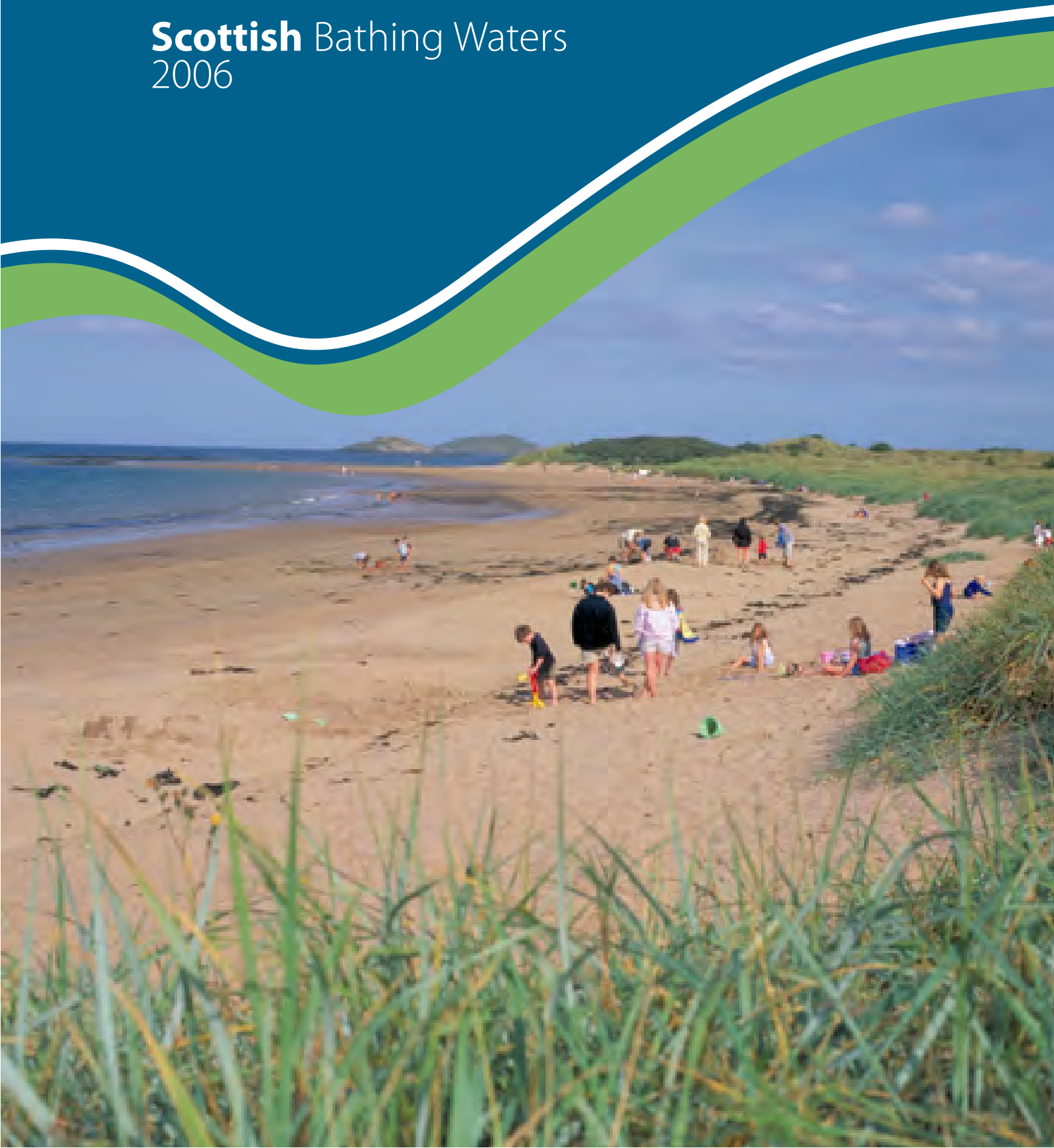


Scottish Bathing Waters 2006

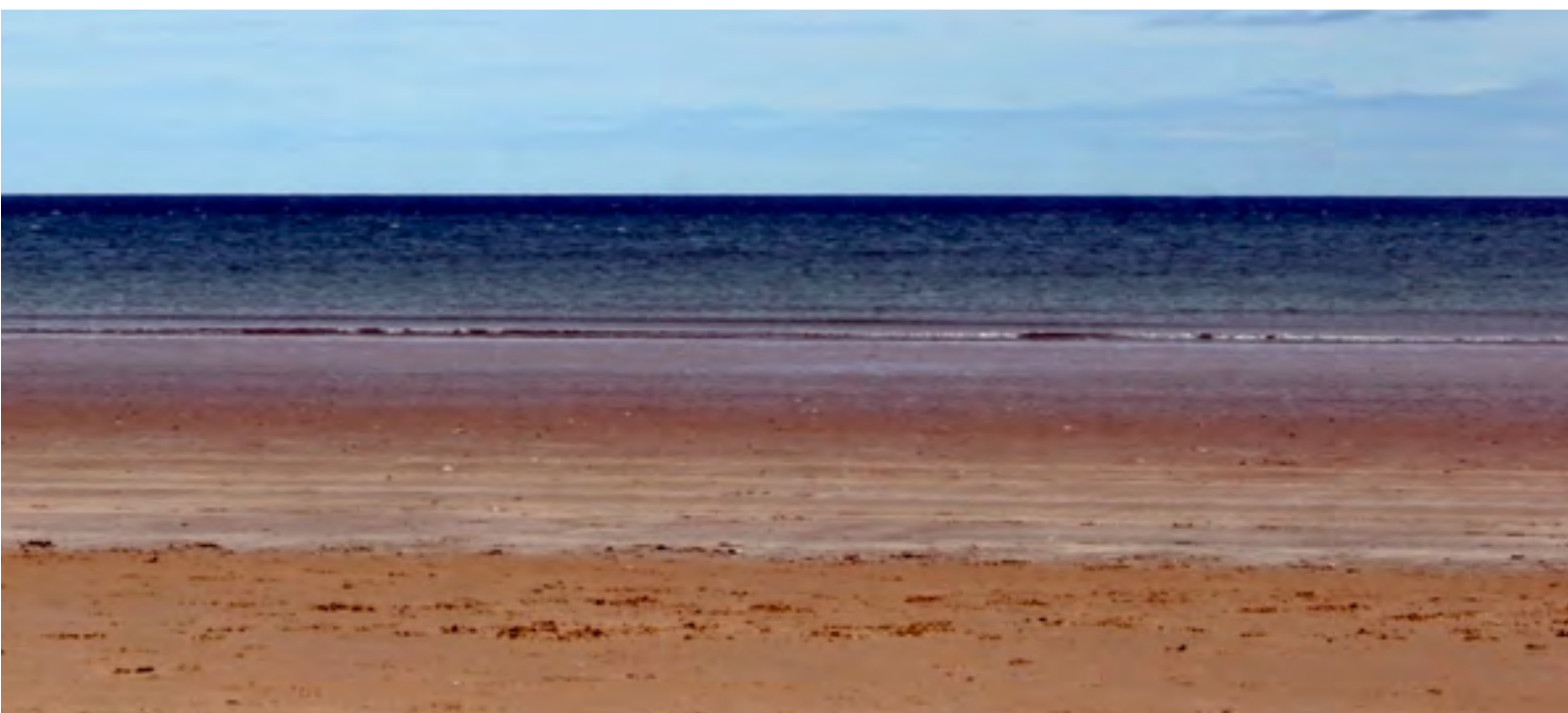


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St Andrews (West Sands)

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Foreword

It is always a pleasure to report good news. This year's first time achievement of 100% compliance with the European Bathing Waters Directive is a substantial success for Scotland. I am very pleased to present this report, which summarises the results, the progress made or planned and the issues being dealt with.

This year was also significant because it marked both the designation of 3 new Scottish bathing waters, bringing the total to 63, and the passing into European law of the new EU Bathing Waters Directive. The Directive sets new standards to be met by 2015, and specifies different sampling and assessment methods, to begin in 2012.

One of the other welcome features of the new Directive is the emphasis it places on providing more information to the public. In Scotland, we have already established real-time electronic signs at ten beaches, giving accurate daily predications of water quality during the bathing season. We have improved our predictive modelling systems this year and expect to provide even better information in 2007.

Achieving good water quality is an ongoing challenge. This year's success reflects the significant progress made by different sectors, including improvements to the sewerage infrastructure and private sewage treatment schemes, and reductions in pollution from agricultural land.

We must not, of course, be complacent. This year's compliance was achieved by a narrow margin with the help of drier than average weather during the summer. But climate change is bringing different weather patterns to Scotland, with warmer and drier periods interspersed with wetter and stormier conditions. We may not have that narrow margin to help in future years. Continuing investment and the ongoing involvement of all stakeholders in achieving and maintaining bathing water quality are therefore essential if Scotland is to enjoy similar successes in future.



A handwritten signature in black ink that reads "Chris J. Spray".

Dr Chris Spray MBE

Director of Environmental Science
Scottish Environment Protection Agency

Executive Summary

Since last year's report, there have been three notable developments. In chronological order these were:

1. the notification of three new identified bathing waters, bringing to 63 the total in Scotland;
2. the final passage into European law of a new revised bathing waters directive, making clear new standards which must be met by 2015;
3. the first time 100% achievement by EU recognised Scottish bathing waters of the basic European quality standards.

This first time compliance of all identified bathing waters with the European mandatory bathing waters bacterial quality standards is great news, and is something the Scottish Environment Protection Agency (SEPA), the Scottish Executive and partner organisations have been striving to achieve for many years. It is a good reward for the large investments made to treat point sources of sewage pollution, and the work done to reduce diffuse, especially agricultural, pollution.

Good though the achievement is, it must be recorded that compliance was by a narrow margin, and that substantial further water quality improvement is still required at many sites to meet current guideline and the 2015 quality standards. A further consideration is that the summer was drier than average, which helps minimise the run-off of faecal contamination from farms and farmland, and to reduce the occurrence of discharges from storm sewer overflows. There is clearly still a need for further reductions in diffuse pollution and for continuing investment in sewage treatment, and sewerage infrastructure, particularly to minimise polluting storm sewer overflow events, if the new quality standards are to be met.

SEPA's provision of bathing waters quality information to the public via electronic beach signage and website information was maintained and enhanced by improving predictive capability. Some of the improvements made were publicised at an inter-agency symposium in November, and are outlined in Section 2.4 of this report. The revised EU directive confirms that the importance of these features will further increase.

Generally dry weather during June got the current season off to a good start, but there were several big rainfall events in July which caused quality standard exceedances. The poor quality results were mostly predictable. One exception was at Carnoustie, where a blocked sewer leading to pollution of a local stream was found to be a problem. Carnoustie previously had a good compliance record since transfer of all local sewage to the new Hatton treatment works further east along the coast. Following correction of the problem, which was confirmed by additional sampling, Carnoustie bathing water returned to its normal high quality.

Towards the end of the season, rainfall increased to more normal levels and the increased diffuse pollution that this brought from farmland run-off and urban sources eventually reduced the number of waters meeting the stringent and aspirational EU guideline standards. At Eyemouth in the Borders, all 12 June/July samples met guideline standards, but five of the eight Aug/Sept samples did not, leading to an overall good rating. However, the absence for the second year of any overall failures on the west coast confirms that the continuing hard work by many organisations to reduce diffuse pollution inputs is really working. It is tangible evidence of the success of the continuing work by SEPA, the agricultural community, Scottish Agricultural College, National Farmers Union of Scotland and Scottish Executive Environment and Rural Affairs Department in tackling diffuse pollution to minimise its multiple sources through a wide range of methods and initiatives. Implementation of the valuable 'Prevention of Environmental Pollution from Agricultural Activity Code of Good Practice' (PEPFAA Code) and 'Four Point Plan' have also helped delivery of these improvements. Nevertheless, diffuse pollution is still the main source of quality threats and problems at numerous bathing waters.

The independent panel set up by the Scottish Executive to make recommendations on desirable changes to the list of recognised bathing waters, based on information about usage, facilities, management plans and stakeholder submissions is expected to make further recommendations for 2007. These will be announced early next year and it is anticipated that Scottish Ministers will decide whether these recommendations should be accepted in time for them to be implemented for the 2007 bathing season.

1 Introduction

1.1 SEPA's role in bathing water quality

The Scottish Environment Protection Agency (SEPA) is Scotland's environmental regulator and adviser, responsible to the Scottish Parliament through Ministers.

SEPA's main aim is to be an effective regulator and a respected authority on the environment. Included within our objectives is a remit to achieve good water, air and land quality, protect, inform and engage communities and promote economic well-being. SEPA also works with many other organisations to help protect and improve the environment.

For bathing waters, in addition to publishing this report, SEPA places monitoring results on its website within a few days of sample collection throughout the bathing season from 1 June-15 September.

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 consolidate this year's full compliance with European bathing water standards, to which the Scottish Executive is committed. Section 3 of this report provides specific information about the ongoing work to ensure attainment of current quality standards and for the attainment of anticipated new and more stringent European standards.

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 status or potential under the Water Framework Directive. In general terms, good status means that waters only show slight change from what would be expected in undisturbed conditions.

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 water quality monitoring results, it also describes factors underlying the results and outlines site-specific plans for improvement.

The results of SEPA's routine monitoring in 2006 are presented in Section 2. This gives details for Scotland's 63 identified bathing waters, and a summary for 38 other waters which were routinely monitored during the 2006 bathing season.

Section 3 provides more information about the work-streams and plans which are continuing, and needed to ensure further water quality improvements.

As required by the directive, the water quality results for the 63 identified bathing waters have been reported to the European Commission (EC), which will publish the results as part of their annual report on the overall quality of bathing waters throughout the countries of the European Union.

1.4 Improving water quality

In 1998 SEPA set out its view on environmental protection priorities for Scotland in the form of its Environmental Strategy. This committed 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 SEPA will continue to work with all relevant organisations, the agricultural community and the public to attain its goal. Only by working in partnership can SEPA give Scotland and its visitors, the high quality of bathing water that 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 Executive recognised this in the first strategy document, published in March 2002 '*Strategy for Improving Scotland's Bathing Waters*', followed by the '*Four Point Plan for reduction of agricultural pollution sources*', published in December 2002. Both publications are proving very helpful in enabling these problem sources to be tackled. More details of the work sponsored by the Scottish Executive are given in Section 3.3.

Essentially all large continuous sewage discharges to Scottish waters are now subject to at least full secondary treatment, but sewage remains a significant cause of coastal waters pollution. Storm overflows, to both 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 Executive work with Scottish Water and the Water Industry Commissioner to ensure:

- that planned capital investment programmes, aimed at upgrading sewerage infrastructure throughout the country, are prioritised to maximise environmental benefits, and
- 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 (CSO), are necessary to prevent flooding. To do this, they have to discharge diluted but minimally treated sewage to watercourses and coastal waters. SEPA imposes conditions requiring solids removal and on the location and frequency of operation of CSO to minimise their impact on water quality.

In respect of urban areas, the principles embodied in the successful Sustainable Urban Drainage Systems (SUDS) manual are increasingly limiting urban diffuse pollution from new developments, but there remains a large problem of contaminated surface water run-off from existing urban areas. It is encouraging that the Scottish Executive has undertaken an evaluation of retrofitting SUDS to urban areas near to bathing waters¹.

Local authorities are responsible for keeping 'Amenity Beaches' free from litter under the Environmental Protection Act 1990. All identified bathing waters are now classed as Amenity Beaches, and local authorities are also obliged to display notice boards at these waters providing a variety of information including the water quality data supplied by SEPA.

¹www.scotland.gov.uk/bathingwaters

1.5 Identification of bathing waters

Bathing waters are designated under the directive by Scottish Ministers. To aid Ministers in determining which sites merit designation – both existing and future sites – the Bathing Water Review Panel has been established by Clean Coast Scotland, at the request of the Scottish Executive. SEPA is a member of this panel. This follows on from recommendations made as a result of the Scottish Executive's consultation in 2004 on the identification process.

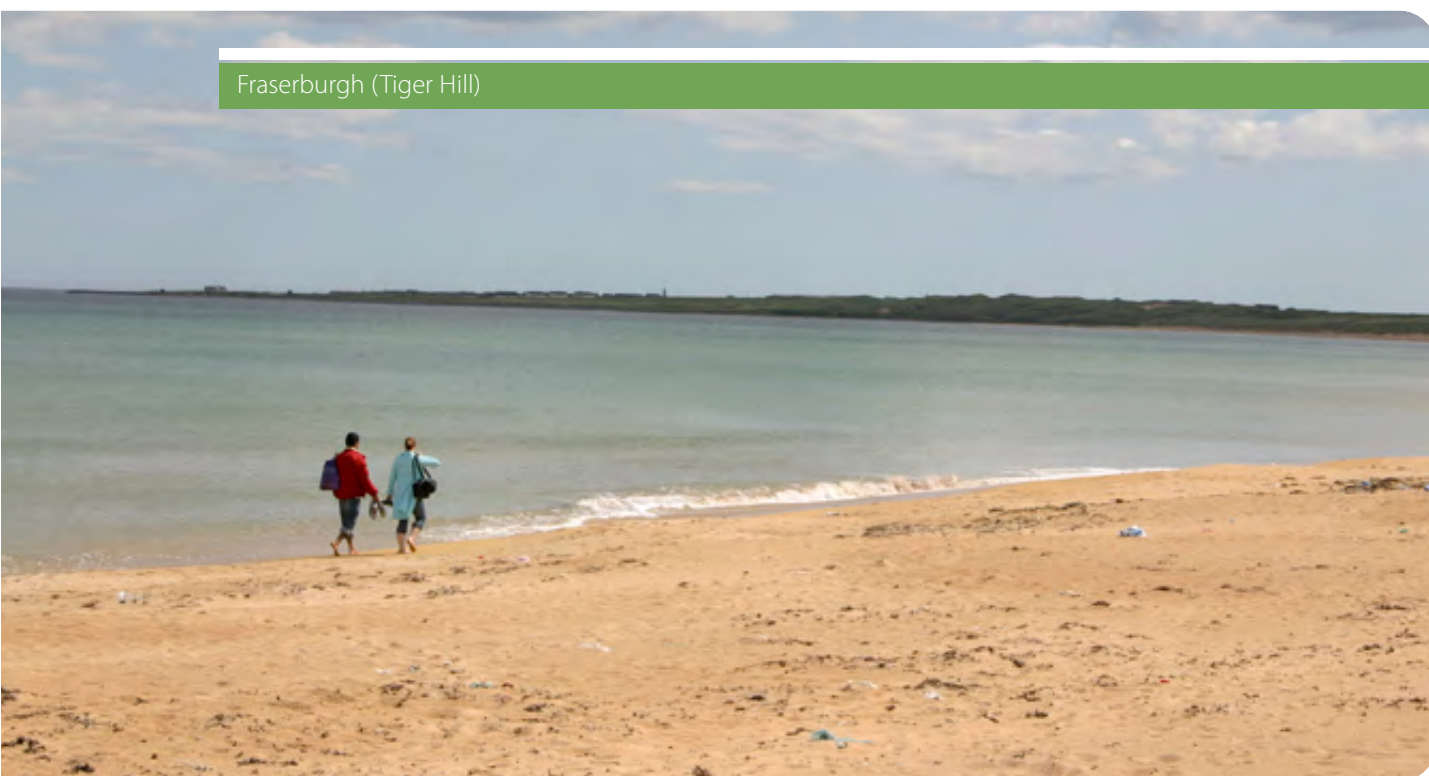
Sites eligible for designation must meet several criteria, the most important of these being evidence of usage, as required by the directive, and appropriate management. Official designation provides for action to be taken to ensure that the bathing water meets the directive's standards to protect public 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. These 63 waters are the focus of this report.

This is the second year that the panel has operated. Its recommendations, following applications made after the 2006 bathing water season, are expected by the end of 2006. Ministers will make a final decision prior to the start of the 2007 bathing season. The panel will only operate until April 2008. How identifications are made after this date will be considered as part of the Scottish Executive's consultation on its transposition of the revised Bathing Water Directive.

The first 23 designated bathing waters in Scotland were identified in 1987 by the then Scottish Office, based on the UK Government's criteria for identifying waters within the scope of the directive on bathing water usage. A review carried out in 1998 by the Scottish Office, involving SEPA and others, resulted in the addition of a further 37 bathing waters, bringing the total in Scotland to 60 for 1999–2005. Further information on the designation process is available on the Scottish Executive's website.

Fraserburgh (Tiger Hill)



1.6 Revision of the Bathing Water Directive

The revised Bathing Water Directive came into force on 24 March 2006, and 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 EC's website². These new standards are required to be met by 2015: the date by which many other EU Water Framework quality objectives have also to be met.

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

There are also changes to the bacterial entities which must be monitored. These arise from recommendations of the World Health Organisation. 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 that will have to be employed, the numeric differences are anticipated to be minimal.

The new directive sets different quality standards for coastal and inland bathing waters. Further differences are that quality assessments will be spread over four years, and required sampling frequency will be lower. Sampling schedules will be published in advance of the bathing season, but there will be several days flexibility, potentially allowing sampling during very wet weather to be avoided. SEPA has undertaken a trial to determine how this might work in practice.

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

The Scottish Executive recognised that significant changes would be required to meet the conditions of the new directive, and published a revised strategy *Better bathing waters: Meeting the challenges of the revised Bathing Water Directive in Scotland*, in March 2006, to outline how those challenges would be met. This strategy document sets out how they propose to implement and meet the requirements of the revised bathing water in Scotland by its deadline of compliance of 2015.

The strategy assesses the work that has already been undertaken towards meeting bathing water compliance under the existing directive and how this will progress under the revised directive. It also identifies the important role SEPA will have here. The Strategy can be found on the Scottish Executive's website³.

²http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2006/l_064/l_06420060304en00370051.pdf

³www.scotland.gov.uk/bathingwaters

2 2006 bathing water quality results

2.1 Results overview

In 2006, all 63 identified bathing waters met the EU mandatory standards. Of these, 34 waters (54%) also met the guideline standard.

Overall, the compliance results for 2006 are the best ever, with full mandatory compliance being achieved for the first time since monitoring began. The number of guideline passes was similar to last year (34 out of 63, compared with 33 of 60 in 2005), although not as high as in 2003, when 65% of waters met the guideline standard. This is ascribed to the wetter weather of 2006 relative to the exceptionally dry conditions of 2003.

The 'reduced sampling' provision of the directive (Annex 3.4) applied for the first time in 2004 to just three designated waters, was applied at 13 sites in 2006. As well as an increase in general water quality, this was in response to reduced sampling measures now being accepted by the bodies responsible for both 'blue flag' and Seaside Awards in Scotland. Whilst in 2004 and 2005 all reduced monitoring sites maintained their 'excellent' quality classification, unfortunately in 2006 Fraserburgh (Philorth) dropped from previous excellent compliance to good. This site will return to being sampled 20 times in 2007.

The full set of microbiological monitoring data from the 63 identified bathing waters in Scotland can be found in Annex 1 and is summarised below (see also Figure 1, and Maps 1 and 2):

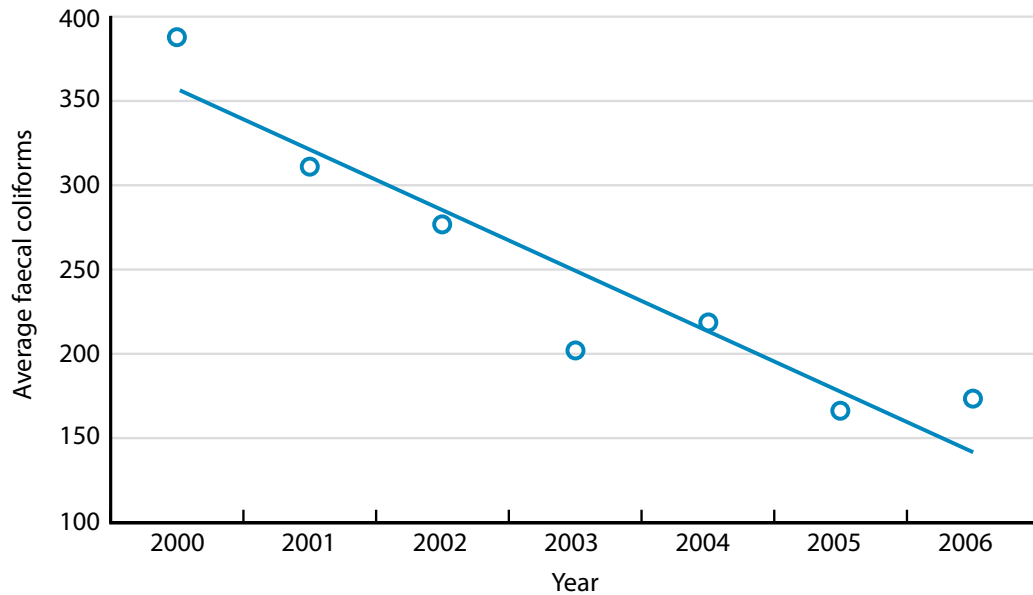
- 34 of the 63 identified bathing waters met the guideline quality standards of the directive and are of 'excellent' quality (54%);
- 29 of the 63 identified bathing waters met the mandatory coliform quality standards of the directive and are of 'good' quality (46%);
- None of the 63 identified bathing waters failed the mandatory coliform quality standards of the directive and are of 'poor' quality (0%).

Figure 1: Scotland's 2006 bathing water results



While the number of waters meeting specific quality targets is a good measure of progress, the ongoing improvements in the last seven years can be shown through the combined result of all samples taken during the season. Figure 2 below shows the average faecal coliform concentration for all samples taken from all identified waters each year since 2000. The wet weather of 2004 caused the average for that year to rise, but it is particularly encouraging that the average for 2006, as well as 2005, is lower than that for 2003, despite the extremely dry summer enjoyed in 2003. This does demonstrate a continuing underlying improvement trend. The average concentration has fallen from 388 fc/100ml in 2000, to 173 fc/100ml in 2006.

Figure 2: Annual average faecal coliform concentration for all samples from the 60 continuously designated EU Bathing Waters, 2000–2006



2.2 Details for each of Scotland's 63 identified bathing waters

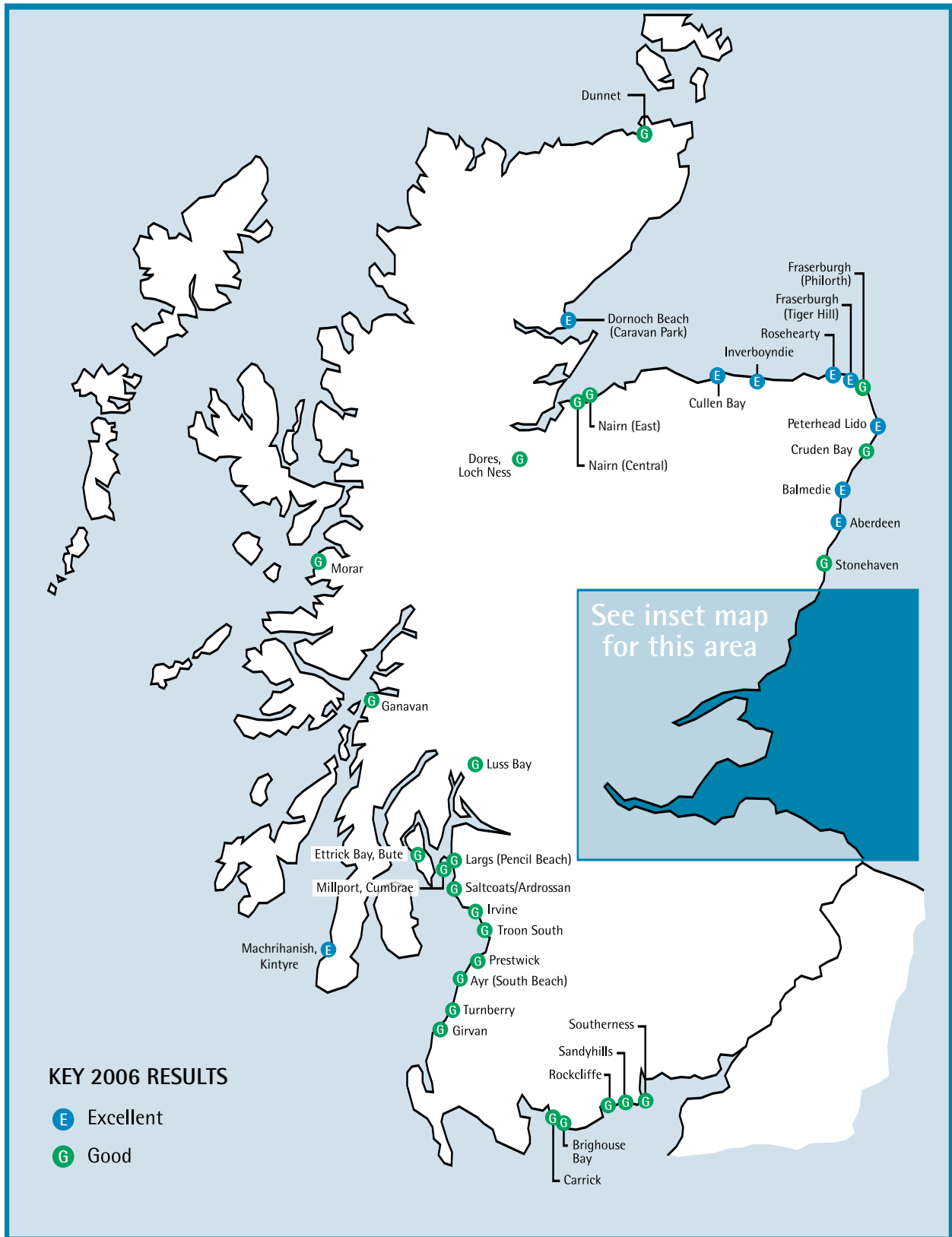
This section contains specific information for each of Scotland's identified waters. It also focuses on the underlying factors behind bathing water quality at each site and outlines the plans for improvements. Waters are described in clockwise order around Scotland, starting in the south west.

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

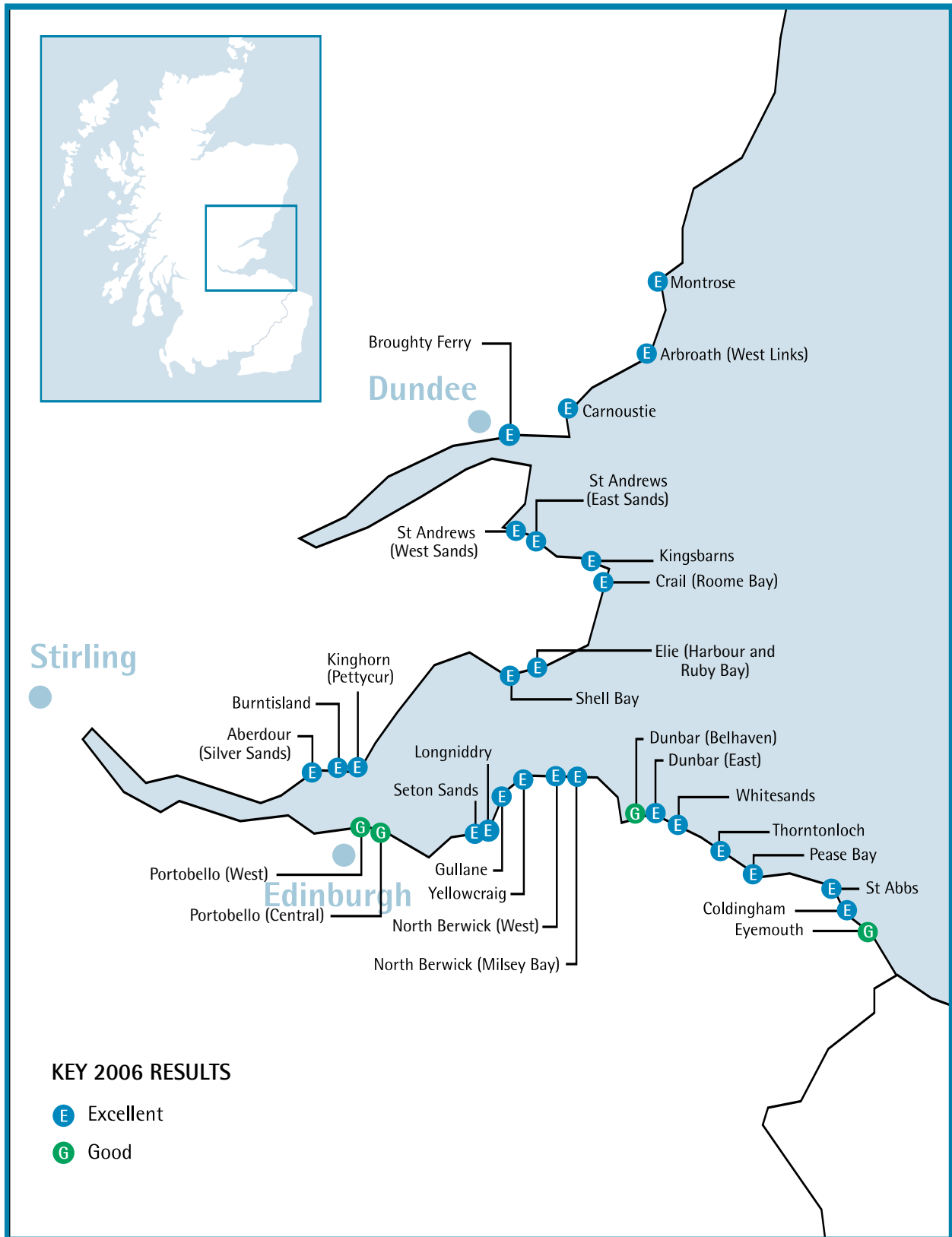


Stonehaven

Map 1: Results for Scotland's 63 identified bathing waters 2006



Map 2: Results for Scotland's 63 identified bathing waters 2006 (south east area)



Southernness

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Poor	Good	Good	Poor	Good	Good

Southernness was identified as an EU Bathing water in 1999. In 2006, 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 Waste Water Treatment Works (WWTW)), 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 WWTW which require to be addressed. The only private waste water treatment plant is at Southernness, which serves the caravan park and village. This discharge was upgraded to full treatment at the end of 2005.

Sandyhills

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Poor	Good	Poor	Poor	Good	Good	Good	Good	Good

Sandyhills bathing water has had a varied history of compliance but again achieved good water quality in 2006.

The main threat to bathing water quality here is agricultural run-off. Work funded by the Scottish Executive, through a biogas and composting project, 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 provide treatment of slurries and manures. These have received welcome positive feedback from the farming communities involved, and in 2006 the project was subject to positive media coverage during the summer.

This bathing beach continues to be part of the SEPA electronic beach signage network, which provides daily predicted water quality information to bathers.

Rockcliffe

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Poor	Good	Poor	Poor	Good	Good	Good

Prior to its first identification in 1999, the bathing water at Rockcliffe had not been of consistently satisfactory quality. However, since the local sewage treatment upgrading completed by Scottish Water before the 2004 bathing season, it has consistently complied with EU good quality requirements.

This third year of satisfactory water quality 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.

Brighouse Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	Good	Good	Good	Good	Good	Good	Poor	Good	Good	Good

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

With no significant sewage discharges into this catchment, 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 agricultural run-off. A project funded by the Scottish Executive was completed last year. This involved extensive fencing of watercourses and provision of alternative livestock watering points. Two farm wetlands were also introduced, this 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 in Brighouse Bay owes more to the relatively dry weather of the last two summers, or the extensive efforts to reduce agricultural sources of pollution. Both are likely to have contributed. As demonstrated in the past, this bathing water has been most contaminated immediately after heavy rainfall events. So, although these results are encouraging, given the recent relatively dry seasons experienced in this area, some caution is necessary. It cannot yet be assumed that its problems have all been fixed.

SEPA is currently managing a Scottish Executive funded evaluation project at Brighouse Bay during 2006 and 2007, which will seek to audit the farm field measures and assess the post installation pollution loading now that the mitigation measures have matured.

This bathing beach continues to be part of the SEPA electronic beach signage network

Carrick

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Good	Good	Excellent	Poor	Good	Good

Carrick was identified as a bathing water in 1999, and has since had a rather variable quality record. 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 was continued this summer. The conclusion of these inspections was that agricultural run-off from this catchment was unlikely to have been the cause. However, as there are no major sewage inputs nearby, SEPA is considering further possible contributors to this failure. 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

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Poor	Poor	Poor	Good	Good	Good	Good	Good	Good	Good	Good

Bathing water quality at Girvan has substantially improved since the successive phases of major new sewerage and sewage treatment schemes were completed during the 2001 season. Although there remain potential impacts during high river flows, an eighth year of good quality was achieved in 2006 with over half of samples achieving guideline quality.

Turnberry

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Poor	Good	Poor	Poor	Good	Poor	Good	Good	Good	Good	Good

Turnberry continues to achieve the 'good' quality standards required by the current EU Directive.

Following completion of the new sewerage scheme that connected Kirkoswald, Maidens and Turnberry to Girvan waste water treatment works (WWTW), there remain some private sewage effluent discharges to the Milton Burn at Turnberry. During 2005, Scottish Water installed some new sewers as part of a scheme to provide first time sewerage for much of the village. This work was completed before the 2006 bathing season. There remain some private sewage effluent discharges, but these are not a significant source of bacterial load.

Ayr (South Beach)

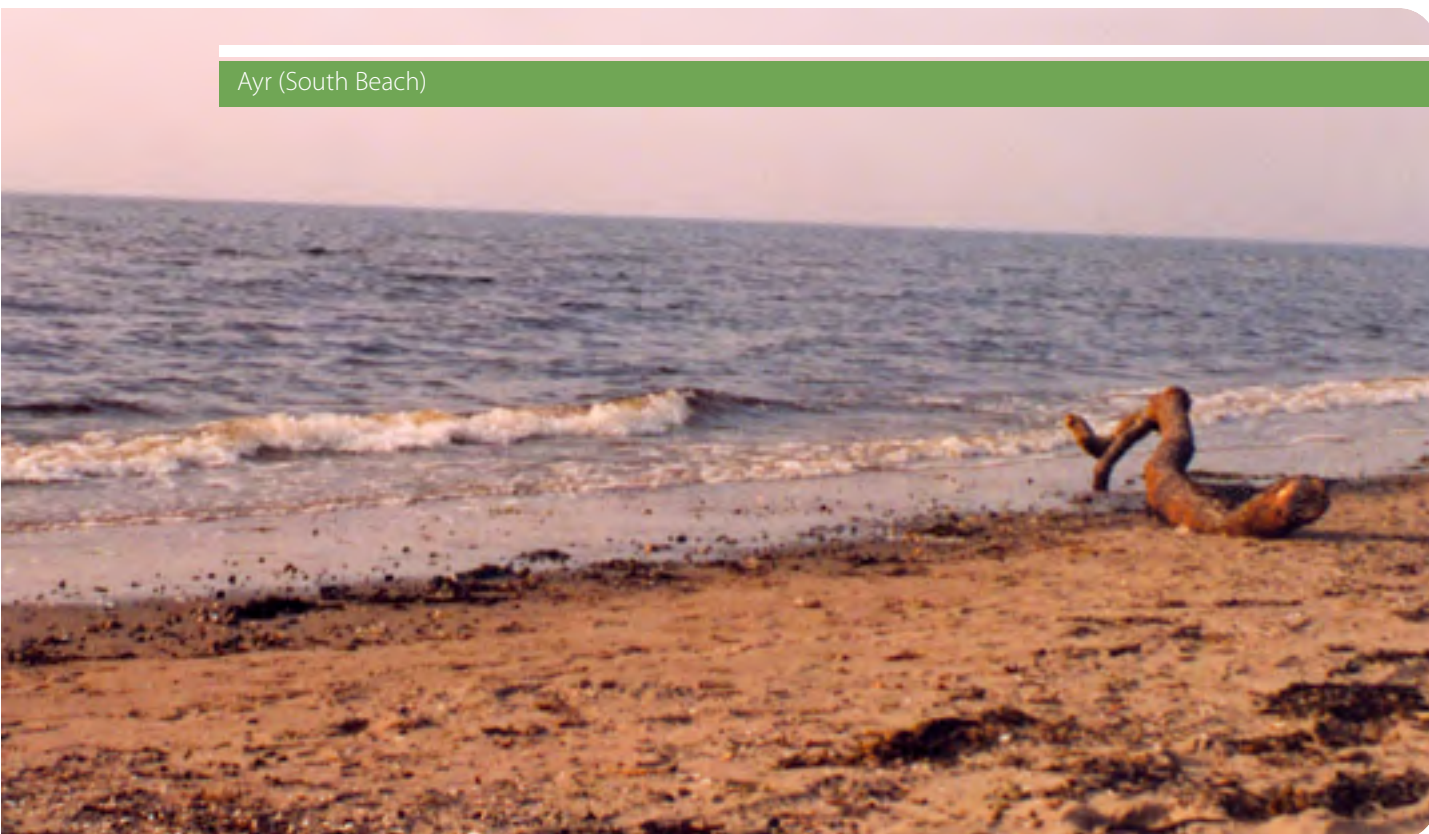
1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Good	Good

Ayr (South Beach) bathing water was again of good quality in 2006. The town's sewage is now pumped to Meadowhead WWTW for full treatment, before discharge via a long outfall. Diffuse pollution remains a concern. 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 the electronic signage network, further details of which are given in section 2.4 of this report.

During the season, a sample taken on 22 August was clearly affected by exceptionally heavy rain in the River Ayr catchment during the preceding weekend. This 24-hour rainfall event had a nine year return period, so met the EU Directive's 'abnormal event' provision, and a replacement sample was taken two days later. This showed that after the deluge, water quality had rapidly returned to good quality.

Ayr (South Beach)



Prestwick

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Poor	Good	Good	Good	Good	Good	Good	Good	Good

Prestwick again recorded good quality for the 2006 season.

The bathing water at Prestwick does not have a direct sewage outfall nearby, although there are storm overflows. Sewage from the town is pumped to Meadowhead WWTW for full treatment, and because of its past quality record, this bathing water is part of the SEPA electronic signage system.

As predicted by the SEPA model and indicated at the time by the electronic signage, the scheduled sample taken on 22 August, failed to comply with the mandatory bacterial limits. The result was affected by the same exceptional rainfall event as at Ayr, and in accordance with the directive's abnormal event provisions the result was disregarded. Re-sampling two days later showed that water quality had returned to 'good' quality.

Troon (South Beach)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Good	Poor	Good	Good	Excellent	Good	Excellent	Good

After commissioning of the new Meadowhead WWTW, the bathing water at Troon was of excellent quality for the first time in 2003. However in 2004, due to wet weather that summer, this was unfortunately not sustained, although the excellent status was again achieved in 2005.

In 2006, Troon was assessed as being good quality and just narrowly missed the excellent status as most samples were of guideline values.

These results confirm encouraging improvement trends, coincident with the increasing treatment given by Meadowhead WWTW.

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

Irvine

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Poor	Poor	Good	Good	Good	Good	Poor	Good	Good

The bathing water at Irvine achieved good status in 2006.

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

As there remains a continuing threat from diffuse agricultural and urban pollution, this bathing water is part of the SEPA electronic beach signage network.

Saltcoats/Ardrossan

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Poor	Good	Poor	Poor	Good	Good	Good	Good	Good

Prior to 2001, Saltcoats/Ardrossan beach had a poor history of bathing water quality, but since 2002 the bathing water has maintained a good standard.

This year the beach just missed classification as excellent status – only 15 rather than the required 16 water samples met the guideline standard for faecal coliform bacteria.

This improvement is attributed mainly to the Waste Water Treatment Works (WWTW) at Stevenston Point which was completed in 2002. However, the monitoring results sometimes show the vulnerability of the beach to high bacterial levels after rainfall. As elsewhere in Ayrshire, action plan work to reduce pollution from urban drainage and intermittent discharges continues.

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

Largs (Pencil Beach)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	n/s	Good	Good	Poor	Good	Good	Good	Good

Largs (Pencil Beach) was newly identified as an EU bathing water in 2006 and again met good quality status. It had been monitored by SEPA since 2000 due to its general recreational use.

The designated bathing water area comprises 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, which drain 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 to have potential to input diffuse sources of faecal indicator bacteria.

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

In 2006, one sample failed to meet the mandatory bacterial standard following very wet weather within the area. The rainfall was not intense enough to be recognised as abnormal. Inspections were carried out by SEPA to look for any point sources of pollution but none were identified. The most likely cause of the failure was diffuse run-off during the wet weather and it confirms that this water, like the others in Ayrshire, remains vulnerable to pollution caused by storm events.

Millport Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Poor	Good	Good	Good	Good	Good

Millport Bay on the Isle of Cumbrae was identified as a bathing water in 1999 and once again was classed as of good quality in 2006. Before the 2005 season, old septic tanks serving Millport were abandoned 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 compliance with mandatory standards from marginal to comfortable.

Luss Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Good	Good	Good	Good	Good	Good

As in previous years, Luss Bay on Loch Lomond attained good quality status in 2006, although, as has occurred before, one sample exceeded the limit values. The poor sample on 4 September was the result of heavy rain following a period of dry weather.

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 was operational at Luss WWTW during 2006. Initial operational feedback from Scottish Water and SEPA compliance monitoring confirmed that the UV treatment was effective. Further upgrades including the blocking off of the storm overflow at the works inlet have been carried out. Site visits throughout the catchment were carried out by SEPA before and during the 2006 season and continued efforts will be required during 2007 to ensure that the good quality bathing water of the previous eight years is maintained.



Ettrick Bay



Ettrick Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good

Ettrick Bay on Bute was identified as a bathing water in 1999 and for six years badly failed to meet the EU Directive's quality standards. This changed dramatically in the 2005 season with good quality being achieved for the first time and the improvement has been consolidated in 2006.

There are no significant sewage discharges in the vicinity of the beach, and the failure to meet required standards in previous seasons has been 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 were 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 of 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 that were found to have a problem with excess surface water draining from contaminated yard areas. In addition, the Scottish Agricultural College has been carrying out advisory/assessment visits to all farms as part of a Scottish Executive project, and giving recommendations on what further remedial measures could be undertaken to the risk of pollution.

Despite these continuing improvements, water quality is still predictably threatened by diffuse pollution, so this bathing water remains part of the electronic signage project.

Machrihanish

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent

Machrihanish was identified as an EU bathing water in 1999. Until 2003, it had achieved good quality. After diversion by pumping of sewage from the small communities of Machrihanish, Stewarton and Drumlemble to Campbeltown WWTW for full treatment, excellent quality standards have now been met for the fourth successive year. Provided potential agricultural pollution sources in the area are kept under control, satisfactory quality should now be maintained.

Ganavan

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Good	Good	Good	Excellent	Good	Good

Ganavan was identified as a bathing water in 1999 and achieved good quality in 2006. A Scottish Water pumping station pumps sewage from the Ganavan public system to Oban for treatment at the WWTW prior to discharge into the Sound of Kerrera. This works 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 is now required by SEPA to upgrade its sewage treatment facility.

Morar

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Good

The 7km stretch of the Morar coast, which was identified as a bathing water in 1999, has always recorded either good or excellent water quality during eight years of monitoring. Suspected sources of agricultural and sewage pollution within the catchment area have been successfully addressed by SEPA in recent years. Monitoring has however shown that isolated unpredictable failures of the directive standards can occur with such a failure occurring this year on 2 August. Site investigation revealed a blocked septic tank outfall at a Caravan Site adjacent to the monitoring point which was leading to a discharge of untreated sewage onto the beach. Improvements were quickly implemented by the caravan site operator. The problem occurred after a period of heavy rainfall which followed a prolonged dry spell which undoubtedly caused increased surface run off from surrounding catchment and this is suspected as being main reason for the temporary poor quality.



Morar

Dunnet

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Excellent	Poor	Excellent	Good	Excellent	Good	Excellent	Excellent	Good	Good

Dunnet, in Caithness, was identified as a bathing water in 1999. Good quality was recorded in 2006 and there have been no failures since 1998. The input of sewage from Castletown has previously affected the quality of the bathing water in Dunnet Bay. As part of ongoing investment to ensure water quality in the identified area is improved, Scottish Water has installed a WWTW on a new site further from the bathing water. This was due to be commissioned in early 2006 prior to the bathing season. However, various problems with the site caused delay in progressing the project, which is now due to be commissioned late in 2006. This will remove this source of potential pollution. To ensure that bathing water quality has been protected during the bathing season, Scottish Water introduced flow proportional peracetic acid disinfection of the effluent as an interim measure.

The adequacy of the septic tanks serving the small settlement at Dunnet and a caravan park at the northern end of the bay are also under review. Scottish Water provided peracetic acid dosing to the Dunnet discharge for the 2005 season. After discussions with SEPA, a new disinfection holding tank was installed this year. This gives an improved 25 minute contact time between sewage effluent and disinfectant. The improved system was tested during the bathing season using on the spot microbiological analysis of the discharge from this tank. This showed that the upgraded system was reducing bacterial concentrations to a very low level. Scottish Water intend continuing with this regime in 2007.

Other potential pollution sources have been checked this year but no new sources found.

Dornoch

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Dornoch was identified as a bathing water in 1999. Local sewage and potential agricultural sources of pollution have been progressively reduced, and in 2006, for the ninth consecutive year, it again achieved excellent quality. The beach continues to be a popular destination for visitors and locals who value the high quality of the bathing water.

Dores

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	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 which had previously been identified as a potential risk to water quality and which discharged to either the Dores Burn or Loch Ness. In the quest to attain guideline quality standards, SEPA continues to monitor the Dores Burn and is seeking to find and eliminate remaining pollution sources.

Arrangements put in place to deal with sewage arising from the 'Rock Ness' music festival were apparently successful in preventing any pollution of the loch from this source.

Nairn (Central)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Good	Excellent	Excellent	Good	Excellent	Good	Excellent	Good

Nairn (Central) was identified as a bathing water in 1999. To ensure that it would be adequately protected, SEPA required disinfection of the effluent from Nairn WWTW. However, the initially installed disinfection system was unreliable leading to enforcement action being taken by SEPA. As a result, a completely new disinfection system was installed in 2004. However, this year's effluent sampling results indicate that the effectiveness of disinfection at the works remains problematic.

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 consents setting more stringent conditions on discharges from four waste water treatment works 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. However, issues remain with the discharge quality from these systems and SEPA continues to work with Scottish Water to improve the quality of these discharges. There continues to be a problem with the discharge from Brackla Septic Tank and SEPA is currently monitoring the situation.

Nairn (East)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Poor	Good	Excellent	Good	Good	Excellent	Excellent	Fail	Good

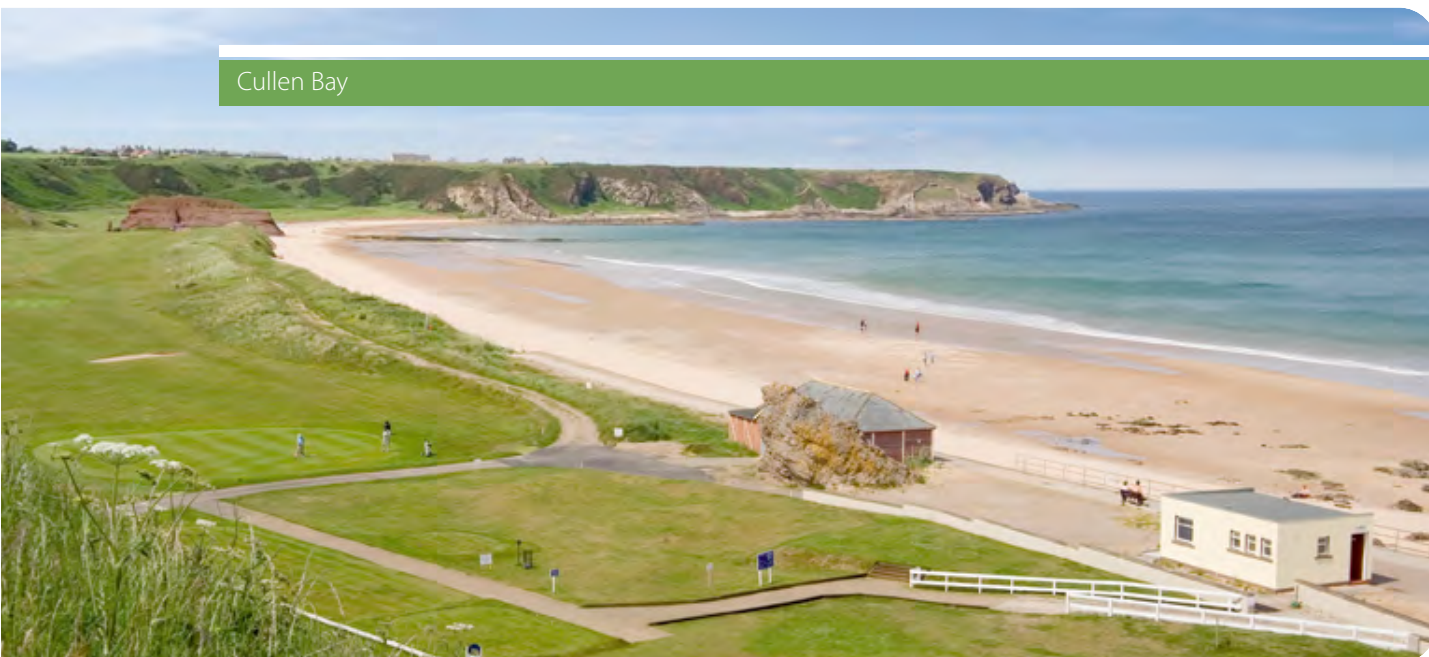
Nairn (East) has a pleasant and popular sandy beach. In recent years, it has had a good and improving quality record, but in 2005 two early season samples exceeded the mandatory quality standards. Subsequent enforcement action by SEPA led to a court case with a successful outcome during 2006. This year, one sample, taken on 27 July, exceeded the mandatory EU standards, but this followed an extensive downpour after a prolonged dry period, 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.

Particularly during periods of high river flow, the waters off this beach are occasionally influenced by the River Nairn, so the above comments about the river for Nairn (Central) are applicable also to Nairn (East).



Nairn (East)

Cullen Bay



Cullen Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent	Excellent

The waters off the very attractive sandy beach at Cullen, a popular destination for visitors and locals who value the high standard of the bathing water, have consistently met the good quality standard and this year achieved the excellent standard. 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 waste water treatment plant at Buckie allowing the beach to now achieve guideline quality standards.

Inverboyndie

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Good	Excellent	Good	Good	Excellent	Excellent	Good	Excellent

Inverboyndie was identified as a bathing water in 1999. The beach is a popular recreational area and attracts many walkers, swimmers, surfers and windsurfers. It achieved excellent bathing water quality in 2006, for the third time in the last four years. As with other samples taken from the Moray coast on 27 July, the result for that day was clearly affected by exceptional heavy rainfall. However, assessment of rainfall data for the area indicated that only in the Inverboyndie area could the rainfall be classified as abnormal as prescribed by the EU Directive. Consequently it was only that day's result from this one site which was discarded and a replacement sample taken.

Inverboyndie has benefited from substantial improvements to the surrounding sewerage system in recent years. A continuous discharge of untreated sewage at one end of the beach has been eliminated, and the sewage is now pumped to a treatment plant at Macduff where it undergoes full biological treatment followed by UV disinfection. The outfall itself 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 Inverboyndie Burn which discharges to the sea at the western end of the beach. All farms draining to this watercourse were inspected in 2003 in order to determine potential sources of bacterial contamination which could pollute the bathing water. The response from the farming community was encouraging, with the majority of farms found to have taken action as required to minimise agricultural pollution. Several large septic tanks impacting on water quality at the mouth of this burn have recently been identified, and action is currently being taken by SEPA to address this situation.

Rosehearty

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	n/s	n/s	Excellent	Good	Good	Good	Excellent	Good	Good	Excellent

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 excellent bathing water quality in 2006.

Sewage improvements in the area came to fruition in 2001, when sewage from the town was diverted to the new waste water treatment plant at Fraserburgh which has UV disinfection designed to protect bathing water quality. At Rosehearty there is now only a pumping station, which has consent to discharge screened sewage only under certain storm and emergency conditions. Several farm steadings draining to watercourses in the vicinity of Rosehearty were audited to assess potential pollution sources in 2003. However, it was concluded that they do not pose a threat to bathing water quality compliance.

Fraserburgh (Tiger Hill)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Poor	Good	Good	Poor	Good	Excellent	Good	Excellent	Excellent

This sandy beach next to the town of Fraserburgh is a popular location for many watersports as well as for walking and family outings. The bathing water achieved excellent quality in 2006.

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

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 this 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)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good

Disappointingly, Fraserburgh (Philorth) narrowly missed out on achieving excellent water quality in 2006, a standard which it had consistently maintained since it was identified as a bathing water in 1999. On account of its outstanding record, this beach had been selected for reduced monitoring, as prescribed by the EC Bathing Waters Directive, in 2006. As a result of the unexpected guideline exceedances (only recorded for streptococci, not coliform bacteria), monitoring will revert to 20 samples in 2007.

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

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Excellent	Good	Poor	Excellent	Good	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 particularly popular. Peterhead Lido achieved excellent bathing water quality in 2006, continuing a generally good compliance record at this bathing water.

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

Cruden Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Poor	Good	Poor	Good	Poor	Good	Good	Good	Good

This extensive sandy beach, situated next to the small village of Cruden Bay, achieved good bathing water quality for the fourth year running in 2006, showing a marked improvement in compliance since sewerage improvement plans came into effect prior to the 2003 season. An unsatisfactory short outfall was removed and sewage from the village is now pumped to the WWTW at Peterhead, with the former outfall retained only as a pumping station, storm and emergency overflow. Problems with the pumping station which were linked to a mandatory exceedance during the 2005 season were fixed prior to the start of the 2006 season, and all samples met the mandatory standards during 2006.

Diffuse pollution still prevents attainment of guideline standards. The Water of Cruden flows into the sea at one end of the bathing water and, as well as draining an agricultural catchment, receives treated sewage effluent from a waste water treatment works serving the village of Hatton. 60 farms in the catchment have been visited and, where necessary, remedial measures installed. Although UV disinfection, designed to reduce the bacterial loading to the Water of Cruden from Hatton WWTW, was installed prior to the start of the 2006 season, commissioning problems prevented its potential benefit being realised. In addition to this, a large septic tank discharge at Bridgend has been removed from the Water of Cruden in favour of discharge to soakaway. It is anticipated that these measures will help the bathing water meet guideline standards in years to come.

Balmedie

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Good	Good	Good	Excellent	Excellent	Excellent	Excellent

This popular expanse of sandy beach is adjacent to Balmedie Country Park, about seven miles north of Aberdeen. It was identified as a bathing water in 1999, and in 2006 achieved excellent water quality for the fourth successive year. On account of its outstanding record, this beach has been selected for reduced monitoring (as prescribed by the EC Bathing Waters Directive), and was sampled only five times during the 2006 season. Bathing water quality in recent years has benefited from the installation of a new WWTW at Balmedie, which was commissioned prior to the 2004 bathing season and now also collects and treats sewage pumped from the nearby village of Newburgh.

Farm audits of premises in the Balmedie area carried out during the 2003 season 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 effect on bathing water quality at this location.

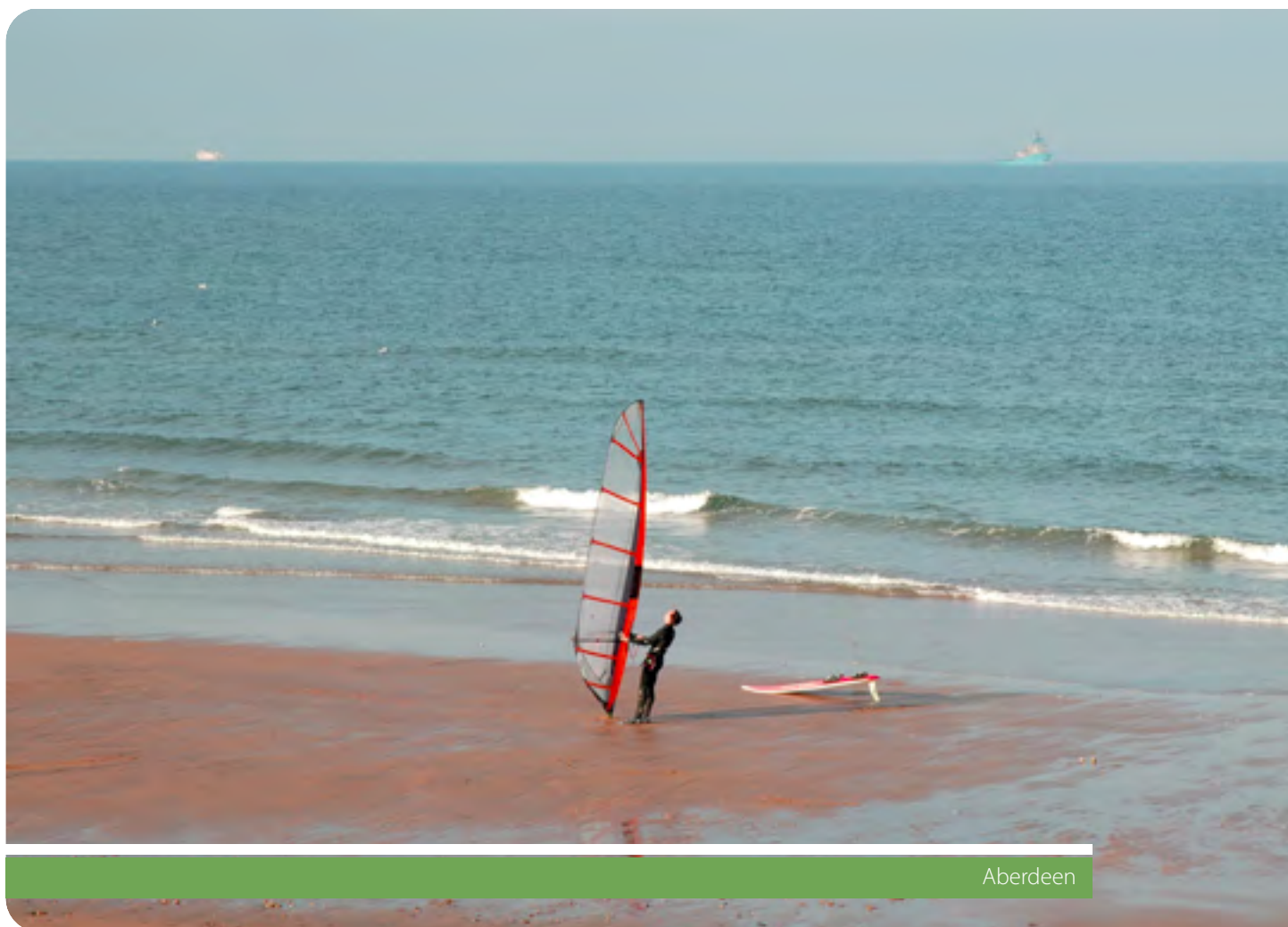
Aberdeen

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Good	Good	Excellent	Good	Good	Good	Good	Good	Good	Excellent

Aberdeen has an extensive sandy beach, which is well used for water sports and sea bathing. The bathing water achieved excellent quality in 2006 despite a single exceedance of the mandatory standard, thought to be due to the influence of the River Don on the beach during a particularly wet period of weather and strong northerly winds. Continued reduction in the bacterial loading to the River Don is provided at Persley WWTW, where the final effluent is treated by UV disinfection.

Improvements to the sewerage network have seen reduction in combined sewage discharges from the Kings Links overflow, 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 to advise bathers of predicted water quality. Beach usage and this sign were affected this year by a sand recharge operation and the sign couldn't be read for much of the season. The beach works also necessitated the temporary relocation of the sampling point since nearly half of the designated beach was fenced off to prevent public access.

Scottish Water is undertaking work on a drainage area plan for the city. This will identify further improvements to the drainage network and remaining CSO, 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.



Aberdeen

Stonehaven

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	n/s	Poor	Poor	Good	Good	Good	Good	Good	Poor	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. After several years of good quality, and despite part-time disinfection of the final effluent, Stonehaven failed to meet the mandatory standards required by the directive in 2005, but once again recorded good quality in 2006.

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 required. This decision was overturned after a Public Inquiry and plans for installation of the new facilities are progressing although works will not be complete before the 2007 season. In order to provide some protection of the bathing waters prior to the completion of the connection to Nigg, Scottish Water will continue 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 prevent salmon from running up the adjacent rivers.

Montrose

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Excellent	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The bathing water at Montrose has consistently achieved European guideline quality standards since 1999.

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

Arbroath (West Links)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Good	Good	Excellent	Poor	Good	Excellent	Excellent	Excellent

The identified bathing water at Arbroath (West Links) met the EU guideline standards in 2006. The substantial improvement since the 1990s is ascribed to the pumping of local sewage to Hatton WWTW, which was commissioned in 2001. SEPA required that this works was designed to ensure that the Bathing Water Directive's guideline quality standards would be met at Arbroath (West Links).

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

Carnoustie

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent

Since completion of the Hatton sewage treatment scheme, Carnoustie has had a good compliance record, but this July saw two poor quality sample results, one of which immediately followed thunderstorms and localised heavy rainfall. Although this may actually have been an abnormal event, as is often the case with severe local thunderstorms SEPA's rain gauge in the area did not record five year exceptional rainfall. However, an investigation identified the poor quality was most likely due to pollution from an input to a local burn. This was then dealt with promptly. Following this action, monitoring frequency and investigative work in the Lochty Burn catchment was increased. The purpose of this was to check that the remedial action carried out really had adequately dealt with pollution sources. Results for the remainder of the season were so good that the two exceedances were diluted down to the critical 95 percentile EU limit, and by the end of the season Carnoustie overall met EU guideline quality standards.

The apparent drop in bathing water quality in 2002 was ascribed to contamination from local surface water inputs, which were affected by increased rainfall. Continuing investigations have identified a number of potential problems with surface water drains, sewer overflows and possibly sewer leakage into the Lochty Burn, which outflows close to the bathing water sampling site. A local Environmental Improvement Action Plan (EIAP) has been 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. However, as was illustrated this year, the complexity and age of the system requires continued vigilance and investigative effort to ensure that compliance is maintained.

All normal sewage flows from the Carnoustie catchment are pumped to the Hatton WWTW for full treatment. SEPA required that this works was designed to ensure that guideline quality standards were met at Carnoustie.



Broughty Ferry

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	Poor	Poor	Poor	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent

Broughty Ferry became a designated identified bathing water in 2006, but has been monitored by SEPA since 1997 due to its recreational use. Before 2002, water quality at Broughty Ferry was often poor but since 2002, excellent quality has continuously been achieved.

Since 2002, all normal sewage flows from the Dundee area have been pumped to Hatton WWTW 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 WWTW. Storm storage was provided at the pumping station and a new outfall installed to allow the discharge of screened storm sewage. Broughty Ferry holds a Blue Flag quality award which recognises both water quality and the facilities provided by the local authority.

St. Andrews (West Sands)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Excellent	Good	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 11 of the past 12 years. This bathing water also holds a Blue Flag quality award.

The WWTW 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 works consistently meets its discharge consent conditions, which should ensure continuing excellent bathing water quality.

St. Andrews (East Sands)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Excellent	Good	Poor	Good	Good	Good	Excellent	Excellent	Excellent	Excellent

This bathing water was identified in 1999, although SEPA and its predecessor had monitored it for many years. Since 2003, it has achieved the European guideline bathing water quality standards. The new works described earlier for St Andrews (West Sands) reduces the risk of bathing water non-compliance at both of the St Andrews bathing waters. This bathing water also holds a Blue Flag award.

Kingsbarns

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent

Kingsbarns was identified as a bathing water in 1999. It met the EU guideline standards for the fifth year running in 2006.

Kingsbarns has a small WWTW with effluent discharging via a short outfall to the north of the bathing water. The reason for 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 WWTW was commissioned in the spring of 2006. It comprises 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)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Good	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 since that time. All local sewage sources are pumped to a WWTW at Kilminning, which provides adequate protection of these waters.

Elie (Harbour and Ruby Bay)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Elie (Harbour and Ruby Bay) was formally identified as a bathing water in 1999, although SEPA began monitoring in 1998. In each year the bathing water has achieved excellent quality. The Elie Harbour beach is managed, and holds a Blue Flag award.



Elie (Harbour and Ruby Bay)

Shell Bay



Shell Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The Shell Bay bathing water, just west of Earlsferry, was officially identified in 1999, and has achieved guideline quality classifications since that time.

Shell Bay is a small private beach that is managed by the adjoining holiday caravan park. The aesthetic appearance of Shell Bay Beach was often blighted by sewage-related debris, most of which was thought to be derived from beyond the Shell Bay area. The aesthetic quality could be vastly improved at this beach with additional beach cleaning. Much of the problem with sewage debris is caused by re-circulating debris that has been lying on the beach strand line, for several weeks in some instances.

The provision of sewage treatment to European Urban Waste Water Treatment Directive (UWWTD) standards at Levenmouth has markedly reduced the input of sewage debris to this part of the Forth. The Levenmouth works also provides UV disinfection of the treated sewage effluent during the bathing season.

Kinghorn (Pettycur)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Poor	Good	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent

In 2006, Kinghorn (Pettycur) bathing water achieved excellent quality for the fourth consecutive year.

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 has resulted in much improved water quality being achieved at Kinghorn's other beach, Kinghorn Harbour, although as yet excellent quality has not been attained there. Prior to the 2006 bathing season, some investigations to determine the reason for this were planned. These were inconclusive and will continue into 2007. The Pettycur water sample taken on 25 August 2006 was of poor quality. Immediate action and investigatory work confirmed there had been a short duration discharge of untreated sewage from an emergency outlet at the treatment works around the time the polluted sample was taken and this was the likely cause of the poor result. Although a thorough investigation by both SEPA and Scottish Water did not determine the reason for this temporary polluting discharge, SEPA will continue to monitor to detect any further discharges from the outlet in question. If discharge occurs, then further investigation will take place and enforcement action will be taken if appropriate.

Burntisland

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Poor	Poor	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

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

Since then, Scottish Water has completed a prolonged series of improvements started by the former Fife Regional Council. Flows from several unsatisfactory outfalls have been diverted to a new WWTW, before discharge via a long sea outfall. The unsatisfactory discharge from Lammerlaws was diverted to this works at the end of 1998, and satisfactory water quality has been attained since that time. A new Lochies Road pumping station scheme was completed early in 2003. This removed the discharge that immediately threatened the bathing water. The Harbour outfall and a few other small outfalls were intercepted and connected into the main sewers prior to the 2004 bathing season, and this should ensure that guideline quality standards continue to be attained.

In 2006, Burntisland maintained its excellent bathing water quality for the eighth consecutive year. Burntisland beach is well managed and holds a Blue Flag award.

Aberdour (Silver Sands)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	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 ten years and holds a Blue Flag award. The diversion of Dalgety Bay sewage by means of a pumping station and rising main to Dunfermline WWTW was completed in spring 2003, removing that distant potential risk to bathing water quality.

Portobello (West)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Good	Good	Poor	Good	Good	Good	Good	Good	Good

Portobello (West) was identified as a bathing water in 1999. In 2006, it was again of good quality, for the fifth consecutive year. There was one mandatory exceedance on 2 August, 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 improvement of sewage treatment and sewerage infrastructure. Edinburgh's WWTW 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 find 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 currently failing 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 improvements required. This group has a very tight schedule to investigate and report by April 2007 to enable the further investments required to be included in Scottish Water's Quality & Standards III capital programme.

Portobello (Central)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good

Portobello (Central) became an EU 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 reduced the occurrence of storm sewage overflows. This bathing water then met the EU bathing water guideline quality standards for the first time in 2001 which was maintained until 2005. In 2006, Portobello (Central) narrowly missed the excellent standard.

Although the threat from diffuse pollution is relatively slight, this bathing water was part of the electronic signage pilot project in 2004, further details of which are given in Section 2.4 of this report.

It is likely that the exceedances of guideline standard were due to problems with the pumps at Joppa Sewage Pumping Station. They have been required to operate above their design standard due to additional flow in the sewer due to minewater from abandoned mineworkings. The Coal Authority is currently looking at means of reducing this minewater flow but in the meantime Scottish Water will install new pumps of greater capacity.

Seton Sands

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Good	Good	Excellent	Excellent	Good	Excellent

Seton Sands/Longniddry was identified as a bathing water in 1999. Between 1999 and 2002 it achieved good quality and in 2003, for the first time, Seton Sands achieved excellent quality. In 2004 this excellent bathing water quality was maintained, but not, disappointingly in 2005 when good quality was achieved. This drop was investigated prior to and during the 2006 bathing season. Though some elevated contamination levels were found in the Canty Burn, it was not possible to determine if this was the source of the problem in 2005. The Canty burn is now sampled at the same time as bathing waters 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 WWTW. The existing WWTW at Longniddry has now become a storm treatment works with a design overflow spill frequency of only once every five years. The impact of this improvement, and work partly funded 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.

Longniddry

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	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 since 2002, good or excellent quality has continuously been achieved. The improvement in bathing water quality at Longniddry coincided with the improvements in the sewerage infrastructure described above for Seton Sands.

Gullane

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
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.

The high quality of the bathing water at Gullane is due to the effective local WWTW, 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 existing outfall for the discharge of storm sewage which will provide further protection of the bathing waters in this area.

Yellowcraig

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent

The identified bathing water at Yellowcraig achieved excellent quality for six consecutive years up to 2004, so it was very disappointing that there was a drop in bathing water quality to good in 2005. Investigations have taken place and potential causes have been identified, though as yet none of these has been confirmed. A more detailed investigation was carried out prior to the 2006 bathing season, though again, nothing conclusive was detected. There is a surface water discharge nearby, which may be intermittently contaminated, but as yet, we have not been able to confirm this. A further line of investigation is planned prior to the 2007 bathing season.

In 2006, Yellowcraig returned to excellent bathing water quality.

The improvement in quality in 1999 followed diversion of sewage from Dirleton to the WWTW and long sea outfall to the east of North Berwick. Prior to this it had discharged at the western end of Broad Sands Bay.



Yellowcraig

North Berwick (West)



North Berwick (West)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Poor	Good	Good	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent

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

Prior to 1995, when the North Berwick WWTW scheme was completed [for further details see the text for North Berwick (Milsey Bay)], North Berwick (West) frequently failed to meet required quality standards. While bathing water quality improved markedly after this date, there have still been occasional problems with the sewage collection and treatment infrastructure. The reason for the slight reduction in quality in 2004 was probably related to a local sewage contamination incident being flushed through to the beach by water from a burst water main, which was revealed and tracked down by SEPA and Scottish Waters' monitoring work. Remedial action promptly taken by Scottish Water should ensure this does not recur, and in 2005 North Berwick (West) returned to excellent status, which was maintained in 2006.

North Berwick (Milsey Bay)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Good	Good	Good	Good	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 greatly improved after the commissioning of the WWTW and long sea outfall in 1995, although SEPA was disappointed that the guideline values were not achieved until after 1999.

Investigative surveys by SEPA prior to 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, in 2000, North Berwick (Milsey Bay) achieved a guideline pass for the first time. To further highlight the improvement in bathing water quality, this very high standard has been maintained since then.

In the early part of the 2004 bathing season, slightly elevated bacterial levels were observed in the Milsey Bay bathing water. SEPA investigative sampling found a small leak from the WWTW high level overflow. Scottish Water found this to be a result of faulty bleed valve seals. As a result of these investigations, remedial action was carried out to remedy the situation and thus ensured that guideline water quality was maintained. The same problem also occurred in 2002. To prevent recurrence, any future 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)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good

Dunbar (Belhaven) has a fine sandy beach, and the identified bathing water achieved excellent status every year between 1993 and 2005. In 2006 however, the bathing water quality dropped to Good.

The current West Barns WWTW and long sea outfall were commissioned in 1993. Since then, the bathing water has mostly achieved EU guideline quality standards. However, the WWTW 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. Consent for a new treatment works has been issued which required Scottish Water to replace the current West Barns WWTW by the end of 2005. However due to delays in concluding the terms of land acquisition the completion of this works will be delayed until spring 2008. The new works will be built inland with a discharge to the Biel Water utilising the existing long sea outfall as a storm overflow. The works will utilise membrane technology, which will achieve the high quality of effluent required for bathing water compliance without the need for additional disinfection, thus further safeguarding the quality of this bathing water.

Dunbar (East)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
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 before this.

The sewage treatment facilities and planned improvements for Dunbar are described in the Dunbar (Belhaven) section. In 2006, Dunbar (East) again achieved the EU guideline standard for bathing water quality as it has done every year since sewage from the east side of Dunbar was diverted to the West Barns WWTW 11 years ago.

Whitesands

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent

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

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. In 2005, excellent status was restored and this was maintained in 2006.

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

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The waters at Thorntonloch have met guideline standards each year since 1988, although only identified as a bathing water under the directive prior to the 1999 bathing season. This bathing water is consistently of excellent quality, though strong tidal currents are present, particularly at the west side of the bay during certain tide and wind combinations.

In 2004 and 2005, in view of its consistently excellent status, the frequency of monitoring was reduced, as permitted by the 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 was returned to 20 times in 2006. Excellent bathing water quality was attained once again.

Pease Bay

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Good	Good	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 waste water treatment plant prior to 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 via the existing outfall to the North Sea. Initial samples of the effluent indicate that it is of very high quality.

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

This year, as in 2004 and 2005, in view of its consistently excellent status, the frequency of testing was reduced, as permitted by the EU, from 20 to five. As at Thorntonloch last year, one of these samples surprisingly exceeded one of the guideline limits, but overall excellent quality was retained.

St Abbs

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
n/s	n/s	n/s	Good	Good	Good	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 water sports usage, particularly scuba diving. It should be noted that there is no safe or explicitly permitted bathing area at St Abbs. For the fifth 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, 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 WWTW at Eyemouth where it now receives full treatment before being discharged to the North Sea.

Coldingham

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Coldingham, a very popular bathing and surfing beach, was identified as a bathing water in 1999, although it had been previously 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, comminuted 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 on to the WWTW at Eyemouth where it now receives full treatment before being discharged to the North Sea.

Eyemouth

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Poor	Good	Poor	Poor	Poor	Good	Good	Good	Good	Poor	Good

Eyemouth was identified as a bathing water in 1999. It failed to meet the mandatory standards between 1998 and 2000. Between 2001 and 2004 the bathing water only just met the required standards. In 2005, Eyemouth failed to meet the mandatory standard, with two unsatisfactory samples. These samples were taken following heavy rainfall and high flows in the Eye Water. The river was strongly implicated as the cause of the pollution. SEPA has carried out investigations into the sources of the faecal indicator organisms in the Eye Water. The Eye Water is affected by:

- 1) Storm overflows that discharge from Eyemouth's sewer network to the Eye Water during wet weather;
- 2) Run off from agricultural grazing land in the Eye catchment during wet weather; and
- 3) 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.

The sewage discharge from Ayton WWTW, approximately 5km upstream of Eyemouth, was also a significant source of faecal contamination of the Eye Water. In 2005, Scottish Water completed a programme of work to collect sewage from Ayton and pump it all on to the WWTW at Eyemouth where it now receives full treatment before being discharged to the North Sea.

The North Burn, a watercourse culverted for much of its length and which runs through Eyemouth and discharges into the bathing water, has also been found to be contaminated with sewage. SEPA and Scottish Water have carried out investigations into the sources of this contamination, which can be very high at times. To reduce pollution, Scottish Water has removed identified problem sources to the foul sewer system. Two further septic tanks discharging to the North Burn at Acredale have now been connected to the sewer by the developer of an adjacent site. Although a lot of sources have been removed, continued monitoring of the North Burn during the bathing season will take place until we are certain there are no more problems present.

Eyemouth WWTW currently treats waste water from Eyemouth, St Abbs, Coldingham and St Abbs before it is discharged to the North Sea through a long sea outfall located south of the bathing water.

2.3 Summer weather 2006

Although the season started out with a very dry spell encompassing almost all of June and leading into July, the weather deteriorated later into the season and this clearly affected water quality. However, in only two instances was the actual measured rainfall of sufficient magnitude to justify consideration as an abnormal event.

Under Article 5.2 of the directive, results must be excluded from consideration if they are the consequence of abnormal weather conditions. It is interesting that the guidance given in the new bathing waters directive refers to a four year return period, rather than the five year return guidance used by SEPA. There were only two events which justified application of the abnormal event provision in 2006, leading to three sample results being disregarded and resampling undertaken. These were at Inverboyndie on 27 July and at Ayr and Prestwick, both on 22 August. The 27 July event clearly impacted on several other waters along the Moray coast, but was less extreme at the other sites. As it later became clear, deletion of the 27 July result at Inverboyndie had no influence on the overall classification for the season.

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

2006 was the second year for which SEPA has had full responsibility for the real-time electronic signage at ten beaches across Scotland, work which was initially funded by the Scottish Executive and jointly piloted with them in 2003-2004. The signs inform potential bathers on a daily basis of predicted water quality conditions and are located at ten sites throughout Scotland.

A key part of the new bathing water directive is the emphasis placed upon the provision of bathing waters quality information to the public. The signage network provides a leading example of how this can be achieved and puts Scotland at the forefront of this public information provision.

The bathing waters with signage, although generally of a high quality, have been selected because they have previously been found to be at risk of not meeting European standards during or after wet weather. The electronic message signs allow predictive water quality forecast messages to be shown to the public daily. These indicate either good quality, or risk of poor quality, i.e. potential failure of EU standards.

The Scottish Executive initiated and funded this work. SEPA provides scientific advice, technical input and manages the daily operation of the sign network. SEPA has also developed additional systems to give wider access to the same information through its website, telephone information line and, new for 2006, a text messaging service.

A firm of consulting engineers has been sub-contracted by SEPA to install and provide technical support. In addition, the relevant local authorities and Clean Coast Scotland are consulted and provide advice.

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

The signs are not intended as 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 2006 bathing season, on average 87% of the days were predicted as having good or better water quality, slightly less than in 2005 (90%), but higher than 2004 (81%). Although much of the early part of the 2006 bathing water season was very dry, this was counteracted by some very wet periods towards the end.

Of the 202 samples taken from the sites with signage, the project correctly predicted measured water quality on 93% of occasions, up from 90% last season.

Overall, the signage at the ten locations indicated correct or protective precautionary conditions to the public over 99% of the time, a similar performance to previous years. A positive feature of the predictions was that measured quality was so often better than predicted, demonstrating the success of recent diffuse pollution reduction work.

Figure 4: Bathing waters signage performance and validation of daily predictions

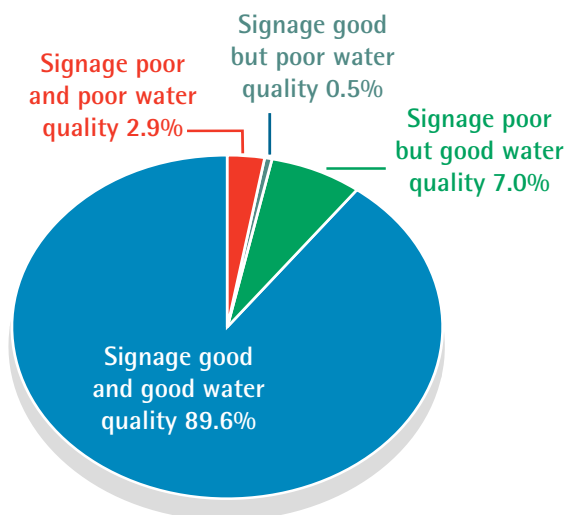
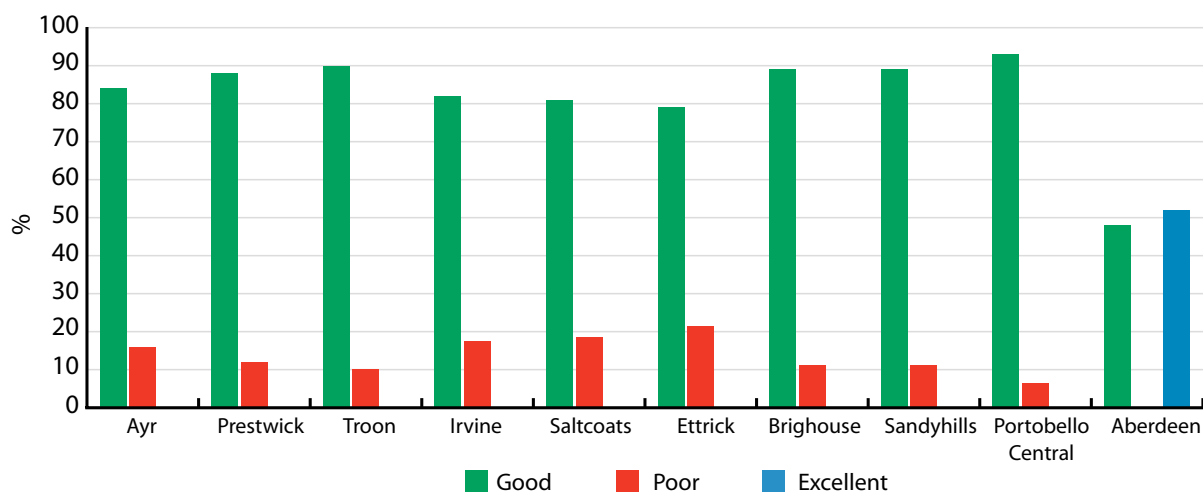


Figure 5: Message status of bathing water signage during 2006



Ongoing work

SEPA has also further developed and improved its bathing waters predictive modelling capability during the year. Results were presented to a UK agencies symposium in November 2006. These improvements will be used to enable SEPA to post better water quality predictions in 2007 and progress towards predictions against the tighter standards indicated in the future new Bathing Waters Directive.

These predictions will in due course take account of the continuing improvements being brought about through improvements in Scottish Water's sewerage infrastructure and sewage treatment, private sewage disposal schemes where they are relevant, and reductions in agricultural pollution sources.

Sampling at Dunbar (Belhaven)



2.5 Results summary for other coastal and inland waters

During the 2006 bathing waters season, SEPA monitored 38 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, the monitoring was instigated to review the need for discharge improvement and in these cases, when the required works are in place, the monitoring can be deleted. In other cases, the local authority has requested monitoring in order to get the monitoring data necessary for a beach to apply for a Keep Scotland Beautiful beach award, which requires that EU bacterial standards are shown to be met. It is intended that the list of other waters monitored will be subject to ongoing reviews to reduce their number, so that resource can be freed up to undertake more investigative microbiological monitoring work at identified bathing waters.

As an additional method of freeing up resource to enable 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, where the consistently excellent water quality allowed the sampling to be reduced to five per season - as with some of the designated waters.

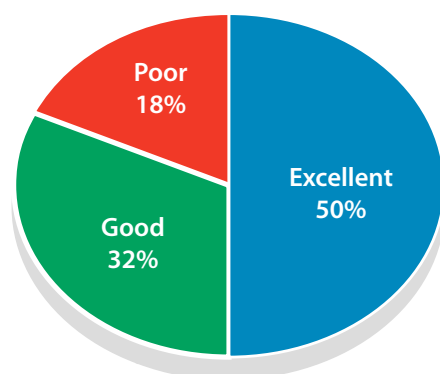
Although these waters are not identified bathing waters, SEPA assesses the monitoring results from these sites in the same way, as compliance with the quality standards of the bathing waters directive is also part of our overall coastal waters quality classification scheme. Therefore, to be of excellent or good quality these waters must meet the guideline or mandatory standards of the bathing waters directive, respectively.

Results are given in detail in Annex 2 and are summarised in Figure 3. Of the 38 sampling sites, in 2006:

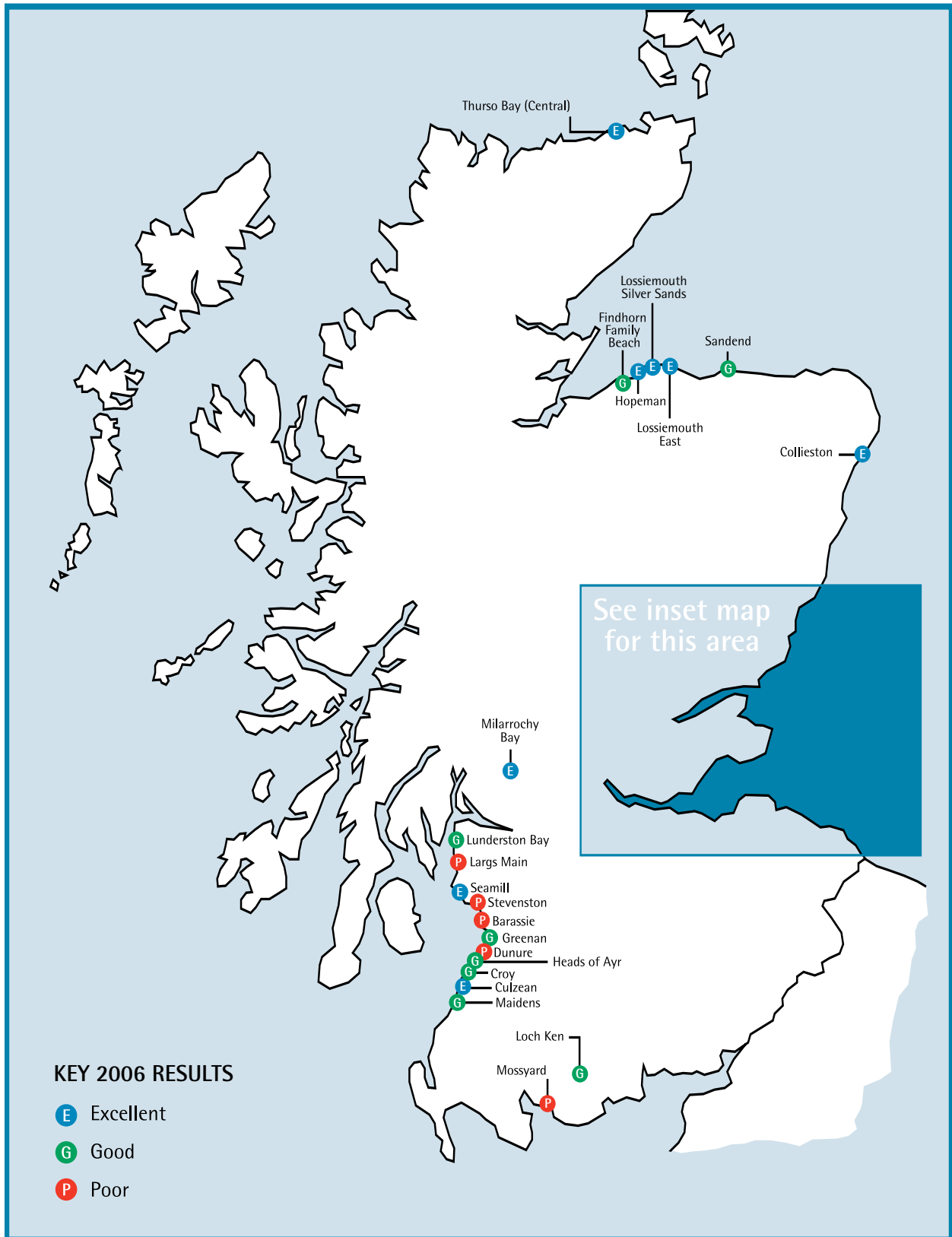
- 19 (50 %) were classified as being of excellent quality;
- 12 (32 %) were classified as being of good quality; and
- 7 (18 %) were classified as being of poor quality.

Comparisons with last season could be misleading due to some of these other waters now becoming designated bathing waters and sampling being discontinued at other sites. However, one direct comparison that can be made is the number of waters meeting the excellent standard, and it is particularly pleasing that 19 sites this year achieved the excellent standard, compared to 17 last season. This number would have been 21 if Broughty Ferry and Longniddry had not been promoted to designated status.

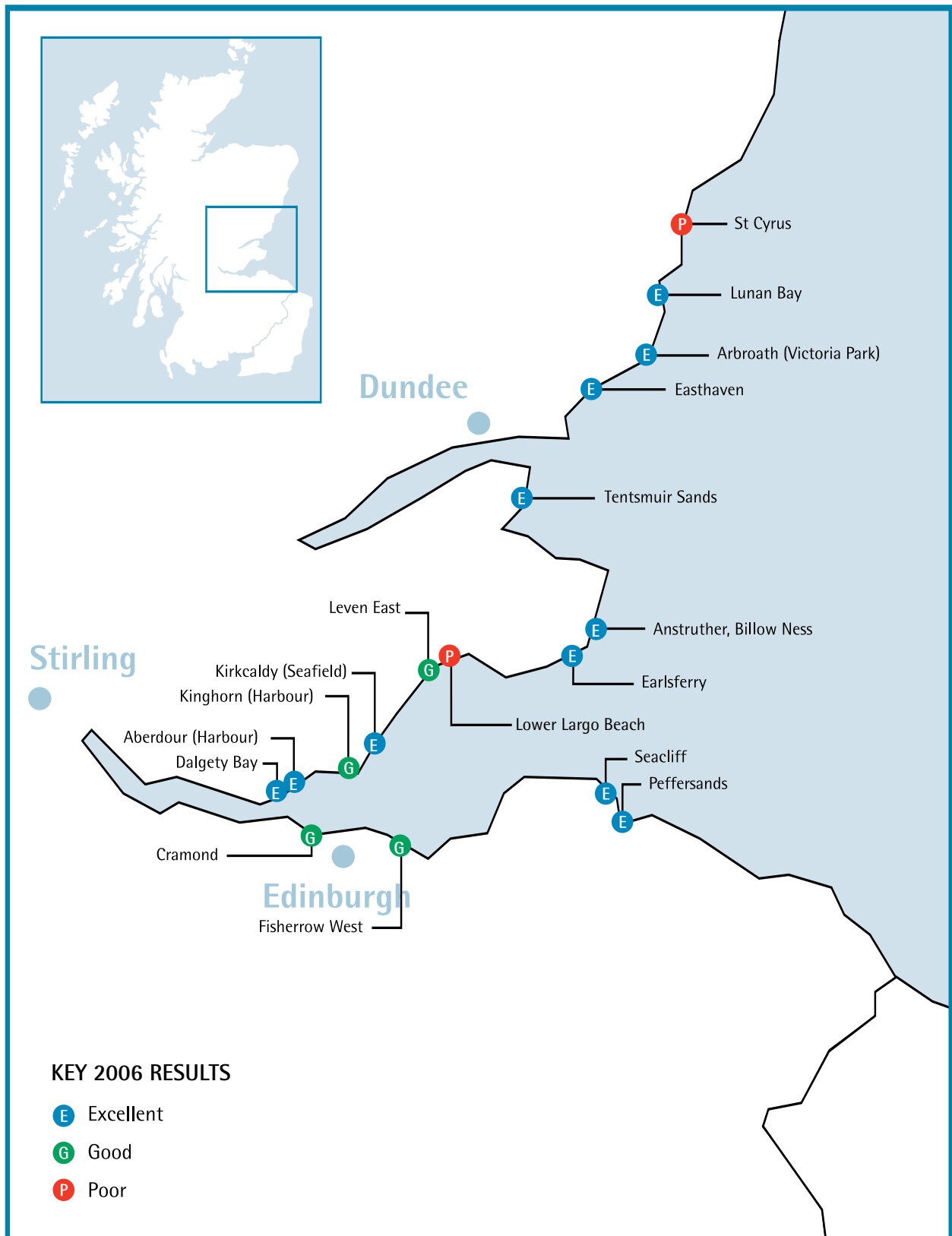
Figure 3: Classification of other monitored waters



Map 3: Location and results of other waters monitored by SEPA during 2006



Map 4: Location and results of other waters monitored by SEPA during 2006 (south east area)



3 Further improvements to water quality

3.1 Scottish Water investments

Until recently, many decades of significant under-investment in the water and sewerage infrastructure of Scotland has resulted in sewage discharges being the major cause of water pollution. In 2000, many bathing waters were still failing or at risk of failing to meet required EU standards due to unsatisfactory sewage discharges. The situation is now substantially improving, particularly with the introduction of the Quality and Standards (Q&S) process for setting the capital expenditure plans for Scottish Water and its predecessor authorities. Q&S I covered a two year period from April 2000 to March 2002 and delivered an investment in water and sewerage infrastructure of £740 million, complemented by a further £380 million in Public Private Partnership Schemes. However, these schemes generally only tackled the larger discharges. Much more remained to be done to achieve adequate environmental quality protection.

Q&S II covered the four year period from April 2002 to March 2006 and comprised 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 schemes within the programme that are required to improve the quality of bathing waters and ensured that 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 following works have consequently been included within the Q&S II programme. Not all of the projects scheduled for completion have been commissioned on time; the current situation is described below. In addition, further works are planned in the next stage of the capital investment programme, Q&S III, which will run from 2006 to 2012, details of which are still being finalised.

Southernness: This bathing water had not previously been regarded as at risk of failure as a result of Scottish Water discharges. However recent monitoring of the River Nith, and the failure in 2004 indicated that the Dumfries sewerage networks (some 15 -20km 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 waters and the sewerage networks highlighted for upgrading under the Q&S III programme were scheduled to commence in April 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.

Turnberry: All discharges from Maidens, Kirkoswald and Turnberry were transferred to Girvan WWTW in 2003. There remain some private sewage effluent discharges at Turnberry, and Scottish Water is investigating the feasibility of a scheme for first time sewerage provision.

Prestwick and Troon (South Beach): As Irvine below

Irvine: It is clear from discussions with Scottish Water that the work to be carried out under the Q&S II projects will not be as extensive as was originally understood by SEPA. The projects currently being undertaken will only tackle debris and will not address the underlying fundamental problem with the CSOs, namely spill frequency and duration. It is unlikely that any reduction in the impact from CSO spills or reduction in the risk of failure of the bathing waters will be seen until the implementation of improvements under the Q&S III programme and initial modelling has commenced in 2006.

Saltcoats/Ardrossan: as Irvine above

Largs (Pencil Beach): In Largs, currently all sewage is discharged untreated via a short outfall at Buchanan Street which is about 2km north of the designated bathing water. A new pumping station is currently under construction adjacent to the existing discharge at Buchanan Street. This is due to be operational by the end of December 2006 and will pump sewage to a new Largs WWTW north of the town. This treatment at the new 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 WWTW has now been built and commissioned. Discharge consents have been granted for the emergency, storm and final effluent discharges associated with the scheme.

Luss Bay: Tertiary treatment in the form of UV light disinfection has now been provided on site. During 2006, Scottish Water upgraded the treatment plant and the inlet overflow has been blocked off. Currently the works is being commissioned and upon completion, it will be handed over to Scottish Water Operations. Initial review of the disinfection system indicates that it is effective at bacterial kill.

Morar: Consideration was given to improving the sewage treatment for the village of Morar, although the village is outside the extensive bathing areas. Hydrographic studies confirmed that there was no need for any further sewage treatment at Morar.

Dunnet: Scottish Water has opted for additional peracetic 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. SEPA understands that although Scottish Water had provided the facility to dose proportional to the flow this was not commissioned in time for the 2006 bathing season. Scottish Water has been asked to confirm that this will be in place for 2007. A new treatment works for Castletown sewage will be brought into beneficial use some time in late October 2006 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 Bathing Waters: 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 sewage effluent discharge to the bay was diverted to Peterhead WWTW prior to the start of the 2003 bathing water season. To further improve the quality of this bathing water, UV disinfection at Hatton WWTW was installed prior to the start of the 2006 season, whilst a large septic tank discharge to the Water of Cruden at Bridgend Crescent, near Hatton, has been 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 securing land acquisition the new works was commissioned in spring 2006 and has been effective in providing tertiary treatment and disinfection during the 2006 bathing season.

Dunbar (Belhaven): Commencement of construction of the new WWTW to serve Dunbar has been delayed due to problems with land acquisition. These problems have now been resolved and construction of the rising main to the new works has commenced with on site works for the new WWTW about to commence. The construction and commissioning of the new WWTW is now planned to be completed 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 WWTW 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 done at a householder's or developer's expense. This has been done by householders at Seton Sands, and a property developer at Eyemouth.

Caravan parks at Southernness on the Solway coast, and at Ganavan North of Oban have been required to upgrade their sewage treatment facilities, and the need for similar upgrading for a site near Pease Bay is currently under consideration. Currently a new sewage treatment plant for a visitor centre at Culloden is being planned. 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 Executive sponsored improvement works

The Scottish Executive has undertaken a lot of research into the impact of diffuse pollution – both urban and rural – on bathing water quality. Projects range from investigating best management practices on farms, retrofitting Sustainable Urban Drainage Systems, anaerobically digesting livestock slurry and composting to kill pathogens, co-digesting of cattle slurry with human sewage sludge, co-digestion of animal waste and the introduction of farm based measures. Full details of the work undertaken can be found on the Scottish Executive's website⁴.

SEPA is currently managing further evaluation work into the effectiveness of one of these projects – best management practices on farms in the Brighouse Bay catchment.

This research has enabled the Scottish Executive to determine the best means of tackling the threat of diffuse pollution not only to bathing waters, but to the water environment in general. The Water Framework Directive (WFD) requires that measures are introduced to tackle these risks. This led to the Scottish Executive publishing its consultation paper, *Diffuse Water Pollution from Rural Land Use*, in December 2005. The document reviewed the issues, discussed current control measures and proposed a package of measures including awareness raising, voluntary action, support payments and new regulatory controls in line with the Water Environment (Controlled Activities)(Scotland) Regulations 2005 (CAR) made under the Water Environment and Water Services (Scotland) Act 2003.

The responses were taken into consideration and measures for the control of diffuse pollution have been developed. The measures are based on widely accepted standards of good practice such as the Scottish Executive'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.

A further consultation document has been published (October 2006) on proposed regulations relating to General Binding Rules (GBRs) for the control of diffuse water pollution from rural land use. This is also available on the Scottish Executive's website.

The Scottish Executive, in collaboration with key stakeholders, including SEPA, has developed a set of GBRs designed to protect the water environment and to prevent actions which could result in undue risks. They now propose the introduction of these national GBRs as part of the CAR regulatory framework. The proposals are intended to help bring about good water status across Scotland without imposing onerous costs or conditions on land managers. They also propose that that it should be permissible for lightly contaminated farmyard water to be drained to a wetland constructed for the purpose, as an alternative to collection of the run-off in a slurry store. These measures will help protect bathing water quality from agricultural diffuse pollution.

⁴www.scotland.gov.uk/bathingwaters

It is very likely that even with these national GBRs in place there will still be problems associated with certain pollutants in some catchments. For these areas it is planned that, in conjunction with river basin management planning, the national rules will be supplemented by further localised controls to apply to a particular land use activity. There is a choice of ways in which such additional rules could be applied and the options will be investigated, in collaboration with stakeholders, in 2007/08.

3.4 SEPA environmental improvement plans to reduce sources of pollution

Water quality is particularly at risk following heavy rainfall, as this washes potentially polluting material from land into surrounding watercourses. Runoff from a single source may not seem important, but across a whole catchment these diffuse sources can have serious implications for nearby bathing waters. This is the fifth year of SEPA environmental improvement plans which aim to reduce the bacterial load entering watercourses.

Continuous monitoring on number of key watercourses and Scottish Water combined sewer overflows (CSOs) has allowed early detection of pollution. A total of 477 inspections were carried out at 37 locations on a weekly basis during the bathing waters season. Working closely with Scottish Water enabled appropriate action to be taken in terms of either emergency maintenance to rectify the problem or dispatch of a clean up team to the site. As a result of this initiative, a number of wrong connections of sewage effluent to surface water drains were identified and have led to on-going work by Scottish Water and SEPA to trace and eliminate these discharges.

Monitoring equipment has been installed at three sites across Scotland which are currently impacted by differing diffuse pollution pressures. Results could help to establish a relationship between rainfall and water quality variations. This could inform future sampling which in turn will allow us to collect storm samples more efficiently.

Work is still ongoing in partnership with the agricultural sector. By 2006, some 5183 farm visits had been undertaken, continuing the partnership approach focusing on education, awareness and regulation of farms within high-priority catchments. In 2007, this work will enter a new phase and will focus on two 'Monitored Priority Catchments' representative of land use to assess sources of, and monitor measures to mitigate, diffuse pollution. This partnership project, working with farmers, the Scottish Executive, Scottish Natural Heritage, Scottish Agricultural College, Macaulay Institute, Centre for Ecology and Hydrology and NFU Scotland, also plan to provide advice on how to meet proposed new regulations relating to diffuse pollution.

Working with farmers and Scottish Water has made significant improvements towards future compliance at Eyemouth. Poor quality following heavy rainfall and a high level of faecal bacteria found in the Eye Water gave cause for concern. SEPA monitoring identified Ayton WWTW as a significant point source of bacterial contamination, coupled with diffuse contamination coming from the Ale Water. Since the start of 2006, sewage from Ayton WWTW is now being pumped to Eyemouth WWTW and SEPA, supported by NFUS, is working with farmers in the Eye catchment, sharing monitoring data and exploring alternative options for livestock watering.

The Scottish Executive Brighouse Bay project installed a range of Best Management Practices (BMP) into farms during 2003 to investigate their effectiveness at reducing diffuse pollution to assist bathing water compliance. SEPA monitoring is continuing to collect hydrological, chemical and microbiological data from the catchment. This is providing valuable information on how these measures have performed and implications for their adoption across Scotland. Measures put in place include fencing off watercourses to prevent cattle access, the provision of alternative watering points and constructed farm wetlands. Using constructed farm wetlands as a way to remove pollutants prior to discharge to the water environment could be an additional option to help farmers reduce the level of lightly contaminated water leaving the farm and can give rise to additional landscape and biodiversity benefits.

New guidance to support the installation of BMP has been trialled this year; the guidance aims to help farmers and advisors identify and reduce diffuse pollution risks from farming practices and suggests low and no cost mitigation measures suitable for a range of farming situations. It is anticipated that some of the measures could benefit surrounding water quality and have additional benefits for the environment and the farm business. Continued farmer involvement is essential to help find straightforward practical solutions in compliance with current and forthcoming regulations.

4 Conclusions

SEPA is delighted that for the first time ever all designated bathing waters passed the current EC Bathing Water Directive mandatory standard.

In last year's report it was concluded that the full east coast compliance in 2004, followed by full west coast compliance in 2005, demonstrated that in the absence of unseasonably wet weather, and with some good fortune at sites that are still close to the quality boundary, it should in future be possible to get 100% mandatory compliance.

So whilst this full compliance should be celebrated, the long term trend of improvement needs to be maintained to add certainty to this result. Although good fortune may have been a factor, as a number of sites still recorded single sample exceedances, there is no doubt that overall these results reflect the very substantial environmental improvements delivered by Scottish Water's investments in new sewage treatment schemes and the success of continuing work to minimise diffuse pollution from agricultural sources. After so much hard work to minimise sources of diffuse agricultural pollution in south west Scotland, it was particularly pleasing that last year's full compliance record was further consolidated.

The three east coast sites which failed to meet mandatory compliance last year all achieved the good standard this year. At Stonehaven, the overall situation remains unsatisfactory, because construction of a pumping station to transfer sewage to the treatment works at Nigg was held back by public objections to the planning proposals. SEPA has required as much part-time temporary disinfection to be put in place as will not jeopardise the salmon run into the local rivers. It is now clear that the pumping station will be completed by 2008, and the return to good quality in 2006, after the failure in 2005 perhaps suggests that the collection of two poor quality samples in 2005 was just bad luck. Nairn East and Eyemouth also returned to good water quality this season, and more details are given in the text of section 2.2. At other sites where new works were put in place before 2006 season, they delivered expected improvements

Three new bathing waters were designated this year, bringing the total to 63. This decision was made by Scottish Ministers on the recommendation of the independent Bathing Waters Review Panel. Of the new sites, Broughty Ferry and Longniddry both achieved the guideline standard and Largs (Pencil Beach) the mandatory standard. Broughty Ferry also holds a blue flag. Further recommendations, based on information about usage, facilities, management plans and stakeholder submissions are expected for 2007.

The new EU Bathing Water Directive was finalised and passed into European law earlier this year. Whilst this directive will bring in more stringent compliance standards that need 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.

It is this public provision element in which SEPA is currently leading the way within Europe with its electronic bathing water signs. SEPA has now held full responsibility for the second year after the early initiation and funding of the project by the Scottish Executive. Occasionally, at some sites after heavy rainfall water quality can deteriorate, primarily due to run off from agriculture and combined sewer overflows. As this dip in water quality is normally predictable, the public can be warned via electronic signs at beach locations, and also via the SEPA website, phone line, and, new for 2006, the SEPA text information service. The public can then make an informed choice about whether to use the water.

To reach the new tighter bathing water quality standards prescribed within the new 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 deliver 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 III) will deliver additional improvements. SEPA will also continue to carry out audit monitoring on existing facilities to ensure that they are working properly, so that risks of pollution are minimised.

As diffuse pollution is still the main source of quality threats and problems at numerous bathing waters, further improvement will be required. SEPA is grateful for the input from the agricultural community, Scottish Agricultural College, National Farmers Union of Scotland and Scottish Executive Environment and Rural Affairs Department in tackling diffuse pollution through cooperation and the adoption of a wide range of methods and initiatives.

With ever increasing awareness and concerns about the impact of travel on global warming, good bathing water quality throughout Scotland should continue to be sought to provide a sustainable holiday option for current and future generations.

Dornoch



Annex One

2006 Monitoring data from Scotland's 63 identified bathing waters

Bathing Water	Local Authority	No. of sample results	Good Quality (EC Mandatory Standard)		Excellent Quality (EC Guideline Value)			Overall Quality
			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	
Southernness	D&G	20	20	20	17	13	17	Good
Sandyhills	D&G	20	20	20	15	9	18	Good
Rockcliffe	D&G	20	20	20	15	8	16	Good
Brighthouse Bay	D&G	20	20	20	18	12	16	Good
Carrick	D&G	20	20	20	17	11	18	Good
Girvan	SA	20	20	20	14	12	13	Good
Turnberry	SA	20	20	19	17	11	18	Good
Ayr (South Beach)	SA	20	20	19	12	6	15	Good
Prestwick	SA	20	19	19	18	13	17	Good
Troon (South Beach)	SA	20	20	20	19	15	19	Good
Irvine	NA	20	20	19	14	11	17	Good
Saltcoats/Ardrossan	NA	20	20	20	18	15	19	Good
Largs (Pencil Beach)	NA	20	20	19	15	9	17	Good
Millport Bay	NA	20	20	20	14	13	17	Good
Luss Bay	A&B	20	20	19	13	9	15	Good
Ettrick Bay	A&B	20	19	19	13	7	18	Good
Machrihanish	A&B	10	10	10	9	8	9	Excellent
Ganavan	A&B	20	20	20	16	14	17	Good
Morar	H	20	20	19	17	15	17	Good
Dunnet	H	20	20	20	17	14	18	Good
Dornoch	H	5	5	5	5	5	5	Excellent
Dores	H	20	20	20	12	12	16	Good
Nairn (Central)	H	20	20	19	17	17	15	Good
Nairn (East)	H	20	19	19	16	18	17	Good
Cullen Bay	Moray	20	20	20	18	18	18	Excellent
Inverboyndie	Aber	20	20	20	19	18	18	Excellent
Rosehearty	Aber	20	20	20	17	16	19	Excellent
Fraserburgh (Tiger Hill)	Aber	20	20	20	19	18	18	Excellent
Fraserburgh (Philorth)	Aber	10	10	10	10	10	8	Good
Peterhead (Lido)	Aber	20	20	20	20	20	20	Excellent
Cruden Bay	Aber	20	20	20	10	7	9	Good
Balmedie	Aber	5	20	20	5	5	5	Excellent
Aberdeen	CofA	20	19	19	18	16	18	Excellent
Stonehaven	Aber	20	20	20	14	9	9	Good

			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
Montrose	Angus	11	11	11	10	10	11	Excellent
Arbroath (West Links)	Angus	20	20	20	20	17	19	Excellent
Carnoustie	Angus	40	40	38	34	32	36	Excellent
Broughty Ferry	DC	20	20	20	20	20	20	Excellent
St. Andrews (West Sands)	Fife	10	10	10	10	9	10	Excellent
St. Andrews(East Sands)	Fife	20	20	20	20	19	19	Excellent
Kingsbarns	Fife	6	6	6	5	5	6	Excellent
Crail (Roome Bay)	Fife	20	20	20	20	20	20	Excellent
Elie (Harbour and Ruby Bay)	Fife	10	10	10	10	10	10	Excellent
Shell Bay	Fife	20	20	20	20	19	20	Excellent
Kinghorn (Pettycur)	Fife	20	19	19	19	18	19	Excellent
Burntisland	Fife	20	20	20	20	20	19	Excellent
Aberdour (Silver Sands)	Fife	10	10	10	10	10	10	Excellent
Portobello (West)	CofE	20	20	19	15	11	12	Good
Portobello (Central)	CofE	20	20	20	17	17	17	Good
Seton Sands	EL	20	20	20	17	17	18	Excellent
Longniddry	EL	20	20	20	19	19	20	Excellent
Gullane	EL	6	6	6	6	6	6	Excellent
Yellowcraig	EL	20	20	20	20	20	19	Excellent
North Berwick (West)	EL	20	20	20	19	18	19	Excellent
North Berwick (Milsey Bay)	EL	20	20	20	20	18	20	Excellent
Dunbar (Belhaven)	EL	20	20	20	19	18	17	Good
Dunbar (East)	EL	6	6	6	6	5	6	Excellent
Whitesands	EL	20	20	20	20	18	20	Excellent
Thorntonloch	EL	20	20	20	20	19	20	Excellent
Pease Bay	SB	5	5	5	4	5	5	Excellent
St Abbs	SB	20	20	20	20	20	20	Excellent
Coldingham	SB	5	5	5	5	5	5	Excellent
Eyemouth	SB	20	20	20	16	15	19	Good

*denotes TC Total coliforms or FC Faecal coliforms or FS Faecal streptococci.

Local Authority Abbreviation codes:

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

Annex Two

Monitoring data from other waters

Bathing Water	No. of sample results	Good Quality (EC Mandatory Standard)		Excellent Quality (EC Guideline Value)			Overall Quality
		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	
Loch Ken	10	10	10	7	7	8	Good
Mosyard	10	10	9	6	4	9	Poor
Maidens	10	10	10	8	6	8	Good
Culzean	10	10	10	9	10	10	Excellent
Croy	10	10	10	8	7	8	Good
Heads of Ayr	10	10	10	8	7	9	Good
Dunure	10	10	9	7	6	8	Poor
Greenan	10	10	10	6	4	9	Good
Barassie	10	10	9	7	3	9	Poor
Stevenston	10	9	9	7	4	9	Poor
Seamill	10	10	10	9	8	10	Excellent
Largs Main	10	10	8	2	0	7	Poor
Lunderston Bay	10	10	10	10	6	9	Good
Milarrochy Bay	10	10	10	10	9	10	Excellent
Thurso Bay (Central)	10	10	10	10	10	10	Excellent
Findhorn Family Beach	10	10	10	6	5	6	Good
Hopeman	10	10	10	10	9	9	Excellent
Lossiemouth Silver Sands	10	10	10	10	10	9	Excellent
Lossiemouth East	10	10	10	9	8	9	Excellent
Sandend	10	10	10	8	7	8	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	8	9	Excellent
St Cyrus	10	9	8	6	5	8	Poor
Lunan Bay	5	5	5	5	5	5	Excellent
Arbroath (Victoria Park)	10	10	10	10	10	10	Excellent
Easthaven	10	10	10	9	9	10	Excellent
Tentsmuir Sands	5	5	5	5	5	5	Excellent
Anstruther, Billow Ness	10	10	10	10	10	10	Excellent
Earlsferry	10	10	10	10	10	10	Excellent
Lower Largo Beach	10	8	7	5	4	6	Poor
Leven East	10	10	10	8	6	9	Good
Kirkcaldy (Seafield)	10	10	10	9	8	9	Excellent
Kinghorn (Harbour)	10	10	10	10	9	8	Good
Aberdour (Harbour)	10	10	10	8	8	9	Excellent
Dalgety Bay	10	10	10	9	9	10	Excellent
Cramond	10	10	10	9	7	10	Good
Fisherrow West	10	10	10	7	5	8	Good
Seacliff	10	10	10	10	10	10	Excellent
Peppersands	10	10	10	10	10	10	Excellent

Annex Three

Current legislation and results assessment

3.1 EC Bathing Water Directive (76/160/EEC)

The EC Bathing Water Directive ('the 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 practiced 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.

3.2 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 waste water treatment works (WWTW), 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.

3.3 Interpretation of results and requirements for monitoring programmes

The requirements of the current 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, and 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', so not all samples taken have to meet the published standards. This recognises the naturally variable nature of our environment.

Mandatory standards (good quality)

Mandatory standards apply to ten quality indicators: total coliforms; faecal coliforms; salmonella; enteroviruses; pH, colour; mineral oils; detergents; phenols; and transparency. Ninety five per cent of samples taken during the bathing season must comply with the mandatory coliform quality standards for the site 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 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 which justified application of this provision in 2006, leading to three sample results being disregarded.

Exceptional geographic conditions

Under Article 8, the requirements of the directive may be waived 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 the River Nairn, when in spate, discharges peaty coloured water into the sea near the sampling point. Currently, four identified bathing waters in Scotland have waivers for colour and 28 have waivers for transparency.

3.4 Sampling frequency

The minimum frequency of sampling is prescribed in the Annex to the directive. Checks must normally be made at least once every two weeks during the bathing season for total and faecal coliforms, transparency, colour, mineral oil, detergents (officially, surface-active substances reacting with methylene blue) and phenols. For the remaining parameters with mandatory standards (salmonella, enteroviruses and pH), and for other parameters where inspection is prescribed, concentrations should be checked whenever inspections show that the substance may be present or where the quality of the bathing water has deteriorated.

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

The directive also permits that the sampling frequency may be halved for waters where quality is consistently good. After the improvements made to Scottish bathing waters, the European Commission in 2003 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 2006 are identified in Annexes 1 and 2.

3.5 Interpretation of microbiological values

The directive sets standards for microbiological quality indicator organisms which 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 which have not been given 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 properly applied 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 1 (below).

Table 1: 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

Aesthetic pollution In the context of this report, pollution caused by sewage solids, sanitary goods and other items which are visually offensive.

Combined sewer overflows (CSO) Overflow pipes designed to operate during periods of high rainfall to relieve pressure on sewerage systems and so prevent flooding. CSO 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.

COPA The Control of Pollution Act 1974, as amended by the Environment Act, 1995.

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 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.

Good quality This indicates that a bathing water met mandatory value quality standards in the 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 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 EC 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.

SAC Scottish Agricultural College.

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

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

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

SEPA Scottish Environment Protection Agency.

Shellfish Waters Directive EU Directive (79/923/EEC) which aims to protect the quality of coastal and brackish waters designated for protection or improvement in order to support particular shellfish populations.

Tertiary sewage treatment Further treatment of effluent generally using sand sewage treatment filter beds or 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 UV irradiation of treated sewage effluent, in order to render the final effluent substantially disinfected.

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

WWTW Waste Water Treatment Works, the same as a sewage treatment works (STW).

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 Seven for details).

SEPA's website (www.sepa.org.uk) contains a wide collection of information on SEPA, as well as the text from 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, listing 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 which 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 across Europe that fulfils 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 2006, seven beaches in Scotland achieved Blue Flag status: Aberdour (Silversands), Broughty Ferry, Burntisland, Elie Harbour, Montrose, St Andrews East Sands and St Andrews West Sands. Clean Coast Scotland (CCS) is a partnership bringing together 13 different government and non-government bodies to coordinate 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.keeptoscotlandbeautiful.org

The website address for the Seaside Awards is: www.seasideawards.org.uk

The website address for the Blue Flag Awards is: www.blueflag.org

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

Environment Agency

Enquiries@environment-agency.gov.uk

Tel: 0845 9333111

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

Annex Six

SEPA Offices

Corporate Office

Erskine Court,
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Stirling, FK9 4TR
t: 01786 457700
f: 01786 446885

Aberdeen Office

Greyhope House, Greyhope Road,
Torry, Aberdeen, AB11 9RD
t: 01224 248338
f: 01224 248591

Arbroath Office

62 High Street, Arbroath,
DD11 1AW
t: 01241 874370
f: 01241 430695

Ayr Office

31 Miller Road,
Ayr KA7 2AX
t: 01292 294000
f: 01292 611130

Dingwall Office

Graesser House, Fodderty Way,
Dingwall Business Park,
Dingwall IV15 9XB
t: 01349 862021
f: 01349 863987

Dumfries Office

Rivers House, Irongray Road,
Dumfries, DG2 0JE
t: 01387 720502
f: 01387 721154

East Kilbride Office

5 Redwood Crescent, Peel Park,
East Kilbride, G74 5PP
t: 01355 574200
f: 01355 574688

Edinburgh Office

Clearwater House,
Heriot Watt Research Park,
Avenue North, Riccarton,
Edinburgh EH14 4AP
t: 0131 449 7296
f: 0131 449 7277

Elgin Office

28 Perimeter Road, Pinefield,
Elgin IV30 6AF
t: 01343 547663
f: 01343 540884

Fort William Office

Carr's Corner Industrial Estate,
Lochybridge, Fort William,
PH33 6TL
t: 01397 704426
f: 01397 705404

Fraserburgh Office

Shaw House, Mid Street,
Fraserburgh, AB43 9JN
t: 01346 510502
f: 01346 515444

Galashiels Office

Burnbrae, Mossilee Road,
Galashiels, TD1 1NF
t: 01896 754797
f: 01896 754412

Glasgow Office

Law House, Todd Campus,
West of Scotland Science Park
Maryhill Road, Glasgow, G20 0XA
t: 0141 945 6350
f: 0141 948 0006

Glenrothes Office

Pentland Court, Saltire Centre,
Glenrothes, KY6 2DA
t: 01592 776910
f: 01592 775923

Lochgilthead Office

2 Smithy Lane, Lochgilthead,
PA31 8TA
t: 01546 602876
f: 01546 602337

Newton Stewart Office

Penkiln Bridge Court, Minnigaff,
Newton Stewart, DG8 6AA
t: 01671 402618
f: 01671 404121

Orkney Office

Norlantic House, Scott's Road,
Hatston Industrial Estate,
Kirkwall, Orkney KW15 1RE
t: 01856 871080
f: 01856 871090

Perth Office

7 Whitefriars Crescent,
Perth PH2 0PA
t: 01738 627989
f: 01738 630997

Shetland Office

The Esplanade, Lerwick,
Shetland ZE1 0LL
t: 01595 696926
f: 01595 696946

Stirling Office

Bremner House, Castle Business Park,
Stirling FK9 4TF
t: 01786 452595
f: 01786 461425

Thurso Office

Thurso Business Park, Thurso,
Caithness, KW14 7XW
t: 01847 894422
f: 01847 893365

Western Isles Office

2 James Square, James Street,
Stornoway, Isle of Lewis,
HS1 2QN
t: 01851 706477
f: 01851 703510

Floodline
0845 988 1188

POLLUTION REPORT LINE
0800 80 70 60

24 HRS A DAY,
7 DAYS A WEEK

www.sepa.org.uk

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