

WATER QUALITY CLASSIFICATION 2001

1. Summary

This report summarises the results of SEPA's monitoring of water quality in Scotland's rivers, estuaries and coastal waters between 1995 and 2001.

The results for 2001 demonstrate improvements in coastal and estuarine waters since 2000 but some deterioration in river water quality. This deterioration has been largely as a result of pollution incidents related to agricultural and industrial activities. Examples are given to illustrate where improvements or deteriorations have happened and the actions SEPA is taking to address the problems.

The results are set out as tables showing the length (in kilometres) of rivers classified by SEPA as Excellent, Good, Fair, Poor or Seriously Polluted (classes A1, A2, B, C and D respectively). Coastal waters, and the area (in kilometres squared) of estuaries are classified as Excellent, Good, Unsatisfactory (fair/poor) or Seriously Polluted (classes A, B, C, D respectively)

Targets have been set for reducing the length or area of class C and D waters. The 2001 results show:

- a reduction of 157 km class C and D rivers between 1999–2001; these waters are, therefore, still on course to meet the improvement target for the period 1999–2006, which is 351 km;
- a reduction of 8.1 km² in the area of class C & D estuaries; this has therefore already exceeded the 1999–2006 improvement target of 6.5 km²;
- a reduction of 62km of class C & D coastal waters between 1999–2001; these waters are therefore on course to meet the improvement target for 1999–2006, which is 145 km.

2. Background Notes

SEPA has previously reported progress towards targets for water quality improvements set for the period 1996–2000. Further targets were set in 2000, on the basis of 1999 water quality, these new targets to be achieved by 2006. The purpose of this paper is to examine progress towards the 2006 targets.

In conjunction with the new set of targets, an improved system for describing river water quality was introduced in 1999/2000. The classification criteria remain unchanged, but are now expressed for a Digitised Rivers Network (DRN), which includes the same river systems as previously, plus islands rivers, and which can be displayed using Geographical Information Systems (GIS). This enables river lengths to be automatically measured and river quality information to be more accessible (at this stage only to SEPA staff, but ultimately also to the public). The apparent length of watercourses covered by the DRN is less than that of the earlier network because it does not include thousands of minor and generally remote headwater tributaries which have never been monitored. Also with the DRN, waters which are not directly monitored are described as being unclassified, and reported as such, rather than being assumed to be of good quality, which was the former practice. It is likely that most waters labelled as unclassified are of at least good quality, as any serious problems would probably have been picked up by existing monitoring further downstream. This revised approach to classification is more precautionary, and considered to be consistent with future requirements.

It is SEPA's intention that the extent of unclassified waters will be progressively reduced to zero by the time EC Water Framework Directive systems are in place in 2006. This will be done by reassessing current stretch allocations, and further developing an extensive network of ecological quality monitoring sites in rural areas which will be infrequently sampled (unless the new sites are found to be not of good quality, in which case the cause of downgrading will be investigated).

For coastal waters, the 1996 improvement targets excluded the islands whose coastlines had not been classified at that time, and also failed to recognise existing problems, particularly in Loch Leven downstream from the former Kinlochleven Aluminium smelter. The 1999 – 2006 targets include these factors. To enable clearer tracking of the 1996 – 2000 and 1999 – 2006 target attainments, two sets of figures are given for 1999 and 2000, ie excluding and including respectively the islands and other downgradings not recognised in 1996.

During 2001, SEPA changed its internal management structure and the former regions (East, West and North) were renamed South East Area, South West Area and Highlands, Islands and Grampian (HIG). These changes are also reflected in the tables.

2 River Water Quality

Table 1: River classification for the years 1996 to 2000 (Old Network)

Region	Year	A1 Excellent km	A2 Good km	B Fair km	C Poor km	D Seriously Poll. km	Total km
NORTH *	1996	20063	1838	384	155	49	22490
NORTH *	1997	19366.9	2305.1	603.0	158.0	57.0	22490
NORTH *	1998	19451.6	2207.8	631.3	157.4	41.9	22490
NORTH *	1999	19366.5	2212.4	769.8	120.0	21.3	22490
NORTH *	2000	19146.9	2492.6	726.7	113.1	10.7	22490
EAST	1996	8774	2064	797	587	49	12271
EAST	1997	8730.5	2195.8	706.7	590.5	47.5	12271
EAST	1998	8496.5	2513.4	753.4	467.9	39.8	12271
EAST	1999	8452.8	2449.4	872.1	465.5	31.2	12271
EAST	2000	8476.8	2420.9	952.3	383.3	37.7	12271
WEST	1996	8906	4285	1825	437	40	15493
WEST	1997	8967.3	4052.0	2026.4	410.1	37.2	15493
WEST	1998	8322.3	4250.9	2356.8	532.9	30.1	15493
WEST	1999	8431.7	4551.1	1883.6	585.8	40.8	15493
WEST	2000	8853.4	4491.0	1737.6	376.8	34.4	15493
TOTAL	1996	37743.4	8187.4	3006.4	1178.7	138.1	50254
(%)		(75.1)	(16.3)	(6.0)	(2.3)	(0.3)	(100)
TOTAL	1997	37064.7	8552.9	3336.1	1158.6	141.7	50254
(%)		(73.8)	(17.0)	(6.6)	(2.3)	(0.3)	(100)
TOTAL	1998	36270.4	8972.1	3741.5	1158.2	111.8	50254
(%)		(72.2)	(17.9)	(7.4)	(2.3)	(0.2)	(100)
TOTAL	1999	36251	9212.9	3525.5	1171.3	93.3	50254
(%)		(72.1)	(18.3)	(7.0)	(2.3)	(0.2)	(100)
TOTAL	2000	36477.1	9404.5	3416.6	873.2	82.8	50254
(%)		(72.6)	(18.7)	(6.8)	(1.7)	(0.2)	(100)
CHANGE (+/- %)	96 to 97	(-1.8)	(+ 4.5)	(+ 11.9)	(-1.7)	(+2.6)	-
CHANGE (+/- %)	96 to 98	(-3.9)	(+9.6)	(+24.5)	(-1.7)	(-19.0)	-
CHANGE (+/- %)	96 to 99	(-4.0)	(+12.5)	(+17.3)	(-0.6)	(-32.4)	-
CHANGE (+/- %)	96 to 00	(-3.4)	(+14.9)	(+13.6)	(-25.9)	(-40.0)	-
Change in length of Classes C and D 1996–2000						- 360.8 km (-27.4%)	
Target change in length of Classes C and D 1996–2000						- 263.4 km (-20%)	
Target exceeded							

* Figures exclude Islands

Table 2: River classification for the years 1999 to 2001 (DRN)

Area	Year	A1 Excellent km	Unclass- ified km	A2 Good km	B Fair km	C Poor km	D Ser. Poll. km	Total km
HIG	1999	N/A	N/A	N/A	477.6	153.3	29.0	11404.2
HIG [▼]	2000	960.9	8259.3	1645.8	385.7	138.0	14.6	11404.2
HIG	2001	1421.0	7950.3	1560.9	384.6	85.9	21.8	11424.6
South East	1999	1120.0	2701.6	1892.8	902.8	450.8	19.7	7087.7
South East	2000	1427.4	2119.0	2271.9	919.4	393.0	24.8	7155.3
South East	2001	1524.0	1666.9	2446.7	996.1	520.1	17.1	7170.9
South West	1999	575.1	2340.0	2262.1	1196.6	473.6	42.5	6889.9
South West	2000	783.2	2437.3	2169.5	1148.1	322.9	34.0	6895.1
South West	2001	929.5	2342.9	2317.3	958.4	323.4	43.5	6915.1
TOTAL	1999	N/A	N/A	N/A	2577	1077.7	91.2	25381.8
(%)					(10.1)	(4.2)	(0.4)	(100)
TOTAL	2000	3171.5	12815.6	6087.2	2453.2	853.9	73.4	25454.6
(%)		(12.5)	(50.3)	(23.9)	(9.6)	(3.4)	(0.3)	100.0
TOTAL	2001	3874.5	11960.1	6324.9	2339.1	929.4	82.5	25510.5
(%)		(15.2)	(46.9)	(24.8)	(9.2)	(3.6)	(0.3)	(100)
CHANGE (+/- %)	99 to 00			-4.8	-20.8	-19.5		-
CHANGE (+/- %)	99 to 01			-9.2	-13.8	-9.5		-
Change in length of Classes C and D 1999–2001					-157km(-13%)			
Target change in length of Classes C and D 1999–2006					-351km (-30%)			

▼HIG figures for 2000 amended from those previously reported due to inclusion of toxic substances classification.

South East Scotland

Improvements

- 8.5 km of the **River Tay** has improved from class A2 to A1 .
- In **Dundee** 2 km of the Alyth Burn rose from class C to A2 after recovering from sheep dip pollution, and an action plan to improve water quality in the Dighty Burn seems to be taking effect as 2.2 km of the burn rose from class B to class A1 this year.
- In **Fife**, upgrading of sewerage infrastructure in the Ore valley has led to 4.5 km of the River Ore improving from class C to class B. The capture of drainage from Randolph colliery bing has resulted in the seriously polluted Lappy Burn improving to class B for a 4.2 km stretch. Remediation of a failed soakaway resulted in 6.6 km of the Cairnsmill Burn upgrading from class C to B.

- In the Scottish **Borders** improved effluent quality at Westruther sewage treatment works has contributed to 7.8 km of the Manse Burn rising from class C to B.

Deterioration

- **In Perthshire** 2.1 km of the Cambusmichael Burn changed from class A2 to C as a result of agricultural pollution.
- Sheep dip pollution of the Gala Water in the **Borders** led to downgrading of 7.3 km from class A1 to B.
- Slurry runoff in the catchment of the Fullarton Water, **Lothians**, appears to have resulted in the downgrading of 11.3 km of water from class A2 to C.
- Urban drainage has contributed to downgrading in the Water of Leith (class B to C) and the Loan Burn in **Edinburgh** and to the Back and Bighty Burns (A2 to B) in **Fife**.
- in **Angus**, 1.3 km of the Kirk Burn was downgraded from class A2 to B due to oil pollution impacts.

South West Scotland

Improvements

- the poor quality of the Luss Water, **Loch Lomond**, is believed to have been due to the impact of spent sheep dip disposal. This is now being tankered off-site and the biological quality of the river has improved from class C to A2.
- reductions in biochemical oxygen demand (BOD) levels in the Carmel Water, **Ayrshire**, have resulted in an upgrading of 3 km from C to B class. This is believed to be linked to improved combined sewer overflow performance.

Deteriorations

- The River Gryffe, **Renfrew and Inverclyde**, has suffered over 9 km downgrading to class C from B. This is thought to have been caused by agricultural pollution and is being investigated further.
- Pollution incidents in 2001 also compromised the quality of the Lees Burn (**East Kilbride**) and the Cameron Burn (**Glasgow**), with sections of both downgraded from class B to C.
- The Luggie Water downstream of Deerdykes sewage treatment works (**North Glasgow**) downgraded to class D in 2001, however this works closed in early 2002 and reductions in the BOD and ammonium levels in the river were immediately apparent. It is anticipated that this should lead to recovery in the quality class in 2002.

Highlands, Islands & Grampian

Improvements

There are a number of significant stretches that have been upgraded from class C to class B or A2 between 2000 and 2001, as a result of changes in the biological component of the classification. These are:

- the North Ugie Water (Grampian) at Millbank (7.4 km from C to B);
- River Nevis (Fort William) upstream of the caravan site (7.9 km from C to B);
- Auchredie Burn (Grampian) at New Deer (3.6 km from C to A2);
- River Lossie (Grampian) at Waulkmill (2.6 km from C to B).

In Easter Ross, Camore sewage works was closed early in 2001 and the wastewater is now treated at Dornoch. Subsequently, 4.1 km of the Dornoch Burn have improved from class C to class B. This improvement is particularly welcome as the Dornoch Burn flows into the sea just to the south of a designated bathing water.

3 Estuarine Water Quality

Table 4: Estuarine classification for the years 1995 to 2001

Region/ Area	Year	A Excellent km ²	B Good km ²	C Unsatis. k m ²	D Seriously Poll. km ²	Total km ²
NORTH	1996	235.9	26.3	4.8	0.0	267.0
NORTH	1997	237.5	24.1	5.4	0.0	267.0
NORTH	1998	237.8	23.8	5.4	0.0	267.0
NORTH	1999	235.9	26.3	4.8	0.0	267.0
NORTH	2000	253.1	10.9	2.9	0.0	266.9
HIG	2001	255.6	8.4	2.9	0.0	266.9
EAST	1996	97.5	91.2	#17.0	0.4	206.1
EAST	1997	97.5	91.2	#17.0	0.4	206.1
EAST	1998	97.5	91.5	16.8	0.3	206.1
EAST	1999	101.9	89.7	14.2	0.3	206.1
EAST	2000	97.5	91.8	16.8	0.0	206.1
South East	2001	101.9	89.7	14.2	0.3	206.1
WEST	1996	293.8	29.2	12.4	1.1	336.5
WEST	1997	289.8	34.3	11.2	0.8	336.1
WEST	1998	288.4	39.8	7.2	0.7	336.1
WEST	1999	295.5	27.6	12.6	0.6	336.3
WEST	2000	286.4	30.2	18.5	1.2	336.3
South West	2001	311.1	18.4	6.2	0.8	336.5
<i>TOTAL</i>	<i>1995</i>	<i>619.4</i>	<i>152.6</i>	<i>28.2</i>	<i>9.1</i>	<i>809.3</i>
<i>(%)</i>		<i>(76.5)</i>	<i>(18.9)</i>	<i>(3.5)</i>	<i>(1.1)</i>	<i>(100)</i>
<i>TOTAL</i>	<i>1996</i>	<i>627.2</i>	<i>146.7</i>	<i>#34.2</i>	<i>1.5</i>	<i>809.6</i>
<i>(%)</i>		<i>(77.5)</i>	<i>(18.1)</i>	<i>(4.2)</i>	<i>(0.2)</i>	<i>(100)</i>
<i>TOTAL</i>	<i>1997</i>	<i>624.8</i>	<i>149.6</i>	<i>#33.6</i>	<i>1.2</i>	<i>809.2</i>
<i>(%)</i>		<i>(77.2)</i>	<i>(18.5)</i>	<i>(4.2)</i>	<i>(0.1)</i>	<i>(100)</i>
<i>TOTAL</i>	<i>1998</i>	<i>623.7</i>	<i>155.1</i>	<i>29.4</i>	<i>1.0</i>	<i>809.2</i>
<i>(%)</i>		<i>(77.1)</i>	<i>(19.2)</i>	<i>(3.6)</i>	<i>(0.1)</i>	<i>(100)</i>
<i>TOTAL</i>	<i>1999</i>	<i>633.3</i>	<i>143.6</i>	<i>31.6</i>	<i>0.9</i>	<i>809.4</i>
<i>(%)</i>		<i>(78.2)</i>	<i>(17.7)</i>	<i>(3.9)</i>	<i>(0.1)</i>	<i>(100)</i>
<i>TOTAL</i>	<i>2000</i>	<i>637.0</i>	<i>132.9</i>	<i>38.2</i>	<i>1.2</i>	<i>809.3</i>
<i>(%)</i>		<i>(78.7)</i>	<i>(16.4)</i>	<i>(4.7)</i>	<i>(0.1)</i>	<i>(100)</i>
TOTAL	2001	668.6	116.5	23.3	1.1	809.5
(%)		(82.6)	(14.4)	(2.9)	(0.1)	(100)

Corrections to the table in the 1997–1998 Annual Report, which omitted 3.9 km² of class C estuary.

Figures in italics issued by the Scottish Office from data supplied by former River Purification Boards.

	Year	A Excellent	B Good	C Unsatis.	D Ser. Poll.	
CHANGE (+/- %)	96 to 97	(-0.4)	(+2.0)	(-1.8)	(-20.0)	-
CHANGE (+/- %)	96 to 98	(-0.6)	(+5.7)	(-14.0)	(-33.3)	-
CHANGE (+/- %)	96 to 99	(+1.0)	(-2.1)	(-7.6)	(-40.0)	-
CHANGE (+/- %)	96 to 00	(+1.6)	(-9.4)	(+11.7)	(-20.0)	-
Change in area of Classes C and D 1996–2000				+ 3.7km ² (+ 10%)		
Target change in area of Classes C and D 1996–2000				- 7.1 km ² (- 20%)		
Target not achieved						
CHANGE (+/- %)	99 to 00	(+5.0)	(-12.3)	(-39.1)	(-8.3)	-
CHANGE (+/- %)	99 to 01	(+5.6)	(-18.8)	(-26.4)	(+22.2)	-
Change in area of Classes C and D 1999–2001				-8.1km² (-25%)		
Target change in area of Classes C and D 1999–2006				-6.5 km² (-20%)		

South East Scotland

Improvements

0.4 km² of the Forth estuary at Grangemouth have been upgraded from class C to B since 2000, reflecting continuing recovery of animal populations since the BP refinery commissioned its effluent treatment plant over ten years ago. In the long term much of this area may become class B. Additionally, the mudflats around Grangemouth, currently class C, are improving gradually as a result of recent decreases in other waste discharges to the area.

Other improvements in south east area estuaries have been observed but these have thus far been insufficient to result in a change of class.

South West Scotland

Improvements

A reduction in C and D class estuaries was observed in SW area. This was due to significant areas of the Clyde Estuary and Gareloch being upgraded due to a small increase in dissolved oxygen levels. However, oxygen concentrations in these systems remain very sensitive to changes in river flow patterns and rainfall related sewer overflow events, and they could potentially return to C class in the future, although provision of biological treatment at Dalmuir STW should help stabilise the improved condition.

Deteriorations

New information on the impacts of organic enrichment of the seabed has led to the downgrading of small areas within the White Cart and Black Cart estuaries. In addition, copper levels in the Leven estuary led to the downgrading of a small area.

Highlands, Islands & Grampian

Improvements

3 km² of the Beaully Firth immediately to the west of Inverness have improved from class B to class A following improvements in sewerage infrastructure in the Inverness area.

No change was observed in the overall area of class C waters in HIG since 2000 (there are no class D estuarial waters in HIG).

Deteriorations

In the Cromarty Firth, 0.1 km² at the Baco Pier (Invergordon) and 0.1 km² at Balintraid have deteriorated from class A to class B, due to the presence of traces of an antifouling chemical, tributyl tin.

In the Dornoch Firth, 0.3 km² in the vicinity of Tain have also been downgraded from class A to class B because of the unsatisfactory operation of combined sewer overflows.

4 Coastal Water Quality

Table 5: Coastal waters classification for the years 1995 to 2001

Region/ Area	Year	A Excellent km	B Good km	C Unsatis. km	D Seriously Poll. km	Total km
NORTH*	1996	3425.8	156.0	56.6	10.6	3649.0
NORTH*	1997	3412.8	161.4	62.4	12.4	3649.0
NORTH*	1998	3408.0	166.9	62.7	11.7	3649.3
NORTH*	1999	3359.9	181.7	90.8	16.6	3649.0
NORTH		8137.6	225.7	120.2	19.1	8502.6
NORTH*	2000	3395.9	158.4	81.2	13.6	3649.1
NORTH		8178.0	206.9	104.6	13.6	8503.1
HIG	2001	8190.3	205.6	91.9	16.0	8503.8
EAST**	1996	134.7	110.9	49.9	20.7	316.2
EAST**	1997	129.3	128.9	37.3	20.7	316.2
EAST**	1998	128.0	130.9	36.7	20.6	316.2
EAST**	1999	130.5	137.6	36.0	12.1	316.2
EAST**	2000	144.7	132.6	26.8	12.1	316.2
South East	2001	147.4	133.3	34.2	1.0	315.9
WEST	1996	2644.5	209.0	103.0	18.5	2975.0
WEST	1997	2657.8	204.4	92.9	16.9	2972.0
WEST	1998	2666.4	194.8	99.6	17.8	2978.6
WEST	1999	2656.8	206.1	99.1	16.6	2978.6
WEST	2000	2657.1	216.8	93.3	11.4	2978.6
South West	2001	2658.2	222.4	90.2	7.8	2978.6
TOTAL*	1995	6278.7	478.1	219.7	42.9	7019.4
(%)		(89.5)	(6.8)	(3.1)	(0.6)	(100)
TOTAL*	1996	6209.8	477.4	209.5	49.8	6946.5
(%)		(89.4)	(6.9)	(3.0)	(0.7)	(100)
TOTAL*	1997	6204.7	496.2	192.6	50.0	6943.5
(%)		(89.4)	(7.1)	(2.8)	(0.7)	(100)
TOTAL*	1998	6207.2	494.1	199.0	50.1	6950.4
(%)		(89.3)	(7.1)	(2.9)	(0.7)	(100)
TOTAL*	1999	6152.0	526.9	225.9	45.3	6950.1
(%)		(88.5)	(7.6)	(3.3)	(0.7)	(100)
TOTAL	1999	10929.7	570.9	255.3	47.8	11798
(%)		(92.6)	(4.8)	(2.2)	(0.4)	(100)
TOTAL*	2000	6202.5	509.3	201.3	37.1	6950.2
(%)		(89.2)	(7.3)	(2.9)	(0.5)	(100)
TOTAL	2000	10984.6	557.8	224.7	37.1	11798
(%)		(93.1)	(4.7)	(1.9)	(0.3)	(100)
TOTAL	2001	10995.9	561.3	216.3	24.8	11798
(%)		(93.2)	(4.8)	(1.8)	(0.2)	(100)

	Year	A Excellent	B Good	C Unsatis.	D Ser. Poll.	
CHANGE* (+/- %)	96 to 97	(-0.1)	(+ 3.9)	(- 8.1)	(+0.4)	-
CHANGE* (+/- %)	96 to 98	(0.0)	(+3.5)	(-5.0)	(+0.6)	-
CHANGE* (+/- %)	96 to 99	(-0.9)	(+10.4)	(+7.8)	(-9.0)	-
CHANGE* (+/- %)	96 to 00	(-0.1)	(+6.7)	(-3.9)	(-25.5)	-
Change in length of Classes C and D 1996–2000 - 20.9 km (- 8%) Target change in length of Classes C/D 1996–2000 - 38.9 km (- 15%) Improvements achieved but not to level of target						
CHANGE (+/- %)	99 to 00	(0.5)	(-2.3)	(-12.0)	(-22.4)	
CHANGE (+/- %)	99 to 01	(0.6)	(-1.7)	(-15.3)	(-48.1)	-
Change in length of Classes C and D 1999–2001 -62.0km (-20%) Target change in length of Classes C and D 1999–2006 -145km (-45%)						

*Figures exclude Islands, and omit recognition of Loch Leven (Kinlochleven, Highland) and an area off Dounreay as downgraded.

**Relative to previous annual reports, length of class A reduced by 4.8 km, and class B by 1.5 km to eliminate double counting of Tyne estuary.

Figures in italics issued by the Scottish Office from data supplied by former River Purification Boards

South East Scotland

Improvements

The biggest improvement is an upgrade from class D to class C along the stretch of coastal water encompassing **Largo East, Lower Largo and Leven East** in Fife. This is due to the new long sea outfall and 6 mm screening now in operation at the Levenmouth waste water treatment works. Further improvements are expected once the effects of secondary treatment at this works become manifest.

Also in Fife, the bathing water at **Crail** (Roome Bay) has improved from class B to class A due to the combination of the Crail and Kirk Wynd sewage outfall improvements, and the section of coastal water to Hermits Well has also improved from class C to class B.

The dual sewer manholes at **Longniddry** (East Lothian) have been improved to reduce sewage overflows, and the bathing water at Seton Sands has since improved from class C to class B quality.

Also in East Lothian, **North Berwick** (West Bay) and **Coldingham** bathing waters attained class A as did the stretch of coastal water from North Berwick (Milsey Bay) to Gin Head.

Deteriorations

The bathing water at **Kingsbarns** (East Fife) has been downgraded from class B to class C. This was due to failure to meet EC Bathing Water environmental quality standards, which had previously always been surpassed at this site. The Kingsbarns

sewage treatment works provides primary treatment and screening but improved treatment and an extension to the existing outfall is required, with Scottish Water due to complete these works in 2003. As an immediate short-term response to the failure, until the new works are complete, chlorine disinfection will be provided for the 2002 bathing season.

The East of Scotland Water Authority (now Scottish Water) began a scheme to discharge all of Kinghorn's sewage through the outfall at **Pettycur** in Fife. These works may have been the cause of the downgrade here from class A to class B, as sewer works elsewhere have occasionally been identified as the cause of temporary downgradings.

South West Scotland

Improvements

As a result of new survey data and the final development of a new waste management strategy for distillery effluents, a long stretch of the **Turnberry** shore (Ayrshire) was upgraded from classes C and D to class A or B, as indicated by the monitoring data.

Work focusing on distillery wastes is continuing and should lead to further reductions in effluent toxicity, with consequent improvements in coastal water quality.

Deteriorations

Downgrades from class B to C were recorded in Dumfries and Galloway due to failure to meet the standards required by the Bathing Water Directive at **Southernness**, and impacts from organo-tin antifouling compounds in **Loch Ryan**.

Highlands, Islands & Grampain

Improvements

At **Golspie** on the Moray Firth, 2.0 km improved from class C to class A following the provision of a new wastewater treatment plant and diversion of sewage outfalls.

Similarly a new sewerage system and waste water treatment plant led to a 2.3 km stretch of coast at **Plockton** (Loch Carron) improving from class C to class A.

1.6 km from the Dee estuary to Girdleness (**Aberdeen**), improved from class C to class B, again as a result of sewerage related improvements. The sewage outfalls at Abercrombie have been rerouted to the Aberdeen sewage overflow, and the Girdleness combined sewage overflow is now being screened.

Deteriorations

2.4 km of coast at **Fraserburgh** deteriorated from class C to class D following five failures of mandatory standards at the identified bathing water during the 2001 bathing season. Investigations suggest that the reason for the failures was contamination of the Kessock Burn, which crosses the beach close to the bathing water monitoring site. One wrong sewer connection was found and remediated, and this burn is now the subject of an action plan to identify other sources of contamination and remedial actions. Rapid recovery of the quality of this stretch is, therefore, anticipated.