station and storm storage was installed in early 2005 to minimise storm overflows.

Prestwick and Troon (South Beach): As Irvine below.

Irvine: It is clear from discussions with Scottish Water that the work carried out under Q&S 2 was not as extensive as was originally understood by SEPA. The projects only tackle debris and do not address the underlying fundamental problem with the CSOs (i.e. spill frequency and duration). Any reduction in the impact from CSO spills or reduction on the risk of failure of the bathing water is unlikely until improvements under Q&S 3 are implemented.

Saltcoats/Ardrossan: As Irvine above.

Largs (Pencil Beach): All sewage in Largs is now currently treated and discharged from the new Largs STW which became operational at the end of 2006. Prior to this, sewage had been discharged untreated via a short outfall at Buchanan Street about 2 km north of the designated bathing water. A new pumping station next to the outfall now pumps sewage to the new STW north of the town. The treatment at the works will improve water quality in the area and contribute to protection of the bathing water.

Millport Bay: Issues regarding the location of the new treatment works and pumping stations resulted in the start date of the work being delayed from 2003. However, the new STW has now been commissioned and discharge consents granted for the emergency, storm and final effluent discharges associated with the scheme.

Luss Bay: Tertiary treatment in the form of UV disinfection is now provided on site. During 2006 Scottish Water upgraded the treatment plant and the inlet overflow was blocked off. The works has been commissioned and handed over to Scottish Water Operations.

Dunnet: Scottish Water has opted for additional peracetic acid treatment of the septic tank discharge from Dunnet. A dosing chamber has been constructed to allow 25 minutes contact prior to discharge to Dunnet Bay. A new treatment works for Castletown sewage has been brought into use after various technical delays.

Dores: First time sewerage was provided in 2004 to connect all properties (except one) within the village of Dores to the public sewerage system and eliminate private discharges which potentially impact on the quality of the bathing water. Scottish Water also provided a new septic tank for the village and extended the associated outfall in 2004.

Nairn Central and East: Problems have been encountered with the upgrading of various works in the Nairn catchment and at the main Nairn works. Appropriate action is being taken to ensure future improvement.

Cruden Bay: The former local discharge of sewage to the bay was diverted to Peterhead STW before the start of the 2003 bathing water season. To further improve the quality of this bathing water, UV disinfection was installed at Hatton STW before the start of the 2006 season and a large septic tank discharge to the Water of Cruden at Bridgend Crescent near Hatton was removed in favour of a new septic tank and soakaway. Both discharges were previously identified as contributing to high bacterial loadings in the Water of Cruden, which enters the sea at the north end of the bathing beach.

Kingsbarns: Following delays in the construction of this works due to difficulties in acquiring land, the new STW was commissioned in spring 2006 and now provides tertiary treatment and, during the bathing season, UV disinfection.

Dunbar (Belhaven): Construction of the new STW to serve Dunbar was delayed due to problems with land acquisition but is now well underway, with planned completion by March 2008.

Eyemouth: Prior to the 2006 bathing season, two private septic tanks discharging to the North Burn at Acredale were connected to the public sewer and thence to Eyemouth STW by the developer of an adjacent housing estate.

3.2 Private sewage treatment systems

Not all sewage treatment schemes are part of the public network operated by Scottish Water. Improvements often have to be sought from privately run systems treating waste from caravan sites and even individual homes. Very often the preferred solution is connection to a public system, but this may have to be paid for by a householder or a developer. This expense has been borne by householders at Seton Sands and a property developer at Eyemouth.

Caravan parks at Southerness on the Solway coast and at Ganavan north of Oban have been required to upgrade their sewage treatment facilities. The need for similar upgrading for a site near Pease Bay has recently been decided.

A new sewage treatment plant is planned for a visitor centre at Culloden which discharges to the River Nairn.

SEPA has set licence conditions requiring effluent disinfection to protect the quality of the River Nairn and hence both bathing waters adjacent to the mouth of this river.

3.3 Scottish Government sponsored improvement works and diffuse pollution controls

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

- investigating best management practices on farms;
- retrofitting SUDS;
- treating livestock slurry by anaerobic digestion or composting to kill pathogens;
- co-digesting cattle slurry with human sewage sludge;
- co-digestion of animal waste;
- the introduction of farm based measures.

Full details of this work can be found on the Scottish Government's website.[5]

SEPA is currently managing an evaluation of the effectiveness of one of these projects – the Scottish Government project on best management practices on farms in the Brighouse Bay catchment. A final report is expected early in 2008.

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

Following consultation carried out between 2005 and 2007 on proposed regulations for the control of diffuse water pollution from rural land use, the Scottish Government has developed a set of General Binding Rules (GBRs) in collaboration with key stakeholders including SEPA. These GBRs are designed to protect the water environment and to prevent actions which could result in undue risks. The measures are based on widely accepted standards of good practice such as the Scottish Government's Prevention of Environmental Pollution from Agricultural Activity (PEPFAA) Code, the 4 Point Plan, Farm Soils Plan and the Forestry Commission's Forests and Water Guidelines.

The proposals are intended to help bring about good water status across Scotland without imposing onerous costs or conditions on land managers, and are planned to come into force in early 2008. They will be part of the Controlled Activities Regulations (CAR) regime and will establish basic activities that should be undertaken to prevent pollution. They also propose that draining lightly contaminated farmyard water to a wetland constructed for the purpose should be permitted as an alternative to collection of the run-off in a slurry store. These measures will help to protect bathing water quality from agricultural diffuse pollution.

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

3.4 SEPA Environmental Improvement Action Plans to reduce sources of diffuse pollution

Its very nature means that diffuse pollution can be difficult to identify and reduce. Diffuse inputs from both rural and urban sources can have a significant impact on water quality. Spells of heavy rainfall can wash potential pollutants off land and into surrounding water, increasing the risk to bathing water quality.

This is the sixth year in which SEPA has used Environmental Improvement Action Plans to work with others to improve and protect water quality.

Key inspection points in watercourses and at Scottish Water outfalls have been identified where early detection of pollution can lead to improvements and prevent impacts on bathing water quality. Following on from previous work, over 790 inspections were carried out at 48 locations on a weekly basis during the bathing water season in 2007. Wrong connections of sewage effluent to surface water drains were identified as part of the ongoing initiative by Scottish Water and SEPA to trace and eliminate these discharges.

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

Continuing work with the agricultural sector has focused on education, awareness and regulation of farms within high priority catchments. Throughout 2007, follow-up visits were made to a number of farms in bathing water catchments in the south-west and north-east of Scotland. Over 5,000 farm inspections have been undertaken by SEPA to date with more planned for 2008.

Two 'monitored priority catchments' (MPCs) have been established in Scotland. The Lunan Water in Angus and the Cessnock Catchment in Ayrshire were chosen because they are deemed to be widely representative of agricultural land use. A range of monitoring equipment has been installed to assess the sources of diffuse pollution and to monitor new measures to mitigate it. This partnership project involves working with local farmers, the Scottish Government, Scottish Natural Heritage, Scottish Agricultural College, Macaulay Institute, Centre for Ecology and Hydrology and NFU Scotland. A further aim is to suggest no-cost and low-cost measures that could help farmers meet the new Diffuse Pollution General Binding Rules to be introduced in 2008.

Partnership working has produced positive outcomes on a number of projects. In the 3 Dee Vision Project, SEPA worked in collaboration with Aberdeenshire Council, Scottish Natural Heritage, Scottish Water and Macaulay Institute to carry out improvements to the Elrick and Tarland Burns. This work involved undertaking farm visits and producing guidance to help farmers identify pollution risks and then take appropriate action. Wetlands and buffer strips were installed as part of the project to reduce the risk of faecal indicator organisms (FIOs) from livestock in fields bordering the watercourses. Preliminary data suggest that a range of small actions across the catchment has led to an overall improvement in water quality.

Following the finding of high levels of faecal bacteria in the Eye Water at Eyemouth, SEPA is working with farmers, NFU Scotland (National Farmers Union of Scotland), Scottish Water, Scottish Government and local authorities to identify sources of diffuse pollution in the catchment that could contribute to poor water quality. Once these sources have been identified, discussions with partners will identify a range of possible options to reduce pollution risk and aid bathing water compliance.

Installation of new equipment at East Tullos Burn in Aberdeenshire has allowed constant monitoring and capture of data from a number of storm events. Monitoring has continued in south-west Scotland, focusing on the River Cessnock – an important tributary to the Irvine bathing water. These data will help to inform actions as part of the ongoing MPC project.

3.5 Future developments

Bacterial source tracking

SEPA is working with the Environment Agency, the Scottish Government and others on the laboratory development of improved molecular (DNA fingerprinting) methods for the identification of sources (quantitative and semi-quantitative) of faecal contamination at bathing waters. When fully developed, it will be possible to use this technique on catchments to identify sources of faecal coliforms (human, cow, sheep, dog, avian) where there is currently uncertainty. This will enable fuller understanding of sources of potential contamination (arising from diffuse, point source, natural or impact of human activities) and will make it easier to take appropriate remedial actions in a specific bathing water catchment.

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

4 Conclusions

SEPA was delighted to report in 2006 that, for the first time ever, all designated bathing waters had passed the current EU Bathing Water Directive mandatory standard. This announcement was qualified with the proviso that 100% mandatory compliance was dependent on the absence of unseasonably wet weather. Unfortunately the detrimental effect of an extremely wet season was seen in the summer of 2007. But although this unseasonable weather played a dominant role in many bathing water quality stories this season, it is important to consider these in the context of the substantial progress made this year and previously.

Of the seven sites that failed overall in 2007, five of these benefited from SEPA's electronic bathing waters signs. All measured exceedances of the mandatory standard at Sandyhills, Ayr (south), Prestwick and Irvine were correctly predicted in advance. The public was warned via electronic signs at beach locations and also via the SEPA website, phone line and the SEPA text information service. Potential users could then make an informed choice about whether to use the water. At Ettrick one of the two exceedances was predicted; the other was due to a pollution incident which was not considered to be related to rainfall.

SEPA currently leads the way in Europe in this public provision element of the revised Bathing Water Directive. SEPA has had full responsibility for the scheme for three years following its initiation and funding by the Scottish Government in 2003. It is envisaged that further expansion of the network will take place in future years, with the public being able to access information about bathing water quality at an increasing number of locations.

This year's results are undoubtedly a dip in the long-term improvement trend seen over previous years. However, this longer trend reflects the very substantial environmental improvements delivered by Scottish Water's investments in new sewage treatment schemes and the success of continuing work by SEPA and others to minimise diffuse pollution from agricultural sources. After so much hard work to minimise sources of diffuse agricultural pollution in south-west Scotland, it is disappointing that the extreme weather meant that last year's full compliance record was not consolidated in 2007.

The revised Bathing Water Directive was finalised and passed into European law in 2006. While this Directive sets more stringent compliance standards that have to be met by 2015, it will also bring in differences in sampling regimes and a much higher focus on providing information to the public.

The Scottish Government is currently undertaking public consultation on the Bathing Water (Scotland) Regulations 2008. These new regulations have to be implemented by the end of March 2008 and SEPA encourages wide engagement with that process. The consultation document can be found on the Scottish Government website (Section 3.3).

SEPA, the Environment Agency and the Northern Ireland Environment and Heritage Services have formed a UK Bathing Waters Technical Advisory Group to consider and advise government on best practice for the many aspects and challenges of the revised Directive.

A new bathing water, Elie (Harbour) and Earlsferry, was identified this year. The former Elie (Harbour and Ruby Bay) site was split into two identified bathing waters to reflect its separation by a natural peninsular. The newly designated water had been monitored since the 1980s as an 'other water' (Earlsferry); it was classed as excellent this year. Along with three de-designations of little used sites (Turnberry, Morar and Shell Bay), this brought the total number of identified sites to 61. These decisions were made by Scottish Ministers on the recommendation of the independent Bathing Waters Review Panel. Further recommendations based on information about usage, facilities, management plans and stakeholder submissions are expected for 2008.

To reach the new tighter bathing water quality standards prescribed within the revised Directive, current levels of pollution from both sewage and diffuse agricultural sources must be further reduced at many bathing water sites. SEPA will continue to work with, and through, a wide range of stakeholders to achieve the improvements required.

SEPA's work with Scottish Water to bring about continued improvements in the sewage infrastructure is very important. The capital investments made so far have brought about real environmental benefits which are increasingly visible. The next Scottish Water investment programme (Quality & Standards 3) will deliver additional improvements. SEPA will also continue to carry out audits at existing facilities to ensure that they are working properly so that risks of pollution are minimised.

Diffuse pollution is still the main source of problems and threats to quality at numerous bathing waters and further improvements will be required. SEPA is grateful for the input from the agricultural community, Scottish Agricultural College, NFU Scotland and Scottish Government in tackling diffuse pollution through co-operation and the adoption of a wide range of methods and initiatives.

While there have been some successes this year, the objective for 2008 is to see a Scotland-wide return to the good quality bathing water we have come to expect.

Annex one

2007 Monitoring data from Scotland's 61 identified bathing waters

			Good quality (EC mandatory standard)		Excellent quality (EC guideline value)			
Bathing water	Local authority	No. of sample results	No. of TC* ≤ 10,000/ 100ml	No. of FC* ≤ 2000/ 100ml	No. of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	Overall quality
Southerness	D&G	20	20	19	13	10	15	Good
Sandyhills	D&G	20	20	18	7	2	14	Poor
Rockcliffe	D&G	20	20	20	10	5	17	Good
Brighouse Bay	D&G	20	20	19	15	12	15	Good
Carrick	D&G	20	20	20	17	15	18	Good
Girvan	SA	20	20	18	13	6	10	Poor
Ayr (South Beach)	SA	20	18	18	9	6	13	Poor
Prestwick	SA	20	19	18	15	13	17	Poor
Troon (South Beach)	SA	20	20	20	19	19	20	Excellent
Irvine	NA	20	18	18	10	7	16	Poor
Saltcoats/Ardrossan	NA	20	19	19	17	13	16	Good
Largs (Pencil Beach)	NA	20	20	20	17	15	18	Good
Millport Bay	NA	20	20	20	20	18	20	Excellent
Luss Bay	A&B	20	20	20	11	3	13	Good
Ettrick Bay	A&B	20	20	18	14	8	16	Poor
Machrihanish	A&B	10	10	10	10	10	10	Excellent
Ganavan	A&B	20	20	20	17	14	20	Good
Dunnet	H	20	20	20	19	18	19	Excellent
Dornoch	H	5	5	5	5	5	5	Excellent
Dores	H	20	20	20	13	16	19	Good
Nairn (Central)	H	20 (+1AWW†)§	20	20	15	13	14	Good
Nairn (East)	H	20 (+1AWW†)§	20	20	16	14	17	Good
Cullen Bay	Moray	20 (+1AWW†)§	20	20	18	15	17	Good
Inverboyndie	Aber	20 (+1AWW†)§	20	19	10	12	17	Good
Rosehearty	Aber	20	20	19	17	15	17	Good
Fraserburgh (Tiger Hill)	Aber	20	20	20	17	15	19	Good
Fraserburgh (Philorth)	Aber	20	20	20	19	17	19	Excellent
Peterhead (Lido)	Aber	20	20	20	20	18	20	Excellent
Cruden Bay	Aber	20	20	20	10	10	13	Good
Balmedie	Aber	5	5	5	4	4	5	Excellent
Aberdeen	CofA	20	20	20	10	10	17	Good
Stonehaven	Aber	20 (+1AWW†)§	19	20	13	13	16	Good
Montrose	Angus	20	20	20	19	16	19	Excellent

			Good quality (EC mandatory standard)		Excellent quality (EC guideline value)			
Bathing water	Local authority	No. of sample results	No. of TC* ≤ 10,000/ 100ml	No. of FC* ≤ 2000/ 100ml	No. of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	Overall quality
Arbroath (West Links)	Angus	20	20	20	20	15	18	Good
Carnoustie	Angus	20	20	20	19	19	19	Excellent
Broughty Ferry	DC	20	20	20	14	10	20	Good
St. Andrews (West Sands)	Fife	20	20	20	18	16	19	Excellent
St. Andrews(East Sands)	Fife	20	20	20	17	14	20	Good
Kingsbarns	Fife	20	20	20	18	19	18	Excellent
Crail (Roome Bay)	Fife	10	10	10	10	9	9	Excellent
Elie (Ruby Bay)	Fife	10	10	10	10	9	10	Excellent
Elie (Harbour and Ruby Bay)	Fife	10	10	10	9	9	10	Excellent
Kinghorn (Pettycur)	Fife	20	20	20	19	17	17	Good
Burntisland	Fife	10	10	10	9	9	10	Excellent
Aberdour (Silver Sands)	Fife	10	10	10	10	8	9	Excellent
Portobello (West)	CofE	20	20	20	11	10	14	Good
Portobello (Central)	CofE	20	20	19	13	12	15	Good
Seton Sands	EL	20	20	20	19	19	20	Excellent
Longniddry	EL	20	20	19	19	17	18	Excellent
Gullane	EL	5	5	5	5	5	5	Excellent
Yellowcraig	EL	20	20	20	20	19	19	Excellent
North Berwick (West)	EL	20	19	19	16	16	16	Good
North Berwick (Milsey Bay)	EL	20	20	20	19	18	19	Excellent
Dunbar (Belhaven)	EL	20	20	20	17	16	19	Excellent
Dunbar (East)	EL	20	20	20	18	16	18	Excellent
Whitesands	EL	10	10	10	10	8	10	Excellent
Thorntonloch	EL	10	10	10	10	10	9	Excellent
Pease Bay	SB	20	20	20	18	19	19	Excellent
St Abbs	SB	20	20	20	20	17	18	Excellent
Coldingham	SB	10	10	10	10	10	9	Excellent
Eyemouth	SB	20	17	17	8	7	11	Poor

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

† AWW = Abnormal Weather Waiver.

§ 20 (+1AWW) denotes 20 samples used for compliance, plus 1 AWW.

Local Authority Abbreviation codes:

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

Annex two

Monitoring data from other waters

		Good quality (EC mandatory standard)		Excellent quality (EC guideline value)			
Bathing water	No. of sample results	No. of TC* ≤ 10,000/ 100ml	No. of FC* ≤ 2000/ 100ml	No. of TC* ≤ 500/ 100ml	No. of FC* ≤ 100/ 100ml	No. of FS* ≤ 100/ 100ml	Overall quality
Loch Ken	10	10	10	9	6	10	Good
Mossyard	10	10	10	8	8	10	Excellent
Maidens	10	10	10	6	6	8	Good
Culzean	10	10	10	10	9	10	Excellent
Croy	10	10	10	10	9	8	Good
Heads of Ayr	10	10	10	9	8	9	Excellent
Dunure	10	10	10	5	4	9	Good
Greenan	10	10	10	6	5	10	Good
Barassie	10	10	10	7	6	9	Good
Stevenston	10	10	8	6	3	8	Poor
Seamill	10	10	10	8	6	10	Good
Largs Main	10	10	10	8	7	9	Good
Lunderston Bay	10	10	10	8	8	10	Excellent
Milarrochy Bay	10	10	10	7	5	8	Good
Thurso Bay (Central)	10	10	10	9	7	9	Good
Findhorn Family Beach	10	10	10	4	4	4	Good
Hopeman	10	10	10	10	10	10	Excellent
Lossiemouth Silver Sands	10	10	10	10	8	9	Excellent
Lossiemouth East	10	9	9	1	3	4	Poor
Sandend	10	10	10	4	3	5	Good

		Good quality (EC mandatory standard)		Excellent quality (EC guideline value)			
Bathing Water	No. of sample results	No. of TC* 10,000/ 100ml	No. of FC* 2000/ 100ml	No. of TC* 500/ 100ml	No. of FC* 100/ 100ml	No. of FS* 100/ 100ml	Overall Quality
Collieston	10	10	10	9	6	10	Good
St Cyrus	10	10	10	10	9	10	Excellent
Lunan Bay	5	5	5	5	5	5	Excellent
Arbroath (Victoria Park)	10	10	10	9	8	9	Excellent
Easthaven	10	10	9	9	7	8	Poor
Tentsmuir Sands	5	5	5	5	5	5	Excellent
Anstruther, Billow Ness	10	10	5	8	8	10	Excellent
Lower Largo Beach	10	10	8	6	6	7	Poor
Leven East	10	10	10	10	9	9	Excellent
Kirkcaldy (Seafield)	10	10	10	9	9	9	Excellent
Kinghorn (Harbour)	10	10	9	7	7	8	Poor
Aberdour (Harbour)	10	10	9	4	4	9	Poor
Cramond	10	10	10	6	6	9	Good
Fisherrow West	10	10	9	5	4	5	Poor
Seacliff	10	10	10	10	10	10	Excellent
Peffersands	10	10	10	9	8	10	Excellent

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

Annex three

Current legislation and results assessment

A3.1 EU Bathing Water Directive (76/160/EEC)

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

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

A3.2 Related legislation

Under the Water Environment and Water Services (Scotland) Act 2003, as implemented through the Water Environment (Controlled Activities) (Scotland) Regulations 2005, SEPA issues consents 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 Urban Waste Water Treatment Directive (UWWTD) specifies minimum legal standards for the treatment of municipal waste water. These standards are determined by the size of the community to be served by a sewage treatment works (STW) and by the nature of the receiving environment. This Directive also requires treatment to ensure compliance with all other relevant EC 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, approved in December 2000, defines a planning mechanism for delivering specified environmental objectives. It requires Member States to ensure attainment of good status in coastal waters, estuaries, rivers, lochs and groundwater by 2015 through the implementation of River Basin Management Plans, the first of which must be finalised by 2009. The WFD will replace seven existing directives and will provide the context within which other directives (including the Bathing Water Directive) operate. As well as having implications for investment to reduce point source pollution, the legislation will also require controls to be put in place to minimise the impact of diffuse pollution sources.

A3.3 Interpretation of results and requirements for monitoring programmes

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

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

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

Mandatory standards (good quality)

Mandatory standards apply to ten quality indicators:

- total coliforms (TC);
- faecal coliforms (FC);

- salmonella;
- enteroviruses;
- pH,
- colour;
- mineral oils;
- detergents;
- phenols;
- transparency.

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

Guideline values (excellent quality)

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

Abnormal weather

Under Article 5.2 of the Directive, results must be excluded from consideration if they are the consequence of abnormal weather conditions. If a result is excluded, then a replacement sample is taken immediately after the abnormal effects have ceased. There were only two events that justified application of this provision in 2007, leading to five sample results being disregarded.

Exceptional geographic conditions

Under Article 8, the requirements of the Directive may be waived by Scottish Government because of exceptional natural geographical conditions in respect of the colour and transparency conditions. For example, Sandyhills on the Solway Firth has a waiver for transparency because tidal action can lead to high levels of suspended sediment being stirred up. At Nairn (East Beach), a waiver has been granted for both transparency and colour because, when in spate, the River Nairn discharges peaty coloured water into the sea near the sampling point. Currently, six identified bathing waters in Scotland have waivers for colour and 39 have waivers for transparency.

A3.4 Sampling frequency

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

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

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

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

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

Sites selected for reduced sampling are sampled five times during the bathing waters season, unless they are current or candidate Blue Flag beaches where a minimum of ten samples is taken to meet the award criteria. Details of sites where the reduced sampling provision was applied in 2007 are identified in Annexes 1 and 2.

A3.5 Interpretation of microbiological values

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

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

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

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

Annex four

Glossary of terms and abbreviations

CAR Controlled Activities Regulations

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

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

EC European Commission (of the EU)

EU European Union

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

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

GBR General Binding Rules

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

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

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

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

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

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

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

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

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

SAC Scottish Agricultural College

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

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

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

SEPA Scottish Environment Protection Agency

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

SUDS Sustainable urban drainage systems

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

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

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

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

Annex five

Sources of additional information on bathing water quality

Technical queries or enquiries about SEPA's bathing water quality monitoring programme should be directed to your local SEPA Office (see Annex 6 for details).

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

A number of other organisations complement SEPA's role in promoting high standards of bathing water quality.

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

In Scotland, the charity Keep Scotland Beautiful administers the Seaside Awards for beaches. These awards recognise beaches that are clean, safe and which comply with the Bathing Water Directive's mandatory standards. As well as the Seaside Awards, Keep Scotland Beautiful administers the European Blue Flag Campaign in Scotland on behalf of the Foundation for Environmental Education. This is an award presented to beaches (and marinas) from 37 countries around the world that fulfil strict criteria relating to both water quality and environmental management in the surrounding beach area.

The Blue Flag award requires water quality to be guideline standard. In 2007 five beaches in Scotland achieved and retained Blue Flag status:

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

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

Water Authority
Scottish Water,
Castle House,
6 Castle Drive,
Carnegie Campus,
Dunfermline,
KY11 8GG
Tel: 0845 601 8855

www.scottishwater.co.uk

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

Tel: 01989 566017

www.mcsuk.org

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

Tel: 01786 471333

www.keepscotlandbeautiful.org

The website address for the Blue Flag and Seaside Awards is: **www.keepscotlandbeautiful.org/coastal**

Information on bathing water quality in England and Wales can be obtained from the Environment Agency and, in Northern Ireland, from the Environment and Heritage Service:

Environment Agency
enquiries@environment-agency.gov.uk
Tel: 08708 506 506
www.environment-agency.gov.uk

Environment and Heritage Service
ep@doeni.gov.uk
Environment Protection
Calvert House
23 Castle Place
Belfast BT1 1FY
Tel: 028 9025 4754
www.ehsni.gov.uk

Environmental Quality Directorate
Scottish Government
Victoria Quay
Edinburgh EH6 6QQ
Tel: 0131 244 0396
waterdivision@scotland.gsi.gov.uk
www.scotland.gov.uk

Annex six

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Fax: 0141 948 0006

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

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Fax: 01546 602337

Newton Stewart Office
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Minnigaff
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0800 80 70 60

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www.sepa.org.uk

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