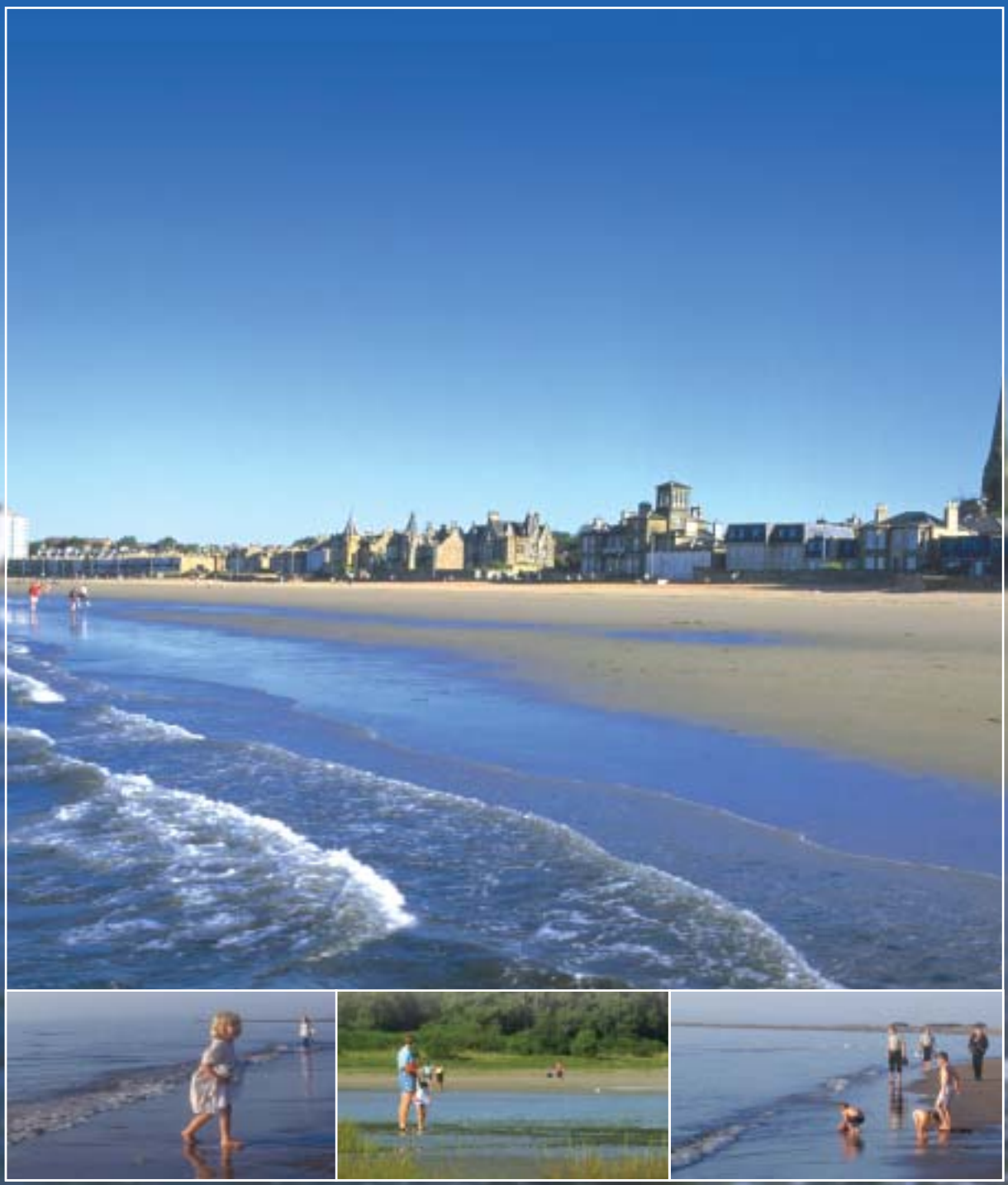
SEPA
Scottish Environment Protection Agency

Scottish **Bathing Waters** | 2002



Contents

Troon South

Foreword

I am pleased to present the Scottish Environment Protection Agency's (SEPA's) 2002 Bathing Waters monitoring report. The headline news for 2002 is good. Scottish bathing waters achieved their best ever compliance rate with environmental quality standards specified in the EC Bathing Waters Directive 76/160. Of the 60 identified waters 55 met the basic mandatory standards. However, while this is an improvement, it is still far from being good enough. One of SEPA's key objectives is to improve the quality of identified bathing waters to the extent that they all meet current EC quality standards. Substantial new sewage treatment schemes have been constructed or are planned, and considerably more resource is being applied to reducing diffuse sources of bacterial pollution. While it is encouraging to see positive outcomes from these continuing investments, further investments and improvements are required to achieve full compliance.

This report contributes to SEPA's aim to provide useful information on Scotland's environment. As well as containing the water quality monitoring results from the identified bathing waters, it also describes factors underlying the results and outlines site-specific plans for improvement.

The principal reason for poor water quality at failing sites is still sewage effluent. However, SEPA investigations show that freshwater sources polluted by agricultural pollution and storm overflows are significant factors at numerous sites. The continuing major investment by Scottish Water is gradually reversing the historic legacy of inadequate sewage treatment facilities and sewerage infrastructure in Scotland. SEPA welcomes the more formal approach to planning the investment cycle introduced by the Scottish Executive's Quality and Standards process. Accordingly, SEPA is engaged in close dialogue with both Scottish Water and the Water Industry Commissioner to ensure that capital expenditure, while restricted to that which is affordable, is targeted to deliver maximum environmental benefits into the future.

Kingsbarns

The quality of all unsatisfactory waters must be improved. The need to deal with all possible sources of pollution requires a fully integrated approach. For some waters the cause of failure is clear, but where the sources are multiple and diffuse, more environmental data is needed to enable sources to be identified and minimised or eliminated. SEPA has done much work on this and these efforts are continuing. Particular focus has been put on improving farming practices in Ayrshire and Argyll that will contribute to reducing the risk of pollution of bathing waters from run-off of livestock slurries and manure. The help of the Scottish Executive, Scottish Agricultural College, National Farmers Union of Scotland, and others contracted to the Scottish Executive in helping deal with problems outwith SEPA's statutory control is gratefully acknowledged.

Looking to the future, implementation of the EU Water Framework Directive will require the introduction of new pollution control regulations which for the first time will include statutory control over diffuse sources. However, SEPA's immediate aim is to make the improvements required in areas draining to identified bathing waters through education and other innovative means, before these statutory controls become available.

SEPA's monitoring extends beyond identified bathing waters and other results are included in this report. Some other waters in urban areas are found to be of poor quality. These will be improved. However, there are many other often remote and relatively sparsely visited beaches around Scotland, which do not attract bathers in sufficient numbers to justify identification as EC Bathing Waters. SEPA's monitoring of a few of these, such as St Combs in Grampian, and Seacliff in East Lothian, suggests that these waters, which may be more typical of Scotland as a whole, are of very good quality.

Ken Collins
Chairman, Scottish Environment Protection Agency
January 2003

1 Introduction

1.1 SEPA's Role in Bathing Water Quality

The Scottish Environment Protection Agency (SEPA) was established in 1996 as the national public body responsible for environmental protection and improvement in Scotland. It is accountable to the Scottish Ministers and, through them, to the Scottish Parliament. SEPA's duties include regulating discharges to water, air and land. Additional powers and duties continue to be given to SEPA, principally through regulations implementing EC Directives. SEPA also provides environmental advice and information, and works in partnership with many public, voluntary and private sector organisations to deliver environmental improvements.

In addition to publishing this annual report, SEPA places monitoring results from bathing waters on its website throughout the bathing season.

Dornoch Beach

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 also help promote the 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 bathing waters. Since its inception, SEPA has continued the aim of its predecessors to improve bathing water quality as rapidly as possible. It will continue working with all other relevant authorities to achieve the goal of full compliance with European bathing water standards, to which the Scottish Executive is committed. This year, a new section (Section 5) has been added to this report to provide information about the ongoing work towards the attainment of current quality standards, and to the future attainment of anticipated European standards, which are expected to be more stringent.

Identified bathing waters represent only a small part of Scotland's waters. SEPA is committed to protecting and improving all controlled waters, and in recognition of this, it maintains a policy on microbiological standards for all discharges. This requires that all new or modified discharges to identified bathing waters must be designed to ensure that the Bathing Water Directive's guideline standards are met. These high standards are also applied to recreational waters, areas where SEPA recognises that water contact activities are practiced outwith identified bathing waters, and to beaches visited by the public. Further information on this policy can be found on SEPA's website.

1.3 Purpose of This Report

This report presents the 2002 results from SEPA's routine monitoring of bathing water quality. Two separate sets of results are included:

- results from Scotland's 60 identified bathing waters; and
- results from other waters which are subject to bacteriological quality monitoring during the bathing season.

The report also examines trends in compliance and provides background information on the identified waters in Scotland. These data are used to identify priorities for investment and to focus effort on delivering environmental improvements. The report also details some site-specific issues and the initiatives necessary to ensure high quality bathing water at these sites in the future.

As required by the Directive, the water quality results for the 60 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 in the European Union.

2 Background and Legislation

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

The EC Bathing Water Directive requires each Member State to identify bathing waters and to take all necessary measures to bring these waters up to the quality standards prescribed. A bathing water is defined as fresh or sea water where bathing is either explicitly authorised or is not prohibited and is traditionally practiced by a large number of bathers. The Bathing Water (Classification) (Scotland) Regulations 1991 implement the Bathing Water Directive in Scotland.

The prescribed environmental quality standards are set to protect the environment and public health and include limits for safe microbiological, physical and chemical parameters. The Directive also lays down requirements for the frequency of sampling, methods of analysis and inspection of bathing areas, and the interpretation of results. Provision is made for excluding some results in abnormal circumstances.

2.2 Related Legislation

Under the Control of Pollution Act 1974 (as amended) (COPA), SEPA issues consents for discharges of sewage and trade effluent to controlled waters (which include all coastal and inland waters). The conditions attached to each consent to discharge must be complied with and are designed to achieve compliance with relevant water quality objectives.

The EC Urban Waste Water Treatment Directive (91/271/EEC) specifies minimum legal standards for the treatment of municipal waste water. These standards are principally determined by the size of the community, or agglomeration, served by a waste water treatment plant (WWTP), and by the nature of the receiving environment. This directive requires treatment to ensure compliance with all other EC Directives, including the Bathing Water Directive. The Urban Waste Water Treatment (Scotland) Regulations 1994 implement this directive in Scotland.

The proposed EC Water Framework Directive will be the principal driver for water quality improvements in Scotland over the next decade and beyond. This Directive was approved in December 2000 and defines a planning mechanism for delivering specified environmental objectives. It generally requires Member States to ensure attainment of 'good status' in coastal waters, estuaries, rivers, lochs, estuaries and groundwater by 2015, through the implementation of River Basin Management Plans which will be finalised by 2009. This new directive will replace seven existing directives and will provide the context within which other continuing directives, including the Bathing Water Directive, will operate. As well as having implications for investment to reduce point source pollution, the Water Framework Directive will also require controls to minimise the impact of diffuse pollution sources.

Crail (Roome Bay)

2.3 Working With Others

In 1998, SEPA's Environmental Strategy identified environmental protection priorities for Scotland and committed SEPA to make continual progress towards total compliance with the Bathing Water Directive's mandatory standards. This 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 the people of Scotland, and visitors to our country, the high quality of bathing water that they are entitled to expect in the 21st century.

Sewage remains the major cause of polluted coastal waters in Scotland. Therefore, measures required to improve water quality are, in most cases, the responsibility of Scottish Water. SEPA and the Scottish Executive work with Scottish Water and the Water Industry Commissioner to seek to ensure that planned capital investment programmes, aimed at upgrading sewerage infrastructure throughout the country, are prioritised to maximise environmental benefits and ensure compliance with European Urban Waste Water Treatment Regulations and all relevant quality standards.

Investment is required not only in sewage treatment but also in sewerage infrastructure, particularly storm water overflows. Combined sewer overflows (CSO), designed to prevent flooding during periods of high rainfall, discharge diluted but minimally treated sewage to watercourses and coastal waters. SEPA imposes conditions on the siting and frequency of operation of CSO to minimise their impact on water quality.

As sewage related problems are gradually fixed, other sources of pollution become more apparent. The Scottish Executive's publication *Strategy for Improving Scotland's Bathing Waters* published in March 2002, and subsequent development of the *Four Point Plan* for reduction of agricultural pollution sources, published in December 2002, is proving very helpful in enabling these problems to be tackled. This is particularly important as many of these problems are not yet subject to statutory control. In respect of urban areas, the principles embodied in the successful Sustainable Urban Drainage Schemes (SUDS) manual will increasingly limit urban diffuse pollution from new developments, but there remains a large problem of contaminated surface water run-off from existing urban areas.

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

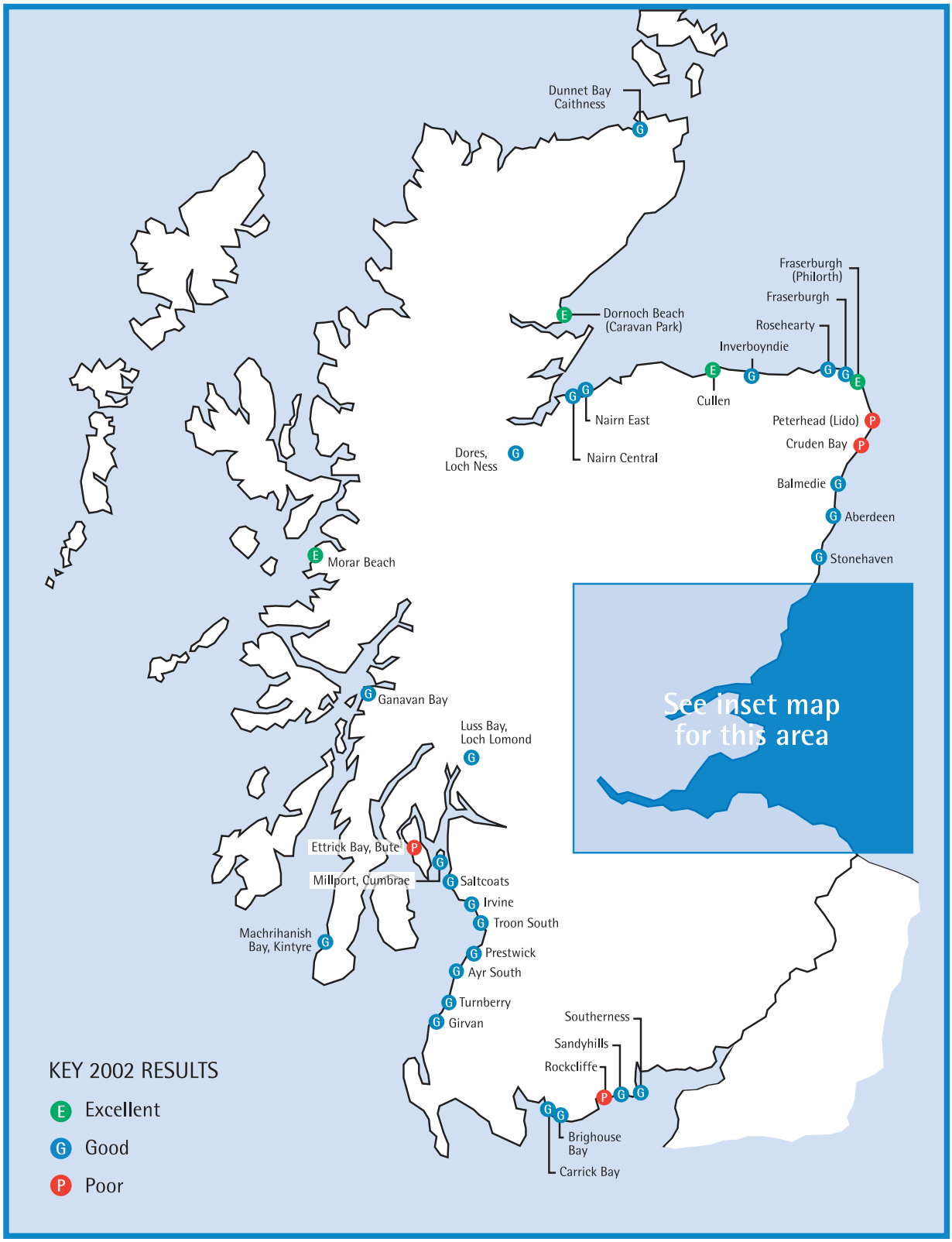
2.4 Identification of Bathing Waters

The first set of identified bathing waters in Scotland, 23 in total, was announced by the then Secretary of State for Scotland in February 1987. Initially, these were based on the criteria set by the UK Government for identifying waters coming within the scope of the Directive, based on the number of people using the water for bathing.

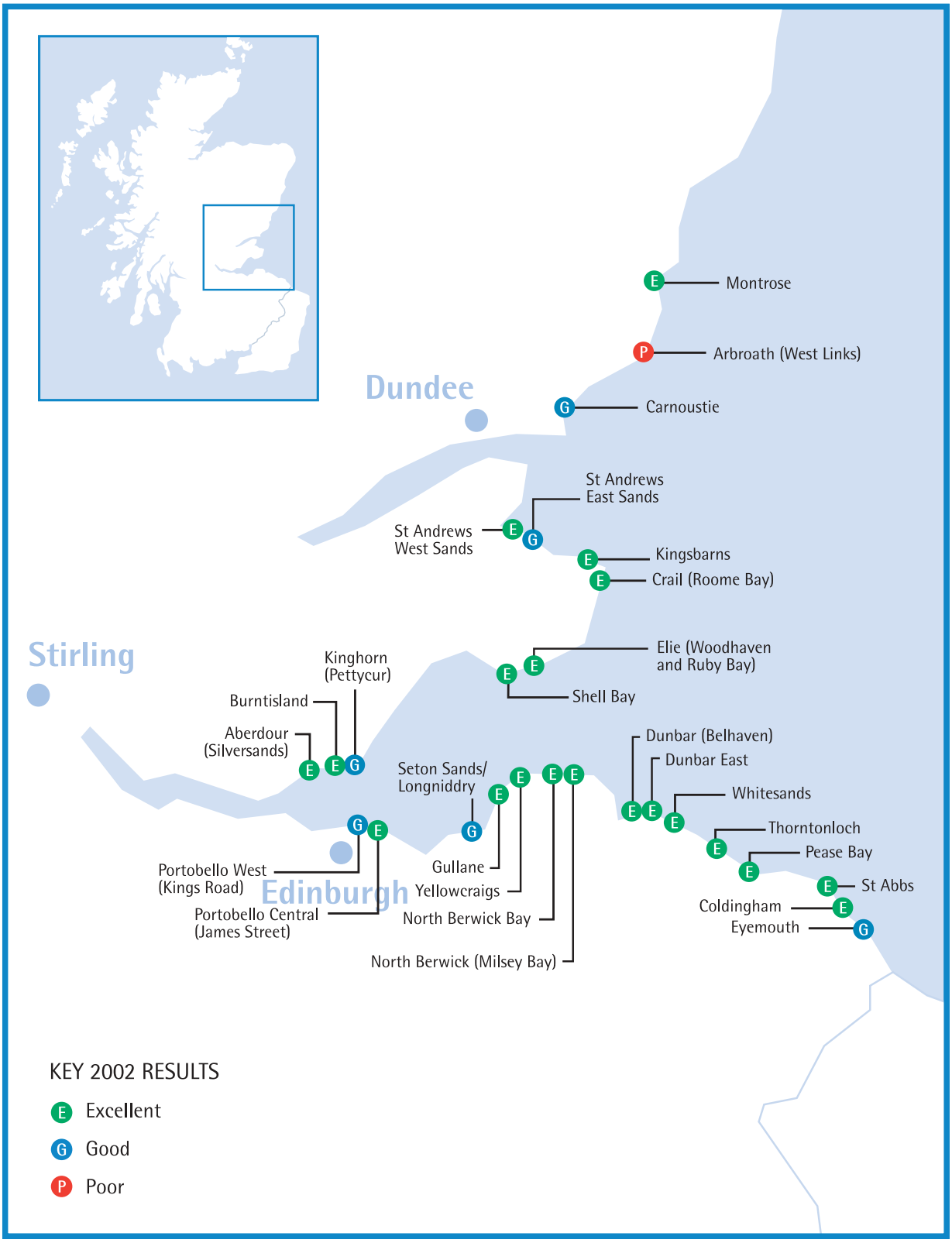
In 1998, the Scottish Office carried out a review to decide whether additional waters should be identified in Scotland under the Bathing Water Directive. A panel was set up by the Scottish Office, with a wide ranging membership, ensuring that all stakeholders in the identification of bathing waters were involved in the decision-making process. The result of this process was that in May 1999, it was formally announced that an additional 37 bathing waters were to be identified before the start of the 1999 bathing water season, bringing the total in Scotland to 60 (see Maps 1 and 2).

Post-devolution, it is Scottish Ministers who are responsible for identifying bathing waters in Scotland. It is not envisaged that there should be any further changes to identified waters before the implementation of the anticipated revised EC bathing waters directive.

Map 1 | Location of Scotland's 60 Identified Bathing Waters



Map 2 | Location of Scotland's 60 Identified Bathing Waters (South East Area)



2.5 Revision of the Bathing Water Directive

In the latter part of 2002, the European Commission published proposals for a revised bathing waters directive. If approved by the European Parliament, this revised directive will eventually require new quality standards to be met. The proposed standards are substantially more stringent than those of the current directive. The proposed new 'good' quality status is, in general terms, equivalent to the current guideline quality standards.

3 How Results are Determined

3.1 Interpretation of Results and Requirements for Monitoring Programmes

The requirements of the EC Bathing Water Directive have been implemented in Scotland by the Bathing Waters (Classification) (Scotland) Regulations 1991. The directive contains two series of water quality standards: mandatory standards which Member States must observe, and stricter guideline values which Member States should endeavour to observe.

Mandatory Standards (Good Quality)

Mandatory standards apply to 10 quality indicators: total coliforms; faecal coliforms; salmonella; enteroviruses; pH, colour; mineral oils; detergents; phenols; and transparency. 95% of samples taken during the bathing season must comply with the mandatory coliform quality standards for the site to achieve a mandatory level pass. Beaches which meet this standard are classified as being of good quality whilst those that do not are classed as poor.

Guideline Values (Excellent Quality)

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

Fraserburgh Philorth

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. In 2002, for the first time for some years, this provision was applied, and the circumstances are described in Section 4.2.

Exceptional Geographic Conditions

Under Article 8, the requirements of the Directive may be waived because of exceptional geographical conditions in respect of the colour and transparency parameters. For example, Sandyhills on the Solway Firth has a waiver for the transparency parameter 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 the transparency and colour parameters 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, while 23 identified waters have waivers for transparency.

3.2 | Sampling Frequency

The minimum frequency of sampling is prescribed in the Annex to the Directive. Checks must be made at least once every two weeks during the bathing season for total and faecal coliforms, transparency, colour, mineral oil, 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 poor compliance history of Scottish bathing waters, additional samples are taken from all waters, so that all are sampled 20 times during the bathing season.

3.3 | Interpretation of Microbiological Values

The microbiological quality indicator organisms, for which standards are set by the Directive, are all naturally present in the guts of humans and 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. Equally, large concentrations of seabirds or agricultural run-off may also give rise to these microbiological indicators in bathing waters. Livestock slurries and manure, if applied to agricultural land inappropriately, can enter inland watercourses and be transported to coastal areas. 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 leave 18 samples with less than, or equal to, 100 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.

4 2002 Bathing Water Quality Results

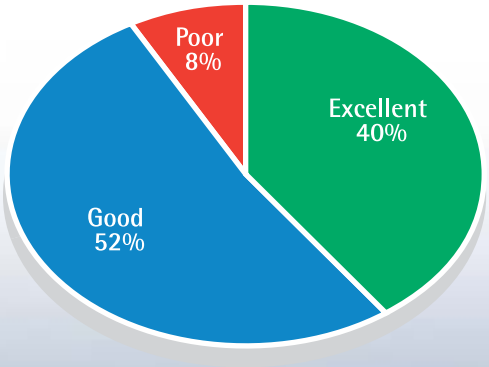
4.1 Results from Scotland's 60 Identified Bathing Waters

The full set of microbiological monitoring data from Scotland's 60 identified bathing waters can be found in Annex 1 and can be summarised as follows (see also Figure 1):

- 31 of the 60 identified bathing waters (52%) were of 'good' quality and met the directive's mandatory coliforms standards;
- 5 of the 60 identified waters (8%) are of 'poor' quality and failed to meet these mandatory standards;
- 24 of the 60 identified bathing waters (40%) met the directive's guideline quality standards and are, therefore, of 'excellent' quality.

Results for all the parameters monitored by SEPA are placed on the public register and are available on request. (see Annex 5 for more details).

Figure 1 | Scotland's Bathing Waters Results 2002



Ayr South

Table 2 indicates the level of pass for each of the 60 identified bathing waters in Scotland in 2002.

Table 2 | Summary of 2002 Bathing Water Results in Scotland

Bathing Water	Local Authority	Level of Pass
Southerness	Dumfries and Galloway	Good
Sandyhills	Dumfries and Galloway	Good
Rockcliffe	Dumfries and Galloway	Poor
Brighouse Bay	Dumfries and Galloway	Good
Carrick Bay	Dumfries and Galloway	Good
Girvan	South Ayrshire	Good
Turnberry	South Ayrshire	Good
Ayr South	South Ayrshire	Good
Prestwick	South Ayrshire	Good
Troon South	South Ayrshire	Good
Irvine	North Ayrshire	Good
Saltcoats	North Ayrshire	Good
Millport, Cumbrae	North Ayrshire	Good
Luss Bay, Loch Lomond	Argyll and Bute	Good
Ettrick Bay, Bute	Argyll and Bute	Poor
Machrihanish Bay	Argyll and Bute	Good
Ganavan Bay	Argyll and Bute	Good
Morar	Highland	Excellent
Dunnet Bay, Caithness	Highland	Good
Dornoch Beach (Caravan Park)	Highland	Excellent
Dores, Loch Ness	Highland	Good
Nairn Central	Highland	Good
Nairn East	Highland	Good
Cullen	Moray	Excellent
Inverboyndie	Aberdeenshire	Good
Rosehearty	Aberdeenshire	Good
Fraserburgh	Aberdeenshire	Good
Fraserburgh (Philorth)	Aberdeenshire	Excellent
Peterhead (Lido)	Aberdeenshire	Poor
Cruden Bay	Aberdeenshire	Poor

Bathing Water	Local Authority	Level of Pass
Balmedie	Aberdeenshire	Good
Aberdeen	Aberdeenshire	Good
Stonehaven	Aberdeenshire	Good
Montrose	Angus	Excellent
Arbroath (West Links)	Angus	Poor
Carnoustie	Angus	Good
St.Andrews (West Sands)	Fife	Excellent
St.Andrews (East Sands)	Fife	Good
Kingsbarns	Fife	Excellent
Crail (Roome Bay)	Fife	Excellent
Elie (Woodhaven and Ruby Bay)	Fife	Excellent
Shell Bay	Fife	Excellent
Kinghorn (Pettycur)	Fife	Good
Burntisland	Fife	Excellent
Aberdour (Silversands)	Fife	Excellent
Portobello West (Kings Road)	City of Edinburgh	Good
Portobello Central (James Street)	City of Edinburgh	Excellent
Seton Sands, Longniddry	East Lothian	Good
Gullane	East Lothian	Excellent
Yellowcraigs	East Lothian	Excellent
North Berwick Bay	East Lothian	Excellent
North Berwick (Milsey Bay)	East Lothian	Excellent
Dunbar (Belhaven)	East Lothian	Excellent
Dunbar East	East Lothian	Excellent
Whitesands	East Lothian	Excellent
Thorntonloch	East Lothian	Excellent
Pease Bay	Scottish Borders	Excellent
St. Abbs	Scottish Borders	Excellent
Coldingham	Scottish Borders	Excellent
Eyemouth	Scottish Borders	Good

Excellent = Guideline Pass; Good = Mandatory Pass; Poor = Mandatory Fail

4.2 | Abnormal Weather 2002

Introduction

Both the EC Bathing Waters Directive 76/160, and the Bathing Waters (Classification) Regulations 1991 which translate the requirements of the Directive into Scottish law, require certain samples to be excluded from consideration in the event of abnormal weather or other factors. This provision has been applied to one or two samples in just a very few years, with the results reported to the European Commission. The provision is intended to prevent the reporting of sample results that are unrepresentative of the normal range of environmental variables. Equivalent exception provisions are included in other EC environmental directives and the Urban Waste Water Treatment Directive.

The accepted definition of abnormal weather relates to the summer bathing period, as do the design conditions for sewerage infrastructure serving bathing water catchment areas. Once a decision is made by SEPA that the abnormal weather provision is relevant to samples, this decision is internally communicated to ensure that replacement samples are collected, and that the exclusion is indicated against every citation of the results, and subsequently reported to the European Commission.

By its very definition, abnormal weather is an infrequent occurrence, and the last occasion on which SEPA was required to apply this provision of the directive was in the wet summer of 1998, when the results from one sample had to be excluded. Nevertheless, in that year, only 12 of the then 23 identified bathing waters met the required standards.

Summer 2002 was even wetter than 1998 and several remarkable rainfall events were recorded, as well as very high monthly rainfall totals. The extent and nature of the rainfall resulted in persistent saturation of soils, so that a given amount of rain had a greater effect on subsequent runoff and streamflow than expected for this time of year. July 2002 was the wettest on record (80 years) at one site, and the widespread nature of flooding of homes and disruption to transport systems following the exceptional rainfall of 30/31 July was perhaps unprecedented for this month.

Taken as a whole, the June/August rainfall total over the Forth and Tay catchment areas had an estimated return period in excess of 25 years (i.e., on average, only one summer in at least 25 years would be expected to be as wet as summer 2002). However, it is the nature of the rainfall (i.e., steady light falls, or less frequent major downpour storm events which are more damaging) that determines the impact on water quality. Unfortunately, summer 2002 rainfall included several major events, although most of these affected relatively limited areas. Some details of these events and the subsequent decisions by SEPA, are given in the following paragraphs.

12th July

Several bathing waters samples taken in the Grampian area on 12 July were clearly adversely affected by severe weather, and some of these failed to meet the 95% environmental quality standards for the bacterial indicator groups. In Stonehaven, there were anecdotal reports of manhole covers in the streets lifting due to pressure of rain run-off, but the rainfall duration was too short to cause exceptional river flows, and no exceptional rainfall was recorded at SEPA rainfall monitoring sites – it is typical of this sort of summer event that they are extremely localised. While the events in Stonehaven were clearly exceptional in this locality, the evidence in this case is considered to be too limited to justify application of the abnormal weather exclusion provision.

31st July

Abnormal rainfall and flooding was widespread on 30/31 July. In the River Nairn catchment, SEPA recorded 6- and 12-hour rainfall totals which have a whole-year return period greater than 25 years. On the same day, intense rainfall recorded close to the Luss (Loch Lomond) EC bathing water had a whole year return period greater than 7 years.

The worst flooding of houses was on the east side of Glasgow, but SEPA rainfall records do not show any (whole year basis) exceptional falls in southwest Scotland. Rainfall was extremely patchy, however, the River Almond rose to 1 in 5 year flow levels, and there is anecdotal evidence of very high (exceptional) flows in the Braid Burn in Edinburgh and in the Borders.

On this evidence, the abnormal weather provision is applicable to all bathing waters samples taken on 31 July, except those in southwest Scotland (Ayrshire, Dumfries and Galloway) where the evidence for abnormal weather is less strong.

19th August 2002

While southwest Scotland was spared the worst of the weather at the end of July, it left soils saturated. Above average rainfall in SW Scotland during 1–17 August ensured that catchments were still saturated when persistently heavy and locally extreme rainfall fell on 18 August. Due to the already saturated nature of the ground in the area, this very heavy rainfall, although not particularly exceptional, led to abnormal run-off in Ayrshire rivers on 18/19 August.

Accordingly, the abnormal weather exclusion was applied to all relevant bathing waters results for samples taken from Ayrshire sites (Saltcoats, Irvine, Troon South, Prestwick, Ayr South, Turnberry and Girvan) on 19 August.

30th August

A heavy rain warning was received from the Meteorological Office in the late afternoon of 29 August. The forecast of 25–35mm of rainfall proved accurate and SEPA issued several floodwatches in the southwest on the following morning. The rainfall recorded at Portling in Galloway exceeded a 1 in 5 year return period on the 30th. Accordingly, the results for the bathing water sample taken from Brighouse Bay at that time must be excluded due to the abnormal weather (rainfall) event.

10th September

There was further significant rainfall in southwest Scotland on 7 September, then again on the 9th. Due to the saturated catchments, rivers rose to very high levels early on the 10th, and these exceptional conditions clearly affected the quality of several bathing waters samples, such as those taken at Brighouse Bay where another environmental quality standard exceedance was recorded. However, although the flow peaks were very high, they were not judged to be abnormal for a summer storm, so the sample results are not excluded.

Abnormal Weather Conclusions

All those samples identified above as being affected by abnormal weather are excluded from consideration for compliance assessment, as specified in the Regulations, and this is accounted for in all SEPA results reporting. As a result of procedures already in place, additional samples were taken at the earliest practical subsequent date from all relevant sites and the results from these replacement samples are reported.

A few of the abnormal weather results exclusions recorded above affected overall compliance for the season, but most did not.

The 2002 results further confirm the conclusions reported last year regarding the influence of rainfall on bathing waters quality compliance. Other samples taken during the bathing season were clearly influenced by wet weather. Some of these, such as the 24 June sample from Irvine, exceeded the EC quality standard limit. This particular sample had an exceptionally low salinity, demonstrating that it comprised an unusually high proportion of freshwater from the River Irvine.

Due to the siting of bathing waters relative to storm sewer overflows and rivers, and the reaction time of rivers to rainfall (fast for local streams, slow for larger rivers), the time between rainfall and its impact on bathing water quality is expected to be variable. The quality of some bathing waters, those relatively remote from freshwater influence, has been found to be almost immune to rainfall. To make better use of this accumulating knowledge about quality prediction, a comprehensive system of signage to provide real time information to potential bathers is under consideration by local authorities, SEPA and the Scottish Executive. If approval is given, the scheme, which would be backed-up by information on SEPA's website, will be piloted first at some bathing waters in southwest Scotland, before being applied across the whole of Scotland.

4.3 | Background Information on Scotland's 60 Identified Bathing Waters

This section contains background information for each of Scotland's 60 identified waters. This information focuses on the underlying factors behind bathing water quality at each site and describes any plans for delivering bathing water quality improvements, such as upgrades to the local sewerage infrastructure. Waters are described in clockwise order around Scotland, starting in the southwest.

Note that in the following paragraphs, the Directive is taken to mean the EC Bathing Water Directive; n/s indicates not sampled; good quality means a pass of the Directive's mandatory standards and excellent quality means a pass of the Directive's guideline standards.

For each identified water, a previous record of compliance is provided. For the 23 waters originally identified, results are given for the last 12 years. For the waters identified for the first time in 1999, the comprehensiveness of the records varies. Records are provided where they exist.

Sandyhills

Southerness

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Poor	Good

Southerness was identified as an EC bathing water in 1999 and achieved good quality in 1999 and 2000. In 2001, there were three exceedances of the 95% faecal coliform mandatory standard, resulting in poor quality. However, in 2002 the bathing water has once again achieved the good standard.

There is a private sewage treatment plant, which serves the caravan park and village of Southerness, and is due to be upgraded before 2005. However, the main sources of coliform bacteria in this water are believed to be larger and more distant. The faecal coliform (FC) loadings in the River Nith are currently being studied to determine whether agricultural run-off from the catchment upstream of Dumfries, the sewerage network in the town, or a combination of both is the main source of the very high FC loadings recorded after heavy rain. All surveys have indicated that there is a marked increase in FC concentrations in the River Nith below Troqueer (Dumfries) WWTP (a ten-fold increase in FC levels during wet conditions). Further surveys will be undertaken during the 2003 bathing season.

In addition to the sources of sewage at Dumfries (Troqueer, Dalscone and Lincluden WWTPs), there are tidal storage tanks at Airds Point, which accept the drainage from Cargenbridge Village, and the Du Pont factory at Cargenbridge. There are also septic tanks serving the small villages of Glencaple, Kelton and Carsethorn. A new pumping station has recently been constructed at Cargenbridge to pump sewage from this village to Troqueer WWTP. This should be fully operational before the start of the 2003 bathing season.

Sandyhills

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Poor	Good	Good	Poor	Poor	Good	Poor	Poor	Good

Sandyhills bathing water has a chequered history of compliance, but achieved good quality in 2002. There are no significant sewage discharges near this water, and results have indicated that high bacterial counts tend to coincide with wet weather and high freshwater flows, strongly suggesting a link with agricultural activity. Consequently, all farms within the catchments of the local Fairgirth Lane and Southwick burns were inspected during the summer. Although no significant pollution sources were discovered, a number of minor contaminated discharges were found and eliminated. While this presumably contributed to the improved quality in 2002, it is evident that animals still have direct access to watercourses at various locations, including sheep grazing on sea-washed grassland. This is a potentially polluting input, which will prove difficult to control.

Rockcliffe

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Good	Poor	Good	Poor

Rockcliffe bathing water was of poor quality in the 2002 season. Two samples failed to meet the faecal coliform standard giving only 90% overall compliance. The cause of these failures is believed to be inadequate dispersion of treated sewage from Rockcliffe WWTP. It is planned that this will be corrected by imposing bacteriological quality standards on the treated effluent, i.e. requiring Scottish Water to disinfect prior to discharge. This further treatment is scheduled to be in place before the 2003 bathing season.

Brighouse Bay

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	Good	Good	Good	Good	Good	Good

Brighouse Bay is a small sandy beach between rock outcrops. Once again it was of good quality in 2002, although one sample exceeded the faecal coliform quality standard. Results from another sample were excluded due to abnormal weather. The replacement sample achieved guideline standards for all microbiological parameters.

With no significant sewage discharges into the bay, attention has focused on the small burn entering from the northeast. It flows through rich pastoral land, with a high concentration of grazing animals. High indicator bacteria concentrations have been recorded in this burn in wet weather. Consequently, all farms within the catchment have been inspected. Remedial action will be required at some properties, but, again, this will not remove the problems associated with animals using the burn for watering purposes.

Carrick Bay

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Good

Carrick Bay has achieved good quality for the fourth successive year. Threats to the quality of this bathing water are relatively few. There are no major sewage or freshwater inputs nearby. A small number of holiday chalets are located in the vicinity, but are not considered a significant risk as the septic tank effluent from each chalet drains to a soakaway system.

However, for the first time there was a faecal coliform quality standard exceedance. This occurred towards the end of the bathing season on 10th September, and coincided with both very heavy rainfall and a 'red tidebloom' of the microscopic plant *Noctiluca scintillans*, in Fleet Bay. Whilst the latter should not cause an increase in faecal coliform numbers, the possibility of a link will be examined should there be a recurrence.

Girvan

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Poor	Good	Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Good

Bathing water at Girvan had a poor record of compliance with EC standards prior to 1999 but has clearly benefitted from successive phases of major new sewerage and sewage treatment schemes. These have now been completed, with pumping stations and full secondary treatment being put in place during the 2001 season. These investments have significantly improved water quality and a fourth year of good quality was achieved in 2002.

Turnberry

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Poor	Poor	Poor	Poor	Good	Poor	Poor	Good	Poor	Good

Bathing water at Turnberry was of good quality in 2002. The Milton Burn, which flows into the near shore waters adjacent to the bathing water, receives a sewage effluent discharge from Kirkoswald WWTP, together with an associated storm overflow. A treated effluent from Turnberry Hotel is discharged to the Firth of Clyde at the bathing water, and surface water is discharged to the Milton Burn. The sewage effluents from both Kirkoswald and Turnberry are disinfected before discharge and the disinfection processes were demonstrated to be very effective throughout the season. Monitoring showed that they consistently contained very low concentrations of coliform bacteria.

A new sewage scheme will replace the Kirkoswald WWTP by a pumping station. It will include a storm overflow with a spill frequency of no more than three times per season. The scheme will also replace the Turnberry Hotel sewage effluent discharge with a pumping station. Construction is well underway and completion is expected before summer 2003.

During 2002, all farms in the Milton Burn catchment were inspected as part of the agricultural pollution prevention action plan. Routine inspection of a surface water discharge also detected a quality threatening sewerage problem, which was promptly fixed by the discharger.

Ayr South

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Poor	Poor	Good	Good	Good	Poor	Poor	Poor	Poor	Good

Ayr South bathing water was of good quality in 2002. This is the first year of full operation of the major scheme to pump all sewage arising in Ayr to the Meadowhead treatment works, abandon some combined sewer overflows, and upgrade others to retain solids and reduce overflow frequency.

While the main sewage pollution threats have thus been overcome, diffuse pollution remains a concern. All farms in the Slaphouse Burn, River Doon and River Ayr catchments were inspected as part of SEPA's agricultural pollution reduction action plan. Other potential pollution sources from urban drainage, continuous and intermittent discharges, were also investigated by stream monitoring, and at least one significant problem found was subsequently fixed by Scottish Water.

Prestwick

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Poor	Poor	Good	Good	Good	Poor	Good	Good	Good	Good

Prestwick recorded good quality for the 2002 season. This level of quality has now been achieved in seven of the past eight years. The bathing water at Prestwick does not have a direct sewage outfall nearby, although there are storm overflows.

All farms in the Pow and Rumbling Burn catchments have been inspected as part of the agricultural pollution prevention action plan.

Troon South

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Good	Good

The bathing water at Troon met the good quality standard in 2002. There are no sewage outfalls in the vicinity of Troon South beach. However, sampling over a number of years has indicated the vulnerability of the beach to elevated concentrations of sewage derived bacteria, believed to be due in part to the Meadowhead sewage effluent discharge. This year has seen a significant improvement in the effluent quality of the Meadowhead discharge with the new biological sewage treatment plant coming on line in February 2002, and a lengthening of the outfall.

Irvine

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Poor	Good	Good	Good

The bathing water at Irvine again achieved good quality in 2002. In February 2002 the new biological treatment plant at Meadowhead and extended sea outfall came on line. Work continues on commissioning and completion of the scheme. Drainage area studies carried out by Scottish Water have confirmed the significance of intermittent discharges into the Irvine catchment and further investigations into the most effective improvement measures are continuing. In the meantime, all farms in the River Irvine and River Garnock catchments have been inspected and many potential problems identified and rectified.

Saltcoats

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Poor	Poor	Poor	Poor	Good	Poor	Poor	Good	Poor	Poor	Good

Saltcoats has a poor history of bathing water quality and it is pleasing to report that the waters achieved good standard in 2002. The improvement in 2002 is attributed to the new sewage treatment works at Stevenston Point, which came on line during February 2002 although commissioning and completion work continues. Earlier surveys had shown effluent from the Garnock Valley sewerage scheme (now treated by the above works) to be the predominant cause of failure.

All farms in the Stanley Burn catchment, which flows into the nearshore waters, have been inspected and as elsewhere in Ayrshire, action plans to reduce pollution from urban drainage and intermittent discharges were also carried out.

Millport, Cumbrae

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Poor	Good

Millport was identified as a bathing water in 1999 and after recording poor quality in 2001, was once again classed as good in 2002. The predominant threat to water quality is the 10 septic tank outfalls discharging into shallow water in the bay. A scheme has been designed to pump the sewage from all of these to a new treatment works discharging away from the bathing water. Scottish Water intends to complete and implement this scheme as soon as is practicable, but planning delays will prevent this completion before the 2003 season.

Luss Bay, Loch Lomond

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Good

Luss Bay was identified as a bathing water in 1999 and was first sampled by SEPA in that year. It has been of good quality every year, but not always by a wide margin.

There is a small treated sewage discharge about 0.5 km to the north of the bathing water. The potential impact of this discharge on the bathing water was assessed and as a result of this work, Scottish Water now plan to add tertiary treatment.

Ettrick Bay, Bute

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
n/s	n/s	n/s	n/s	n/s	n/s	Poor	Poor	Poor	Poor

Ettrick Bay was identified as a bathing water in 1999 but has never met the EC Directive's quality standards and has been classed as poor every year.

There are no significant sewage discharges in the vicinity of the bathing beach and failure to meet required standards is attributed solely to agricultural pollution which flows into the bathing water from local streams. The surrounding area is intensively farmed and high levels of bacteria have been found in these streams, particularly after heavy rainfall. Livestock have direct access to the streams and high bacterial counts have also been found even during periods of dry weather.

Efforts for improvement are being targeted at encouraging farmers in the area to adopt practices that should lead to a reduction in bacterial pollution of the local streams. This catchment is included in the SEPA agricultural pollution prevention action plan described in more detail in section 5.2.

Machrihanish Bay, Kintyre

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Good

Machrihanish Bay was identified as an EC bathing water in 1999 and has achieved good quality each year since then.

The only potential local source of pollution is the nearby Machrihanish Water. Sewage from the small communities of Machrihanish, Stewarton and Drumlemble is to be pumped to Campbeltown for treatment at the new sewage treatment works prior to being discharged into Campbeltown Loch. The Machrahanish Water catchment receives sporadic agricultural pollution and possible risks and sources are being investigated. Corrective action will be taken where a source is considered a real threat to the continuing attainment of good bathing water quality. This catchment is also included in the SEPA agricultural pollution prevention action plan.

Ganavan Bay (North of Oban)

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Good

Ganavan Bay, first identified as a bathing water in 1999, again achieved good quality in 2002, although results indicated that this was not by a wide margin.

A sewage outfall serving the resident population of Oban (9,000 rising to 20,000 in summer), discharges offshore into deep water approximately 2 km to the south of the bathing water. Three septic tank outfalls serving a population of around 250 also discharge into the bay. Under certain conditions of wind, current movement and tides, the microbiological quality of the bathing water may be compromised by these smaller local discharges.

Future action will be targeted at reducing this risk. A new pumping station is proposed which will pump the sewage from the Ganavan public system to Oban for treatment at the new sewage treatment works prior to discharge into the Sound of Kerrera. Discharges from the private outfalls will require either to be connected into the public system or to be upgraded by addition of appropriate treatment prior to be being discharged locally.

Sound of Sleat at Morar Golf Course

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Excellent	Good	Good	Excellent

A 7 km stretch of the Morar coast was identified as a bathing water in 1999. It is sampled at Lon Liath bay, adjacent to a golf course. Excellent quality was achieved for 2002, an improvement on the good status of 2001.

There are waste water treatment plants at both Mallaig and Morar. There are additional sewage effluent discharges from caravan and camping sites and private septic tank discharges. The coastal land is also extensively grazed by livestock. The Morar bathing water has performed well this year, but the site is sensitive to all these potential threats. Preliminary inspections have been undertaken by SEPA of the main sewage discharges and agricultural premises. Further inspections are planned and required improvements will be discussed with operators. Scottish Water has undertaken dispersion tests to determine the potential impact of the Morar septic tank discharge. Bacteriological sampling has also been undertaken to determine potential bacteriological inputs from freshwater streams.

Morar

Dunnet Bay (Caithness)

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	Excellent	Excellent	Poor	Excellent	Good	Excellent	Good

Dunnet Bay was identified as a bathing water in 1999. Good quality was recorded in 2002.

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 will connect Castletown to the new Thurso waste water treatment plant. This is not due to be commissioned until 2005, however, as an interim measure only, Scottish Water will install a hypochlorite dosing unit to the discharge point at Castletown, to ensure that bathing water quality is protected.

The adequacy of the septic tank serving the small settlement at Dunnet and a small caravan park at the Dunnet end of the beach, are also under review. It has been confirmed that as a temporary measure, Scottish Water will provide chlorination to the Dunnet discharge for the 2003 season.

All farms and private dwellings in the catchment have been inspected but very few potential problems were found. The impact of surface water runoff to the Stanergill Burn which discharges into Dunnet Bay has been examined and improvements, particularly to potentially oily discharges from an industrial site, have been secured.

Dornoch Beach (Caravan Park)

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent

Dornoch Beach was formally identified as a bathing water in 1999. This year it again achieved excellent quality.

The bathing water at Dornoch continues to meet very high standards, having achieved excellent quality for five consecutive years, and the beach continues to be a popular destination for visitors and locals who value the high standard of the bathing water. Dornoch waste water treatment plant was commissioned in 1993, and in November 2000, the village of Camore was connected to the works, improving the quality of Camore Burn which flows directly into the bathing water.

Dores (Loch Ness)

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Good

An area of Loch Ness next to the village of Dores was identified as a bathing water in 1999. This is one of only two freshwater sites in Scotland and achieved good quality in 2002. While this standard has been consistently met, further work is required to move towards attainment of excellent standard.

There are several small septic tank inputs to Loch Ness near to the identified area, which may have an impact on the quality of the bathing water. A programme of bacteriological sampling was carried out this year at various sites along the shore of Loch Ness, beside the identified bathing area, and also at various points along the Dores Burn (Allt a' Mhinister), which runs into Loch Ness adjacent to the identified bathing area. This showed that some potential problem areas existed. Scottish Water is now extending the public sewerage system to capture the private septic tanks discharging to both the loch and the Dores Burn. Scottish Water is also upgrading the Dores septic tank and making improvements to the outfall. These measures should progress the attainment of guideline quality standards.

Nairn (Central Beach)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Excellent	Poor	Good	Good	Good	Good	Excellent	Excellent	Good

Nairn (Central Beach) was identified as a bathing water in 1999. It achieved good quality in 2002.

The slight deterioration of water quality at Nairn (Central) in 2002 was disappointing. The waste water treatment plant, which was commissioned in the autumn of 1999 by Scottish Water, has been experiencing some technical difficulties with ensuring adequate disinfection of the effluent prior to discharge from the plant. Work is ongoing to eliminate these problems and ensure compliance with the discharge consent conditions imposed by SEPA. Other consents issued by SEPA for the combined sewage overflow discharges, with conditions designed to ensure compliance with European standards, should help to further protect the bathing water quality. Scottish Water has carried out works to decrease the frequency of use and volume discharged from these overflows.

Nairn (East Beach)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Good	Good	Poor	Good	Excellent	Good	Good

This popular expanse of sandy beach, east of Nairn, achieved good quality in 2002. It was hoped that the waste water treatment plant, which was commissioned in the autumn of 1999 by Scottish Water, would have helped improve water quality on this beach (see information for Nairn Central).

The water quality at Nairn (East Beach) is also influenced by the nearby River Nairn, which flows to the sea in this area. An action plan is underway, looking at what effect the numerous diffuse and point source discharges to the River Nairn may have on the identified bathing waters. This has included a programme of bacteriological sampling of the various source discharges. A program of inspecting virtually every farm in the catchment should also begin to reduce the risk of problems from the various farms within the Nairn Catchment from 2003 onwards.

Cullen

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Excellent	Excellent	Good	Excellent	Excellent	Good	Good	Good	Excellent	Excellent	Good	Excellent

The waters off the very attractive sandy beach at Cullen consistently meet the good quality standard and this year achieved the excellent standard. Work on the major Moray East sewerage scheme, which includes the interception of the two sewage outfalls to the east of the town, continued over the summer. However, delays in the project meant that the pumping of waste water to the new treatment plant at Buckie did not take place as planned. Fortunately, this did not impact upon water quality and the pumps will be commissioned before summer 2003.

Inverboyndie

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Excellent	Good	Good	Good	Good	Excellent	Good	Good

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 good quality in 2002.

Considerable improvements to the area's sewage treatment facilities were completed in 2002. A previous continuous discharge of untreated sewage at one end of the beach has been eliminated. The sewage is now pumped to the new waste water treatment plant at Macduff where it undergoes full biological treatment followed by ultraviolet disinfection. The outfall itself has been retained only as a storm and emergency overflow for the pumping station.

Another potential impact on bathing water quality comes from the Inverboyndie Burn which discharges to the sea at the western end of the beach. The catchment area of this burn is mainly agricultural and land run-off may impart a bacteriological load to the water. Monitoring of the burn is planned for 2003 to assess the extent of its influence on bathing water quality.

Rosehearty

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		Good	Excellent	Excellent	Excellent	n/s	n/s	Excellent	Good	Good	Good

Rosehearty became an identified bathing water in 1999, although it has been monitored intermittently since 1989. It achieved good quality in 2002.

Sewage from the town was diverted to the new waste water treatment plant at Fraserburgh in 2001, whereas it had previously discharged to the sea via a number of outfalls, including one adjacent to the beach. The only sewage outfall in the vicinity of the bathing water is now from a pumping station which has a consent to discharge screened sewage, only under certain storm and emergency conditions.

Fraserburgh

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Good	Good	Poor	Good	Good	Poor	Good

This sandy beach next to the town of Fraserburgh is a popular location for many watersports as well as for walking and family outings. It achieved good quality in 2002.

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

The local Kessock Burn remains a potential source of bacterial contamination. An action plan is underway to assess the significance of inputs to the burn from agriculture, septic tanks and urban drainage, and to determine how these can best be controlled. Further investigations and monitoring are planned for 2003.

Fraserburgh Philorth

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		n/s	Excellent	Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent	Excellent

Fraserburgh Philorth again achieved excellent quality in 2002, continuing its record since it was identified in 1999.

The beach is a popular recreational and windsurfing area, located at one end of the sandy bay that links Fraserburgh and Philorth. There are no sewage discharges in the immediate vicinity of the bathing water, although the Water of Philorth discharges at one end of the beach. The catchment of this watercourse is mainly agricultural in nature with no real urban development.

Peterhead Lido

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Excellent	Good	Good	Good	Excellent	Excellent	Good	Poor

In 2002 this water was of poor quality for the first time since monitoring began. However, had it not been for the two untypical results which caused the failure, good quality would have been achieved, as the other 18 samples all met this high standard. The sampling point is on the shoreline of a boating marina situated within the outer harbour (Bay of Refuge) of the town of Peterhead. It attracts a diverse range of water sports enthusiasts, with dinghy sailing in the sheltered waters of the bay being particularly popular.

This result is disappointing given the improvements that have been made to the waste water treatment plant serving the area's predominantly urban development. Sewage is given full biological treatment before being discharged. It is suspected that the failure this year was due to overflows from a pumping station, where upgrading works were taking place, ironically to reduce spill frequency. These improvements are due for completion before summer 2003, and include increased storage capacity at the pumping station and a better telemetry system. Discharges from the pumping station will then be limited to emergency or storm conditions only, with the consent conditions designed to protect the bathing water.

Cruden Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Poor	Good	Good	Poor	Poor	Good	Poor	Good	Poor

Cruden Bay was of poor quality in 2002, continuing a generally poor compliance record for this bathing water.

However, improvement plans, which have been in place for some years, are now coming to fruition. Until autumn 2002, an unsatisfactory short outfall continuously discharged sewage immediately adjacent to the bathing water. This discharge was removed later in 2002. The main sewage flow is now pumped to the new waste water treatment plant at Peterhead, with the former outfall retained only as a storm/emergency overflow.

In addition, an action plan has begun which is focusing attention on the Water of Cruden as another potential source of bacterial pollution. This river flows into the bathing water and, as well as draining an agricultural catchment, receives treated sewage effluent from a waste water treatment plant serving the village of Hatton. At the time of writing there is a proposal in hand for Scottish Water to disinfect this effluent by means of ultraviolet light. Further, it is proposed to eliminate the discharge to the Water of Cruden from a large septic tank by means of pumping the discharge to Hatton WWTP.

Balmedie

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Excellent	Excellent	Excellent	Good	Good	Good	Excellent	Good	Good	Good

Balmedie is a very popular and extensive sandy beach adjacent to the Balmedie Country Park north of Aberdeen. It was identified as an EC bathing water in 1999 although it has been monitored for many years. Good quality was achieved in 2002.

Prior to the start of the 2002 bathing season, work was undertaken by the Country Park staff which altered the course of the Eigie Burn and changed the access routes to the beach. The resulting change in distribution of bathers will require the water quality monitoring point to be moved for the 2003 season. Work is underway on a new Balmedie waste water treatment plant, and this, in addition to the elimination of any preventable sources of pollution to the Eigie Burn, should ensure that water quality at this site will improve.

Aberdeen

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Excellent	Good	Good	Excellent	Good	Good	Good

Aberdeen has an extensive sandy beach, which is well used for water sports and sea bathing. The bathing water again achieved good quality in 2002. To protect it, the waste water treatment plant at Persley, which discharges to the River Don, has been upgraded and now includes ultraviolet disinfection. There is also now a secondary treatment phase at the main Aberdeen treatment plant which discharges via the Nigg long sea outfall. These major improvements to the sewage treatment facilities serving Aberdeen, as well as the screening of the storm overflows to be carried out by Scottish Water, have been planned to significantly improve water quality over next few years. Monitoring on the River Don has identified potential entry points of bacterial contamination upstream of Persley, and these will be investigated further in 2003.

Stonehaven

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Excellent	n/s	Poor	Poor	Good	Good	Good

Stonehaven is a very popular coastal resort, which is well used by water sports enthusiasts. The bathing water was identified in 1999 but has been monitored since the 1980s. Stonehaven achieved the good standard in 2002, as in the previous 2 years.

Poor quality in 1998 and 1999 was considered to be due to a combination of weather conditions and a sewer defect, which was subsequently repaired. Improvements to the local sewerage infrastructure will take place by 2004, by which time sewage effluent from Stonehaven will be pumped to the main Aberdeen treatment plant and long sea outfall at Nigg Bay. As an interim measure, Scottish Water is to provide facilities to disinfect the sewage effluent at Stonehaven to ensure bathing water compliance in 2003.

Montrose

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Excellent	Good	Good	Excellent	Poor	Excellent	Excellent	Excellent	Excellent

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

Dye-tracing experiments carried out in the area a few years ago showed that effluent plumes from the Lifeboat Station, West End Park and other sewage outfall pipes could under certain unusual conditions be swept into the vicinity of the bathing water and cause contamination.

The sewerage network has since been redirected, and Montrose Waste Water Treatment Plant built. This new works provides full secondary treatment and was commissioned in January 2002. All former discharges have now ceased. Some of the former outfalls at Montrose have been retained as storm and emergency overflows, but have had storm storage and screening facilities added. All these new works have been designed to be compatible with the attainment of EC guideline quality standards.

Arbroath (West Links)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Good	Good	Good	Good	Good	Good	Good	Good	Good	Excellent	Poor

The identified bathing water at Arbroath (West Links) failed to meet mandatory standards in 2002 and was classed as poor. This was despite meeting excellent quality in 2001, and the commissioning of a new waste water treatment plant at Hatton prior to the bathing season.

SEPA required that the new works were designed to ensure that the Bathing Water Directive's guideline quality standards for excellent quality are met at Arbroath (West Links). In view of this, the overall Poor result for 2002 is particularly surprising. SEPA and Scottish Water have begun an investigation into the reason for the failure. Preliminary investigations are taking place into the operation of the sewage system, in particular the combined sewer overflows, along with an assessment of the potential influence of surface water inputs in the vicinity of the beach. Remedial action is being taken whenever a potential source of pollution is identified.

Carnoustie

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Good	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Excellent	Good

Carnoustie was good quality in 2002. This is disappointing, as the bathing water had met the excellent standard for the three preceding years.

After 1996, when Carnoustie achieved a very marginal good class, sewage effluent was disinfected prior to discharge during the bathing season. This move, an interim measure pending the construction of an improved treatment plant, improved water quality. Increased storm storage to reduce sewer overflows during heavy rainfall has been in place since 1998. All normal flows from the Carnoustie catchment are now pumped to the Hatton WWTP for full treatment. SEPA required that the upgraded works were designed to ensure excellent quality at Carnoustie.

The drop in bathing water quality in 2002 is possibly due to contamination from local surface water inputs, which were affected by the exceptionally high rainfall. Initial investigation results have identified a potential problem with a surface water drain to the Lochty Burn. The sewerage system is also being investigated. Investigations are continuing, with remedial action taking place where appropriate.

St Andrews (West Sands)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent

St.Andrews (West Sands) has a good record of compliance with EC standards, and has achieved excellent quality since 1999. This bathing water also holds a 'blue flag'.

The former Fife Regional Council decided that a new WWTP and long sea outfall should be constructed at Kinkell Ness, with a pumping station and rising main to transfer the flows from the existing outfall pipe and WWTP at East Sands. SEPA discharge consent conditions were set to enable compliance with guideline EC quality standards. This also required that storm tanks were built within the Kinness Burn sewer catchment to reduce discharges from storm sewer overflows. The new works, providing full biological treatment and disinfection, came online during the 2001 bathing season. Bacteriological monitoring of the final effluent carried out by SEPA showed that the works consistently met its consented bacterial quality limits in 2002.

St Andrews (East Sands)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Poor	Poor	Good	Good	Excellent	Good	Poor	Good	Good	Good

This bathing water was identified in 1999, although it had previously been monitored for many years. St Andrews (East Sands) achieved good quality between 1995 and 1998, and achieved excellent quality in 1997. However, it narrowly failed in 1999 and was classed as poor. This was caused by the operation of storm overflows during wet weather. Since 2000, St.Andrews (East Sands) has achieved good quality.

With the new works described above for St Andrews (West Sands) now in place, future compliance should be assured, with attainment of excellent quality probable in a less wet year than 2002.

Kingsbarns

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		Good	Good	Good	Good	Good	Good	Excellent	Good	Poor	Excellent

Kingsbarns was identified as a bathing water in 1999, and in 2002 it was of excellent quality.

Kingsbarns has a small WWTP with effluent discharging via a short outfall to the north of the bathing water. The reason for the poor quality, with two samples failing, in 2001 was thought to be a combination of weather and tidal conditions directing the effluent plume onto the bathing water site. To ensure compliance in 2002, Scottish Water added chemical disinfection as an interim measure, prior to provision of improved treatment and outfall due in 2003.

Crail (Roome Bay)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Excellent	Poor	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent

Newly identified in 1999, Crail (Roome Bay) has achieved excellent quality since that time.

Prior to 2000 three untreated sewage outfalls at Crail Harbour, Castle Walk and Kirk Wynd, and a septic tank and short outfall at West Braes, provided sewage disposal for the town. While this usually ensured compliance with the Directive at Roome Bay, SEPA concluded that the same could not be assured at the town's other main beach adjacent to the harbour. In order to rectify this and to meet SEPA quality standards, Scottish Water have provided a new treatment works and long sea outfall at Kilminning, to the east of the town. The effluent from Sauchope Caravan Park was connected to the new works during 2001. The existing outfalls at Crail Harbour and Kirk Wynd have been converted to storm overflows which should only discharge during exceptional conditions.

Elie (Woodhaven and Ruby Bay)

			1994	1995	1996	1997	1998	1999	2000	2001	2002
			n/s	n/s	n/s	n/s	Excellent	Excellent	Excellent	Excellent	Excellent

Elie (Woodhaven and Ruby Bay) was newly identified in 1999, though SEPA began monitoring in 1998. In each year, the bathing water has achieved excellent quality.

To date, a septic tank and long sea outfall have provided effective sewage treatment for the town although aesthetically, the presence of sewage derived debris is often a problem. To further improve bathing water quality at Elie and Earlsferry, SEPA has notified Scottish Water that improved screening and reduced spill frequency from storm sewer overflows at pumping stations at Earlsferry and Elie High Street is required during the bathing season.

Shell Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Poor	Excellent	Excellent	Good	Good	Good	Excellent	Excellent	Excellent	Excellent

Shell Bay is a small private beach that is managed by the adjoining holiday caravan park. It was identified as a bathing water in 1999, though it had been monitored for many years. Since 1999 Shell Bay has been of excellent quality.

The aesthetic appearance of Shell Bay Beach is often blighted by sewage-related debris, most of which is derived from beyond the Shell Bay area. The aesthetic quality could be vastly improved at this beach by improved 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.

To improve bathing water quality at Shell Bay and surrounding bathing waters, Scottish Water are providing, by means of a PFI scheme, a new biological treatment works and long sea outfall at Levenmouth. This scheme has been designed to enable guideline bathing water quality standards to be met, as well as all other EC requirements, and will include disinfection of the effluent during the bathing season.

Kinghorn (Pettycur)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Good	Good	Good	Good	Good	Poor	Good	Excellent	Good	Good

Between 1993 and 1997, Kinghorn (Pettycur) achieved good quality each year. However, the bathing water was of poor quality in 1998. This was caused by an unauthorized discharge which resulted in court action. In 1999, with the problem corrected, the bathing water once more achieved good quality. In 2001 and 2002, Kinghorn (Pettycur) was of good quality.

During 2001, a scheme was completed whereby all sewage arising in Kinghorn is now treated and discharged through the long outfall at Pettycur. This should result in better water quality at Kinghorn's other beach near the Harbour.

Burntisland

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Poor	Good	Poor	Poor	Poor	Poor	Poor	Excellent	Excellent	Excellent	Excellent

Burntisland is another of the bathing waters identified in 1999, although monitoring for bathing water quality has been undertaken at this location since the 1970's. Apart from the occasional good classification, bathing water quality was usually very poor at Burntisland, mainly due to sewage that was discharged untreated at nearby short outfalls. This unsatisfactory situation is being corrected.

A programme of improvements, started by the former Fife Regional Council, is now being continued by Scottish Water. The scheme will collect the flows from all the old outfalls and divert these to a new treatment works, before discharge via a long sea outfall. The untreated discharge from Lammerlaws was diverted to the treatment works during the 1998 bathing season. The new Lochies Road pumping station scheme was completed prior to the 2002 bathing season. This removed the discharge that immediately threatened the bathing water. The Harbour outfall and a few other small outfalls are still to be intercepted and connected into the main sewers. This work is planned for completion by the end of 2002. However as a result of the Lammerlaws diversion, Burntisland achieved excellent quality for the first time in 1999, and has maintained that standard each year since.

Aberdour (Silversands)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Good	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The very popular identified bathing water at Aberdour (Silversands) has achieved excellent quality for the last six years. This bathing water also holds a 'blue flag'.

The excellent water quality in recent years is attributable to the commissioning, in 1993, of the Aberdour (Silversands) long sea outfall pipe, which added to the existing treatment. However, the quality of bathing water at Aberdour (Silversands) was at risk from sewage discharges at Burntisland 2.5 km to the east, Dalgety Bay about 3 km to the west and short private sewer outfalls at Hawkcraig Point. In addition to the improvement works completed at Burntisland (see details above), a new long sea outfall pipe was commissioned at Aberdour West (Harbour) WWTP in 1995. Scottish Water plan to pump sewage from Dalgety Bay to Dunfermline's biological WWTP by 2005, instead of providing local treatment as at present.

Portobello West (Kings Road)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Poor	Poor	Good	Good	Poor	Good	Good	Poor	Good	Good

Portobello West (Kings Road) was identified in 1999, though SEPA and its predecessors have monitored it since the early 1980s. In 2002, Portobello West was of good quality.

Bathing water quality at this bathing water has been successively improved over many years by progressive improvement of Edinburgh's sewage treatment and sewerage infrastructure. Most recently, significant improvements have been made at Joppa, Pipe Street and Fillyside sewage interceptor and pumping stations. The main sewage discharge from the Seafield Sewage Treatment Works was upgraded at the end of 2000. It provides secondary treatment, with ultraviolet disinfection during the bathing season.

Samples taken from the Figgate Burn at the same time as the bathing water surveys strongly implicate the quality of this burn as having a significant impact on bathing water quality. A joint study of the Figgate Burn has been carried out between SEPA and Scottish Water to determine what improvements are required and to identify any other significant sources of coliform contamination. Since this study began several sources of faecal contamination have been identified and removed. An ongoing programme of CSO upgrading is also being carried out to reduce spill frequency. This has already resulted in improved quality in the Figgate Burn.

Portobello Central (James Street)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
n/s	n/s	n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Excellent	Excellent

Portobello Central (James Street) became an EC identified bathing water in 1999. This bathing water also shares the same history, and plans for improvement, as that outlined above for Portobello West (Kings Road).

Following a sewer overflow in May 2000, investigative work on the Joppa sewer resulted in removal of debris from the sewer, increasing the flow passing on to Seafield and reducing the frequency of overflow at Joppa.

Following this and other improvements Scottish Water are continuing to make, and the consequent reduced occurrence of storm sewage overflows, Portobello Central reached the excellent quality standard for the first time in 2001. Excellent water quality was again achieved in 2002, further illustrating the impressive improvement in bathing water quality at this highly popular bathing water.

Gullane

Seton Sands/Longniddry

			1994	1995	1996	1997	1998	1999	2000	2001	2002
			n/s	n/s	n/s	n/s	n/s	Good	Good	Good	Good

Seton Sands/Longniddry was identified as a bathing water in 1999. During 2002, as with the three previous years, the bathing water was of good quality.

Prior to the 1999 bathing season, a number of potential sources of contamination were identified. These included an intermittently contaminated surface water discharge to the Canty Burn, which outflows close to the sample area, a number of septic tanks and an inefficient soakaway system (from Seton Mains), to the west, and Longniddry WWTP to the east. Trials with ultraviolet disinfection at this WWTP have continued since 1999 as an interim improvement measure, prior to permanent solution. This permanent solution, a new interceptor sewer, was commissioned later in 2002 and now conveys sewage from Longniddry to Edinburgh WWTP. Improvements to the Longniddry drainage carried out in 2002 also reduced incidences of sewage contamination of the Canty Burn.

The residents of Seton Mains have been consulted on contributing to the connection of their drainage to the mains sewer and have responded favourably. Work to connect over 40 houses in this community to the main sewer will be completed by the end of 2002. Some improvements have been made in relation to the dual manholes which have been identified as causing overflows to the Canty Burn, but further work is still required to eradicate this source of pollution.

Gullane

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The identified bathing water at Gullane is now of high quality, and has achieved excellent status every year since 1995. In 2002, all 60 of the 60 microbiological analyses carried out met the EC guideline standard at this very popular and picturesque bathing water.

The high quality of the bathing water at Gullane is due to the effective local WWTP and location of overflows well away from the bathing water area. Work is currently ongoing to build a new long sea outfall and to utilise the existing long outfall for the discharge of storm sewage. This will provide further protection of the bathing waters in this area.

Until 2000, the sewage from Gullane North was discharged to the inter-tidal area about 3 km north-east of the identified bathing water. Bacteriological and dye-testing studies carried out in 1993 indicated that, in most prevailing conditions, this discharge had little impact on the bathing water. Nevertheless, work to connect up this discharge to Gullane WWTP was carried out. The existing pipe remains for storm relief, but is designed to operate as an overflow less than once in 5 years.

Yellowcraigs

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent

The identified bathing water at Yellowcraigs has achieved good or excellent quality each year since 1991, although these passes were often marginal until 1998.

Investigations carried out in 1992 showed that the Dirleton short sea outfall pipe, which lies at the western corner of Broad Sands Bay, could cause contamination of the bathing water at Yellowcraigs. To address this problem, sewage from Dirleton was diverted to the North Berwick WWTP and long sea outfall. This work was completed during the 1998 bathing season. 1999 was the first complete bathing season following the completion of this work and since that time Yellowcraigs has consistently achieved the excellent quality standard. There are no significant potentially polluted fresh water streams discharging to this bathing water.

North Berwick Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Good	Poor	Good	Good	Good	Poor	Good	Good	Good	Excellent	Excellent

North Berwick Bay has been sampled since the 1970's though 1999 was its first year as an identified bathing water.

Prior to 1995, when the North Berwick WWTP scheme was completed (see text for North Berwick (Milsey Bay) over), North Berwick Bay was of poor quality and frequently failed the mandatory EC standards. While bathing water quality improved markedly after this date, there are still occasional problems, as highlighted by the poor quality in 1997. SEPA investigated possible intermittent sources of contamination at North Berwick Bay and the adjoining bathing water at Milsey Bay. Whilst there has been some success at the latter, resulting in remedial work being carried out by Scottish Water, no sources have been positively identified at North Berwick Bay. Following a few years of just failing to reach excellent standard, North Berwick Bay achieved this bathing water quality for the first time in 2001 and maintained this standard in 2002. Despite the indicated high quality, there was one solitary and as yet unexplained poor quality result during the 2002 season. The history of infrequent but unexplained poor quality samples requires that continuing investigation and vigilance is required for this bathing water.

Dunbar (Belhaven)

North Berwick (Milsey Bay)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Excellent

The identified bathing water at North Berwick (Milsey Bay) has achieved good quality each year since 1989, though these passes were often marginal up to and including 1994. In 1995, a scheme to intercept the numerous short sea outfall pipes, which discharged along the North Berwick coast, was completed. The scheme included the provision of enhanced primary sewage treatment and discharge of the effluent via a new long sea outfall pipe at the eastern extremity of Milsey Bay. The treatment works is very innovative: it is constructed into the side of an old quarry, and has the different stages of treatment stacked above each other. Bathing water quality greatly improved following the commissioning of the WWTP and the long sea outfall pipe, although SEPA was disappointed that excellent quality had still not been achieved by 1999.

Investigative surveys by SEPA prior to the 2000 bathing season identified two significant sewage sources that could affect water quality at Milsey Bay. The water authority fixed these problems and as a consequence, in 2000, North Berwick (Milsey Bay) achieved excellent quality for the first time. This high quality has since been maintained. However, in the early part of the 2002 bathing season, elevated indicator levels were observed in the Milsey Bay bathing water. SEPA investigative sampling found a slight discharge from a high level overflow. Scottish Water found this to be a result of faulty seals. A small sewer leak to the Glen Burn was also detected. As a result of the SEPA investigations, in both cases, remedial action was carried out to remedy the situation and thus ensured that good quality was maintained at North Berwick (Milsey Bay) in 2002.

Dunbar (Belhaven)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

The identified bathing water at Dunbar (Belhaven) has achieved good quality each year since 1988, and has achieved excellent status since 1993.

The West Barns WWTP and long sea outfall have been in operation since 1993. However, SEPA has found problems between the WWTP and long outfall with the result that untreated discharges via the old West Barns outfall and storm overflow have occurred. To address this and to meet other requirements, the current treatment works will be replaced by Scottish Water, by 2004. This will further safeguard maintenance of bathing water quality. Discharge consents for Belhaven and West Barns are currently being reviewed by SEPA.

Dunbar East

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Poor	Good	Poor	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Dunbar East was identified as a bathing water in 1999, though it had been monitored for many years before this. In 2002, it again achieved excellent water quality standards, as it has done consistently for the last seven years.

The sewage treatment facilities and planned improvements for Dunbar are described above. Pumping of sewage from Dunbar East to the treatment plant at West Barns followed completion of the main scheme. There are no significant fresh water streams draining to this bathing water.

Whitesands

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Whitesands is a shallow enclosed bay, protected from the effects of strong waves and currents by rocky outcrops at each end. It has been an identified bathing water since 1999.

During the 2000 bathing season, a joint study by SEPA, the former East of Scotland Water and East Lothian Council concluded that there were no significant threats to bathing water quality at Whitesands.

Thorntonloch

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Thorntonloch was identified as a bathing water in 1999, and has achieved excellent status each year since 1988. Like Whitesands, the bathing water is of excellent quality, though strong tidal currents are present, particularly at the west side of the bay during certain combinations of tide and wind.

Pease Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Excellent	Good	Excellent	Good	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent

The identified bathing water at Pease Bay has achieved good quality each year since 1988, and excellent quality since 1999.

This high environmental quality is the result of appropriate treatment of local sewage sources. The effluent from a privately owned septic tank treatment plant, serving a nearby caravan site, enters Pease Bay to the south east of the bathing water. Sewage effluent discharge from this plant is controlled by a lunar clock and only occurs over a four hour period either side of the high tide between 2100 hours and 0700 hours. This ensures that maximum initial dilution is available and no effluent is discharged during the day.

Until June 2001, the Cockburnspath Burn received effluent from Cockburnspath Village (1.5 km inland) and outflowed in the vicinity of the bathing water. This was a potential source of sewage contamination particularly during periods of high rainfall. The effluent from Cockburnspath is now pumped to a new WWTP at Cove for full treatment, prior to discharge about 1.5 km north of the bathing water. The final effluent from the WWTP is disinfected prior to discharge during the bathing season.

St. Abbs

				1995	1996	1997	1998	1999	2000	2001	2002
				n/s	n/s	n/s	n/s	Good	Good	Good	Excellent

St. Abbs was identified as a bathing water in 1999, and had never previously been sampled by SEPA. Since 1999, the bathing water achieved good quality, and in 2002 achieved excellent quality for the first time. St.Abbs was identified because of its water sports usage, particularly scuba diving. It should be noted that this area is rocky and that there is no safe or explicitly permitted bathing area at St.Abbs.

Sewage from St.Abbs is currently treated by a septic tank and short outfall located west of the harbour mouth. There are also a few untreated outfalls, although these are small, some serving individual households. To improve this situation, Scottish Water have started a programme of work to collect the effluent from these discharges and pump it on to the new WWTP at Eyemouth where it will receive full treatment. This work is scheduled for completion during 2003.

Coldingham

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Good	Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent

Coldingham, a very popular bathing and surfing beach, was identified as a bathing water in 1999, although it had been monitored previously. Excellent quality was achieved each year between 1996 and 1999. In 2000, Coldingham narrowly failed to meet the excellent standard though it did achieve good status. All of the individual samples which didn't meet the guideline standard that year, occurred during or following heavy rain or storm conditions. In 2002 Coldingham once again met the excellent quality standards.

Comminuted sewage from Coldingham is discharged south east of the bathing area. There is also a small septic tank discharge at the northern edge of the bay. Occasional poorer bacteriological results at Coldingham show that these two discharges pose a threat to meeting excellent and even good values. To remove these quality threats, Scottish Water have started work on a scheme to pump the effluent from these discharges to Eyemouth WWTP where it will receive secondary treatment. As with St Abbs, this scheme is due to be completed in 2003.

Eyemouth

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Poor	Poor	Good	Good	Good	Poor	Good	Poor	Poor	Poor	Good	Good

Eyemouth has been sampled since the 1980s. However, it was only identified as a bathing water in 1999. Eyemouth was of poor quality each year between 1998 and 2000.

This failure was attributed to the discharge of untreated sewage from Eyemouth at two locations either side of the identified bathing water. There are also storm overflow discharges via the Eye Water and Harbour that operate during wet weather. By the end of the 2001 bathing season sewage effluent, previously discharged via the two historic outfalls, was being screened and discharged through the new long sea outfall. A new WWTP providing secondary treatment was completed in October 2002, and should ensure better water quality from 2003 onwards.

However, SEPA's monitoring work suggests that the aforementioned Eye Water and Harbour discharges still threaten bathing water quality in the area. In addition, a largely culverted surface water discharging close to the bathing water has been found to be contaminated with sewage. SEPA is currently investigating the source(s) of this contamination with a view to having remedial action taken prior to the 2003 bathing season. Also in 2002, a sewer break caused an overflow of untreated sewage to the bathing water causing one sample failure. Scottish Water carried out fast remedial action, thus preventing an overall poor classification for the year.

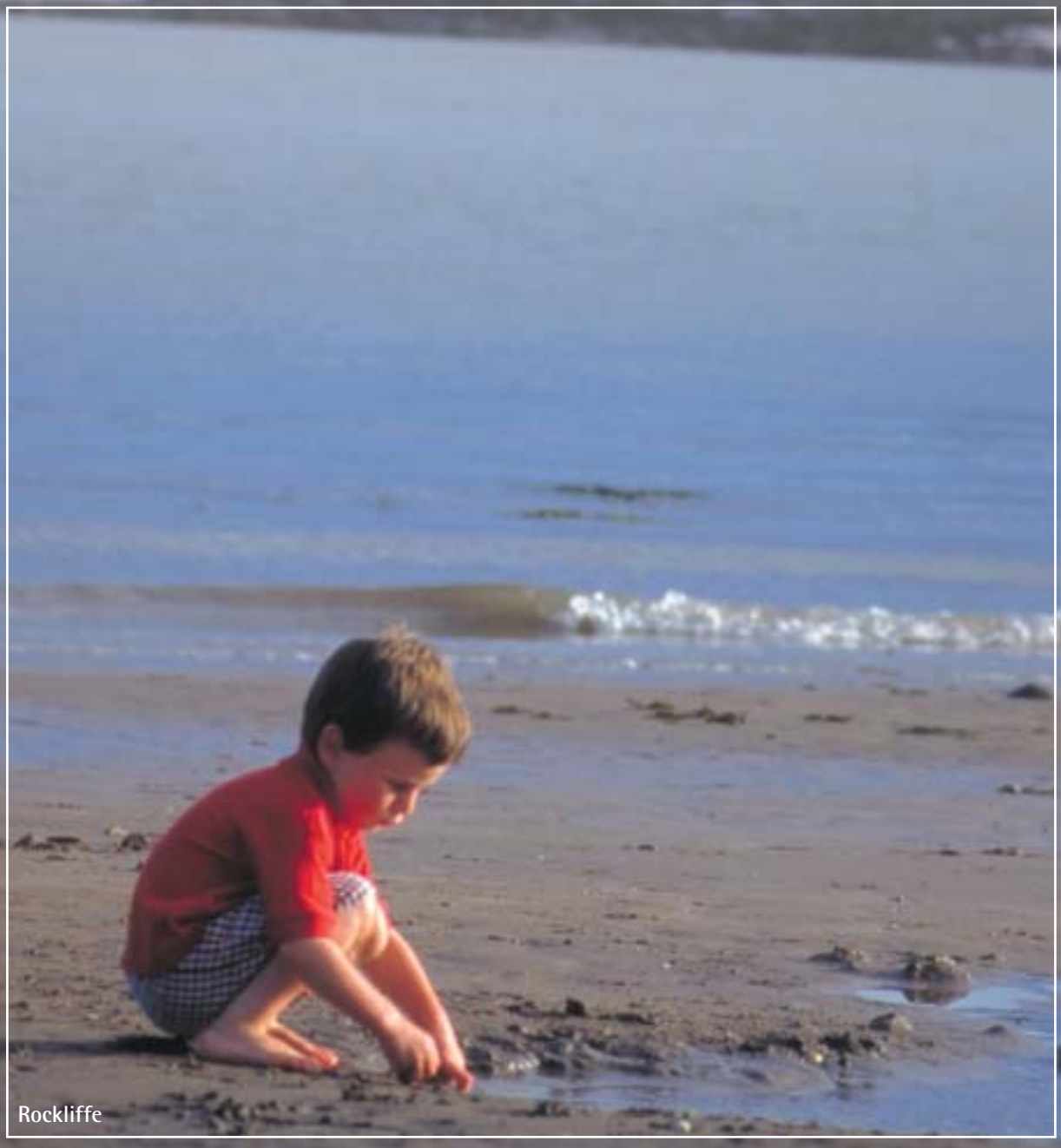
Coldingham

4.4 | Results from other Coastal and Inland Waters

During the 2002 bathing season, SEPA monitored bacterial water quality at an additional 54 coastal, estuarine and inland sites on at least 20 occasions. Maps 3 and 4 on pages 41 and 42 show the location of these waters, which are not necessarily potential recreational waters.

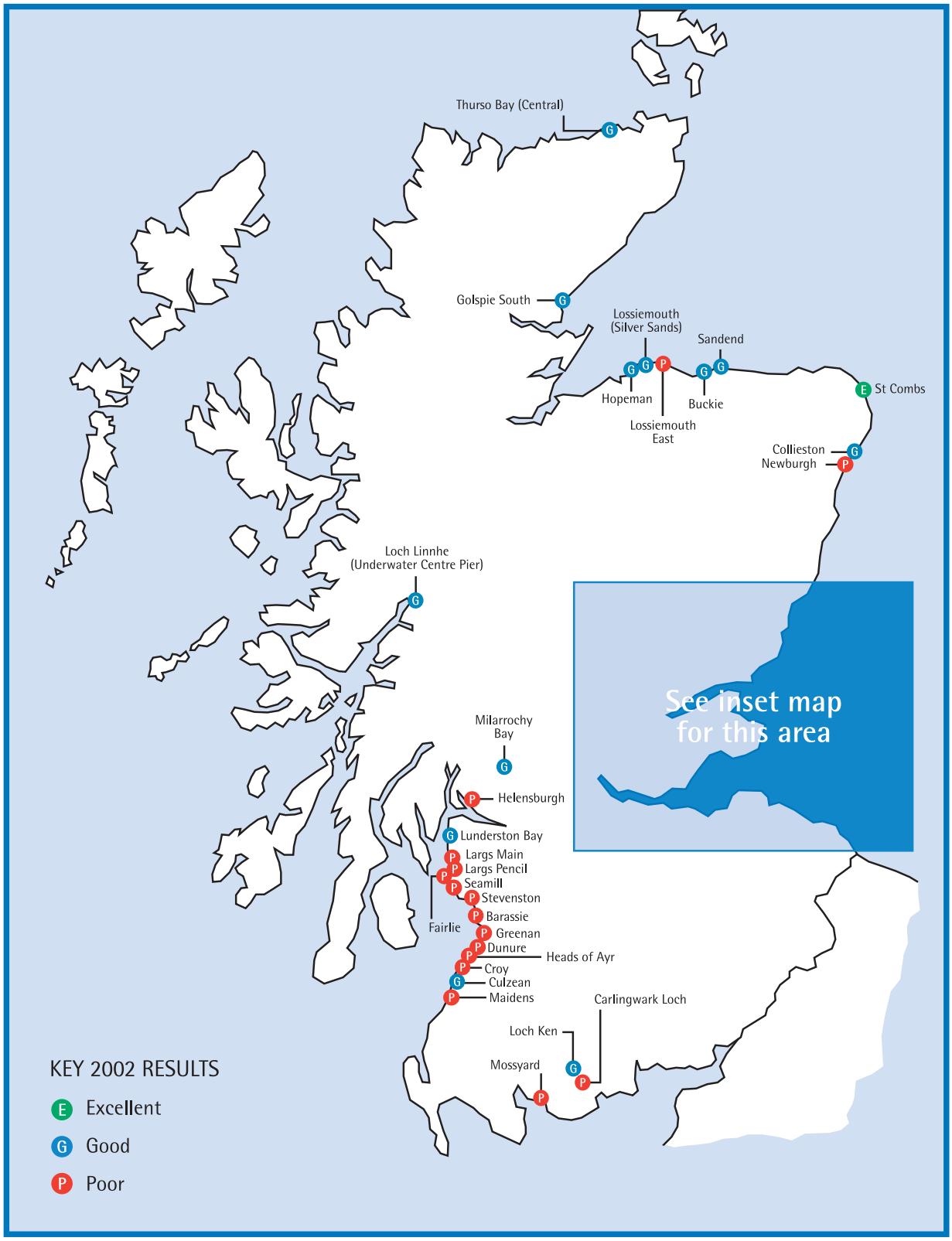
Although these waters are not identified bathing waters, SEPA uses the EC quality standards for bathing waters as part of its overall coastal waters quality classification scheme. Results from this classification are indicated in Annex 2. To be of 'excellent' and 'good' standard, waters must meet the guideline and mandatory standards respectively of the Bathing Waters Directive. In summary, of these 54 other sampling sites, in 2002:

- 9 (17%) are classified as excellent quality;
- 25 (46%) are classified as good quality;
- 20 (37%) are classified as poor.



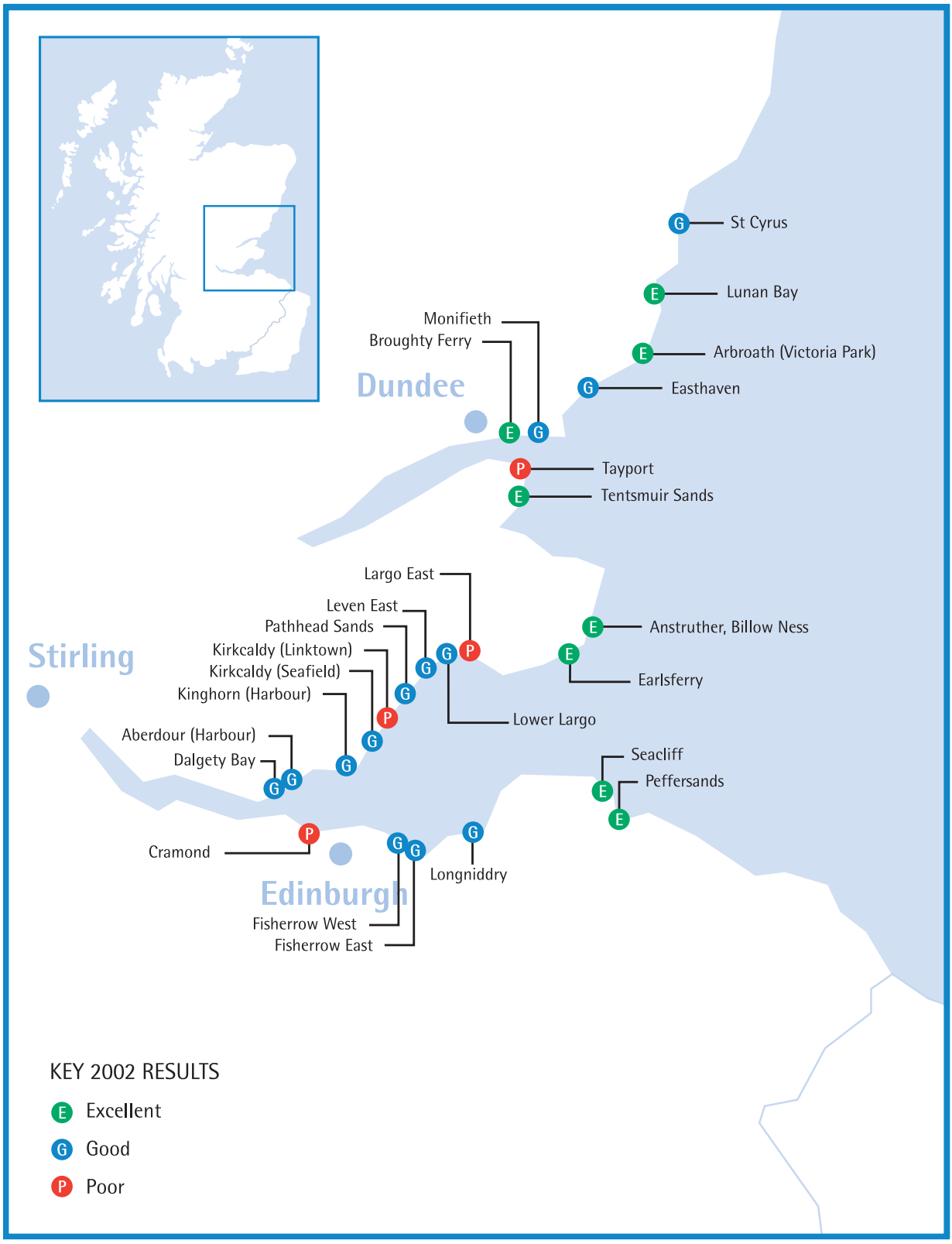
Rockliffe

Map 3 | Location of other Waters Monitored by SEPA During 2002



Sites sampled at least 20 times during the bathing season

Map 4 | Location of other Waters Monitored by SEPA During 2002 (East Region)



Sites sampled at least 20 times during the bathing season

5 Quality Improvement

5.1 Scottish Water

Many decades of significant under-investment in the water and sewerage infrastructure of Scotland have resulted in sewage discharges being the major cause of water pollution. By 2000, many bathing waters were still failing or at risk of failing to meet required EC standards due to unsatisfactory discharges. The situation has, however, been improving in recent years, 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 Private Public Partnership Schemes. However, these schemes only tackled a few of the most urgent needs. Much more remained to be done to achieve adequate environmental quality protection.

Q & S II covers the four-year period from April 2002 to March 2006 and comprises an unprecedented scale of investment of £2.3 billion to upgrade and enhance drinking water supply and sewerage provision in Scotland. SEPA has worked with Scottish Water to identify all schemes within the programme that are required to improve the quality of bathing waters and has ensured that these are scheduled for completion as early as possible, with interim temporary solutions 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:

- Rockcliffe – Temporary disinfection is to be provided for 2003 Bathing Water season, followed by permanent improvements to the sewerage system, which includes the provision of a new pumping station and storage in 2004.
- Turnberry – The scheme is currently under construction to divert the sewage discharges from Maidens, Kirkoswald and Turnberry to Girvan Waste Water Treatment Works WWTP
- Prestwick – Major investigations are currently being undertaken into the sewerage systems to identify solutions to the unsatisfactory combined sewer overflows, with design work commencing in 2003 where found necessary.
- Troon (South) – as Prestwick
- Irvine Gailes - as Prestwick
- Ardrossan/Saltcoats - as Prestwick
- Millport – The design stage for an interceptor sewer, to collect the numerous discharges, and the new WWTP is complete. Still to be resolved are issues over the siting of the treatment works and pumping stations.
- Luss – Temporary disinfection is to be provided for the 2003 Bathing Season, followed by permanent tertiary treatment of a WWTP discharge to the north of the bathing water.
- Machrihanish Bay – A pumping station to divert the sewage from Machrihanish to Campbeltown has been constructed, commissioning awaits resolution of flow problems at Campbeltown WWTP.
- Ganavan – A pumping station is to be constructed to divert the local sewage discharge to Oban once planning permission issues are resolved.

- Morar – A new WWTP is scheduled for commissioning in December 2003.
- Dunnet – Sewage from Castletown is to be pumped for treatment at Thurso WWTP by late 2004, with interim temporary disinfection of the discharge in the 2003 and 2004 bathing seasons.
- Dores – First time sewerage is being provided to connect a number of properties to the public sewerage system and eliminate private discharges which potentially impact on the quality of the Bathing Water.
- Cullen – Two untreated sewage discharges are to be intercepted and pumped to Buckie WWTP prior to the 2003 Bathing Water season.
- Inverboyndie – The Inverboyndie discharge was intercepted and transferred to the new Banff/Macduff WWTP in 2002.
- Rosehearty – The Rosehearty discharge was transferred to Fraserburgh in 2002.
- Peterhead (Lido) – Improvements to the sewerage system, to provide additional storage for storm flows, are to be completed for the 2003 Bathing Water season.
- Cruden Bay - the discharge was diverted to Peterhead late in 2002.
- Aberdeen – Disinfection was provided to the Persley WWTP discharge and the secondary treatment works for the main Nigg discharge was commissioned in 2002. Improvements to the Aberdeen sewerage system are ongoing.
- Stonehaven – Temporary disinfection is being provided in 2003 and 2004, pending the pumping of the sewage from Stonehaven to Aberdeen in late 2004.
- Kingsbarns - Temporary disinfection was provided in 2002 and a new WWTP is under construction for completion before the 2003 Bathing Water season.
- Portobello West – Improvements to the sewerage system to deal with unsatisfactory combined sewer overflows on the Figgate Burn and Powburn are scheduled for completion for the 2003 Bathing Water season.
- Seton Sands/Longniddry - First time sewerage for Seton Mains was provided in 2002 and the sewage from Longniddry is to be diverted to Edinburgh early in 2003.
- Dunbar (Belhaven) - Sewerage improvements and provision of a new WWTP are scheduled for completion in early 2004.
- St Abbs – The sewage discharge is to be diverted to Eyemouth by start of 2003 Bathing Water season.
- Coldingham – As St. Abbs.
- Eyemouth – A new WWTP was commissioned in December 2002 and sewerage improvements are to be completed by 2003 water season.

5.2 | SEPA Action Plans to Reduce Sources of Agricultural Pollution

Sewage is not the only major cause of bathing water pollution, and following disappointing monitoring data for the 2001 bathing season, SEPA undertook a detailed re-assessment of the potential problems of all waters. Major sewage schemes were coming into final construction and implementation and research was showing that factors other than coastal sewage discharges can make a significant contribution to microbiological water quality. It has become increasingly clear that, following rainfall, coastal water quality is dominated by bacterial inputs from fresh waters, particularly in the wetter regions of Scotland.

In March 2002 the Scottish Executive published its strategy for improvement of bathing waters, which underlined the need for urgent actions to improve bacterial quality. This has been followed up with more practical detail in the Scotish Executive's 4 Point Plan for dealing with agricultural pollution. In conjunction with these strategies, SEPA introduced a number of action plans for improved monitoring and response to the performance of direct continuous and intermittent discharges and also reducing the diffuse bacterial load entering watercourses. These were focused in the South West area, and Ayrshire in particular, where the problem is most acute.

Some Ayrshire beaches can be affected by various potential pollution sources. Action plans were focused on continuous, intermittent and minor discharges, urban drainage and stream monitoring. The plans involved weekly monitoring of sewage treatment plants, surface water outfalls, combined sewer overflows and local watercourses. They were successful in reducing the pollution load entering watercourses that drain into identified bathing waters.

However all identified waters are potentially impacted by bacteria in surface waters draining from farmland. Pollution can be minimised by following the Code of Good Agricultural Guidance, and by adherence to the Silage Slurry and Agricultural Fuel Oil (Scotland) regulations. In the South West area as a whole, an agricultural action plan addressed this topic. A project team of five experienced officers was created, based at SEPA's Ayr office, using staff drawn from a number of the Environment Improvement Regulation teams. Bathing water catchments were prioritised according to risk of failure and every farm in the catchments visited. An audit inspection considered the Regulations and Guidance, and identified potential or actual sources of pollution from farm steadings. The farmers concerned have been asked to take remedial action. Most pollution found was minor and the agricultural industry has been co-operative in addressing the issues identified. By the end of September, some 650 farm visits had been carried out by the team.

Farms in river catchments draining to waters at the greatest risk were visted first. These included Ettrick Bay, Saltcoats, Irivine, Ayr, Prestwick, Sandyhills and Turnberry. Initial visits found that some 60% of farms had polluting or potentially polluting drainage discharging to a watercourse. Most sources were minor and included midden drainage (25%), cattle housing, (13%), and dairy/milking parlours (10%). Many farms have difficulties with collection of run-off from contaminated surfaces, such as yards where cows stand before or after milking; 17% were identified as polluting or potentially polluting. Separation of clean rainwater away from such areas is seen as a key issue in reducing the quantity of contaminated drainage.

Repeat visits to farms where remedial action has been requested, found some 70% of farmers have either started or completed the work required. The remainder are being encouraged to ensure the work is done but in some cases it may be necessary for SEPA to take formal action.

Due to the importance of widespread diffuse drainage, this plan is continuing over the winter period.

5.3 | Overall Improvements

Despite the general trend in improvement in bathing water quality over the past few years, there remain long-term problems with some identified waters, particularly on the west coast, in Ayrshire and Argyll. In the majority of cases, SEPA's monitoring clearly indicates that poor bathing water quality is attributable to sewage effluent. Therefore, measures required to improve water quality are, in these cases, the responsibility of Scottish Water. SEPA will continue to work closely with the Scottish Water to ensure that their planned capital investment programmes are prioritised to maximise environmental benefits, and that any new schemes and modified discharges are designed to achieve the Directive's guideline quality standards. The welcome capital investments arising from the Quality and Standards I & II programmes are delivering real environmental improvements, and further required improvements will be planned and delivered through their successor, Q&S III. SEPA will also continue to enforce discharge consent conditions, to ensure that the requirements of the Bathing Water Directive and other EC environmental legislation are met.

Even with full treatment, however, there is still a risk of some identified bathing waters failing to comply with the Directive's mandatory standards because of the operation of storm overflows and the run-off of livestock slurries and manure from agricultural land. SEPA will work closely with agricultural organizations and the farming community to promote best practice and to minimise the risks of both point source and diffuse agricultural pollution. These requirements are being taken forward by SEPA working in conjunction with others, in accordance with the Scottish Executive's overall strategy for improving bathing waters and 4-point plan for dealing with agricultural problems.

It is clear that a combination of extensive investment in sewage treatment, sewerage system upgrades and an increased adoption of best practice by the agricultural community are required if Scotland's identified bathing waters are to achieve full compliance with existing European bathing water standards. Both the Scottish Executive and SEPA are fully committed to this aim. As the main problems are overcome, previously masked (diffuse) pollution sources become apparent, and proactive research work is underway to identify and enable cost effective methods to be developed for the correction of such problems. Many organizations, several of them under contract to the Scottish Executive, and others working with SEPA are involved in these projects. Litter is also recognised as a problem, and is of particular concern to some of the partner organizations involved including Clean Coast Scotland, the Tidy Britain Group and local authorities which are taking forward initiatives to seek and implement long term sustainable improvements.

Different and possibly even higher bathing water standards may be introduced through a revision of the Directive. Future legislation brought in to implement the EC Water Framework Directive should bring in new legislative controls over diffuse sources of pollution where these are required. However, existing standards are already high and there is a limit to how far it is cost-effective to go. Sewage treatment methods generally consume energy and energy generation has an environmental cost. Already the summer input of indicator bacteria to near-shore waters from seabirds exceeds that from sewage along vast stretches of the Scottish coastline, including even the heavily populated Edinburgh and Lothians shoreline.

Ettrick Bay

6 Conclusion

Although the 2002 Scottish Bathing Water quality monitoring results are the best ever, and indicate that Scotland has many high quality bathing waters, overall quality is still not good enough. As described in this report, many pollution problems and potential threats to bathing water quality have been identified, and actions are in hand or planned to overcome them. While completion of all desired schemes and actions will cost a lot of money, and expenditure will necessarily be phased over a number of years, a good number of new schemes are already nearing completion and will be in place before summer 2003. This gives hope that the number of waters failing to meet the mandatory European standards will show another significant fall in 2003.

The exceptionally wet weather during summer 2002 clearly had an overall adverse effect on bathing water quality. It is a particularly encouraging indication of the effectiveness of new schemes being put in place that the number of bathing waters meeting the stringent "excellent" quality was maintained despite the poor weather. Last year's report put particular emphasis on the 74% of waters in southeastern Scotland which achieved these standards, and this high achievement was maintained in 2002 despite amounts of summer rainfall which are only expected occur on average less than once in twenty-five years.

There were however some unexpected and disappointing failures. The poor quality at Arbroath despite a new sewerage scheme having been put in place since the year before, and the possibility of a problem with the new system will be investigated and hopefully corrected before next summer. Elsewhere in Scotland, at Fraserburgh, a good long-term record was unexpectedly spoiled; sewerage engineering works are suspected to have given rise to short-term unauthorised discharges which caused the poor classification, while the other 90% of the samples taken from this site all met the stringent excellent quality standards. Although overall water quality in Ettrick Bay on Bute was not as bad as last year, presumably in response to the great efforts to curb the diffuse agricultural pollution sources in its catchment, it unfortunately maintained its dismal record of poor quality and non-compliance. As there are no significant sewage sources anywhere near this bathing water, it is a clear indicator of the importance of agricultural pollution sources.

SEPA and others are tackling not only these problems at failing waters, but all potential threats to quality at all bathing waters, as wider general improvements in water quality are sought. Several further new sewage abatement schemes will be in place, and more work will have been done to reduce diffuse sources by summer 2003. This investment, and work on other pollution sources will continue until required quality standards are met, and it is hoped to be able to report further continuing improvement in bathing waters quality in both 2003 and beyond.

Annex One | 2002 Monitoring Data from Scotland's 60 Identified Bathing Waters

		Good Quality (EC Mandatory Standard)		Excellent Quality (EC Guideline Value)			
Bathing Water	No. of sample results	No. of TC <=10000/ 100-ml	No. of FC <=2000/ 100-ml	No. of TC ≤500/ 100-ml	No. of FC ≤100/ 100-ml	No. of FS ≤100/ 100-ml	Overall Quality
Southerness	20	20	19	11	9	8	Good
Sandyhills	20	19	19	6	3	8	Good
Rockcliffe	20	19	18	10	2	5	Poor
Brighouse Bay	20*	20	19*	10	7	10	Good
Carrick Bay	20	20	19	15	12	15	Good
Girvan	20	20	19	11	8	13	Good
Turnberry	20	20	20	17	9	16	Good
Ayr (South Beach)	20*	20	20*	11	6	12	Good
Prestwick	20*	20	20*	18	11	18	Good
Troon (South Beach)	20*	20	20*	17	12	12	Good
Irvine-Gailes (New Town)	20*	20*	19*	14	8	14	Good
Saltcoats/Adrossan (South Beach)	20*	20	19*	12	7	12	Good
Millport, Cumbrae	20	20	19	12	5	14	Good
Luss Bay	20*	20	20*	13	8	8	Good
Ettrick Bay	20	18	18	9	4	8	Poor
Machrihanish Bay	20	20	20	19	17	17	Good
Ganavan Bay	20	20	20	18	14	16	Good
Morar Beach	20	20	20	18	17	19	Excellent
Dunnet Bay (Caithness)	20	20	20	17	13	17	Good
Dornoch Beach (Caravan Park)	20	20	20	20	19	19	Excellent
Loch Ness (Dores)	20	20	20	12	11	12	Good
Nairn (Central Beach)	20*	20	20	16	13	18	Good
Nairn (East Beach)	20*	20	20	14	13	14	Good
Cullen	20	20	20	19	18	20	Excellent
Inverboyndie	20	20	20	18	15	18	Good
Rosehearty	20	20	20	18	12	15	Good
Fraserburgh	20	20	19	11	6	12	Good
Fraserburgh (Philorth)	20	20	20	20	20	20	Excellent
Peterhead (Lido)	20	20	18	18	18	18	Poor
Cruden Bay	20	19	18	6	4	9	Poor

Asterisks (*) in the number of sample results column indicate sites where the results from one other sample were excluded due to abnormal weather, as described in sect. 4.2. Asterisks in the mandatory and guideline columns indicate which limits the excluded samples exceeded.

		Good Quality (EC Mandatory Standard)		Excellent Quality (EC Guideline Value)			
Bathing Water	No. of sample results	No. of TC <=10000/ 100-ml	No. of FC <=2000/ 100-ml	No. of TC ≤500/ 100-ml	No. of FC ≤100/ 100-ml	No. of FS ≤100/ 100-ml	Overall Quality
Balmedie	20	20	19	16	13	17	Good
Aberdeen	20	20	20	17	13	18	Good
Stonehaven	20	19	19	13	8	13	Good
Montrose	20	20	20	20	20	20	Excellent
Arbroath (West Links)	20	19	18	17	15	16	Poor
Carnoustie	20	20	20	16	16	16	Good
St. Andrews (West Sands)	20	20	20	20	19	20	Excellent
St. Andrews (East Sands)	20	20	20	16	14	16	Good
Kingsbarns	20	20	20	20	18	19	Excellent
Crail (Roome Bay)	20	20	20	18	18	18	Excellent
Elie (Woodhaven and Ruby Bay)	20	20	20	19	19	18	Excellent
Shell Bay	20	20	20	19	17	19	Excellent
Kinghorn (Pettycur)	20	20	20	17	16	17	Good
Burntisland	20	20	20	19	17	19	Excellent
Aberdour (Silversands)	20	20	20	19	17	19	Excellent
Portobello West (Kings Road)	20	20	20	16	13	13	Good
Portobello Central (James Street)	20*	20	20	17*	16*	18*	Excellent
Seton Sands/Longniddry	20*	20	20*	17	14	17	Good
Gullane	20	20	20	20	20	20	Excellent
Yellowcraigs	20	20	20	18	18	18	Excellent
North Berwick Bay	20	20	19	19	18	19	Excellent
North Berwick (Milsey Bay)	20	20	20	16	16	18	Excellent
Dunbar (Belhaven)	20	20	20	18	18	20	Excellent
Dunbar East	20	20	20	18	18	18	Excellent
Whitesands	20	20	20	20	20	18	Excellent
Thorntonloch	20	20	20	19	19	20	Excellent
Pease Bay	20*	20	20	18*	18*	19*	Excellent
St. Abbs	20*	20	20	19*	18*	18*	Excellent
Coldingham	20	20	20	19	19	20	Excellent
Eyemouth	20*	20*	19*	12	12	14	Good

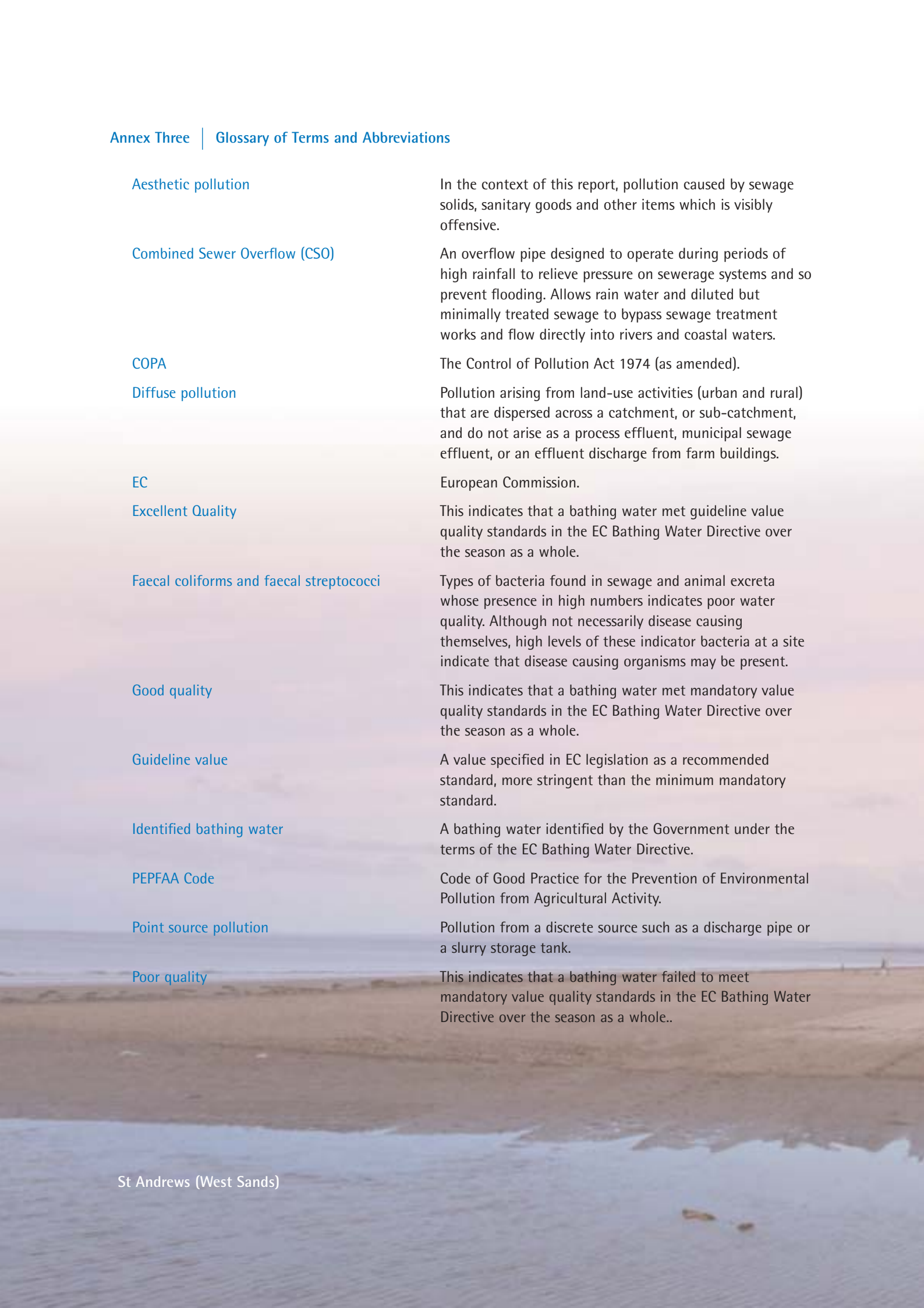
Annex Two | Monitoring Data from Other Waters Sampled 20 Times During the 2002 Bathing Season

		Good Quality (EC Mandatory Standard)		Excellent Quality (EC Guideline Value)			
Bathing Water	No. of sample results	No. of TC <=10000/ 100-ml	No. of FC <=2000/ 100-ml	No. of TC =500/ 100-ml	No. of FC =100/ 100-ml	No. of FS =100/ 100-ml	SEPA Quality classif-ication
Carlingwark Loch	20	19	15	5	4	11	Poor
Loch Ken	20	20	20	12	9	4	Good
Mossyard	20	19	17	6	8	9	Poor
Maidens	20	19	13	6	5	5	Poor
Culzean	20	20	20	18	17	14	Good
Croy	20	18	15	10	5	5	Poor
Heads of Ayr	20	19	15	10	6	9	Poor
Dunure	20	20	17	13	6	11	Poor
Greenan	20	20	16	12	7	11	Poor
Barassie	20	20	17	13	6	12	Poor
Stevenston	20*	19*	15*	10	5	8	Poor
Seamill	20	19	16	12	7	10	Poor
Fairlie	20	20	17	15	12	15	Poor
Largs Pencil	20	20	18	17	11	15	Poor
Largs Main	20	17	15	8	5	9	Poor
Lunderston Bay	20	19	19	18	13	14	Good
Helensburgh	20	14	8	5	1	5	Poor
Milarrochy Bay	20*	20*	19*	14	4	10	Good
Loch Linnhe (Underwater Centre Pier)	20	20	20	12	13	18	Good
Thurso Bay (Central)	20	20	20	14	12	12	Good
Golspie South	20	20	20	17	16	16	Good
Hopeman	20	20	20	17	13	18	Good
Lossiemouth (Silver Sands)	20	20	20	20	15	18	Good
Lossiemouth East	20	19	18	12	13	16	Poor
Buckie	20	20	19	16	10	15	Good
Sandend	20	20	20	15	12	11	Good
St. Combs	20	20	20	20	20	20	Excellent

		Good Quality (EC Mandatory Standard)		Excellent Quality (EC Guideline Value)			
Bathing Water	No. of sample results	No. of TC <=10000/ 100-ml	No. of FC <=2000/ 100-ml	No. of TC =500/ 100-ml	No. of FC =100/ 100-ml	No. of FS =100/ 100-ml	SEPA Quality classif-ication
Collieston	20	20	20	17	11	17	Good
Newburgh	20	18	16	1	1	16	Poor
St. Cyrus	20	20	20	15	14	18	Good
Lunan Bay	20	20	20	19	18	18	Excellent
Arbroath (Victoria Park)	20	20	20	19	19	20	Excellent
Easthaven	20	20	20	18	15	17	Good
Monifieth	20	20	19	14	12	17	Good
Broughty Ferry	20	20	20	18	17	19	Excellent
Tayport	20	18	18	11	6	16	Poor
Tentsmuir Sands	20	20	20	20	20	19	Excellent
Anstruther, Billow Ness	20	20	20	19	19	18	Excellent
Earlsferry	20	20	20	18	18	18	Excellent
Largo East	20	20	18	15	11	16	Poor
Lower Largo	20	19	19	13	14	15	Good
Leven East	20	20	20	11	11	14	Good
Pathhead Sands	20	20	20	16	17	16	Good
Kirkcaldy (Linktown)	20	19	17	10	4	11	Poor
Kirkcaldy (Seafield)	20	20	19	16	12	16	Good
Kinghorn (Harbour)	20	20	20	13	8	10	Good
Aberdour (Harbour)	20	20	20	16	14	16	Good
Dalgety Bay	20*	20*	20*	12	9	15	Good
Cramond	20	20	18	8	6	17	Poor
Fisherrow West	20	20	20	12	11	15	Good
Fisherrow East	20	20	19	11	8	10	Good
Longniddry	20	19	19	17	14	17	Good
Seacliff	20	20	20	20	20	20	Excellent
Peffersands	20	19	19	17	17	18	Excellent

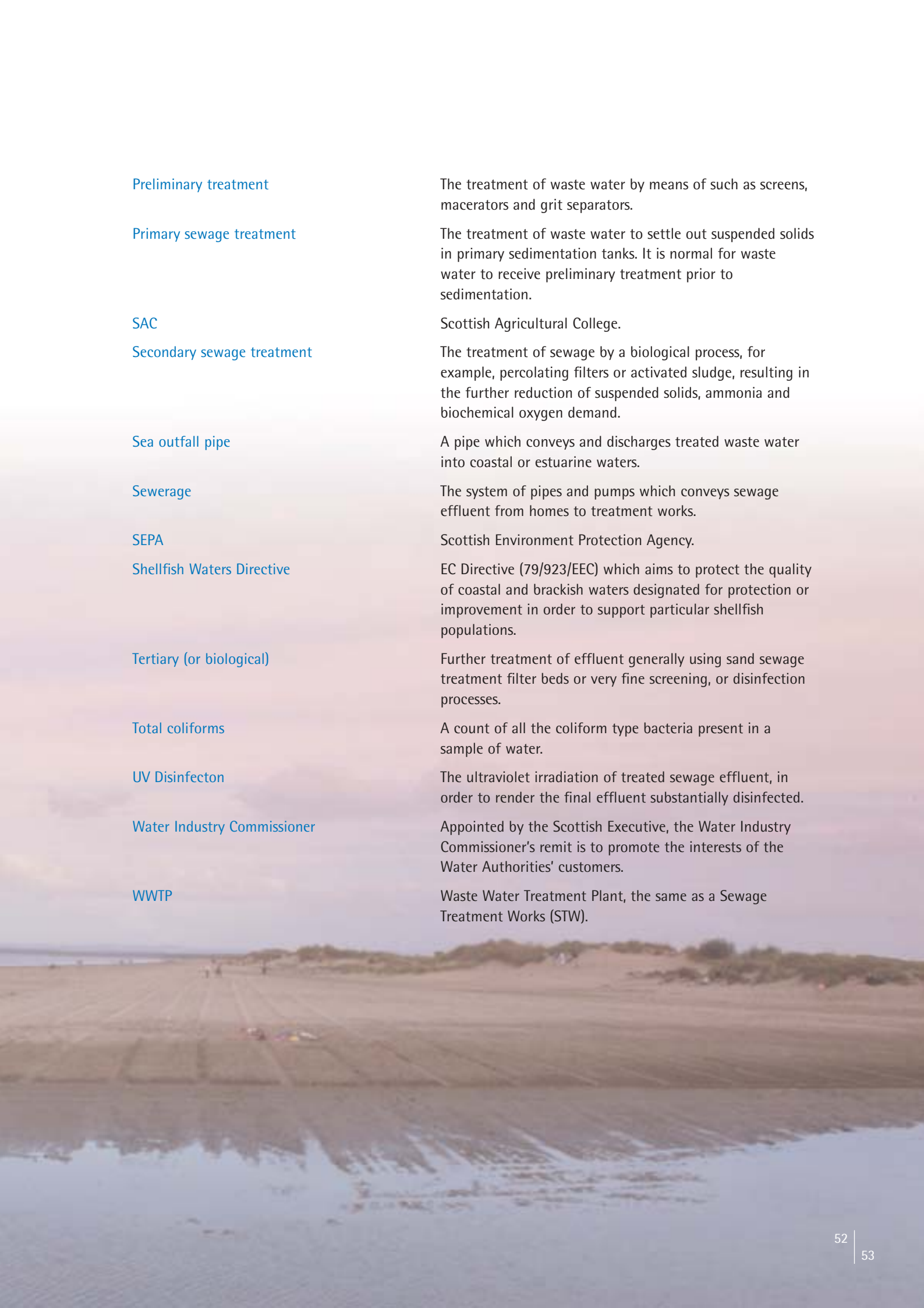
Annex Three | Glossary of Terms and Abbreviations

Aesthetic pollution	In the context of this report, pollution caused by sewage solids, sanitary goods and other items which is visibly offensive.
Combined Sewer Overflow (CSO)	An overflow pipe designed to operate during periods of high rainfall to relieve pressure on sewerage systems and so prevent flooding. Allows rain water and diluted but minimally treated sewage to bypass sewage treatment works and flow directly into rivers and coastal waters.
COPA	The Control of Pollution Act 1974 (as amended).
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.
Excellent Quality	This indicates that a bathing water met guideline value quality standards in the EC 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 EC Bathing Water Directive over the season as a whole.
Guideline value	A value specified in EC 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 EC 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..



St Andrews (West Sands)

Preliminary treatment	The treatment of waste water by means of such as screens, macerators and 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	EC 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 (or biological)	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 Disinfecton	The ultraviolet 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.
WWTP	Waste Water Treatment Plant, the same as a Sewage Treatment Works (STW).



Annex Four | Sources of Additional Information on Bathing Water Quality

Technical enquires about SEPA's bathing water quality monitoring programme should be directed to your local SEPA office (see Annex 5 for details).

SEPA's website at **www.sepa.org.uk** contains a wide collection of information on SEPA, as well as the text from previous Scottish Bathing Waters reports. Monitoring results for the identfified bathing waters are placed on SEPA's website as they are produced through the bathing season.

Water Authority

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

www.scottishwater.co.uk

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 coastal discharges affecting 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 administer the European Blue Flag Campaign in Scotland, on behalf of the Foundation for Environmental Education. This is an award presented to resort beaches across Europe that fulfil strict criteria relating to both water quality and environmental management in the surrounding beach area. The Blue Flag award requires water quality to be guideline standard. In 2002, five beaches in Scotland achieved Blue Flag status: Nairn, St. Andrews West Sands, Elie Harbour, Burntisland and Aberdour (Silversands).

Marine Conservation Society

9 Gloucester Road,
Ross-on-Wye,
Herefordshire,
HR9 5BU.
Tel: 01989 566017

www.mcsuk.org

Keep Scotland Beautiful,

7 Melville Terrace,
Stirling,
FK8 2ND.
Tel: 01786 471333.

www.encams.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**

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Rosehearty

Please do not call these numbers for general enquiries

www.sepa.org.uk

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For further information about SEPA and for copies of publications mentioned in this report please contact:

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