

31 Aberdeen



31.1 Background Information

Aberdeen is a well used town beach with amusements and a golf course nearby and is popular with water sports enthusiasts. A 1.5 km stretch of the most used section of the beach fronting the main leisure complex area is an EC identified bathing water (Fig 31A). The beach lies between the River Dee to the South and River Don to the North. The heavily used commercial harbour area is to the south side of the designated section of the beach. In 2007 Aberdeen was awarded a Seaside Award in the resort category. This followed the extensive flood defence work on the beach in the summer of 2006. This included recharge of the sand with clean sand imported from Montrose to replace sand that had eroded away in order to help protect the flood defence wall. Structures to deflect tidal currents were built at the end of the groynes in the worst affected area to help prevent erosion in future. The Seaside Award acknowledges those beaches with good management, which are clean, safe and display up-to-date information to the public.

The main sources of bacterial contamination of the bathing water are the two major rivers, the Dee and the Don, which feed to sea either side of the beach area. The main pressures acting on the Dee and the Don which pose a threat to the bathing water quality are the array of combined sewer overflows (CSOs) that discharge to the rivers, along with diffuse urban pollution. Sewage inputs from the various sewage treatment works (STW) serving communities further inland and diffuse agricultural pollution may also have some impact.

Aberdeen beach has always achieved at least good quality since it was designated in 1987. In 2006 it achieved excellent quality for the first time since 1999 despite a single exceedance of the mandatory standard. This was thought to be due to the influence of the River Don on the beach during a period of wet weather and strong northerly winds. In 2007 Aberdeen achieved good quality status overall however three results of faecal coliforms close to the mandatory standard were recorded.

As there is still a threat to quality from diffuse pollution or overflows arising from rainfall driven short term pollution events, this bathing water is part of the SEPA electronic signage and Beachline information network. At these beaches (11 in Scotland), SEPA provides daily water quality predictions and displays these forecasts via electronic message signs at each of the 10 beach locations as well as by updates on the SEPA website, Beachline phone (08452 30 30 98) and Beachline text service (Text the first beach word to 07797 806503). For further details, or daily updates during the bathing season visit SEPA's website at:

<http://www.sepa.org.uk/data/bathingwaters/signage/index.asp>

In March 2006 the revised Bathing Water Directive (2006/7/EC) entered into force and was enacted in the UK by Regulations in 2008. Key features are tighter microbiological standards to be met by 2015 and increased provision of public information.

Compliance and pollution improvement required for the designated EU Bathing Waters will be co-ordinated through the Water Framework Directive (WFD) programme of measures which will form part of the river basin management plan. The programme of measures will outline measures (actions) that are being taken to protect and improve the water environment in the river basin district. This EU designated bathing water (protected area) pollution reduction plan will identify measures relevant to this bathing water and associated water bodies that are being undertaken as part of the programme of measures.

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

Table 31A: Record of Compliance for Aberdeen, 1997-2007.

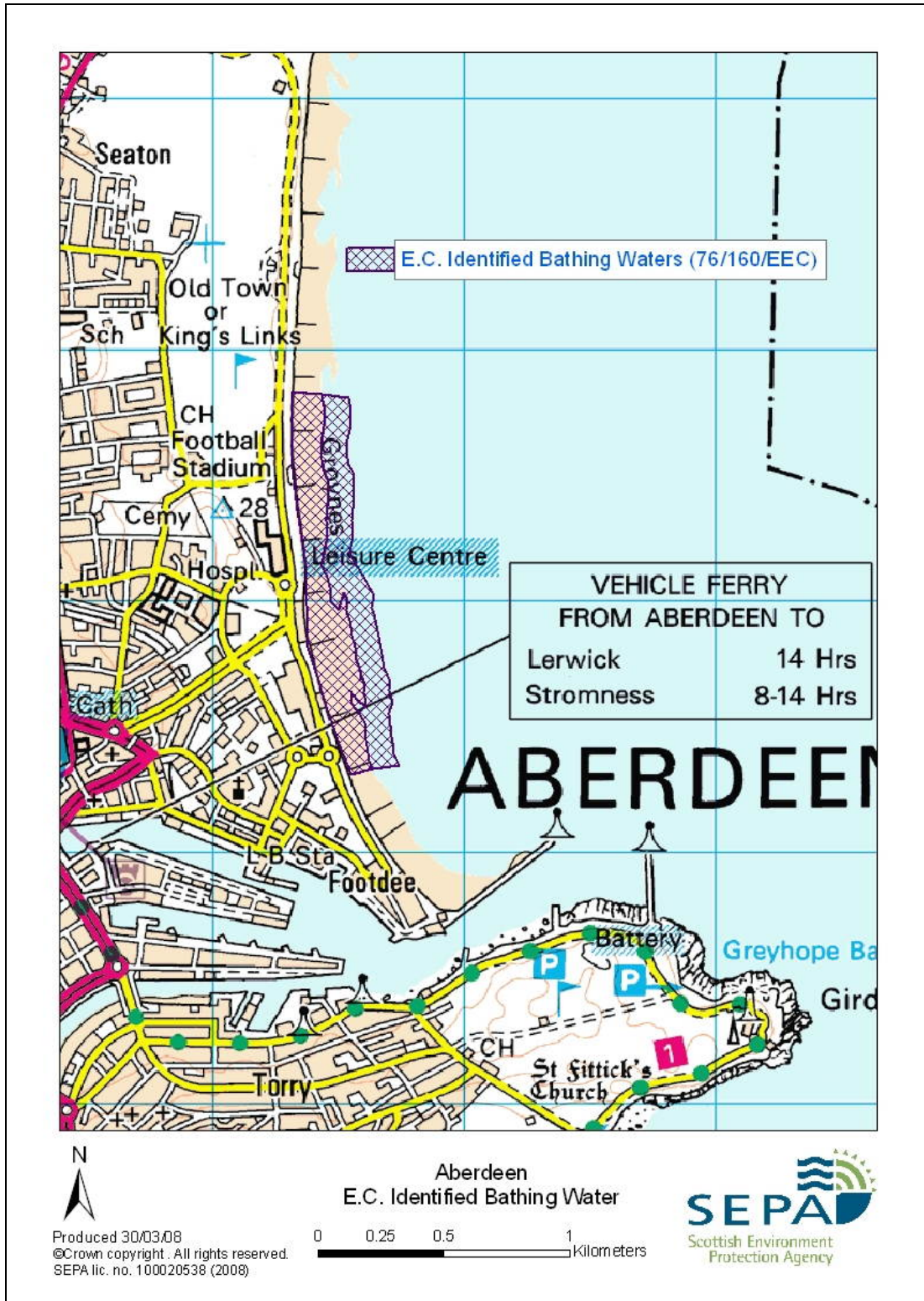


Figure 31A: Map of Aberdeen designated bathing beach and surrounding local area.

31.2 Results for 2007

| Aberdeen Results | | | | |
|------------------|----------------------------------|-----------------------------------|--------------------------------------|----------|
| Date | Total Coliforms (colonies/100ml) | Faecal Coliforms (colonies/100ml) | Faecal Streptococci (colonies/100ml) | Salinity |
| 24-May-2007 | 4 (G) | 4 (G) | 3 (G) | 33.1 |
| 6-Jun-2007 | 3800 (M) | 1900 (M) | 380 | 28.1 |
| 12-Jun-2007 | 234 (G) | 48 (G) | 18 (G) | 35 |
| 19-Jun-2007 | 900 (M) | 100 (G) | 8 (G) | 26.6 |
| 27-Jun-2007 | 64 (G) | 18 (G) | 2 (G) | 34.7 |
| 2-Jul-2007 | 1400 (M) | 300 (M) | 39 (G) | 31.9 |
| 6-Jul-2007 | 6400 (M) | 1800 (M) | 99 (G) | - |
| 8-Jul-2007 | 700 (M) | 400 (M) | 970 | - |
| 10-Jul-2007 | 66 (G) | 18 (G) | 6 (G) | - |
| 20-Jul-2007 | 5800 (M) | 1100 (M) | 90 (G) | 26.6 |
| 24-Jul-2007 | 1100 (M) | 100 (G) | 36 (G) | 33.8 |
| 27-Jul-2007 | 200 (G) | 200 (M) | 20 (G) | 34.3 |
| 30-Jul-2007 | 500 (G) | 400 (M) | 53 (G) | 29.1 |
| 2-Aug-2007 | 200 (G) | 52 (G) | 10 (G) | 34.7 |
| 7-Aug-2007 | 1400 (M) | 400 (M) | 30 (G) | 33.5 |
| 8-Aug-2007 | 600 (M) | 174 (M) | 130 | 33.8 |
| 15-Aug-2007 | 60 (G) | 58 (G) | 50 (G) | 36.6 |
| 21-Aug-2007 | 3400 (M) | 1800 (M) | 40 (G) | 27.7 |
| 28-Aug-2007 | 272 (G) | 70 (G) | 11 (G) | 30.5 |
| 4-Sep-2007 | 144 (G) | 48 (G) | 6 (G) | 35.7 |

Table 31B: Microbiological results for Aberdeen bathing beach, May-Sept 2007.

31.3 Scottish Water Assets

There have been significant improvements to the sewerage infrastructure and treatment facilities in Aberdeen in recent years, to the benefit of the bathing beach. One of the main sewage treatment facilities for the city of Aberdeen and surrounding villages is Nigg STW. A long sea outfall discharges sewage from the Nigg STW approximately 2 km out to sea off the headland of Greg Ness, which is a few kilometres round the coast south of beach area. Nigg STW now provides full biological treatment to the effluent. The other major sewage works for Aberdeen city is Persley STW, which discharges to the River Don approximately 4 km upstream of the estuary. This plant was upgraded in 2001 and now has ultra violet disinfection as part of the treatment process, which was provided to protect the bathing water.

Prior to the 2003 bathing season, work was undertaken on the Kings Links CSO, which discharges to the Don estuary, to ensure that the number of overflows met the requirement of a maximum of three spills per season. Improvements to the network of sewers which feed to the King's Link CSO have seen the installation of two mechanical screens, two static screens and seven rainfall event recorders. Five other CSO's have also been eliminated.

Diffuse urban pollution from overflows on the public sewage network in Aberdeen continues to impact upon the coastal waters around Aberdeen. SEPA is awaiting the

outcome of the Scottish Water drainage area plan to identify solutions to the CSO problems in the city. This will identify further improvements to the drainage network and remaining CSO, required to increase the quality of effluent discharging to the streams and rivers in the vicinity of the bathing waters. The drainage study will ensure that pollution control measures are targeted effectively.

31.4 Other Discharges

There are a number of trade effluent discharges to the harbour area and to the lower reaches of the River Don and River Dee, as well as numerous surface water sewer discharges. These are not likely to be significantly impacting on the bacteria levels of the bathing water however.

31.5 Agriculture

The River Dee and the River Don both have large catchment areas, with agriculture being the dominant land usage in the mid catchment areas. The Don catchment is the more intensively farmed of the two.

Work by SEPA as part of a national bathing beach project to identify diffuse sources of bacteria from agricultural land was undertaken during 2003. In the River Dee and River Don catchments there was no single incident of bad working practice identified in the survey that would impact on the bathing beach. However there is no doubt that the programme of inspections has made the agricultural community aware of their obligations to ensure compliance with the Silage, Slurry and Agricultural Fuel Oil Regulations, and the PEPFAA code of good agricultural practice.

There is still some risk to the bathing water quality from run-off from the land particularly during periods of wet weather however. SEPA will continue to promote best practices and the PEPFAA code where possible, to help minimise diffuse agricultural pollution. In addition, the Scottish Executive's Four Point Plan for the reduction of agricultural pollution sources should prove helpful in tackling this issue.

The River Don and parts of the River Dee catchments lies within a designated Groundwater Nitrate Vulnerable Zone (NVZ) under the terms of the European Nitrates Directive 91/676/EEC, which aims to reduce water pollution from agricultural sources. As a result of the Directive, The Action Programme For Nitrate Vulnerable Zones (Scotland) Regulations 2003 came into force in February 2003 and introduce legally binding rules in the form of action programmes for farmers in designated NVZs. Programme measures focus on limiting nitrate input by matching it to crop requirement, and controlling storage and application of certain fertilisers and organic waste to minimise leaching and run-off.

Scottish Government has completed a consultation on General Binding Rules (GBRs) designed to protect the water environment from agricultural diffuse pollution. The proposed GBRs which are part of the Controlled Activities Regulations (CAR) came into force in April 2008. The measures are based on widely accepted standards of good practice such as the Scottish Government's Prevention of Environmental Pollution from Agricultural Activity (PEPFAA) Code, the 4 Point Plan, Farm Soils Plan and the Forestry Commission's Forests and Water Guidelines.

The GBRs will establish basic activities that should be undertaken to reduce pollution risk. They also propose that draining lightly contaminated farmyard water to a Constructed Farm Wetland (CFW), specifically designed for the purpose should be

permitted as an alternative to collection and storage of the run-off. These measures will help to protect bathing water quality from agricultural diffuse pollution.

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

31.6 Hydrometric Network

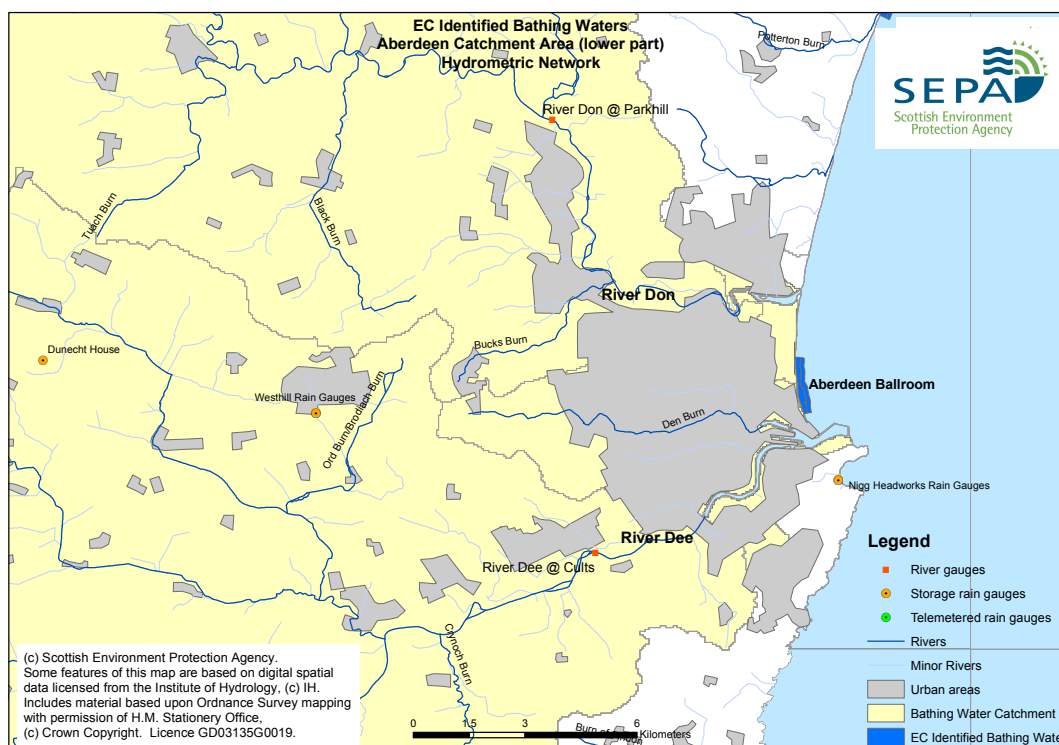


Figure 31B: Hydrometric map of Aberdeen and surrounding area.

31.7 Further Investigations

Bacteriological surveys to identify potential bacterial pollution sources to the River Don were undertaken in 2002 as part of SEPA's action plan looking at the impacts of riverine bacteria on bathing waters. Twelve sites were monitored, the majority targeting the lower urbanised reaches. Due to the large number of discharges into the Don and the possibility of intermittent bacterial inputs it was impossible to pinpoint accurately the source of faecal pollution based on the results. However, the study did show that high levels of bacterial contamination were present in the Don, particularly in the stretch upstream of the Persley STW, and based on the (limited) results, there does appear to be an increase in bacterial concentration at the bathing-water site corresponding with an increase in concentration at the mouth of the Don.

31.8 Response to Failure

Aberdeen has been assessed for the 2008 season as at medium risk of failing to meet the Directive's standards. Although this bathing water has always met the mandatory standards each year overall, there was a single sample failure in 2006,

and elevated bacteria levels close to the mandatory limits have been detected in previous years including 2007. No specific causes have been pinpointed, and as such the chance of failures occurring remains.

Should there be a mandatory failure, there will be an immediate response to check all the relevant potential sources and major discharges in the catchment area to confirm the reason, e.g. if there has been a failure of any of the works, pumping stations, CSOs and/or whether the failure was due to high river flows, taking account of SEPA's hydrometric information. In addition, immediate follow-up microbiology sampling will be undertaken of the failed beach, and of nearby river inputs where appropriate.

The regional Environmental Quality Unit will co-ordinate a response in conjunction with the local Environmental Protection and Improvement team and Science functions, and post the result of the investigation and actions arising on the SEPA bathing waters internet site.