

# UK bathing water quality in 2017



## United Kingdom

May 2018

Photo: © Peter Kristensen/EEA

# BWD Report For the Bathing Season 2017

## The United Kingdom

The report gives a general overview of information acquired from the reported data, based on provisions of the Bathing Water Directive<sup>1</sup>. The reporting process is described below, as well as state and trends of bathing water quality in the United Kingdom.

### 1. BWD reporting in the season 2017

In the 2017 bathing season, 634 bathing waters have been reported in the United Kingdom. For each bathing water, five groups of parameters have been delivered<sup>2</sup>:

- *identification data* – including name, location, coastal, inland or transitional type of bathing water and availability to bathers;
- *seasonal data* – including season start and end, national quality classification in the recent season, potential management measures and changes that are likely to affect the classification of the bathing water;
- *monitoring results* – disaggregated numerical values of two microbiological parameters – intestinal enterococci and Escherichia coli (also known as E. coli), recorded at each water sample taken;
- *abnormal situation periods* – periods of an event or combination of events impacting on bathing water quality, during which monitoring calendar may be suspended; reporting is optional;
- *short-term pollution periods* – measurable events of microbiological contamination; reporting is optional.

<b>Total reported</b>	<b>634</b>
Coastal	618
Inland	16
<b>Max season period</b>	<b>139 / 205 days</b>
Coastal	10 Apr to 31 Oct
Inland	15 May to 30 Sep
<b>Samples taken</b>	<b>9960</b>
<b>Share of bathing waters with good or excellent water quality</b>	<b>88 %</b>
<b>Reporting under Directive 2006/7/EC since</b>	<b>2012</b>

The authorities of the United Kingdom report data according to the new BWD (2006/7/EC) since the season 2012.

Altogether, **634 bathing waters** have been reported – 2.9% of all bathing waters in Europe. Three bathing waters have been newly reported in the recent season. 97% of bathing waters in the United Kingdom are of coastal type; the other 3% are inland. **9960 samples** were taken at bathing waters throughout the season – 16 per bathing water on average.

<sup>1</sup> Directive BWD 2006/7/EC, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF>

<sup>2</sup> See the BWD Data Dictionary for detailed explanations: <http://dd.eionet.europa.eu/datasets/3294#tables>

The maximum bathing season period was from 10 April to 31 October for coastal bathing waters, i.e. 205 days altogether. Maximum inland bathing season period was from 15 May to 30 September, i.e. 139 days. Season duration varies depending on the bathing water.

Detailed information on bathing waters is available from national portals at:

- <http://environment.data.gov.uk/bwq/explorer/index.html> (England),
- <https://www.nidirect.gov.uk/articles/bathing-water-quality> (Northern Ireland),
- <http://apps.sepa.org.uk/bathingwaters/> (Scotland),
- <http://environmental-agency.gi/index.php/bathing-water/> (Gibraltar),
- <http://environment.data.gov.uk/wales/bathing-waters/profiles/> (Wales).

## 2. Assessment methodology<sup>3</sup>

During the bathing season, water samples are taken and analysed for two bacteria, *Escherichia coli* and intestinal enterococci which may indicate the presence of pollution, usually originating in sewage, livestock waste, bird faeces etc. The results of the analysis are used to assess the quality of the bathing waters concerned and to provide information to the public on the quality of water in the bathing sites concerned.

The monitoring requirements under the Directive are:

- taking a pre-season sample (taken shortly before the start of the bathing season) <sup>4</sup>;
- a minimum of four samples per season<sup>5</sup>;
- a minimum of one sample per month<sup>6</sup>.

If these rules are satisfied, the bathing water is categorised as 'sampling frequency satisfied'. If not all monitoring requirements are fulfilled the bathing water is categorised as 'not enough samples'. 99.4% of bathing waters met the described monitoring requirements set by the Directive, while the rest did not satisfy monitoring requirements for different reasons: being new; having changed environmental conditions that might affect water quality classification; closed; not monitored due to legal issues, physical inaccessibility to the site etc. Table 1 shows the statistics of bathing waters according to monitoring requirements.

**Table 1: Bathing waters in 2017 according to compliance with BWD monitoring provisions**

	Count	Share of total [%]
<b>BWs with sampling frequency satisfied (and are not new, are not subject to changes or were not closed in 2017)</b> These bathing waters have been monitored according to provisions and have complete dataset from the last assessment period. They have been	630	99.4%

<sup>3</sup> The methodology used by the EC and the EEA is described here, while results of assessment by national authorities may differ in individual cases.

<sup>4</sup> A pre-season sample is taken into a sum of samples per season.

<sup>5</sup> Three samples are sufficient if the season does not exceed eight weeks or the region is subject to special geographical constraints.

<sup>6</sup> If, for any reason, it is not possible to take the sample at the scheduled date, a delay of four extra days is allowed. Thus, the interval between two samples should not exceed 31 + 4 days.

quality-classified (excellent, good, sufficient, poor).		
<b>BWs with sampling frequency not satisfied (and are not new, are not subject to changes or were not closed in 2017)</b> These bathing waters exist throughout the last assessment period but have not been monitored throughout the period according to provisions for various individual reasons. They may be quality-classified if there is an adequate volume of samples available for credible classification.	0	0.0%
<b>BWs that are new, subject to changes or closed in 2017</b> These bathing waters do not have complete dataset for the last assessment period because they are new, have been subject to changes (that are likely to affect the classification of the bathing water) or have been closed. They cannot be quality-classified.	4	0.6%
<b>Total number of bathing waters in 2017</b>	<b>634</b>	<b>100%</b>

Bathing waters where sampling frequency was not satisfied can still be quality assessed if at least four samples per season (three samples if the season does not exceed eight weeks or the region is subject to special geographical constraints) are available and equally distributed throughout the season. Assessment of bathing water quality is possible when the bathing water sample dataset is available for four consecutive seasons. Bathing waters are accordingly classified to one of the bathing water quality classes (excellent, good, sufficient, or poor).

The classification is based on pre-defined percentile values for microbiological enumerations, limiting the classes given in Annex I of the Directive. The Directive defines different limit values for coastal and inland waters.

Quality assessment is not possible for all bathing waters. In these cases, they are instead classified as either:

- not enough samples<sup>7</sup>;
- new<sup>8</sup>;
- changes<sup>9</sup>;
- closed<sup>10</sup>.

### 3. Bathing water quality

The results of the bathing water quality in the United Kingdom throughout the past period are presented in Figure 1 (for coastal bathing waters) and Figure 2 (for inland bathing waters). The previous reports are available on the European Commission's bathing water quality website<sup>11</sup> and the European Environment Agency's bathing water website<sup>12</sup>.

<sup>7</sup> Not enough samples have been provided throughout the last assessment period (the last four bathing seasons or, when applicable, the period specified in Article 4.2 or 4.4).

<sup>8</sup> Classification not yet possible because bathing water is newly identified and a complete set of samples is not yet available.

<sup>9</sup> Classification is not yet possible after changes that are likely to affect the classification of the bathing water.

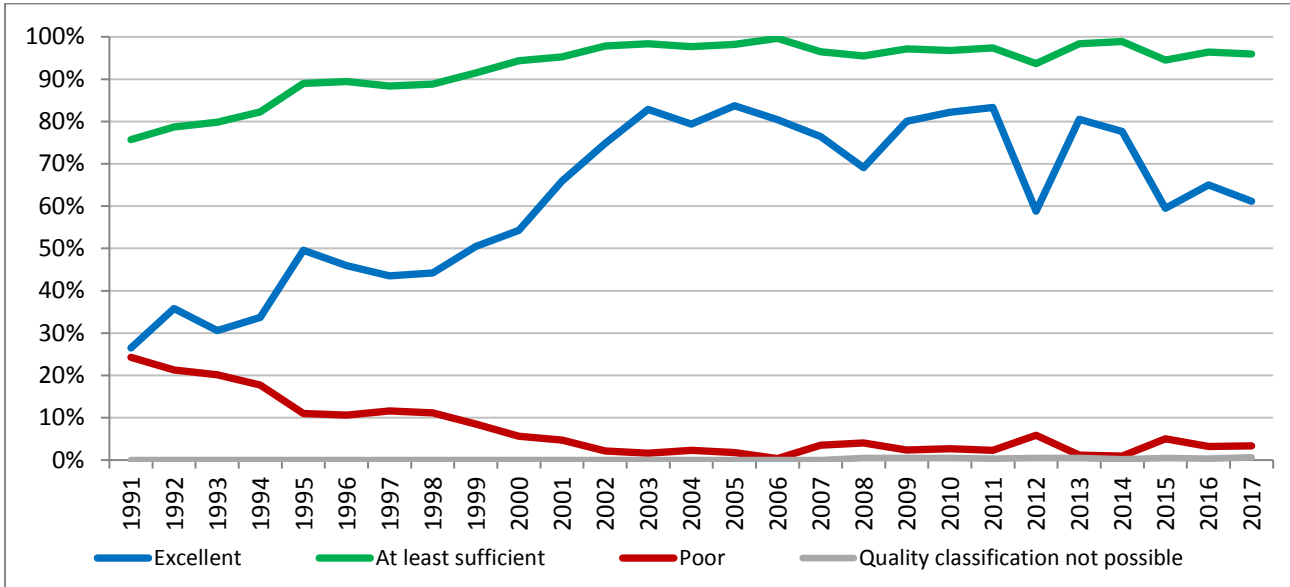
<sup>10</sup> Bathing water is closed temporarily or throughout the bathing season.

<sup>11</sup> [http://ec.europa.eu/environment/water/water-bathing/index\\_en.html](http://ec.europa.eu/environment/water/water-bathing/index_en.html)

<sup>12</sup> <http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>

### 3.1 Coastal bathing waters

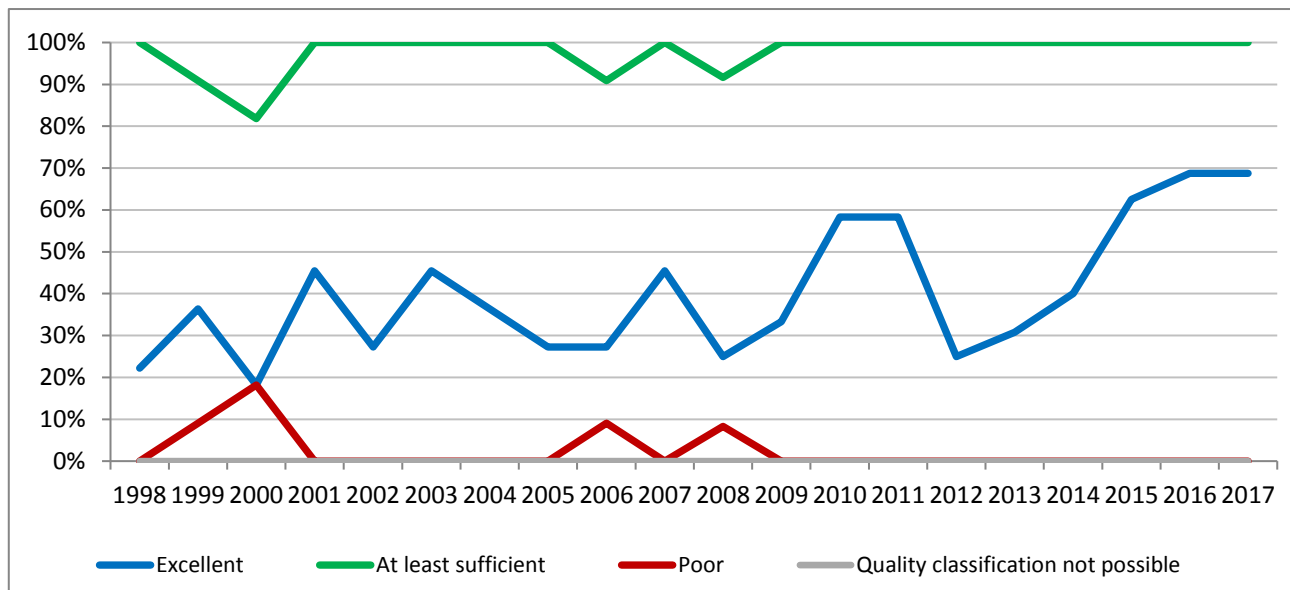
In the United Kingdom, 96.0% of all existing coastal bathing waters met at least sufficient water quality standards in 2017. See Appendix 1 for numeric data.



**Figure 1: Coastal bathing water quality trend in the United Kingdom.** Note: the “At least sufficient” class also includes bathing waters of “Excellent” quality class, the sum of shares is therefore not 100%.

### 3.2 Inland bathing waters

All existing inland bathing waters were of at least sufficient water quality in 2017. See Appendix 1 for numeric data.



**Figure 2: Inland bathing water quality trend in the United Kingdom.** Note: the “At least sufficient” class also includes bathing waters of “Excellent” quality class, the sum of shares is therefore not 100%.

## 4. Information regarding management and other issues

### Information to the public

Bathing water quality information in the UK can be accessed through a wide range of sources, including online. Up-to-date results of samples taken in 2017 were posted on the websites of:

- Environment Agency for bathing waters in England (<http://environment.data.gov.uk/bwq/explorer/index.html>);
- Natural Resources Wales (<http://environment.data.gov.uk/wales/bathing-waters/profiles/>);
- the Scottish Environment Protection Agency ([http://www.sepa.org.uk/water/bathing\\_waters.aspx](http://www.sepa.org.uk/water/bathing_waters.aspx));
- The Northern Ireland Direct website (at <http://www.nidirect.gov.uk/bathing-water-quality> and on the Department of Agriculture, Environment and Rural Affairs website at: <https://www.daera-ni.gov.uk/topics/water/bathing-water-quality>).

Monitoring information is also available to the public on registers held by the competent authorities and detailed summaries are published annually.

Daily pollution risk forecasts were available online for 155 bathing waters in England and 12 in Wales. At 133 bathing waters, local authorities participated in this scheme by providing warning signs at beaches on days when reduced water quality was forecast. At 35 bathing waters in England, electronic signs display the day's pollution risk forecast.

In England, the Environment Agency uses a web tool called a widget to make it possible to share the latest bathing water quality results via other organisations' websites, including local authorities, tourist attractions and businesses. The widget designer is a simple tool that helps website managers and builders configure a widget and embed it into their own site, allowing them to display the latest data from one or more bathing waters in their area. It can be seen on the Environment Agency's website: <http://environment.data.gov.uk/bwq/widget/design>.

In Wales, information on water quality for all 104 designated bathing waters is available at: <http://environment.data.gov.uk/wales/bathing-waters/profiles/>.

In Scotland, electronic signage providing daily real-time bathing water quality predictions is available at 29 bathing waters, along with updates on the web, a smartphone mobile website and a dedicated phone number.

In Gibraltar, bathing water results are uploaded on to the Environmental Agency website for the public to view: <http://environmental-agency.gi/index.php/bathing-water/>. Relevant information can also be accessed via the Environmental Agency app (Gibenviro) for mobile phones and tablets. The Environmental Agency also disseminates information regarding bathing water quality to the public via press releases.

## **Treatment of wastewater**

The UK water industry continues to implement solutions to meet the requirements of the Bathing Water Directive. Considerable investments to improve and protect over 50 bathing waters are planned for the 2015-20 period.

For the period April 2016 to March 2017, all ten water and sewerage undertakers in England and Wales reported 100% delivery of planned schemes in the National Environment Programme set by the Environment Agency in England and Natural Resources Wales in Wales.

Schemes to improve bathing waters, for example by providing additional storage to reduce the frequency of storm discharges at Combined Sewer Overflows and pumping stations, were completed at five locations by two water companies.

In addition, investigations were carried out:

- at 10 locations where bathing waters either are at risk of being classified as Poor, or of deteriorating to Poor if no action is taken (five companies);
- at three locations where bathing waters are judged to have a greater than 20% risk of deteriorating from the position in 2011 (three companies);
- involving coastal and network modelling at 28 locations to enable planning to achieve Excellent bathing water quality. Also, the development of a tool for discounting and prediction (one company);
- leading towards the improvement of bathing waters in eight locations to Good or Excellent where there is proof of water customers' willingness to pay (two companies).

In Northern Ireland, Northern Ireland Water has worked with the Northern Ireland Environment Agency and Department of Agriculture, Environment and Rural Affairs to identify priorities for investment as part of the 2015-2021 PC15 capital business planning. There are currently three main live capital works for bathing water quality improvements being undertaken in Ballycastle, Bangor and Millisle. These projects will all be completed in 2018/2019. Event and duration monitors are to be installed at all Combined Sewer Overflows within 2km of identified bathing waters and shellfish water Protected Areas in the PC15 period. Northern Ireland Water has ongoing involvement in the UK-led 21st Century Drainage Programme Work packages.

In Scotland the investment programme 'Quality and Standards 4' runs from 2015-2027 and takes account of infrastructure investment requirements to ensure compliance with bathing water standards. Further details of the requirements set by Ministers for Scottish Water to develop in the period 2015-27 are provided on the Scottish Government's website at: <http://www.scotland.gov.uk/Topics/Business-Industry/waterindustryscot/improvingservices/currentimprovement> .

## **Treatment of sources of diffuse pollution**

Tackling diffuse water pollution from agriculture is a major part of UK water quality policy and a key element of achieving the objectives of the Bathing Water Directive and Water Framework Directive. UK authorities are working with farmers and others to develop measures to reduce diffuse water pollution from agricultural and urban sources, and to provide information and advice on how to achieve this.

In England, authorities are working with farmers to develop mechanisms to ensure that all farmers adopt basic measures and to secure uptake of additional measures through advice and incentive mechanisms. Evidence of diffuse pollution from agriculture collected by the Environment Agency is being used to target measures to water bodies where they will deliver the greatest benefit.

In April 2018, new statutory rules for all farmers in England to tackle diffuse water pollution from agriculture came into force. The new “farming rules for water” require farmers to test their soils and apply fertilisers according to soil and crop needs, thereby avoiding excess nutrients which can pollute water. Other rules set minimum distances from water for storing or spreading fertilisers. Farmers must consider soil and weather conditions to decide when to apply fertilisers avoiding water pollution. There are also rules to avoid soil erosion and run-off from livestock poaching (soil compaction) and from livestock too close to water courses. The rules will be implemented by the Environment Agency, providing farmers with all the information they need to meet the standard. Enforcement will be proportionate and will include civil sanctions (such as fixed penalty notices) and criminal prosecution.

Catchment Sensitive Farming (CSF) is an important delivery mechanism in England seeking to reduce agricultural pollution using a network of Catchment Officers who deliver advice and grants to farmers. Since 2015 the CSF capital grant scheme has been integrated into the Countryside Stewardship agri-environment scheme. Funding is targeted towards high priority areas for water where multiple Water Framework Directive objectives (including those for Protected Areas like bathing waters) are not being met due to agriculture. The grants provide financial support for farmers investing in farm infrastructure items such as watercourse fencing that restricts livestock, and therefore faecal pollution, from watercourses. The farm advice helps ensure the right measures are sited in the right place and then managed appropriately. 2016 marked the beginning of a new phase of delivery to address faecal pollution as CSF is now consistently focused on the same water quality priority areas as Countryside Stewardship, which will help ensure effective use of the scheme for bathing water quality. Work during 2015 resulted in some 350 new Countryside Stewardship agreements and this work to promote Countryside Stewardship continued throughout 2016. Whilst data is not yet available, the work during 2016 is likely to result in a similar number of new agreements. During 2017 CSF has been working on 23 bathing waters and engaged with over 650 farmers. It has recommended approximately 7780 advice measures in bathing water catchments, focusing on land use, livestock management, manure and fertiliser management, pesticide management, farmyard infrastructure and soil management.

An additional mechanism in England to help tackle diffuse water pollution is the Catchment Based Approach (CaBa). This approach establishes local partnerships between all those that have an interest in water and the wider environment. These partnerships are able to better identify the pressures, agree priorities and elicit more action to improve the local water environment. There are currently over 100 Catchment Partnerships set up across England’s 87 (93 including cross-border) catchments. In line with Defra’s policy framework, the vast majority of the partnerships are hosted by third sector organisations. To support these partnerships there is a central National CaBa Support Group which works to enhance the effectiveness and impact of local partnership working (e.g. sharing best practice, mentoring, steering investment in Research and Development).

In England, in order to develop appropriate policy interventions, Defra funds significant research into understanding the relationships between agriculture, diffuse pollution and water quality, and evaluating the cost-effectiveness of mitigation measures. This includes the second phase of the Demonstration Test Catchments (DTC) programme (2015-17), which aims at testing diffuse pollution



mitigation measures in combination at a large scale in four English catchments: the Eden (Cumbria); Wensum (Norfolk); Avon (Hampshire), and Tamar (Devon/Cornwall). This research combines a biophysical and socio-economic assessment of the efficacy and appropriateness of mitigation measures to reduce pollution, and is used to support policy development and the design of agri-environment monitoring and evaluation programmes. This programme also serves to engage stakeholders in the development of strategies to reduce agricultural pollution and provides a research “platform” to host additional research activities on agricultural and catchment science. Defra-funded research, including DTC, generally integrates Faecal Indicator Organisms (FIOs) when evaluating the efficacy of specific mitigation measures to reduce diffuse water pollution.

Defra has also contributed to a research initiative to develop a new integrated model to predict the exposure to, and the health impact assessment of, pathogen risks by FIO in near-shore coastal waters. The outcomes of the project modelling the delivery of FIOs from land to water in headwater catchments can be seen on its website: <http://www.sheffield.ac.uk/c2c>.

In Wales, financial support is available to farmers and land managers through the Glastir sustainable land management scheme. Glastir pays for the delivery of specific environmental goods and services aimed at combating climate change, improving water management and maintaining and enhancing biodiversity. It is designed to deliver measurable outcomes at both a farm and landscape level in a cost effective way. In 2017 several schemes have run to support nutrient management practices, mitigate diffuse agricultural pollution to water bodies and enhance the provision of a full range of ecosystem services. The Glastir Entry scheme includes commitments on farmers and land managers to deliver environmental goods for five years. Glastir Advanced targets financial support at specific locations where action will best deliver a range of objectives including habitats, species, soil and water. Glastir Woodland supports land managers who wish to create new woodland, re-stock woodlands infected by *Phytophthora ramorum* or manage existing, mainly farm, woodlands. It provides beneficial outcomes for a range of woodland type, species, soils and water.

The UK is continuing its implementation of the Nitrates Directive, which aims to reduce pollution of water by nitrates from agricultural sources. There are separate Action Programmes for England, Wales, Scotland and Northern Ireland. Mandatory measures within the Action Programmes control the use and management of chemical nitrogen fertiliser and organic manures on farms located within the Nitrate Vulnerable Zones (NVZs). Studies have shown that these measures, although specifically designed to tackle nitrate pollution, will also reduce losses of FIOs and phosphate to water. In recent years nitrate concentrations in English waters have continued their general decline and a recent review of the area designated as NVZ has concluded that little change is needed. The current Action Programme for England has been in place since 2013. In Wales the current Regulations came into effect on 1 October 2013 and both these and the current Action Programme for Wales are undergoing review. In Scotland revisions to the Action Programme for NVZs came into force on 1 March 2013 and the Programme is due for review. A Nitrates Action Programme covering the total territory of Northern Ireland and applicable to all farmers has been operational since 1 January 2007. It is reviewed every four years and most recently during 2014. A revised Action Programme for the period 2015-18 has been in place since 1 January 2015.

Scotland’s programme of rural diffuse pollution priority catchment work started in March 2010 in 14 priority catchments identified as being at risk from diffuse pollution to help deliver the objectives outlined in the River Basin Management Plans for the Scotland and Solway Tweed river basin districts.

The Scottish Environment Protection Agency (SEPA) is continuing to work with land managers in these catchments and in the second River Basin Management Plan (2016-21) has extended this to include a further 43 priority catchments. SEPA staff have carried out one-to-one visits with land managers to discuss diffuse pollution issues and, with key stakeholders, organised events and workshops to raise awareness and discuss actions that could be taken to reduce diffuse pollution and to protect and improve water quality in catchments impacting on bathing water quality. Scotland has also launched a dedicated Farming and Water Scotland website to provide advice to land managers on diffuse pollution issues and their legal responsibilities. A "Farming and Water Scotland" roadshow has attended agricultural events across Scotland in 2017 and this will continue into 2018. The Water Environment (Controlled Activities) (Scotland) Regulations continue to play a key role in mitigating diffuse pollution, with compliance with the general binding rules showing continual improvement. Revisions to these Regulations, to further protect the water environment, are planned to come into force early in 2018.

The Scotland Rural Development Programme 2014-2020 offers funding to land managers towards the cost of measures to reduce diffuse pollution. The Programme now includes measures to mitigate run-off from farm steadings, which has the potential to have a considerable impact on the water environment.

Agreements under the Northern Ireland Countryside Management Scheme will end on 31 December 2019. The Environmental Farming Scheme (EFS) is Northern Ireland's new Agri-Environment Scheme. It opened in February 2017 and closed in March 2017 with over 1300 applications. The EFS has been designed to address specific environmental needs, primarily relating to biodiversity and water quality. The water quality improvement measures will be targeted to areas most at risk from agricultural diffuse pollution.

Annual assessments are made of Northern Ireland's bathing water quality to determine those "at risk" of failing Bathing Water Directive standards. These catchments are subjected to detailed catchment investigations to identify and rectify actual pollution sources in an effort to continue to drive improvements in water quality and ensure no deterioration.

As with England and Scotland, there is ongoing development of policy projects to tackle non-agricultural diffuse water pollution in Wales and Northern Ireland. In addition, in Northern Ireland, in support of the Nitrates Action Programme, the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2014 limit the use of chemical phosphorus fertiliser to crop requirement.

In England, planning authorities are required to make sure that sustainable drainage systems (SuDS) are put in place when considering applications for new major development, unless it is demonstrated that they are clearly inappropriate, and that there are clear arrangements in place for ongoing maintenance of the SuDS. This is in addition to existing requirements that SuDS should be given priority in new developments in flood risk areas. In addition, the Government's strategic policy statement to Ofwat makes it clear that the regulator is expected to challenge sewerage undertakers to improve planning and investment to meet the wastewater needs of current and future customers, while protecting the environment. This could include promoting, adopting or maintaining SuDS.

In Wales, interim National SuDS Standards (SuDS standards) were published on a non-statutory basis in January 2016. These provide principles and guidance for the design, construction, operation and maintenance of SuDS on new developments. However, research published by the Welsh Government in January 2017 found that the uptake of effective SuDS compliant with the SuDS standards remains low.

The research also concluded that the commencement of Schedule 3 of the Floods and Water Management Act 2010 for sustainable drainage is necessary to deliver good quality SuDS on new developments. In order to implement the requirements of Schedule 3, a series of consultations and workshops on the draft regulations and statutory SuDS standards which provide the framework for its introduction have been ongoing. In November 2017, the Welsh Government confirmed its commitment to making the requirement for sustainable drainage on new developments mandatory when it announced that it expects to bring forward the legislation and statutory SuDS Standards in May 2018 with a view to it coming into effect within six months.

In Scotland it is already required by legislation that, in most circumstances, new developments must include SuDS to control surface water drainage.

## **5. Bathing water quality assessment presentation in online viewers**

The European bathing water legislation focuses on sound management of bathing waters, greater public participation and improved information dissemination. More on the bathing and other water legislation can be found on the European Commission's website: [http://ec.europa.eu/environment/water/index\\_en.htm](http://ec.europa.eu/environment/water/index_en.htm).

The bathing water section of the Water Information System for Europe (WISE) which is accessible at the EEA bathing water website (<http://www.eea.europa.eu/themes/water/interactive/bathing/state-of-bathing-waters>) allows users to view the bathing water quality at more than 21 000 coastal and inland sites across Europe. The WISE bathing water quality data viewer combines text and graphical visualisation, providing a quick overview of the bathing water's locations and achieved quality. Having access to bathing water information, citizens are encouraged to make full use of it and participate with their comments.

## Appendix 1: Results of bathing water quality in the United Kingdom from 2014 to 2017

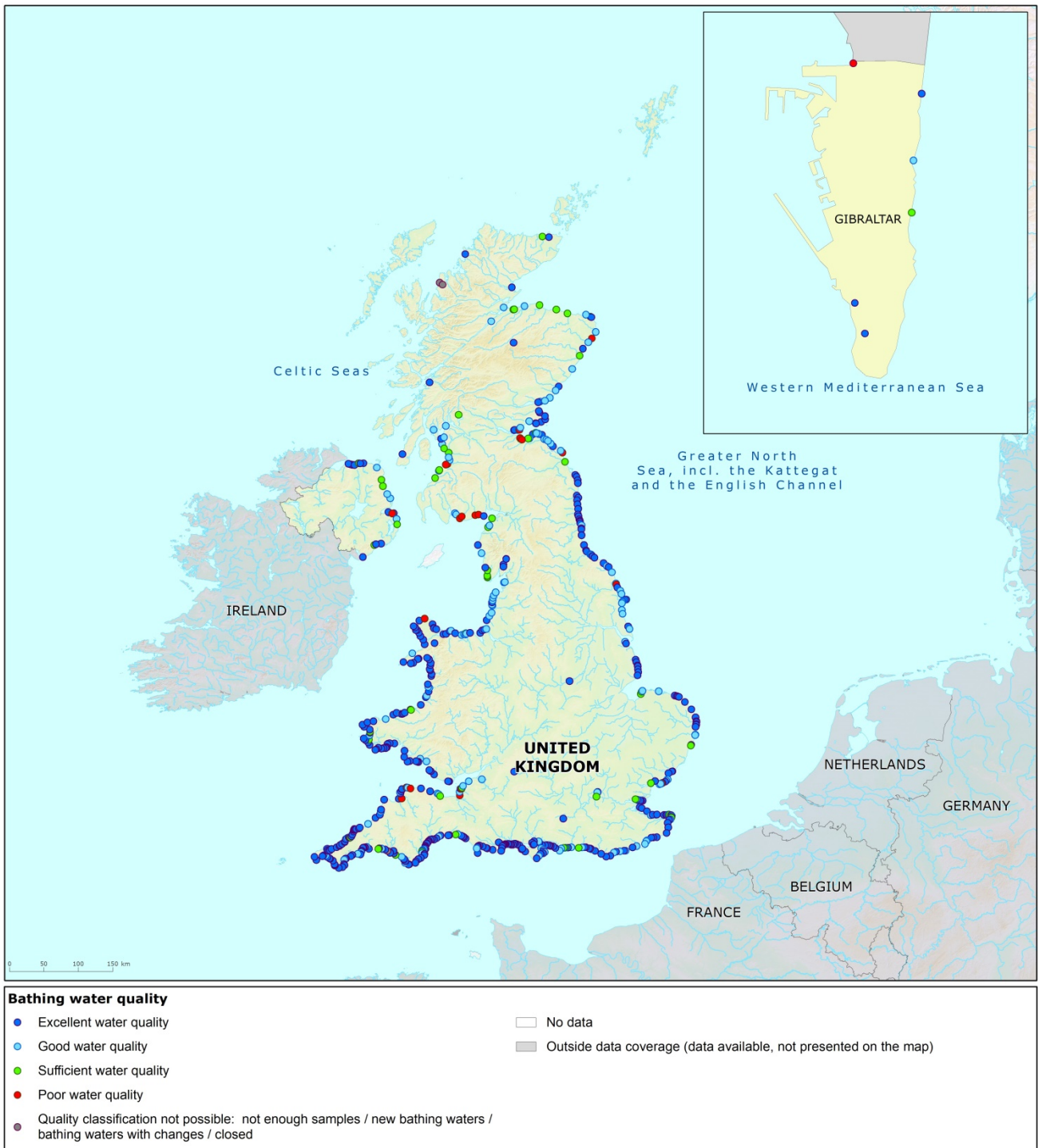
Table 2: Bathing waters in the season 2017 according to quality

		Total number of bathing waters	Excellent quality		At least sufficient quality		Poor quality		Quality classification not possible: not enough samples /new bathing waters/bathing waters subject to changes/closed	
			Count	%	Count	%	Count	%	Count	%
Coastal	2014	617	479	77.6	610	98.9	6	1.0	1	0.2
	2015	617	367	59.5	583	94.5	31	5.0	3	0.5
	2016	615	400	65.0	593	96.4	20	3.3	2	0.3
	2017	618	378	61.2	593	96.0	21	3.4	4	0.6
Inland	2014	15	6	40.0	15	100.0	0	0.0	0	0.0
	2015	16	10	62.5	16	100.0	0	0.0	0	0.0
	2016	16	11	68.8	16	100.0	0	0.0	0	0.0
	2017	16	11	68.8	16	100.0	0	0.0	0	0.0
Total	2014	632	485	76.7	625	98.9	6	0.9	1	0.2
	2015	633	377	59.6	599	94.6	31	4.9	3	0.5
	2016	631	411	65.1	609	96.5	20	3.2	2	0.3
	2017	634	389	61.4	609	96.1	21	3.3	4	0.6

Note: the class "At least sufficient" also includes bathing waters which are of excellent quality, the sum of shares is therefore not 100%.

## Appendix 2: Bathing water quality map

**Map 1: Bathing waters reported during the 2017 bathing season in the United Kingdom**



**Source:** National boundaries: EEA; Large rivers and lakes: EEA, WFD Article 3; Bathing waters data and coordinates: U.K. authorities; Digital Elevation Model over Europe (EU-DEM): EEA.