SEPA
Scottish Environment Protection Agency

SCOTTISH BATHING WATERS 2001

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CONTENTS

FOREWORD

I am pleased to present the Scottish Environment Protection Agency's (SEPA) sixth annual Scottish Bathing Waters report. This report contributes to SEPA's aim to provide comprehensive information on Scotland's bathing waters. As well as containing the water quality monitoring results from Scotland's 60 identified bathing waters, it also describes factors underlying the results and outlines, where relevant, site-specific plans for improvement. This information is intended to inform and stimulate discussion on the future management of Scotland's coastal and inland bathing waters.

Disappointingly, and despite continuing investment by Scotland's Water Authorities, there has been no change in the overall number of identified waters meeting the European standards. In 2001, as in 2000, only 51 of the 60 EC sites in Scotland met the EC Bathing Water Directive's mandatory quality standards. Only four of the bathing waters which failed the mandatory standards this year also failed last year. Five that failed to meet the EC standards last year passed this year. Where this was achieved thanks to new sewage treatment schemes, continuing compliance is anticipated in the future. While the principal reason for poor water quality at failing sites is still sewage effluent, SEPA investigations show that freshwater sources polluted by storm overflows and agricultural pollution are significant factors at several unsatisfactory sites. The continuing major investment by the Water Authorities is 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 of the Water Authorities introduced by the Scottish Executive's Quality and Standards process. Accordingly, SEPA is engaged in close dialogue with the Water Authorities and the Water Industry Commissioner to seek to ensure that capital expenditure, while restricted to that which is affordable, is targeted to deliver maximum environmental benefits into the future.

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 minimized or eliminated. SEPA has done much work on this and these efforts are continuing with increased urgency for the waters which failed in 2001 after meeting standards in 2000. Particular effort has been focused 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. In most cases this has to be done through education and persuasion, through organisations with specific agricultural expertise, and more directly by SEPA officers.

Looking to the future, the proposed EC Water Framework Directive will eventually 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 effect 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 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 Lunan Bay in Angus, suggests that these waters, which may be more typical of Scotland as a whole, are of very good quality.

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 the Water Authorities and their forthcoming successor Scottish Water, local authorities, non-governmental organisations, the agricultural community and the public to realise 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.

M PATRICIA HENTON

Chief Executive, Scottish Environment Protection Agency
December 2001

Yellowcraigs

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 the identified bathing waters on its website throughout the bathing season from 1 June to 30 September.

1.2 SEPA's Commitment to Improving Bathing Water Quality

SEPA recognises the immense economic value of Scotland's relatively unspoiled environment. High quality bathing waters are important for a wide variety of interests and also help promote Scotland's tourism industry. To protect and where necessary improve the quality of bathing waters, all possible sources of pollution must be recognised and controlled. Accordingly, SEPA works closely with Scotland's three Water Authorities, which are responsible for both public water supply and sewerage services, other key bodies and the agricultural community in seeking to ensure high quality bathing waters.

Whitesands

As indicated in more detail in Section 4, several new sewage treatment schemes are under construction and should be operational before the start of the 2002 bathing season. These will particularly benefit Fraserburgh and some of the Ayrshire beaches. The risk of pollution of all bathing waters has been assessed, and in conjunction with the Scottish Executive, Water Authorities and Water Industry Commission, future investment in sewage collection and treatment schemes has been particularly targeted to those which will deliver required environmental quality improvements. Investment timetabling has been adjusted to give highest priority to those schemes, which will benefit bathing waters, which do not meet EC standards at present. Substantial additional effort is also being applied to reduce diffuse sources of agricultural pollution in areas where this has been shown to have an impact on EC bathing water quality.

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.

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 which is designed to achieve a consistent approach. All new or modified discharges to identified bathing waters must be designed to ensure that the Bathing Water Directive's guideline standards are attained. 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 foreshores 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 2001 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 55 non-identified waters, which are sampled 20 times during the bathing season.

The report also examines trends in compliance and provides background information on each identified water in Scotland. One new section this year (4.2) describes some additional monitoring work done in dry weather only. Significantly better bathing water quality is indicated by this alternative sampling regime, which is probably more truly representative of conditions when most people use these bathing waters. It also serves to emphasise the significance of storm sewer overflows and agricultural sources in causing overall failures at some sites.

Gathering and reporting information on bathing water quality is an essential component of SEPA's Environmental Strategy in that it promotes an understanding of the pressures and impacts exerted by discharges and land management practices on identified bathing waters. This data is used to identify priorities for investment and focus effort on delivering environmental improvements. It also facilitates the discussion of 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 prescribed environmental quality standards are set to protect the environment and public health and include limits for 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 waiving some quality values and varying sampling frequency in a few specific 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. For identified bathing waters, water quality objectives are set out in the Bathing Water (Classification) (Scotland) Regulations 1991. These Regulations implement the EC Bathing Water Directive in Scotland.

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 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. In most circumstances it requires Members States to ensure good status in coastal waters, estuaries, rivers, lochs, estuaries and groundwater, by 2015, through the establishment of River Basin Management Plans. 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.

2.3 Other Competent Authorities

Sewage remains the major cause of polluted coastal waters in Scotland. Therefore, measures required to improve water quality are, in many cases, the responsibility of the Water Authorities (soon to be amalgamated to form the Scottish Water Authority). SEPA works with the Water Authorities 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 all relevant EC environmental Directives. The level of investment is crucial and, over the period 2002 to 2006, will be subject to consultation and advice from the Water Industry Commissioner in respect of Water Authority charges.

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

Local Authorities are responsible for keeping beaches designated 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 water quality data supplied by SEPA.

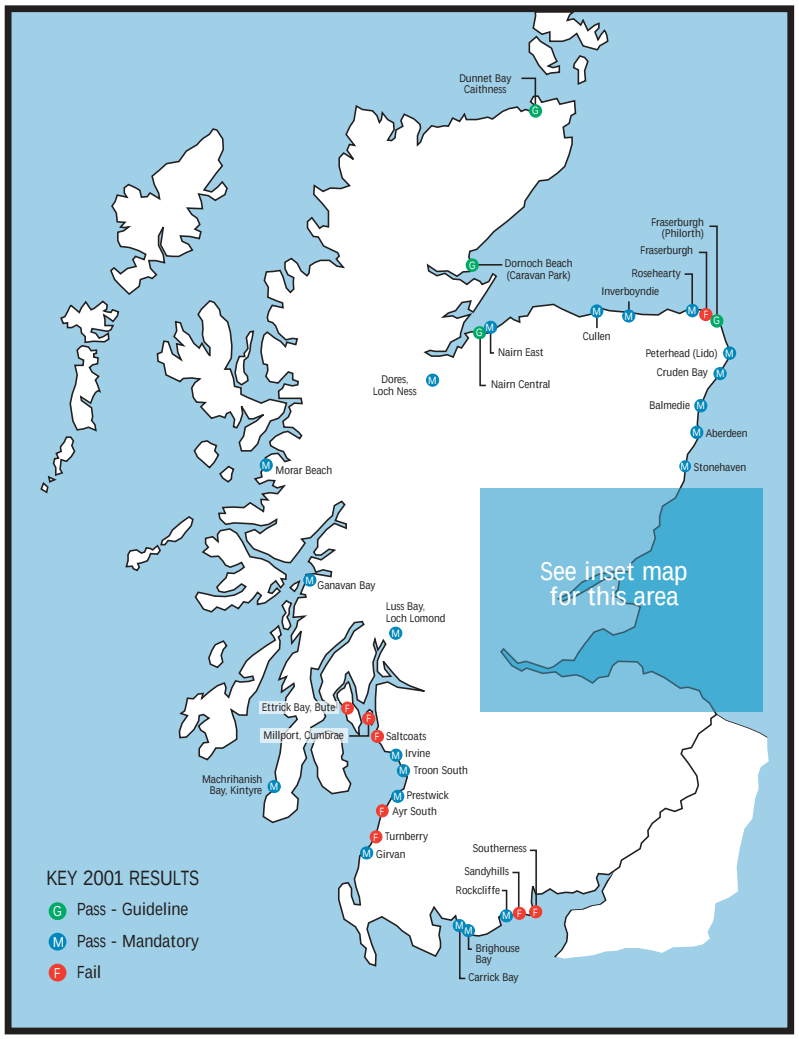
2.4 Identification of Bathing Waters

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

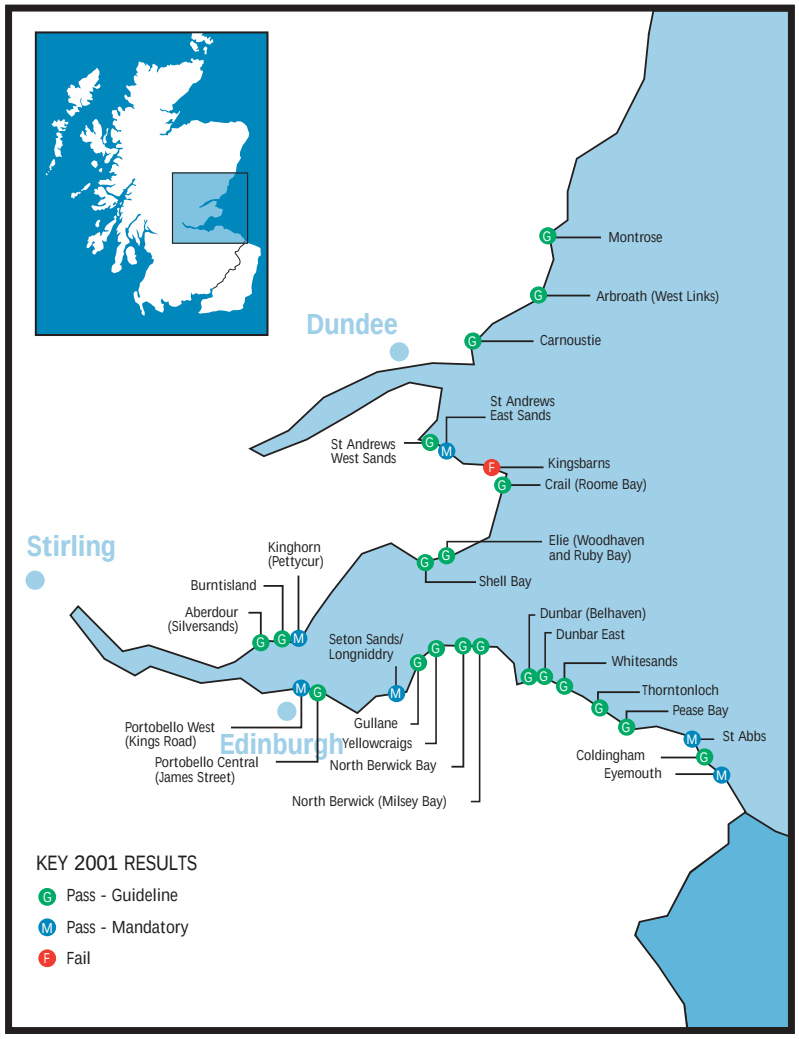
In 1998, the Scottish Office carried out a review to decide whether additional waters should be identified in Scotland under the Bathing Water Directive. A panel, whose membership ensured that as many parties as possible with a stake in the identification of bathing waters would have input into the decision-making process, was set up by the Scottish Office. The end result of this process was that in May 1999, the then Secretary of State 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 up to 60 (see Maps 1 and 2).

Post-devolution, it is now Scottish Ministers who are ultimately responsible for identifying bathing waters in Scotland under the terms of the Directive. No further waters have been added since 1999.

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



Map 2: Location of Scotland's 60 Identified Bathing Waters



2.5 Revision of the Bathing Water Directive

Since the introduction of the EC Bathing Water Directive in 1976, there have been advances in microbiological, physical and chemical analytical techniques. There have also been a number of international studies on how the risks of exposure to those using bathing waters to microbiological contaminants could be minimised and managed effectively. To take this new work into account, the EC has recognized that the current Bathing Water Directive would benefit from revision.

In 1998, the EC announced its latest intention to revise the Directive. In order to test initial proposals, a small number of feasibility trials were conducted in 1999 in the UK, France and the Netherlands. Revised proposals were subsequently developed, and a series of more extensive trials at approximately 100 sites throughout Europe took place during the 2000 bathing water season. As reported last year, SEPA participated in these trials.

The underlying principle of the new proposals is the wish to change the ethos of the Bathing Water Directive from "purely punishing non-conformity" to "punishing inaction in response to non-conformity". This is designed to alter the emphasis of the Directive from bathing water quality monitoring to water quality management and the protection of public health. A key component of the trials was the establishment of Beach Management Committees led by Local Authorities and involving SEPA and the Water Authorities in Scotland.

There has been relatively little progress with the revision proposals in the past year, and any new standards will not now be implemented before the 2003 bathing season at the earliest.

3. How Results Are Determined

3.1 Interpretation of Results and Requirements for Monitoring Programmes

The Annex to the EC Bathing Water Directive contains information on the requirements for monitoring programmes. It lists the 19 parameters and values which apply to identified bathing waters and states how results should be interpreted. These requirements have been implemented in Scotland by the Bathing Waters (Classification) (Scotland) Regulations 1991.

The Directive contains information on two main types of values for water quality standards: mandatory standards which Member States must observe, and stricter guideline values which Member States should endeavour to observe.

Mandatory Standards

Mandatory standards apply to 10 parameters: total coliforms, faecal coliforms, salmonella, enteroviruses, pH, colour, mineral oils, detergents, phenols and transparency.

Compliance with the Directive's mandatory standards is based on the counts of total coliforms and faecal coliforms. 95% of samples must comply with the Directive's mandatory standards for both parameters for the site to achieve a pass at this level.

Guideline Values

In addition to the mandatory standards set by the Directive, there are guideline values for some of the parameters, including the two coliform groups and faecal streptococci. These guideline values are stricter than the mandatory standards and, if achieved, indicate excellent bathing water quality.

Compliance with the Directive's guideline values is based on the counts of total coliforms, faecal coliforms and faecal streptococci. All three parameters must comply with the Directive's guideline values for the site to achieve a pass at this level.

Under Article 5.2 of the Directive, deviations from these mandatory and guideline values are allowed in the case of floods, other natural disasters and abnormal weather conditions. The guidance that SEPA received from The Scottish Office was that exceptional weather conditions are defined as a storm with a return frequency of one in five years or more. If a waiver is applied, then a replacement sample is taken after an appropriate period to allow the storm effects to dissipate. No such waivers were claimed in 2001.

Under Article 8 of the Directive, the requirements of the Directive may be waived because of exceptional geographical conditions in respect of the colour and transparency parameters. For example, Sandyhills has a waiver for the transparency parameter because tidal action can lead to high levels of suspended sediment entering the bathing water. 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 also set out in the Annex to the Directive. Checks must be made at least once a fortnight during the bathing season for total and faecal coliforms, transparency, colour, mineral oil, surface-active substances reacting with methylene blue and phenols. A minimum of 12 samples must be taken during the bathing season. 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.

Under the Bathing Waters (Classification) (Scotland) Regulations 1991, the bathing water season in Scotland is specified as the period from 1 June to 30 September inclusive. At least 20 samples have been taken at each identified water since 1998, in addition to one pre-season sample. This means that for each parameter and each season, there is normally available a series of at least 20 samples showing the counts of total and faecal coliforms and transparency, together with the results of an equivalent number of inspections for colour, oil, detergent foam and phenols.

This report includes results of SEPA's microbiological monitoring, as compliance with the Directive's standards is based on these parameters alone. Owing to space limitations, it is not possible to include all of the results of SEPA's analysis from the 2001 bathing season. However, sampling results for the other parameters monitored by SEPA are placed on the public register and are available on request. (see Appendix Five for contact details).

3.3 Interpretation of Microbiological Values

The microbiological organisms listed in the Directive are all natural inhabitants of the guts of humans and other warm-blooded animals, and are used as indicators of faecal pollution. Their presence, in excess of the values in the Directive, identifies waters which may have received volumes of sewage that have not been given adequate treatment or dilution. Equally, large concentrations of sea-birds 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 on page 12. Details on interpreting the results obtained from 20 samples are provided in this Table, as this is the minimum number of samples which should be taken from each identified bathing water in Scotland during the bathing season.

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	G	Directive states:	80% of samples should not exceed 500 total coliforms per 100 ml.	80% of samples should not exceed 100 faecal coliforms per 100 ml.	90% of samples should not exceed 100 faecal streptococci per 100 ml.
		Based on 20 samples:	Must have at least 16 samples with less than, or equal to, 500 total coliforms per 100 ml.	Must have at least 16 samples with less than, or equal to, 100 faecal coliforms per 100 ml.	Must have at least 18 samples with less than, or equal to, 100 streptococci per 100 ml.
Pass - Mandatory	M	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.

3.4 Bacteriological Analysis

Bacteriological analysis is carried out in SEPA's specialist microbiological laboratories at East Kilbride, Dumfries, Dingwall, Aberdeen and Edinburgh. All of these laboratories operate to United Kingdom Accreditation Service (UKAS) quality systems for their analytical work and they participate in external inter-laboratory testing schemes such as those run by the Public Health Laboratory and Aquacheck. The inter-laboratory testing has demonstrated consistent high accuracy of SEPA's bacteriological test results.

4. 2001 BATHING WATER QUALITY RESULTS

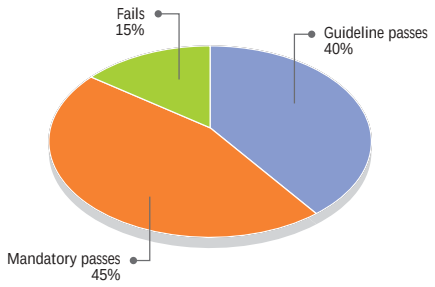
4.1 Results from Scotland's 60 Identified Bathing Waters

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

- 51 of the 60 identified bathing waters (85%) achieved mandatory passes of the Directive's coliforms standards;
- 9 of the 60 identified waters (15%) failed to achieve the Directive's mandatory coliform standards;
- 24 of the 60 identified bathing waters (40%) achieved guideline passes of the Directive's microbiological standards.

All sites that achieved guideline values also met the Directive's mandatory standards.

Figure 1 – Scotland's Bathing Waters Results 2001



sampling at Belhaven, Dunbar

Table 2 - Summary of 2001 Bathing Water Results in Scotland

Level of pass for each of the 60 identified bathing waters in Scotland in 2001

Bathing Water	Local Authority	Level of Pass
Southerness	Dumfries and Galloway	Fail
Sandyhills	Dumfries and Galloway	Fail
Rockcliffe	Dumfries and Galloway	Pass-M
Brighouse Bay	Dumfries and Galloway	Pass-M
Carrick Bay	Dumfries and Galloway	Pass-M
Girvan	South Ayrshire	Pass-M
Turnberry	South Ayrshire	Fail
Ayr South	South Ayrshire	Fail
Prestwick	South Ayrshire	Pass-M
Troon South	South Ayrshire	Pass-M
Irvine	North Ayrshire	Pass-M
Saltcoats	North Ayrshire	Fail
Millport, Cumbrae	North Ayrshire	Fail
Luss Bay, Loch Lomond	Argyll and Bute	Pass-M
Ettrick Bay, Bute	Argyll and Bute	Fail
Machrihanish Bay	Argyll and Bute	Pass-M
Ganavan Bay	Argyll and Bute	Pass-M
Morar	Highland	Pass-M
Dunnet Bay, Caithness	Highland	Pass-G
Dornoch Beach (Caravan Park)	Highland	Pass-G
Dores, Loch Ness	Highland	Pass-M
Nairn Central	Highland	Pass-G
Nairn East	Highland	Pass-M
Cullen	Moray	Pass-M
Inverboyndie	Aberdeenshire	Pass-M
Rosehearty	Aberdeenshire	Pass-M
Fraserburgh	Aberdeenshire	Fail
Fraserburgh (Philorth)	Aberdeenshire	Pass-G
Peterhead (Lido)	Aberdeenshire	Pass-M
Cruden Bay	Aberdeenshire	Pass-M
Balmedie	Aberdeenshire	Pass-M
Aberdeen	Aberdeenshire	Pass-M
Stonehaven	Aberdeenshire	Pass-M
Montrose	Angus	Pass-G
Arbroath (West Links)	Angus	Pass-G
Carnoustie	Angus	Pass-G
St.Andrews (West Sands)	Fife	Pass-G
St.Andrews (East Sands)	Fife	Pass-M
Kingsbarns	Fife	Fail
Crail (Roome Bay)	Fife	Pass-G
Elie (Woodhaven and Ruby Bay)	Fife	Pass-G
Shell Bay	Fife	Pass-G
Kinghorn (Pettycur)	Fife	Pass-M
Burntisland	Fife	Pass-G
Aberdour (Silversands)	Fife	Pass-G
Portobello West (Kings Road)	City of Edinburgh	Pass-M
Portobello Central (James Street)	City of Edinburgh	Pass-G
Seton Sands, Longniddry	East Lothian	Pass-M
Gullane	East Lothian	Pass-G
Yellowcraigs	East Lothian	Pass-G
North Berwick Bay	East Lothian	Pass-G
North Berwick (Milsey Bay)	East Lothian	Pass-G
Dunbar (Belhaven)	East Lothian	Pass-G
Dunbar East	East Lothian	Pass-G
Whitesands	East Lothian	Pass-G
Thorntonloch	East Lothian	Pass-G
Pease Bay	Scottish Borders	Pass-G
St. Abbs	Scottish Borders	Pass-M
Coldingham	Scottish Borders	Pass-G
Eyemouth	Scottish Borders	Pass-M

Pass-G = Guideline Pass; Pass-M = Mandatory Pass; Fail = Mandatory Failure

sea fishing at Dunbar

4.2 Dry Weather Compliance

To determine compliance with the Bathing Water Directive's standards, all beaches are sampled by SEPA following a timetable established before the start of the bathing season. In 2001, additional sampling was carried out during dry weather, to determine whether this would result in a different compliance rate. This additional targeted sampling also helps to clarify the type of pollution sources causing compliance failure. If samples are failing in dry weather, this indicates that better sewage treatment or outfall provision is required. Where failed samples are related to rainfall events or high river flows, this suggests that factors such as livestock farming and sewer overflows have to be investigated and corrected. As expected, it was found that sampling only in dry weather made a significant difference where the primary cause of pollution was believed to be diffuse and river sources, rather than local sewage discharges.

Table 3 Comparison of Dry Weather and Pre-scheduled Sampling Compliance Rates

Bathing Water	Dry Weather Sampling Compliance %	Pass/Fail (EC limit is 95%)	Pre-scheduled Sampling Compliance %	Pass/Fail (EC limiti is 95%)
Ayr South	100	Pass	85	Fail
Sandyhills	100	Pass	85	Fail
Eyemouth	100	Pass	95	Pass
Prestwick	97	Pass	95	Pass
Girvan	97	Pass	100	Pass
Turnberry	97	Pass	90	Fail
Irvine	97	Pass	95	Pass
Troon South	94	Fail	95	Pass
Ettrick Bay	91	Fail	80	Fail
Saltcoats	83	Fail	80	Fail

As shown in Table 3 sampling only in dry weather improves the overall pass rate for these 10 sometimes doubtful quality bathing waters to 70% from the 50% recorded with the usual pre-scheduled sampling programme. Also, and perhaps more significantly, the overall average sample compliance improves to 96% from 90%. Overall average sample compliance for samples taken in wet weather was a particularly poor 67%, with Ettrick Bay and Sandyhills having 100% failure records for samples taken in wet weather. This strongly suggests that at these two sites diffuse pollution problems induced by wet weather are especially serious.

At sites such as Saltcoats, which are affected predominantly by continuous sewage discharges, monitoring only in dry weather makes no significant difference to the overall compliance rate.

A more detailed and complete analysis of the influence of rainfall on bathing water quality during recent years has been prepared by SEPA and is available on its website (www.sepa.org.uk).

On the basis of these Scottish data analyses, the practice of only taking samples for assessing bathing water compliance during dry weather would seem likely to give a significantly better picture of overall compliance with quality standards if there are any diffuse pollution sources in the local inland catchments.

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/D means Not Done; Pass-M means a pass of the Directive's mandatory standards and Pass-G means a pass of the Directive's guideline standards.

Note that for each identified water, a previous record of compliance is provided. For the 23 waters originally identified, these records date back to 1991 in each case. For the waters identified for the first time in 1999, the comprehensiveness of the records varies. Records are provided where they exist.

Southerness

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Fail

Southerness was identified as an EC Bathing water in 1999 and achieved mandatory passes in 1999 and 2000. However, there were three exceedances of the 95% faecal coliform mandatory standard during 2001, resulting in failure to meet the required overall standard.

Two of the failures followed heavy rain and could possibly be attributed to very high loadings of faecal coliforms, which are known to occur in the River Nith under these conditions. However, the third failure occurred during dry weather, and was most likely influenced by discharge from the Southerness sewage settlement tanks. This discharge is due to be upgraded to full treatment before 2005.

Additional sources of sewage may contribute to the bacterial load such as the sewage works at Dumfries (Troqueer, Dalscone and Lincluden), Cargenbridge, Airds Point tidal tanks and other small villages served by septic tanks (Glencaple, Kelton and Carsethorn). There are some additional small watercourses close to Southerness Point which may influence microbiological counts at the bathing water at times of heavy rainfall.

The high coliform level of the River Nith during and after heavy rain is being studied to determine whether agricultural run-off or storm overflows are the main source and appropriate remedial measures will then be sought.

Sandyhills

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-M	Fail	Fail	Pass-M	Fail	Fail

The bathing water at Sandyhills had three faecal coliform mandatory limit exceedances during the 2001 season. Although an abnormal weather waiver for 4 July would have been granted due to a one in five year rain storm, overall compliance was still only 90%, rather than the 95% required. The abnormal weather replacement sample met the mandatory standards.

Sandyhills has failed to achieve compliance with the EC standard four times in the past six seasons and the reasons for this have been investigated. There are no large sewage discharges but the nearby land is farmed intensively. The two main watercourses flowing into the bay, Fairgirth Lane and Southwick Water, both drain agricultural land and have been found to carry very high levels of agriculturally derived faecal bacteria during wet weather. Efforts involving the farming community will be made to try to reduce these diffuse sources of pollution. The potential impact of a small local sewage discharge from a caravan site will also be investigated.
All the bacterial quality standard exceedances at this site occurred during wet weather.

Rockcliffe

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Fail	Pass-M

Rockcliffe was identified as an EC bathing water in 1999 and achieved a mandatory pass that year. However, the required environmental quality standard was not met in 2000. A new sewage pumping station and storm overflow to serve the area are planned and should be operational by mid-season 2002. The bathing water at Rockcliffe nevertheless recorded a mandatory pass for the 2001 season, with all individual samples meeting both the total and faecal coliform EC quality standards.

Brighouse Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M

Brighouse Bay was identified as an EC bathing water in 1999 and achieved mandatory passes in 1999 and 2000. Another mandatory pass was achieved for 2001 and all individual samples met both EC coliform bacterial standards.

The Brighouse Bay Holiday Park WWTP discharges approximately 1 km to the south of the bathing water. This discharge receives both secondary sewage treatment and filtration through a reed bed system and the final effluent is of good quality.

Carrick Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	PassM	Pass-M	Pass-M

Newly identified in 1999, Carrick Bay achieved mandatory passes in 1999 and 2000. Because of movement restrictions to prevent possible spread of foot and mouth in 2001, there was no access to Carrick Bay until 17 August. Consequently, it was only possible to take 12 samples during the last part of the 2001 bathing season. However, all 12 samples met the European mandatory quality requirements, so another overall pass was achieved for the 2001 season.

Threats to the quality of this bathing water are minimal. There are no major sewage or freshwater inputs nearby. A small number of holiday chalets are located in the vicinity but the septic tank effluent from each chalet is discharged to soakaways.

Girvan

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
PassM	Fail	Pass-M	Fail	Fail	Fail	Fail	Fail	Pass-M	Pass-M	Pass-M

The bathing water at Girvan had a poor record of compliance with EC standards before 1999. However, since then successive phases of a major new sewerage and sewage treatment scheme have been completed, with pumping stations and full secondary treatment being in place for the first time during the 2001 season. These investments have significantly improved water quality and a third successive pass of the EC mandatory standards was achieved in 2001.


Turnberry

Turnberry

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Fail	Fail	Fail	Fail	Pass-M	Fail	Fail	Pass-M	Fail

Turnberry failed to meet the EC mandatory quality standards for bathing waters in 2001. This bathing water has a poor compliance record, although it did achieve a mandatory pass in the 2000 season. The Milton Burn, which flows into the nearshore waters adjacent to the bathing water, receives a sewage effluent discharge from Kirkoswald WWTP, together with an associated storm overflow. A discharge of sewage effluent from Turnberry Hotel is made directly to the Firth of Clyde at the bathing water. Following recent upgrading, the quality of these two sewage discharges was very high in 2001. Both effluents 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 .

However, the surrounding area is farmed quite intensively. Both samples with high bacterial counts, which caused the overall failure, were taken during wet weather. Failure to achieve the EC standard is most likely due to agricultural pollution and storm water discharge at Kirkoswald. This is being further investigated.

A new sewerage scheme is under construction to 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 mean that the Turnberry Hotel discharge will be abandoned and replaced by a pumping station with no overflow.

Additional samples taken during dry weather all met the EC standards and if compliance were to be assessed only on the basis of these, then an overall pass would be achieved.

Ayr South

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Fail	Fail	Pass-M	Pass-M	Pass-M	Fail	Fail	Fail	Fail

Ayr South has failed to meet the EC mandatory standard for the last four years. In 2001, only 85% rather than the required 95% of samples met the relevant quality standards. Two of the exceedances occurred during wet weather and all three while flow in the local rivers was high. Twenty samples taken during dry weather all met the required standards.

The pumping station at Newton, serving the new Ayr sewerage scheme became operational on 1 June 2001. Thereafter, sewage was pumped to the Meadowhead long sea outfall near Irvine. However, the new scheme was not fully operational as a number of combined sewer overflows were not connected to the system during the season. Consequently, the nearshore waters remained susceptible to occasional sewage overflows after heavy rainfall.

The bathing waters also receives freshwater inputs from the River Doon, Slaphouse Burn and River Ayr. Major investigative studies, carried out in 1999, revealed that these, especially the Rivers Ayr and Doon, can result in significantly higher levels of faecal coliform bacteria in nearshore waters, particularly when river flows are high.

Prestwick

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Fail	Fail	Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-M	Pass-M

Prestwick recorded a mandatory pass for the 2001 season. This level of pass has now been achieved for six of the past seven years.

The bathing water at Prestwick does not have a direct sewage outfall nearby, although there are storm overflows but it has been demonstrated previously that sewage discharged from Ayr's Newton and Euchar Rocks outfall pipes, approximately 2.5 km south of Prestwick, can result in localised significant microbiological and aesthetic pollution. However, since the pumping station at Newton became operational during the 2001 season, the sewage which was previously discharged from all the Ayr outfall pipes is now pumped to the Meadowhead outfall.

Troon South

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Fail	Pass-M

Compliance of the bathing waters at Troon with EC standards has always been marginal, but following the only failure in 2000, the Directive's mandatory quality standards were again met in 2001.

There are no sewage outfalls in the vicinity of Troon South beach. However, taking many samples at one time along the whole coastal stretch has demonstrated that elevated concentrations of sewage-derived bacteria can occur during certain conditions of wind, tide and sea. Such occurrences should be reduced by the progressive improvement of sewage collection and treatment arrangements along the Ayrshire coast.

Irvine

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Fail	Fail	Pass-M	Pass-M	Fail	Fail	Fail	Pass-M	Pass-M

The bathing water at Irvine has achieved the mandatory EC quality standards for the last two years, following a poor record of compliance. These passes have, however, been relatively borderline and extensive investigations into the threats to bathing water quality on this beach have continued.

These studies have shown that sewage effluent from the Irvine and Garnock Valley sewers were the major sources, contributing about 90% of bacteria overall. However, under specific conditions of wind, tide and freshwater flow, bacterial loading from the rivers Garnock and Irvine can predominate and these river sources have been implicated as the main cause of failure of monitoring samples taken on some days in recent years. Commissioning of the new sewage treatment works at Meadowhead before the 2002 bathing season is nevertheless expected to give substantial future water quality improvements.

Children playing at Prestwick beach

Saltcoats

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Fail	Fail	Fail	Fail	Pass-M	Fail	Fail	Pass-M	Fail	Fail

Saltcoats has failed to meet the EC mandatory quality standard for bathing waters in four of the last five years. Four samples failed to achieve the faecal coliform mandatory standard in 2001, so overall compliance was only 80%, well below the 95% required.

The cause of these failures has been thoroughly investigated and effluent from the Garnock Valley sewer has been clearly shown to be the predominant cause of failure. This should be improved when the Ayrshire sewage treatment scheme is commissioned in 2002.

It has also been found that the local Stanley Burn could be a contributor to faecal coliform concentrations under high flow conditions. However, failure of even the additional dry weather samples taken in 2001 further confirmed the Garnock Valley sewer as the primary cause of failure.

Millport, Cumbrae

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Fail

Millport was identified as a bathing water in 1999 and achieved mandatory passes in 1999 and 2000. However, this has not been maintained, with two faecal coliform mandatory limit exceedances recorded in 2001 giving overall compliance of only 90%, below the 95% required.

The causes of this failure will be investigated but the ten septic tank outfalls in the vicinity of the bathing water are strongly implicated. Previous reports have warned that bacterial and aesthetic quality of Millport Bay could be compromised under particular combinations of tidal state, current movement, wind velocity, rainfall and the number of tourists visiting the island.

Luss Bay, Loch Lomond

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M

Luss Bay was identified as a bathing water in 1999 and was first sampled by SEPA that year. It has met the EC Directive's mandatory quality standards each year, but not 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 is being assessed and further action will be taken as required.

Ettrick Bay, Bute

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Fail	Fail	Fail

Ettrick Bay was identified as a bathing water in 1999 and was first sampled then, but it has never met the EC Directive's quality standards.

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

Machrihanish Bay, Kintyre

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M

Machrihanish Bay was identified as an EC bathing water in 1999 and has achieved a mandatory pass each year since then.

The potential local source of pollution is the nearby Machrihanish Water. A few small sewage sources discharge into the catchment but are anticipated to be diverted to Campbelltown. The Machrahanish Water catchment does receive 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.

Ganavan Bay (North of Oban)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M

Ganavan Bay, identified as a bathing water in 1999, again achieved a mandatory pass in 2001, although not by a wide margin.

A sewage outfall serving a resident population of 9,000 (rising to 20,000 in summer) discharges 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. The discharges from these tanks can result in greatly elevated bacterial levels 0.5 km from the bathing water sampling station. Consequently, under certain conditions of wind, current movement and tides, the microbiological quality of the bathing water may be compromised by these discharges. Future action will be targeted at reducing this risk.

Morar Beach (South of Mallaig)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-G	Pass-M	Pass-M

A 7 km stretch of the Morar coast was identified as a bathing water in 1999. Samples are taken from the most populated site in Lon Liath Bay, adjacent to the golf course. A mandatory pass was achieved for the 2001 season.

Despite improvements to the sewage treatment facilities serving Morar, Mallaig and Arisaig, the results of microbiological analysis on the bathing water samples show little change. There are numerous small sewage effluent discharges from caravan and camping sites and the coastal land is extensively grazed by livestock. SEPA has undertaken inspections of known discharges and is seeking progressive improvements. An action plan, for implementation in 2002, will investigate the diffuse and point source discharges and direct efforts to improve water quality.

Dunnet Bay, Caithness

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	Pass-G	Pass-G	Fail	Pass-G	Pass-M	Pass-G

Dunnet Bay was identified as a bathing water in 1999, although it had previously been monitored as a non-identified beach. This year it met the EC Directive's more stringent guideline quality standards.

There is an input of sewage to the Bay from Castletown. In order to improve the quality of the sewage discharged into the Bay, automatic micro-screens were installed by the Water Authority during November 2000. There will be further improvement when Castletown is connected to the new Thurso WWTP, which is due to be commissioned in 2005.

Dornoch Beach (Caravan Park)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	Pass-G	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G	Pass-G

Dornoch Beach was identified as a bathing water in 1999, after several years of monitoring as a non-identified beach by SEPA. In 2001 it again achieved a guideline pass.

The beach at Dornoch is a popular destination for visitors and locals who value the high standard of the bathing water. The recreational facilities nearby include a children's play park, a caravan and camp site and a renowned golf course. Dornoch WWTP was commissioned in 1993 and in November 2000 the village of Camore was connected to the works, significantly improving the quality of the Camore Burn which flows directly into the bathing water.


Dores, Loch Ness

Dores, Loch Ness

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M

An area of Loch Ness next to the village of Dores was formally identified as a bathing water in 1999. This is one of only two freshwater sites in Scotland and again achieved a mandatory pass in 2001.

There are several septic tank inputs to Loch Ness near to the designated area which may have an impact on the quality of the bathing water. Following discussions with SEPA, NoSWA have agreed to upgrade the existing septic tank at Dores or build a new Waste Water Treatment Plant by 2003. The new WWTP will be designed to protect the identified bathing water.

Nairn Central

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-G	Fail	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G

After nine years of monitoring as a non-identified beach, Nairn Central was identified as a bathing water in 1999. The site achieved a guideline pass in 2001 despite poor weather conditions.

Water quality at this beach has benefited greatly from upgrading of the Nairn WWTP which was completed before the 2000 season. This new plant provides secondary treatment using an activated sludge process and is also fitted with ultraviolet disinfection equipment designed to ensure that guideline bathing water standards are met. In addition SEPA has issued consents for the storm overflow discharges with conditions which are designed to ensure compliance with the UWWT Regulations and to protect the bathing water. NoSWA has carried out works to improve these intermittent discharges and decrease their frequency of operation.

Nairn East

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-G	Pass-M

This popular expanse of sand east of Nairn achieved a mandatory pass in 2001. This was a disappointing result following the considerable investment by NoSWA to improve the sewerage infrastructure and protect the bathing water (see text for Nairn Central).

The apparent deterioration in water quality at Nairn East may be attributed to the considerable intrusion of freshwater from the River Nairn along the eastern coastline. Periods of high rainfall may have increased diffuse agricultural inputs and storm overflow discharges to the river which impact on the quality of the bathing water near the mouth of the river. These potential polluting impacts will be further investigated and corrective action taken as required.

Cullen

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-G	Pass-G	Pass-M	Pass-G	Pass-G	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-M

Cullen has an attractive sandy beach which is popular with school groups and families. During the 2001 bathing season, Cullen achieved a mandatory pass which was disappointing as its compliance over the previous two years has been at the guideline level.

No definite reason can be given for this apparent drop in standard, but there is likely to have been a contribution from the two unsatisfactory sewage overflows near the beach area. These discharged more frequently during summer 2001 due to the relatively wet weather.

As part of the Moray Firth sewage treatment project the main flow from these unsatisfactory discharges will be intercepted and pumped along the coast to Buckie for full treatment. These works are due to be in place in June 2002. The new pumping station at Cullen has been designed to meet the requirements of EC directives and allow the beach to achieve guideline quality standards.

Inverboyndie

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-M

Inverboyndie has a very popular beach which attracts many walkers, swimmers, surfers and windsurfers. This bathing water has been monitored for many years and acquired EU designation as an identified bathing water in 1999. Inverboyndie achieved a mandatory pass in 2001.

An unsatisfactory NoSWA sewage discharge is located at the west end of the beach. However this will be linked into the Banff, Macduff sewage treatment scheme by the end of June 2002, leaving just a pumping station storm and emergency overflow as the only potential sewage discharge into the beach area. The Inverboyndie Burn also discharges to sea at the western end of the beach.

Rosehearty

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G	N/D	N/D	Pass-G	Pass-M	Pass-M

This beach was designated as an identified bathing water for the first time in 1999, although it has been monitored intermittently since 1989. It achieved a mandatory pass in 2001. As with the previous year, it failed to achieve guideline compliance. This is perhaps surprising given that there are no continuous sewage or river discharges to the shore in the vicinity.

The old untreated sewage outfall serving the town has been replaced by a pumping station which now pumps sewage to the new Fraserburgh WWTP. The pumping station has a consent to discharge screened sewage only under certain extreme storm conditions and in an emergency.

Fraserburgh

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-M	Fail

This is a popular sandy beach adjacent to the town. The Fraserburgh bathing water failed to meet the mandatory EC quality standards in 2001 by a substantial margin. Excessive sewage bacteria concentrations were found even during dry weather.

There were twelve untreated sewage discharges in the vicinity of the bathing water. However, major works were carried out during the early part of the bathing season in 2001 and these local discharges are now pumped 3 km west of the bathing water, where full biological treatment and UV disinfection will be provided before discharge through a new outfall. Attention has since been focussed on the Kessock Burn, which discharges to this bathing water. Initial findings have shown that a surface water discharge can contaminate the burn and potential polluting sources in the urban drainage system are currently being investigated.

Fraserburgh (Philorth)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	Pass-G	Pass-G	Pass-M	Pass-G	Pass-M	Pass-G	Pass-G	Pass-G

The extensive sandy beach at Philorth is some distance from Fraserburgh and adjacent to the waters of Philorth Local Nature Reserve. This bathing water has achieved guideline EC quality standards every year since 1999.

Philorth is a popular recreational and windsurfing area and although the Water of Philorth flows into the sea at one end of the beach, there are no sewage discharges in the immediate vicinity.

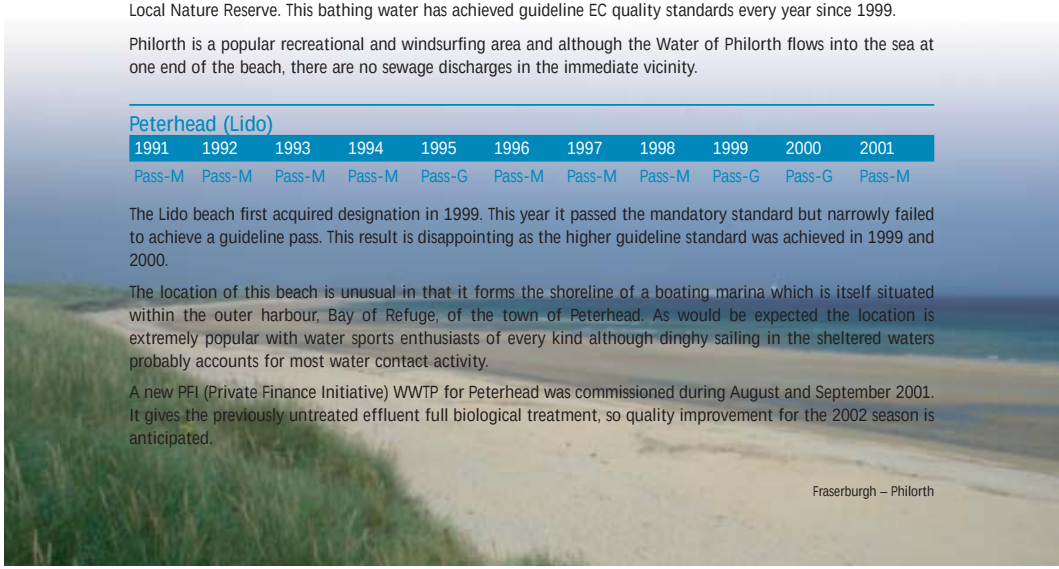
Peterhead (Lido)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-M

The Lido beach first acquired designation in 1999. This year it passed the mandatory standard but narrowly failed to achieve a guideline pass. This result is disappointing as the higher guideline standard was achieved in 1999 and 2000.

The location of this beach is unusual in that it forms the shoreline of a boating marina which is itself situated within the outer harbour, Bay of Refuge, of the town of Peterhead. As would be expected the location is extremely popular with water sports enthusiasts of every kind although dinghy sailing in the sheltered waters probably accounts for most water contact activity.

A new PFI (Private Finance Initiative) WWTP for Peterhead was commissioned during August and September 2001. It gives the previously untreated effluent full biological treatment, so quality improvement for the 2002 season is anticipated.



Fraserburgh – Philorth

Cruden Bay

Cruden Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-M	Fail	Fail	Pass-M	Fail	Pass-M

The beach at Cruden Bay met EC mandatory quality standards in 2001, an improvement on last year's overall failure.

An unsatisfactory NoSWA short sewage outfall discharges to sea immediately adjacent to the bathing water. This is believed to be the primary cause of pollution of the local waters, although there is also a fairly large river receiving sewage from two known storm overflows flowing into the same end of the bathing water. The main unsatisfactory discharge is due to be pumped to the new Peterhead treatment plant prior to the 2002 bathing season and this will greatly benefit bathing water quality.

Balmedie

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-G	Pass-G	Pass-G	Pass-M	Pass-M	Pass-M	Pass-G	Pass-M	Pass-M

Balmedie is a very popular and extensive sandy beach adjacent to the Balmedie Country Park. It was newly identified as an EC bathing water in 1999 although it has been monitored for many years. A mandatory pass was achieved in 2001.

For the second year in succession the beach marginally failed to meet the guideline standard. Work is due to start in spring 2002 on a new NoSWA sewage treatment plant to give full secondary treatment to all sewage from Balmedie and the nearby villages of Newburgh and Collieston. Standards based on mathematical modelling will be set for the new discharge to ensure that guideline EC quality standards will be achieved.

Aberdeen

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-M	Pass-M	Pass-G	Pass-M	Pass-M

Aberdeen has an extensive sandy beach which is well used for water sports and sea bathing. Aberdeen achieved a mandatory pass in 2001, having last reached guideline quality in 1999.

The major WWTP at Persley, which discharges to the River Don, has recently been upgraded and now includes ultra violet disinfection. It is anticipated that the new secondary WWTP at Nigg and improvements at Persley and to some of the significant storm overflows to be carried out by NoSWA in the Aberdeen area over next few years will result in a noticeable improvement in water quality.

Stonehaven

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	N/D	Fail	Fail	Pass-M	Pass-M

Stonehaven is a very popular coastal resort which is well used by water sports enthusiasts. The bathing water was first designated in 1999 but has been monitored since the 1980s. Stonehaven has again achieved the mandatory standard in 2001, as in 2000.

Failure to meet the mandatory standard in 1998 and 1999 were considered to be due to a combination of weather conditions and a sewer defect which was subsequently repaired. It is expected that further improvements to the local sewerage infrastructure will take place by 2004, by which time sewage effluent from Stonehaven will be pumped to the Aberdeen treatment plant and long sea outfall at Nigg Bay. This is expected to result in further improvements to bathing water quality.

Montrose

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-G	Pass-M	Pass-M	Pass-G	Fail	Pass-G	Pass-G	Pass-G

The bathing water at Montrose has achieved guideline passes since 1999.

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

Commissioning of Montrose WWTP commenced in September 2001. Sewage from the Montrose catchment will receive secondary treatment by the end of January 2002. Existing outfalls will be retained as storm overflows, extended to below mean low water spring where necessary, with storm storage and screening prior to discharge.

SEPA has required that the upgrading of these works will be compatible with compliance with the EC Bathing Water Directive's stringent guideline bacterial quality standards, thus reducing the risk of future pollution of these waters.

Arbroath (West Links)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G

The identified bathing water at Arbroath (West Links) failed the mandatory standards between 1988 to 1991, but has passed since 1992 following improvement works carried out between 1991 and 1993. During the 2001 bathing season, Arbroath (West Links) achieved its first ever guideline pass.

In accordance with the requirements of the EC Urban Waste Water Treatment Directive, a new sewage treatment works is in final stages of commissioning near Hatton, south west of Arbroath. In late 2001, sewage flows from the Arbroath catchment received secondary treatment at Hatton during the commissioning process of this new works. SEPA has required that the new works are designed to ensure that the Bathing Water Directive's guideline quality standards are met throughout the bathing waters.

Carnoustie

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G

After 1996, when Carnoustie achieved a very marginal mandatory pass, NoSWA began to disinfect the town's sewage effluent before discharge during the bathing season. This move, which was seen as an interim measure pending the construction of an improved WWTP, improved bacterial water quality. Prior to the 1998 bathing season, NoSWA constructed a new tank sewer, to increase the storage capacity of the sewerage system and thus reduce storm overflows during heavy rainfall. Since 1999 guideline passes have been achieved at Carnoustie.

Since the 2001 bathing season, all flows from the Carnoustie catchment are being pumped to the new Hatton treatment plant (see Arbroath (West Links)), which is due to be fully commisioned before the 2002 bathing season. Existing outfalls will be retained as storm overflows, extended where necessary, with storm storage and screening prior to any discharge. SEPA has required that the upgraded works are designed to ensure that the stringent guideline quality standards are met at Carnoustie.

St. Andrews West Sands

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-M	Pass-G	Pass-G	Pass-G

St. Andrews West Sands consistently achieved a guideline pass between 1992 and 1997. Heavy rainfall during 1998 led to an increase in the number of discharges from storm sewer overflows. This had a negative effect on bathing water quality, causing St. Andrews West Sands to only achieve a pass of the mandatory standards that year. St.Andrews West Sands has achieved passes of the guideline standard 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. Storm tanks were also required in 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 and should safeguard future water quality.

St Andrews East Sands

St. Andrews East Sands

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Fail	Fail	Pass-M	Pass-M	Pass-G	Pass-M	Fail	Pass-M	Pass-M

This bathing water was newly identified in 1999, though it has been monitored by SEPA and its predecessors for many years. St. Andrews East Sands achieved mandatory passes between 1995 and1998, and achieved a guideline pass in 1997. However, St.Andrews East Sands narrowly failed to achieve a mandatory pass in 1999. This was caused by the operation of storm overflows during very wet weather, as well as a combination of low tide and a strong onshore wind returning some of the flow from the East Sands overflow to the shore. In 2000 and 2001, St. Andrews East Sands achieved a mandatory pass of the Directive's coliform standards.

The new works described above for St. Andrews West Sands should ensure future Directive compliance at both St. Andrews bathing waters.

Kingsbarns

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-M	Fail

Kingsbarns was newly identified in 1999, though it has been monitored by SEPA and its predecessors since 1993. Kingsbarns met the mandatory standards consistently from 1993 and achieved a guideline pass in 1999. However, in 2001 Kingsbarns failed to reach the mandatory standard for faecal coliforms, with 90% instead of the required 95% of samples meeting the mandatory standard.

There is a small WWTP providing primary treatment and screening which discharges, via a short outfall, to the north of the bathing water. Improvements will be in place for the 2002 bathing season, with full secondary treatment and outfall extension by 2003.

One sample failed after a period of very light rain (1.8 mm) in the previous 24 hours. This sample was taken at low water and a strong north westerly wind was recorded. It was very likely that these conditions were directing the treated and diluted sewage plume to the nearshore waters of Kingsbarns.

Crail (Roome Bay)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-G	Fail	Pass-G	Pass-G	Pass-G	Pass-G	Pass-M	Pass-G	Pass-G	Pass-G	Pass-G

Newly identified in 1999, the bathing water at Crail (Roome Bay) has nevertheless been monitored by SEPA and its predecessors for many years. With the exception of 1992, the bathing water has achieved mandatory passes since 1989, and also achieved guideline passes in many of these years, including the last four.

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 next to the harbour. In order to rectify this and to meet SEPA quality standards, ESW have provided a new WWTP and long sea outfall at Kilminning, to the east of the town. The effluent from Sauchope Caravan Park was connected to the new WWTP during 2001, and this should further improve water quality. 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)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-G	Pass-G	Pass-G	Pass-G

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

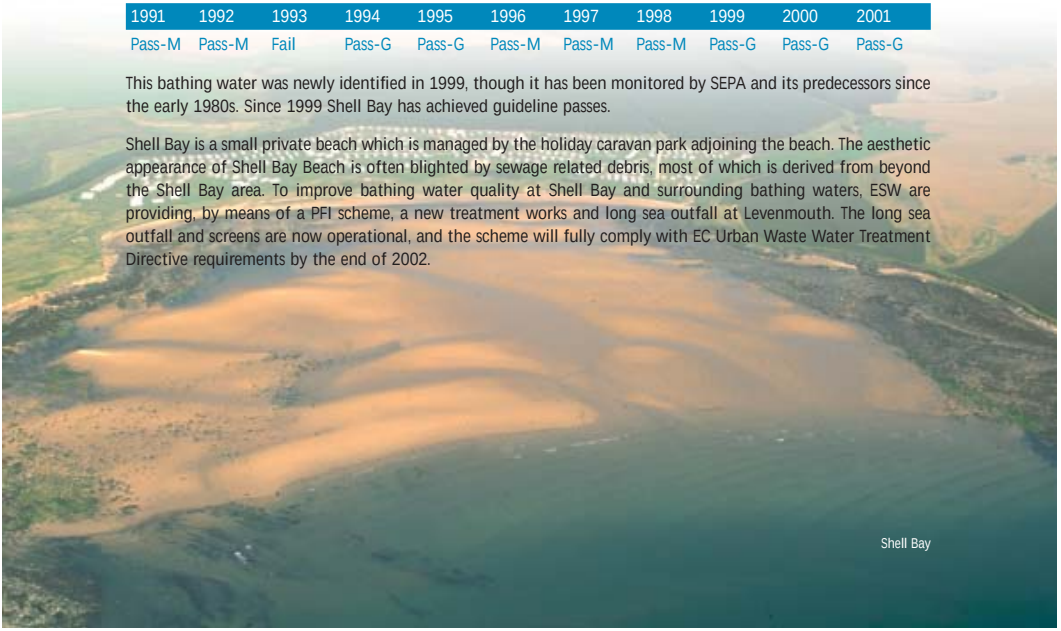
A septic tank and long sea outfall provide effective sewage treatment for the town although aesthetically, the presence of sewage derived debris is sometimes a problem. To further improve bathing water quality, SEPA has notified East of Scotland Water that improved screening and reduced spill frequency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

Shell Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Fail	Pass-G	Pass-G	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G

This bathing water was newly identified in 1999, though it has been monitored by SEPA and its predecessors since the early 1980s. Since 1999 Shell Bay has achieved guideline passes.

Shell Bay is a small private beach which is managed by the holiday caravan park adjoining the beach. 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. To improve bathing water quality at Shell Bay and surrounding bathing waters, ESW are providing, by means of a PFI scheme, a new treatment works and long sea outfall at Levenmouth. The long sea outfall and screens are now operational, and the scheme will fully comply with EC Urban Waste Water Treatment Directive requirements by the end of 2002.



Shell Bay

Kinghorn (Pettycur)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-G	Pass-M

Between 1993 and 1997, Kinghorn (Pettycur) achieved mandatory passes each year. However, the bathing water failed to achieve a mandatory pass in 1998. This was caused by a discharge which resulted in enforcement action under the Control of Pollution Act 1974. In 1999, with the problem corrected, the bathing water once more achieved a mandatory pass. In 2001, Kinghorn (Pettycur) met the mandatory standard. The apparent slight fall in bathing water quality may have been as a result of disturbance caused by drainage engineering works being carried out in the vicinity of the bathing water (see below). Once these works were completed, bathing water quality improved.

Prior to the 1993 bathing season, new treatment facilities and a long sea outfall pipe at Pettycur were commissioned. The work comprised a new interceptor sewer and the treatment of effluent by septic tanks, prior to discharge through a long sea outfall. During the 2001 bathing season, ESW completed a scheme which treats and discharges all Kinghorn's sewage through the long outfall at Pettycur. This should result in EC bathing water standards also being achievable at Kinghorn's other beach near the Harbour.

Burntisland

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Fail	Pass-M	Fail	Fail	Fail	Fail	Fail	Pass-G	Pass-G	Pass-G

Burntisland is another of the 1999 newly identified bathing waters, although it has been monitored since the 1970s. Apart from occasional mandatory passes, bathing water quality was usually very poor at Burntisland, mainly due to sewage that was discharged untreated at nearby short outfalls.

ESW has continued a programme of improvements, started by the former Fife Regional Council, diverting the flows from several old outfalls to a new treatment works, before discharge through a long sea outfall. The untreated discharge from Lammerlaws was diverted to the WWTP at the end of the 1998 bathing season. The new Lochies Road pumping station scheme should be in place before the 2002 bathing season. This will remove the discharge which immediately threatens 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 has achieved good guideline passes every year since 1999.

Aberdour (Silversands)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Pass-M	Pass-G	Pass-G	Pass-M	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G

The very popular bathing water at Aberdour (Silversands) has achieved guideline passes for the last five years. This bathing water also holds a blue flag.

The good water quality in recent years is attributable to the commissioning, in 1993, of the Aberdour (Silversands) long sea outfall pipe.However, the quality of bathing water at Aberdour (Silversands) may be 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. ESW plan to divert Dalgety Bay sewage by means of a pumping station and rising main to Dunfermline WWTP by 2005.

Portobello West (Kings Road)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Fail	Fail	Pass-M	Pass-M	Fail	Pass-M	Pass-M	Fail	Pass-M

Portobello West (Kings Road) was newly identified as a bathing water in 1999, though it has been monitored by SEPA and its predecessors since the early 1980s.

Bathing water quality at this beach has been successively improved over many years by progressive improvement of sewage treatment and sewerage infrastructure. Most recently, significant improvements have been made at Joppa, Pipe Street and Fillyside sewage interceptor and pumping stations. Also, the main treated sewage discharge from the Seafield works has been upgraded to secondary treatment, with ultra violet disinfection during the bathing season.

Despite the improvements, Portobello West (Kings Road) failed the mandatory standard in 2000. Samples taken from the Figgate Burn at the same time as the bathing water surveys strongly implicate the quality of this burn as the cause of the failure. A joint study of the Figgate Burn is being carried out by SEPA and ESW to determine what improvements are required and to identify any other significant sources of coliform contamination.

Portobello Central (James Street)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M	Pass-G

Portobello Central (James Street) became an official EC identified bathing water in 1999. Between 1998 and 2000 it achieved a mandatory pass. This bathing water also shares the same history and plans for improvement as Portobello West (Kings Road).

Following a sewer overflow in May 2000, ESW carried out investigative work of the Joppa sewer. This resulted in removal of debris from the sewer, increasing the flow passing on to Seafield and reducing the frequency of overflow at Joppa. Following these and other improvements by ESW, and consequently reduced occurrence of storm sewage overflows, Portobello Central met the EC bathing water guideline quality standards for the first time in 2001.

Portobello Beach

Seton Sands, Longniddry

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M

Seton Sands/Longniddry was formally identified as a bathing water in 1999, having never previously been sampled by SEPA. During 2001, as with 1999 and 2000, the bathing water achieved a mandatory pass.

Prior to the 1999 bathing season, a number of potential sources of contamination were identified for this site. These included an intermittently contaminated surface water 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.

ESW plans to upgrade Longniddry WWTP by 2003. In 1999, ESW carried out trials of ultra violet disinfection at this WWTP and continued this in 2000 and 2001. The residents of Seton Mains have been consulted on contributing to the connection of their drainage to the main foul sewer and have responded favourably. ESW is drawing up plans for their connection which should start in Spring 2002 and has also upgraded the sewerage system to rectify inappropriate overflows from dual manholes.

Gullane

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-G	Pass-M	Pass-G	Pass-M	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G

The identified bathing water at Gullane has achieved a mandatory pass each year since 1988 and has achieved a guideline pass each year since 1995.

Until recently 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 but was unsightly. Work on connecting up this unsatisfactory discharge to the Gullane WWTP was completed at the end of July 2000. The existing pipe will remain for storm relief, but is designed to overflow less than once in five years.

Yellowcraigs

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G

The identified bathing water at Yellowcraigs has achieved mandatory passes 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, ESW diverted the sewage from Dirleton to the WWTP and long sea outfall pipe to the east of North Berwick. This work was completed during the 1998 bathing season. 1999 was the first complete bathing season following the completion of this work and it is clear that the consequent improvements resulted in Yellowcraigs achieving a guideline pass that year for the first time on record. In 2000 and 2001 Yellowcraig also complied with the guideline standard microbiological parameters, further highlighting the improvement in water quality at this site.

North Berwick Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Pass-M	Fail	Pass-M	Pass-M	Pass-M	Fail	Pass-M	Pass-M	Pass-M	Pass-G

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

Prior to 1995, when the North Berwick WWTP scheme was completed (see North Berwick (Milsey Bay)), North Berwick Bay frequently failed the mandatory standards. While bathing water quality has improved markedly after this date, there are still occasional problems, as highlighted by the failure 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 ESW, no sources have been positively identified at North Berwick Bay. Following a few years of just failing to reach EC guideline standard, North Berwick Bay achieved this excellent bathing water quality for the first time in 2001.

North Berwick (Milsey Bay)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G

The identified bathing water at North Berwick (Milsey Bay) has achieved mandatory passes 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 enhanced primary sewage treatment and discharge of the effluent via a new long sea outfall pipe at the eastern end 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 the guideline values had still not been achieved by 1999. Investigative surveys by SEPA prior to the 2000 bathing season identified two significant sewage sources, which were brought to the attention of ESW for remediation. As a consequence, North Berwick (Milsey Bay) achieved a guideline pass for the first time in 2000 and again in 2001.

Dunbar (Belhaven)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G

The identified bathing water at Dunbar (Belhaven) has achieved mandatory passes each year since 1988, and has achieved guideline passes since 1993.

Surveys carried out in 1988 indicated local pollution of nearshore waters from discharges of untreated sewage to the west and east of Dunbar. Since that time, the outfall pipes responsible for the discharges have been intercepted and diverted to a new long sea outfall, which was commissioned in 1993. Following this, the bathing water has achieved guideline quality standards. Intermittent discharges from the West Barns storm overflow are under investigation. It is expected that further improvements will be carried out by ESW to the West Barns WWTP to ensure that all future EC standards will be met. This will further safeguard achievement of stringent guideline bathing water quality standards.

Dunbar East

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Fail	Pass-M	Fail	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G

The bathing water at Dunbar East has achieved guideline passes each year since 1996, although it was only prior to the 1999 season that it was formally identified as a bathing water.

The sewage treatment facilities and planned improvements for Dunbar are described in the Dunbar (Belhaven) section. During June 2001, there was a problem with Woodbush pumping station. During routine maintenance, when one of the two pumps was removed, the remaining pump broke down. Sewage was discharged only at night, and was tankered to West Barns WWTP during the day. The incident lasted a couple of days and no sewage debris was found on the beach during this time. Thanks to the prompt action by ESW, Dunbar East again achieved the EC Guideline Standard for bathing water quality in 2001.

Whitesands

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G

Whitesands has achieved guideline passes each year since 1988, although it was only in 1999 that it was formally identified under the terms of the Directive.

Whitesands is a shallow enclosed bay, protected from the effects of strong waves and currents by the rocky outcrops at each end. During the 2000 bathing season, a joint study by SEPA, ESW 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
Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G	Pass-G

The identified bathing water at Thorntonloch has achieved guideline passes each year since 1988, although it was only identified as a bathing water under the Directive in 1999. Like Whitesands, this bathing water is also of excellent quality, though strong tidal currents are present, particularly at the west side of the bay during certain combinations of tide and wind.

Thorntonloch

Pease Bay

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-G	Pass-M	Pass-G	Pass-M	Pass-G	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G

The identified bathing water at Pease Bay has achieved mandatory passes each year since 1988, and attained guideline passes in 1999, 2000 and 2001.

The effluent from a privately owned septic tank treatment plant, serving a nearby caravan site on The Bents, 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 9 pm and 7 am. This ensures that maximum initial dilution is available and no effluent is discharged during the day.

Until June 2001, the Cockburnspath Burn received treated effluent from Cockburnspath Village, 1.5 km inland. This was a source of sewage contamination particularly during periods of high rainfall. The effluent from Cockburnspath is now pumped via a new ESW pumping station to a septic tank at Cove for treatment, prior to discharge about 1.5 km north of the bathing water.

St. Abbs

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	Pass-M	Pass-M	Pass-M

St. Abbs was formally identified as a bathing water in 1999, having never previously been sampled by SEPA. During 1999, 2000 and 2001, the bathing water achieved a mandatory pass. St. Abbs was identified because of its use for water sports, particularly scuba diving. It should be noted that there is no safe or explicitly permitted bathing area at St. Abbs.

Sewage from St. Abbs is 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. Plans to pump sewage from St. Abbs to the new WWTP at Eyemouth are being reviewed by ESW as one option to ensure that the Bathing Water Directive's guideline quality standards can be met in the future at St. Abbs, though no date for improvement has yet been set.

St Abbs

Coldingham

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Pass-M	Pass-M	Pass-M	Pass-M	Pass-M	Pass-G	Pass-G	Pass-G	Pass-G	Pass-M	Pass-G

Coldingham, a very popular bathing and surfing beach, was identified as a bathing water in 1999, although it was monitored previously by SEPA and its predecessor. Guideline passes were achieved each year between 1996 and 1999. In 2000, Coldingham narrowly failed to meet the Directive's guideline standard though it did achieve a mandatory pass. All of the individual samples which didn't meet the guideline standard that year occurred during or following heavy rain or storm conditions. In 2001 Coldingham once again met the EC guideline standard.

Sewage effluent from Coldingham is discharged south east of the bathing area close to Yellowcraigs. 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 guideline and even mandatory quality standards. Plans to pump sewage from Coldingham to the new WWTP at Eyemouth are being reviewed by ESW, with alternative upgrade options under investigation. Until these are in place, the threat of bathing water directive failures remains at this location.

Eyemouth

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Fail	Fail	Pass-M	Pass-M	Pass-M	Fail	Pass-M	Fail	Fail	Fail	Pass-M

Eyemouth has been sampled by SEPA and its predecessor since the 1980s. However, it was only formally identified as a bathing water in 1999. Eyemouth failed the mandatory standards each year between 1998 and 2000.

Prior to 2001, untreated sewage from Eyemouth was discharged at two locations either side of the identified bathing water. There are also storm overflow discharges during wet weather via the Eye Water and Harbour. The failures in 2000 and previous years are likely to have occurred as a result of these discharges being partially brought back to shore under certain wind and tide conditions. By the end of the 2001 bathing season sewage effluent, previously discharged via the two historic outfalls, was being screened and discharged through a new long sea outfall. On completion of the WWTP in December 2002, secondary treatment will be applied.

In 2001, Eyemouth met the EC mandatory standard for bathing water quality, however some of the results obtained suggest the Eye Water and Harbour discharges still threaten bathing water quality in the area. SEPA will carry out microbiological investigations on these discharges before next bathing season to locate and identify those that pose the biggest threat to bathing water quality.

In addition to the pre-scheduled bathing water directive samples collected in 2001, a further 20 dry weather research samples were collected. All 20 of these met the EC mandatory standard, though, as with the bathing water directive surveys, the range of results obtained suggested that even in dry weather bathing water quality could be threatened from faecal contamination sources within the harbour and Eye Water.

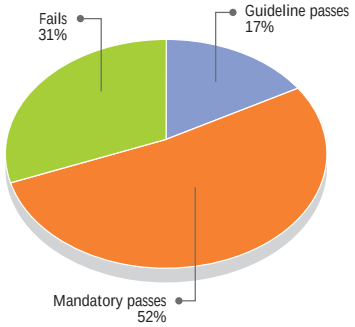
4.4 Results from Non-Identified Coastal and Inland Waters

During the 2001 bathing season, SEPA monitored bathing water quality at an additional 52 coastal and inland sites on at least 20 occasions. Three sites monitored in 2000 were not sampled at this frequency in 2001 due to Foot and Mouth Disease access restrictions. Maps 3 and 4 on pages 39 and 40 show the location of these bathing waters, which tend to be close to large conurbations.

Of these 52 non-identified bathing waters:

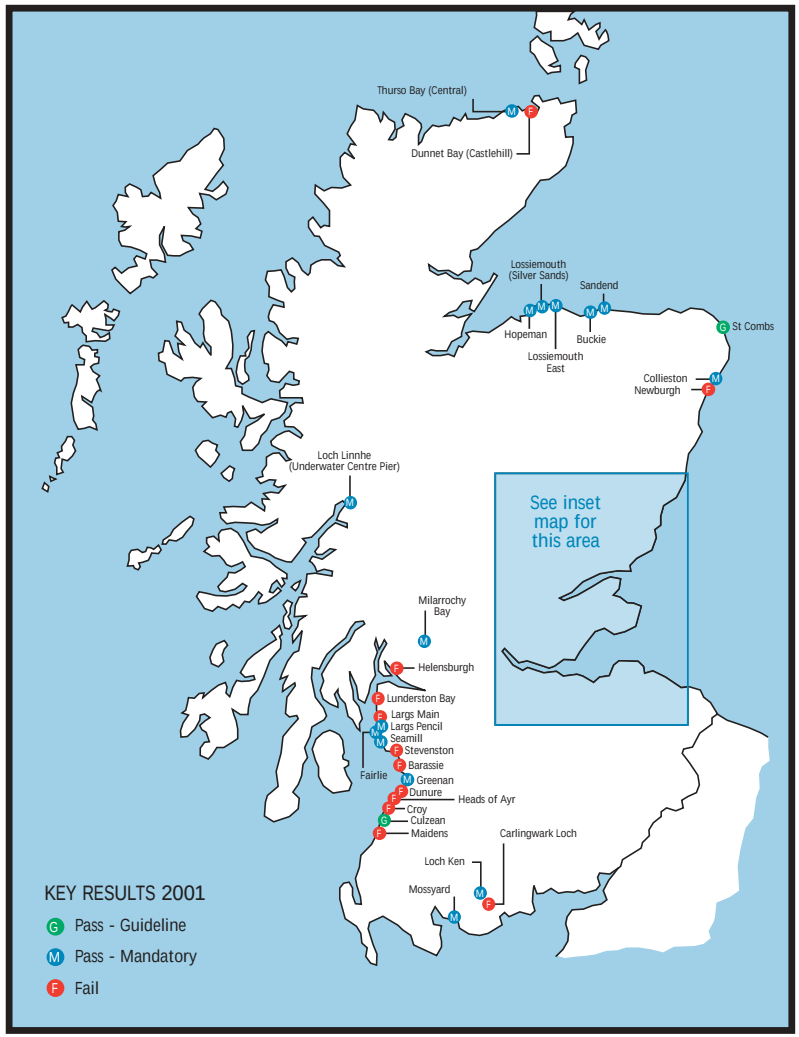
- 27 (52%) achieved mandatory passes of the Directive's coliforms standards;
- 16 (31%) failed to achieve the Directive's mandatory coliform standards;
- 9 (17%) achieved guideline passes of the Directive's microbiological standards.

Figure 5 - Scotland's Bathing Water Results 2001: Non-Identified Coastal and Inland Waters



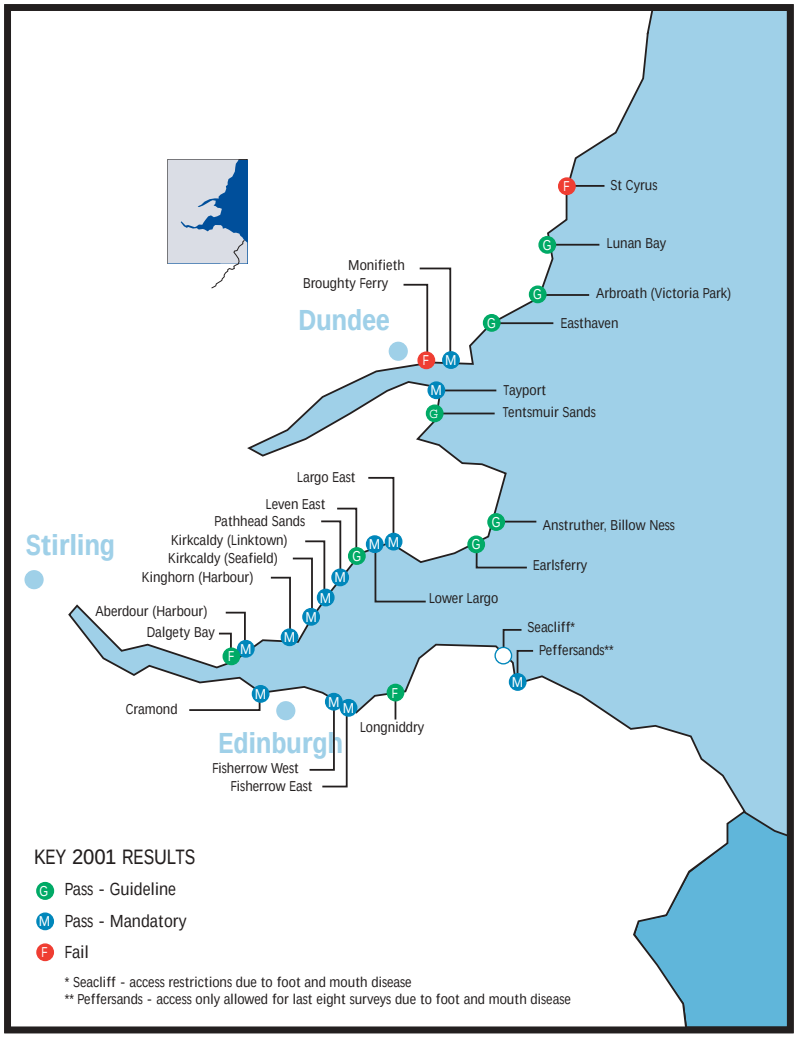
Note that all sites that achieved guideline passes in 2001 also achieved mandatory passes. Monitoring data for these sites can be found in Appendix Two.

Map 3: Location of Non-Identified Coastal and Inland Waters Monitored by SEPA during 2001



Sites sampled at least 20 times during the bathing season

Map 4: Location of Non-Identified Waters Monitored by SEPA during 2001



Sites sampled at least 20 times during the bathing season

5 CONCLUSIONS

The 2001 bathing water quality results for Scotland's 60 EC identified waters are disappointing, with only 85% of these identified bathing waters meeting the EC Bathing Water Directive's mandatory standards, no better than last year's figure. There were however numerous good water quality improvements at both EC identified bathing waters and other recreational waters where new sewerage or sewage treatment schemes had been completed since the year before. This is particularly well illustrated in the south east where guideline compliance at identified bathing waters now stands at 74%.

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 many cases, the responsibility of the Water Authorities. SEPA will continue to work closely with the Water Authorities 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. 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 would still be a risk of some identified bathing waters failing to comply with the Directive's mandatory standards because of the operation of CSOs 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.

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.

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.

APPENDIX ONE

2001 Monitoring Data from Scotland's 60 Identified Waters

		EC Mandatory Standard		EC Guideline Value			
Bathing Water	No. of samples	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	Level of pass
Southerness	20	19	17	13	11	8	Fail
Sandyhills	20	19	17	12	9	5	Fail
Rockcliffe	20	20	20	15	9	10	Mandatory
Brighouse Bay	20	20	20	17	14	13	Mandatory
Carrick Bay++	12	12	12	9	7	7	Mandatory
Girvan	20	20	20	10	7	9	Mandatory
Turnberry	20	20	18	10	9	9	Fail
Ayr South	20	19	17	9	5	7	Fail
Prestwick	20	20	19	14	11	10	Mandatory
Troon South	20	20	19	15	12	7	Mandatory
Irvine	20	19	19	5	6	6	Mandatory
Saltcoats	20	19	16	4	3	6	Fail
Millport, Cumbrae	20	19	18	10	8	13	Fail
Luss Bay, Loch Lomond	20	20	19	10	8	13	Mandatory
Ettrick Bay, Bute	20	19	16	5	3	5	Fail
Machrihanish Bay, Kintyre	20	20	20	16	12	14	Mandatory
Ganavan Bay (North of Oban)	20	20	19	13	8	11	Mandatory
Morar Beach (South of Mallaig)	20	20	20	17	16	17	Mandatory
Dunnet Bay, Caithness	20	20	19	19	17	18	Guideline
Dornoch Beach (Caravan Park)	20	20	20	19	19	18	Guideline
Dores, Loch Ness	20	20	20	11	11	13	Mandatory
Nairn Central	20	20	20	19	18	18	Guideline
Nairn East	20	20	20	16	15	17	Mandatory
Cullen	20	20	20	19	14	16	Mandatory
Inverboyndie	20	20	20	15	15	19	Mandatory
Rosehearty	20	20	20	20	17	16	Mandatory
Fraserburgh	20	19	15	9	7	10	Fail
Fraserburgh (Philorth)	20	20	20	20	20	20	Guideline
Peterhead (Lido)	20	20	20	19	19	17	Mandatory
Cruden Bay	20	20	19	7	4	9	Mandatory
Balmedie	20	20	20	19	15	19	Mandatory
Aberdeen	20	20	20	17	15	18	Mandatory
Stonehaven	20	20	20	15	14	17	Mandatory
Montrose	20	20	20	19	19	20	Guideline
Arbroath (West Links)	20	20	20	18	17	18	Guideline
Carnoustie	20	20	20	19	20	18	Guideline
St. Andrews West Sands	20	20	20	18	19	19	Guideline
St. Andrews East Sands	20	20	19	17	18	15	Mandatory
Kingsbarns	20	20	18	16	16	16	Fail
Crail (Roome Bay)	20	20	20	20	20	20	Guideline
Elie (Woodhaven and Ruby Bay)	20	20	20	17	17	19	Guideline
Shell Bay	20	20	20	19	19	19	Guideline
Kinghorn (Pettycur)	20	20	20	16	15	14	Mandatory
Burntisland	20	20	20	19	20	19	Guideline
Aberdour (Silversands)	20	20	20	20	20	19	Guideline
Portobello West (Kings Road)	20	20	19	18	11	15	Mandatory
Portobello Central (James Street)	20	20	20	19	16	20	Guideline
Seton Sands, Longniddry	20	20	20	20	14	19	Mandatory
Gullane	20	20	20	20	19	20	Guideline
Yellowcraigs	20	20	20	19	19	19	Guideline
North Berwick Bay	20	20	20	19	19	18	Guideline
North Berwick (Milsey Bay)	20	20	20	20	19	19	Guideline
Dunbar (Belhaven)	20	20	20	19	19	19	Guideline
Dunbar East	20	20	20	20	19	18	Guideline
Whitesands	20	20	20	19	18	19	Guideline
Thorntonloch	20	20	20	20	19	19	Guideline
Pease Bay	20	20	20	19	19	19	Guideline
St. Abbs	20	20	20	18	16	17	Mandatory
Coldingham	20	20	20	19	17	19	Guideline
Eyemouth	20	20	19	15	12	17	Mandatory

++ There was no access until 17 August because of foot and mouth disease restrictions.

APPENDIX TWO

Monitoring Data from Non-Identified Coastal and Inland Waters Monitored During the 2001 Bathing Season

		EC Mandatory Standard		EC Guideline Value			
Bathing Water	No. of samples	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	Level of pass
Carlingwark Loch	20	13	16	5	4	10	Fail
Loch Ken	20	20	19	14	15	15	Mandatory
Mossyard	20	20	20	17	15	16	Mandatory
Maidens	20	19	14	6	4	5	Fail
Culzean	20	20	20	19	17	18	Guideline
Croy	20	20	18	12	9	9	Fail
Heads of Ayr	20	19	17	13	10	7	Fail
Dunure	20	19	18	12	11	10	Fail
Greenan	20	20	19	9	7	9	Mandatory
Barassie	20	20	16	6	7	7	Fail
Stevenston	20	19	18	11	9	10	Fail
Seamill	20	20	20	12	11	11	Mandatory
Fairlie	20	20	19	15	9	12	Mandatory
Largs Pencil	20	20	20	12	9	11	Mandatory
Largs Main	20	19	15	6	5	8	Fail
Lunderston Bay	20	19	17	7	5	10	Fail
Helensburgh	20	17	15	7	3	8	Fail
Milarrochy Bay	20	20	19	13	11	12	Mandatory
Loch Linnhe (Underwater Centre Pier)	20	20	20	13	13	17	Mandatory
Thurso Bay (Central)	20	19	19	16	13	16	Mandatory
Dunnet Bay (Castlehill)	20	18	17	6	5	9	Fail
Hopeman	20	20	20	16	12	16	Mandatory
Lossiemouth (Silver Sands)	20	20	20	15	14	18	Mandatory
Lossiemouth East	20	20	19	12	9	16	Mandatory
Buckie	20	20	20	12	11	15	Mandatory
Sandend	20	20	20	16	13	14	Mandatory
St. Combs	20	20	20	20	20	20	Guideline
Collieston	20	20	20	16	12	16	Mandatory
Newburgh	20	19	18	3	0	17	Fail
St. Cyrus	20	19	17	15	13	18	Fail

		EC Mandatory Standard		EC Guideline Value			
Bathing Water	No. of samples	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	Level of pass
Lunan Bay	20	20	20	20	20	20	Guideline
Arbroath (Victoria Park)	20	20	20	19	19	18	Guideline
Easthaven	20	20	20	19	17	19	Guideline
Monifieth	20	20	20	17	12	16	Mandatory
Broughty Ferry	20	19	17	7	6	14	Fail
Tayport	20	20	20	15	10	16	Mandatory
Tentsmuir Sands	20	20	20	19	19	18	Guideline
Anstruther, Billow Ness	20	20	20	17	17	19	Guideline
Earlsferry	20	20	20	20	19	19	Guideline
Largo East	20	20	20	18	16	16	Mandatory
Lower Largo	20	20	20	17	14	17	Mandatory
Leven East	20	20	20	18	17	18	Guideline
Pathhead Sands	20	20	20	17	13	17	Mandatory
Kirkcaldy (Linktown)	20	20	19	12	7	9	Mandatory
Kirkcaldy (Seafield)	20	20	20	17	15	15	Mandatory
Kinghorn (Harbour)	20	20	20	8	7	9	Mandatory
Aberdour (Harbour)	20	20	20	17	11	16	Mandatory
Dalgety Bay	20	18	17	12	11	12	Fail
Cramond	20	20	19	14	8	13	Mandatory
Fisherrow West	20	20	20	11	10	12	Mandatory
Fisherrow East	20	20	20	16	11	17	Mandatory
Longniddry	20	19	18	16	12	16	Fail
Seacliff**	0						-
Peffersands++	8	8	8	7	6	6	Mandatory

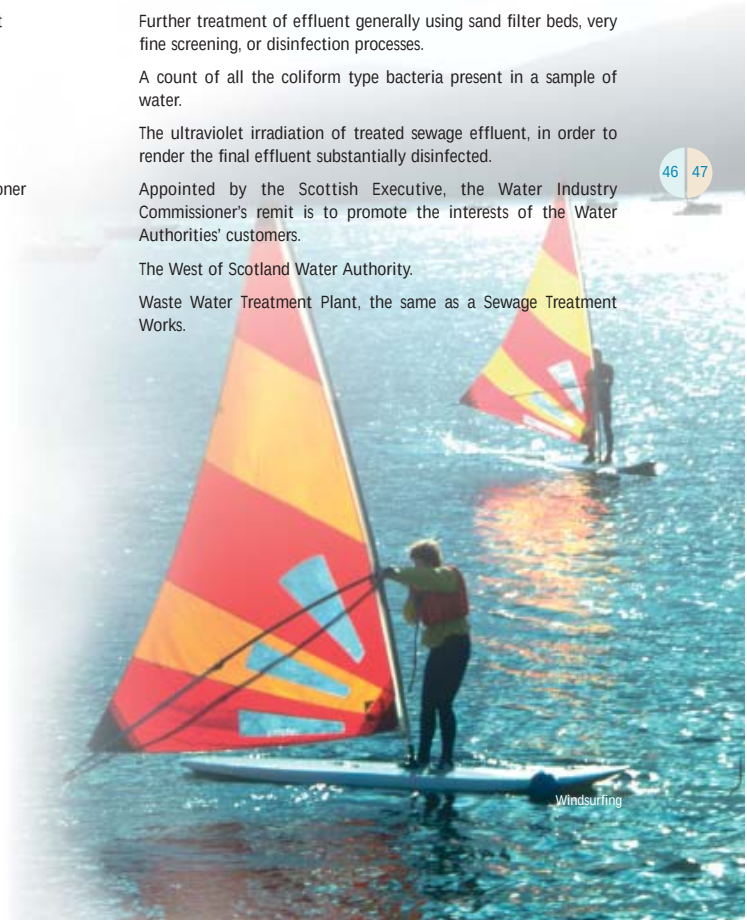
** Seacliff - access restrictions due to foot and mouth disease.

++ Peffersands - Access only allowed for last eight surveys due to foot and mouth disease restrictions.

APPENDIX 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 are 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.
ESW	The East of Scotland Water Authority.
Faecal coliforms and faecal	Types of bacteria found in sewage and animal streptococci 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.
Guideline pass	This indicates that a bathing water met guideline value quality standards 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.
Mandatory standard	A value specified in EC legislation as a mandatory minimum standard to be achieved by Member States.
NoSWA	The North of Scotland Water Authority.
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.
Preliminary treatment	The treatment of wastewater by means of such as screens, macerators and grit separators.
Primary sewage treatment	The treatment of wastewater to settle out suspended solids in primary sedimentation tanks. It is normal for wastewater 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 wastewater 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 sewage treatment	Further treatment of effluent generally using sand filter beds, very fine screening, or disinfection processes.
Total coliforms	A count of all the coliform type bacteria present in a sample of water.
UV 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.
WOSWA	The West of Scotland Water Authority.
WWTP	Waste Water Treatment Plant, the same as a Sewage Treatment Works.



Windsurfing

APPENDIX 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 Appendix Five 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 identified bathing waters are placed on SEPA's website as they are produced through the bathing season.

Water Authorities

West of Scotland Water Authority,
Headquarters,
419 Balmore Road,
Glasgow G22 6NU
Tel: 0141 355 5333
www.westscotlandwater.org.uk

North of Scotland Water Authority,
Headquarters,
Cairngorm House,
Beechwood Park North,
Inverness IV2 3ED
Tel: 01463 245400
www.noswa.co.uk

East of Scotland Water Authority,
Headquarters,
55 Buckstone Terrace,
Edinburgh EH10 6XH
Tel: 0131 445 4141
www.esw.co.uk

A number of other organisations complement SEPA's role in promoting high standards of bathing water quality. The Marine Conservation Society, the UK's only charity solely dedicated to protecting 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. In Scotland, the charity Keep Scotland Beautiful administer 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 which 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 2000-2001, five beaches in Scotland achieved Blue Flag status: Nairn, St. Andrews West Sands, Elie (Woodhaven and Ruby Bay) and Aberdour (Silversands).

Marine Conservation Society,
9 Gloucester Road,
Ross-on-Wye,
Herefordshire,
HR9 5BU
Tel: 01989 566017
www.mcsuk.mcmail.com

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

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

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

APPENDIX FIVE

SEPA CONTACTS

SEPA Corporate Office
Erskine Court
The Castle Business Park
STIRLING
FK9 4TR
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Fax: 01786 446885

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Aberdeen, AB11 9RD
t: 01224 248338
f: 01224 248591

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

Ayr Office
2 Alloway Place, Ayr KA7 2AA
t: 01292 294000
f: 01292 611130

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Stirling Office
Erskine Court, Castle Business Park,
Stirling FK9 4TX
t: 01786 452595
f: 01786 461425

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

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

POLLUTION REPORT LINE
0800 80 70 60

**24 HRS A DAY,
7 DAYS A WEEK**

Floodline
0845 988 1188

Please do not call these numbers for general enquiries

www.sepa.org.uk

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

SEPA Public Relations, Corporate Office, Erskine Court, Castle Business Park, Stirling FK9 4TR
Tel: 01786 457700 Fax: 01786 448040 Email: publicrelations@sepa.org.uk

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