



# Bathing Water Quality in Ireland

A report for the year 2016

## ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

### The work of the EPA can be divided into three main areas:

**Regulation:** *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

**Knowledge:** *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

**Advocacy:** *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

## Our Responsibilities

### Licensing

We regulate the following activities so that they do not endanger human health or harm the environment:

- waste facilities (*e.g. landfills, incinerators, waste transfer stations*);
- large scale industrial activities (*e.g. pharmaceutical, cement manufacturing, power plants*);
- intensive agriculture (*e.g. pigs, poultry*);
- the contained use and controlled release of Genetically Modified Organisms (*GMOs*);
- sources of ionising radiation (*e.g. x-ray and radiotherapy equipment, industrial sources*);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

### National Environmental Enforcement

- Conducting an annual programme of audits and inspections of EPA licensed facilities.
- Overseeing local authorities' environmental protection responsibilities.
- Supervising the supply of drinking water by public water suppliers.
- Working with local authorities and other agencies to tackle environmental crime by co-ordinating a national enforcement network, targeting offenders and overseeing remediation.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE), Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Prosecuting those who flout environmental law and damage the environment.

### Water Management

- Monitoring and reporting on the quality of rivers, lakes, transitional and coastal waters of Ireland and groundwaters; measuring water levels and river flows.
- National coordination and oversight of the Water Framework Directive.
- Monitoring and reporting on Bathing Water Quality.

## Monitoring, Analysing and Reporting on the Environment

- Monitoring air quality and implementing the EU Clean Air for Europe (CAFÉ) Directive.
- Independent reporting to inform decision making by national and local government (*e.g. periodic reporting on the State of Ireland's Environment and Indicator Reports*).

## Regulating Ireland's Greenhouse Gas Emissions

- Preparing Ireland's greenhouse gas inventories and projections.
- Implementing the Emissions Trading Directive, for over 100 of the largest producers of carbon dioxide in Ireland.

## Environmental Research and Development

- Funding environmental research to identify pressures, inform policy and provide solutions in the areas of climate, water and sustainability.

## Strategic Environmental Assessment

- Assessing the impact of proposed plans and programmes on the Irish environment (*e.g. major development plans*).

## Radiological Protection

- Monitoring radiation levels, assessing exposure of people in Ireland to ionising radiation.
- Assisting in developing national plans for emergencies arising from nuclear accidents.
- Monitoring developments abroad relating to nuclear installations and radiological safety.
- Providing, or overseeing the provision of, specialist radiation protection services.

## Guidance, Accessible Information and Education

- Providing advice and guidance to industry and the public on environmental and radiological protection topics.
- Providing timely and easily accessible environmental information to encourage public participation in environmental decision-making (*e.g. My Local Environment, Radon Maps*).
- Advising Government on matters relating to radiological safety and emergency response.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

## Awareness Raising and Behavioural Change

- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

## Management and structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.



## **Report on Bathing Water Quality for 2016**

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## Report on Bathing Water Quality 2016

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## Key Findings of 2016

### Bathing water Quality

- **130** (92.9%) of Ireland's 140 identified bathing waters met the minimum required standard of 'Sufficient' water quality – 2 more than in 2015
- **120** (85.7%) bathing waters were classed as being either 'Excellent' or 'Good' quality in 2016 compared to 114 (83.2%) in 2015
- **6** bathing waters were classified as 'Poor' in 2016 the same as in 2015 but only 3 cover both periods
- **14** bathing waters improved in quality, **8** showed signs of a deterioration and **1** was newly classified
- **79** other waters where bathing takes place were monitored by local authorities - many of which met the criteria for Excellent quality

### Pollution Notifications

- **81** bathing water incident notifications were received in 2016 compared to 147 in 2015
- **24** of these related to precautionary Short Term Pollution (STP) notifications but pollution was confirmed as occurring on only 2 occasions
- **42** bathing waters (30%) were affected by some restrictions compared to 29 (21%) in 2015 however 14 of these were STP warnings
- **56** Bathing restrictions were applied covering 228 days out of a total of 14980 beach / days (1.5%) compared to 131 days (0.9%) in 2015

### Suspected Cause of Pollution Events

- **23** notifications received were suspected as being due to wastewater discharges compared to 7 in 2015
- **21** notifications related to suspected pollution from agricultural sources with 1 linked to possible septic tank discharges (3 in 2015)
- **18** notifications were reported as suspected as being due to contamination from surface waters

# 1. Introduction

Good quality bathing water is an essential natural resource for recreational use as well as being an important tourist attraction. While Ireland has some of the best quality and most scenic waters in northern Europe there are many challenges to maintaining this situation. In particular the impacts of pollution from urban run-off, wastewater discharges, and agricultural sources - especially after heavy rain, remain a potential and continuing threat.

In 1991 Ireland identified just 65 bathing waters compared to the 140 currently. In 2008 the revised Bathing Water Directive (2006/7/EC) was transposed into Irish legislation as the “Bathing Water Quality Regulations 2008” [S.I. No. 79 of 2008](#). These new Regulations came fully into effect on the 31<sup>st</sup> December 2014.

Their purpose is primarily three-fold:

- To reduce the risk to bathers from bacterial pollution and improve health protection by introducing stricter standards for bathing water quality and a new approach to assessment;
- To establish a more pro-active approach to the assessment of possible pollution risks and the management of bathing waters;
- To promote increased public involvement and improved dissemination of information on bathing water quality to the general public.

In addition to using the microbiological parameters *E.coli* and Intestinal Enterococci rather than Total and Faecal coliforms, as was previously the case, assessment of bathing water quality now uses the compliance monitoring data for the current and 3 previous bathing seasons (on a rolling basis) rather than focusing solely on the most recent bathing season. This report presents the third assessment of Ireland’s identified bathing waters, under the terms of the 2008 Bathing Water Regulations, and is based on results for 2013 – 2016 inclusive. It also provides information on water quality at other locations where bathing activities occur and where the water quality monitoring is undertaken by local authorities as a public health measure this may be undertaken less frequently than at identified bathing waters.

The EPA provides systems for the communication and management of bathing water data both for Local Authorities and in the provision of information to the general public via our national bathing water website Splash ([splash.epa.ie](http://splash.epa.ie)). 2017 will see the launch of an updated bathing water portal **beaches.ie**. The new site is designed to be accessed from mobile devices. This represents a major step forward in making information on bathing water quality much more accessible to the public. Details of any reported incidents are notified to the public via a dedicated Twitter™ account @EPABathingWater.

The public can play an important role in improving water quality and can help by better managing their waste from beach visits (e.g. by taking your rubbish home for disposal) and by controlling domestic animals such as dogs (e.g. by bagging dog poo – don’t bury it in the sand). As well as being unsightly food waste can also attract seabirds which are well recognized as a potential source of bacterial pollution.

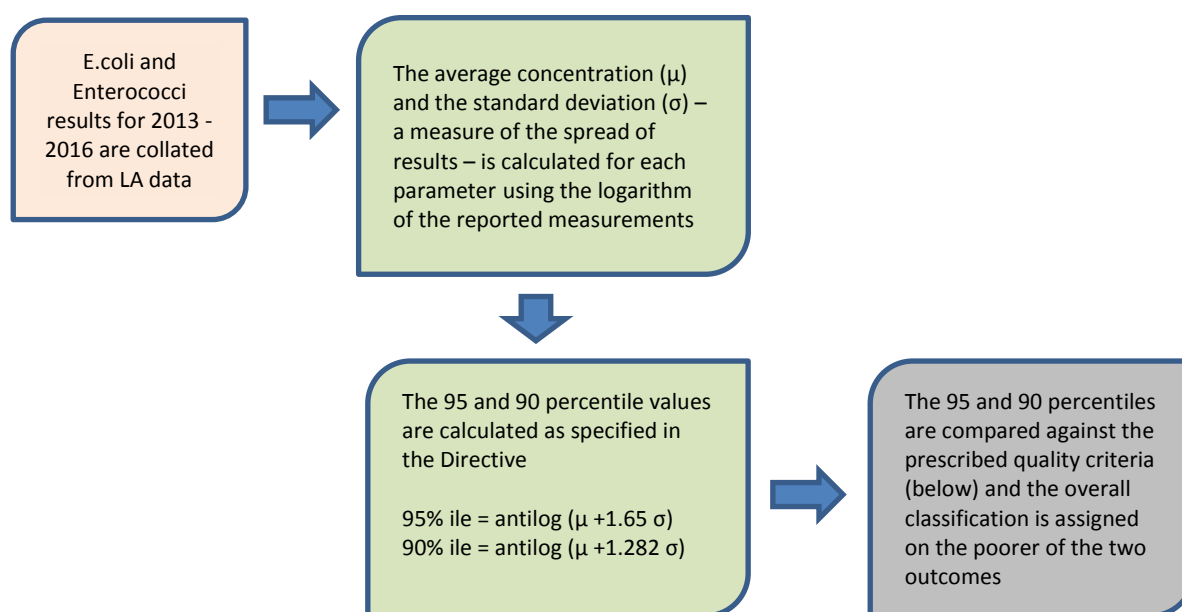
**Bathing in Ireland remains a safe and pleasurable activity, but we all need to take an active part to ensure that quality improvements are delivered.**

## 2. Bathing Water Quality Assessment

Since 2014 bathing water classification has been undertaken using data covering a 4 year period rather than just the past season's data and against more stringent bacterial thresholds. This approach is now common across all EU Member States and there is a requirement to ensure that bathing waters are of 'Sufficient' standard or better by September 2015. Any 'Poor' bathing waters require a programme of adequate management measures to be implemented. A minimum of 16 samples are required for formal assessment.

### 2.1 How is overall quality calculated?

The following flow chart shows how the overall quality is assessed



The standards to be met depend on whether the bathing water is a freshwater or a coastal location as set out below.

Parameter	Excellent	Good	Sufficient
E. coli (freshwater)	500*	1000*	900**
Intestinal enterococci (freshwater)	200*	400*	330**
E.coli (Coastal)	250*	500*	500**
Intestinal enterococci (coastal)	100*	200*	185**

\* based on 95-percentile calculation      \*\* based on 90-percentile calculation

While the overall water quality classifications refer to the assessment of 4 years data a key difficulty is determining the risk associated with a single set of microbiological results. The EPA, in agreement with the Health Services Executive (HSE), has adopted the following general classification of **individual samples** –regardless of their origin.

Parameter	Excellent	Good	Sufficient	Poor
Escherichia coli	≤250	251 - 500	501 - 1000	>1000
Intestinal enterococci	≤ 100	101 - 200	201 – 250	>250

### “New” Classification

When any bathing water is first reported by local authorities for identification under the 2008 Bathing Water Regulations it is given a classification of “New”. Once a minimum of 16 samples have been taken it can then be formally classified into one of the four quality categories.

### “Changes” classification

For bathing waters where major infrastructural improvements, such as the commissioning of a new sewage works, or other activities which could significantly and materially bring about a change in water quality, have occurred a formal classification cannot be determined until at least 16 samples (post change) are available for review. A holding category of ‘Changes’ is applied in such cases.

## 2.2 Bathing Water Classification signs

Each bathing water classification will now carry an EU pictogram which will be displayed both on Splash / **beaches.ie** systems and on beach noticeboards to indicate the 4 year water quality assessment. These pictograms are standard across EU Member States in both English and the national languages.



**‘Excellent’ quality**



**‘Good’ water quality**



**‘Sufficient’ water quality**



**‘Poor’ water quality**



**‘Ar Fheabhas’**



**‘Go maith’**



**‘Imleor’**



**‘Go Dona’**

## 2.3 Other hazards

In 2015 a Twitter™ feed, [@EPABathingWater](#), was introduced to keep bathers informed of any bathing water related news items and pollution incidents. One of the key issues in 2016 was the occurrence of hazardous jellyfish in Irish waters. Irish Water Safety is the lead organization for reporting of these hazards in conjunction with the local authorities however EPA used the Twitter feed to reinforce the message.

During 2016 the main species were the Lions Mane jellyfish and the Portuguese ‘Man o’ War’ both of which have stinging tentacles which can inflict a nasty wound even when they are dead. While the Lions Mane and barrel jellyfish were mostly found in the Irish Sea; the Portuguese Man o’ War was more evident on southern and western coasts. Further details on jellyfish identification can be found at Irish Water Safety: [http://www.iws.ie/fileupload/advice/id\\_card\\_for\\_website.pdf](http://www.iws.ie/fileupload/advice/id_card_for_website.pdf)



Lions Mane jellyfish



Lions Mane washed up in Dublin Bay



Portuguese Man o’ War



Skin lesions from Man o’ War contact

Another less harmful issue on some Irish Sea beaches was the growth of various forms of *Ulva* species commonly referred to as “Sea Lettuce”. These algae affected Clogherhead beach in County Louth for several weeks creating an unsightly scum on the high watermark. Though posing little risk to humans it can give off a foul odour, rather like rotten eggs, when it decays. It is very common along both sides of the Irish Sea coastline.

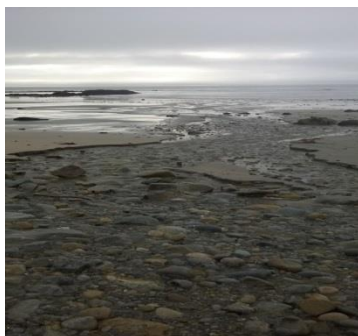


In late summer reports were received from several local authorities of the occurrence of off-white / yellowish lumps of what appeared to be a greasy solid substance. Following chemical analysis these were found to be decaying ‘fat-bergs’ of palm oil believed to have originated from a cargo lost off the southern coast of the UK in last winter’s storms. Palm oil is used as an additive in many cosmetics and personal care products. These fatty balls do pose a serious risk to dogs, in particular, who are attracted by their smell. If they ingest the oil it can cause severe illness.

**One, often overlooked, potential hazard at our beaches is the hidden bacterial risk from surface water streams and rivers which may drain onto the beaches either directly or through piped culverts.**

**These can be an enticing place for young children to play as they are generally warmer than the sea and don’t taste of salt but they can contain hidden dangers due to the presence of high bacterial counts from agricultural runoff, or from the impact of discharges from septic tanks ... particularly in rural areas and after heavy rainfall.**

**Large streams or rivers may also have received discharges from wastewater treatment plants.**



**Some local authorities have erected warning signs but this may not always be the case ... the best course of action is to keep young children out of these streams and rivers if at all possible.**

## 2.4 Emerging Issue - Antibiotic resistant bacteria

Over the last decade there has been a marked increase across the globe in the occurrence of illness arising from antibiotic resistant bacteria (ARB). Many of these cases have been connected to hospital acquired infections rather than from contact with recreational waters; however, a recent UK study<sup>1</sup> concluded that their abundance in sewage presents an exposure risk to bathers and to those engaged in water sports activities where ingestion of waters could occur. This issue has been recognized at European level as one of ten key societal challenges that need to be addressed through the EU Joint Programme Initiative. Research in Ireland funded by the EPA and led by NUI Galway into the presence and persistence of ARBs in hospital effluent<sup>2</sup> indicates that sewage discharges are a key exposure route with the numbers of ARBs diminishing with the complexity of the wastewater treatment process.

Further research by NUI Galway has identified the genetic fingerprint of antibiotic resistant *E.coli* in a sewage discharge and associated Irish bathing waters. At the present time, however, techniques to isolate and count the numbers of these ARBs are not well developed making it difficult to assess potential bather exposure. The research team also identified the presence of a harmful variant of *E.coli* in surface waters flowing onto the beach (VTEC). VTEC is typically found in areas of intensive cattle and / or sheep. This form of *E.coli* does respond to antibiotic treatment. Notwithstanding these issues, water quality at the beach shows levels of all *E.coli* (including any ARB and VTEC) consistently compliant with the minimum standard of 'Sufficient' over the last decade, meaning that the water quality has been compliant with the Bathing Water Directive requirements.



*E.coli*

The EPA's Urban Wastewater Treatment Report 2015<sup>3</sup> highlighted that raw sewage is being discharged from 43 areas and that delivery of suitable treatment facilities is delayed by an average of almost two years. One of these locations is the bathing water assessed by NUI Galway again highlighting the need to address untreated sewage discharges as a priority. Irish Water has indicated that a suitable wastewater treatment plant for the area is scheduled to be completed by the end of 2019.

The EPA will continue to fund research in this area and to facilitate engagement by Irish researchers with similar research at European level so that practical solutions can be found to deal with this issue.

<sup>1</sup> [Human recreational exposure to antibiotic resistant bacteria in coastal bathing waters](#), Leonaad A.F.C, et al; Environmental International, Vol. 82, Sept 2015, pages 92-100

<sup>2</sup> [Hospital effluent: impact on the microbial environment and risk to human health](#), EPA Research, November 2015 ISBN: 978-1-84095-614-6

<sup>3</sup> [Urban Waste water Treatment in 2015](#), EPA (2016)

### 3. How was our Bathing Water Quality in 2016?

For the 2016 bathing season there were **140** identified bathing waters assessed. 131 of these are coastal waters and 9 are inland freshwaters.

Overall, **130** (92.9%) of waters met the minimum required standard of 'Sufficient' – up 2 on 2015 however the reduction (in percentage terms) from 93.4% to 92.9 % is not significant.

- **102** (72.9%) of bathing waters were classified as 'Excellent' compared with 101 (73.7%) in 2015)
- **18** (12.9%) were classified as 'Good' compared to 13 (10.2%) in 2015. Water quality in Ardmore also met 'Good' quality but this location has been allocated to 'Changes' status pending full assessment of improvements arising from commissioning of a new wastewater treatment plant in early 2016
- **10** (7.1%) were classified as 'Sufficient' compared to 14 (10.2%) in 2015
- **6** were classified as 'Poor' the same number as in 2015. 3 of these cover both periods (Merrion Strand, Loughshinny, and Ballyloughane)
- **3** new locations classed as of 'Poor' quality in 2016 are Clifden, Tra na bhForbacha, and Portane (Brook beach).
- **3** bathing waters introduced in 2015 still remain to be fully classified (Dooley and Magheraarty in Co. Donegal, and Rush North Beach in Fingal).
- **1** bathing water (Ardmore) was classified as 'Changes' although meeting Good quality pending full assessment of improvements arising from commissioning of a new wastewater treatment plant in early 2016.

The breakdown between coastal and freshwater bathing areas is shown below.

Classification	Coastal (No.)	Coastal (%)	Inland (No.)	Inland (%)	Total	% (rounded)
Excellent	94	71.8%	8	88.9%	102	<b>72.9%</b>
Good	17	13.0%	1	11.1%	18	<b>12.9%</b>
Sufficient	10	7.6%	-	-	10	<b>7.1%</b>
Poor	6	4.6%	-	-	6	<b>4.3%</b>
New / Changes	4	3.1%	-	-	4	<b>2.9%</b>
Overall	131		9		140	100%

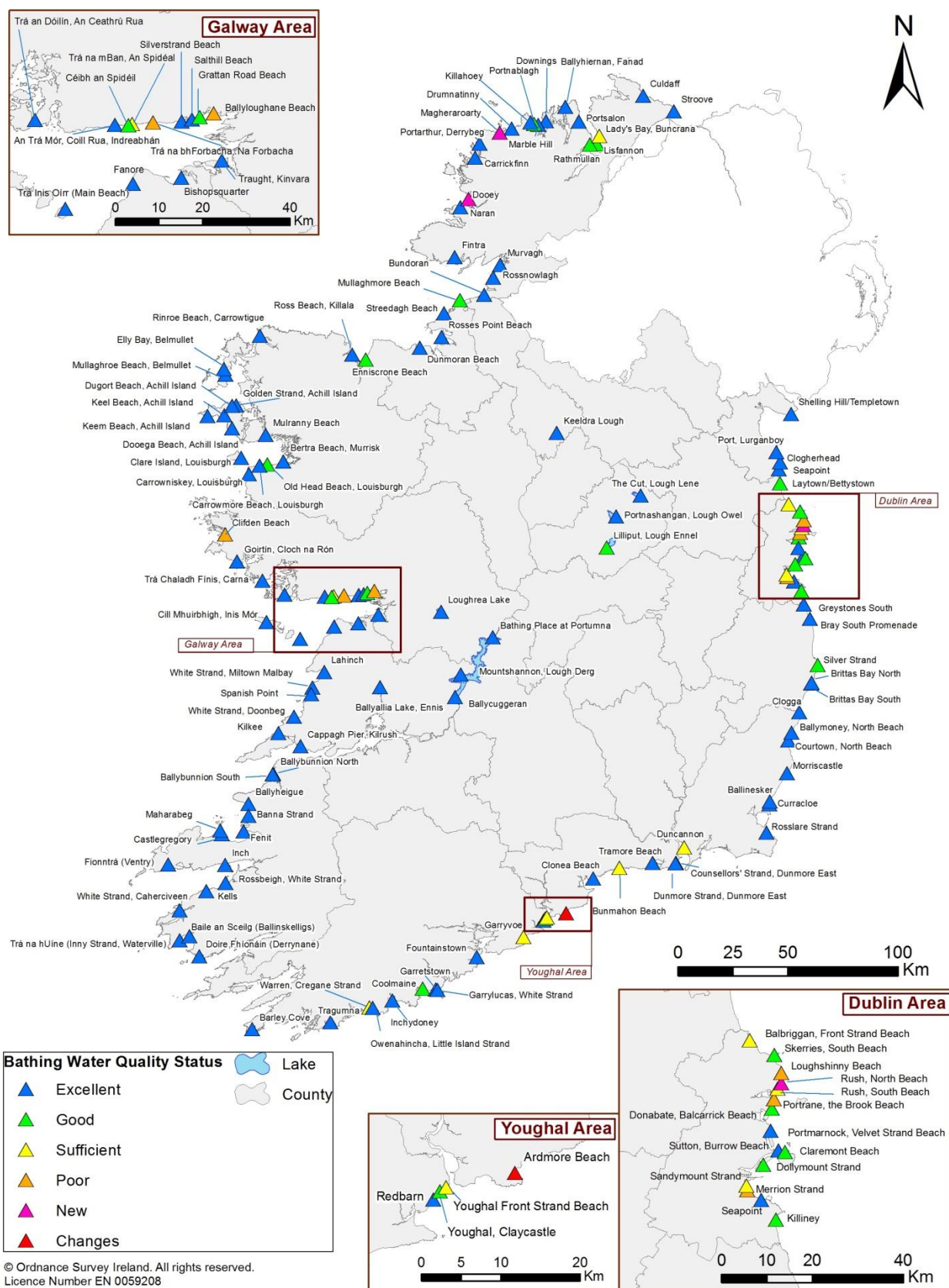
**Note:** Percentage values are rounded for reporting purposes.

The improvement in the number of waters achieving 'Good' classification (up 5 on 2015) and the corresponding reduction in the number of waters achieving 'Sufficient' status (down 4 on 2015) is very encouraging and can be attributed, in part, to the exclusion of the influence of results from the unusually wet summer of 2012. In August 2014 however, several bathing waters around Dublin Bay area suffered pollution arising from extremely heavy rainfall which has resulted in some waters achieving poorer quality than might otherwise have been expected given that classification is based on the period 2013 to 2016.

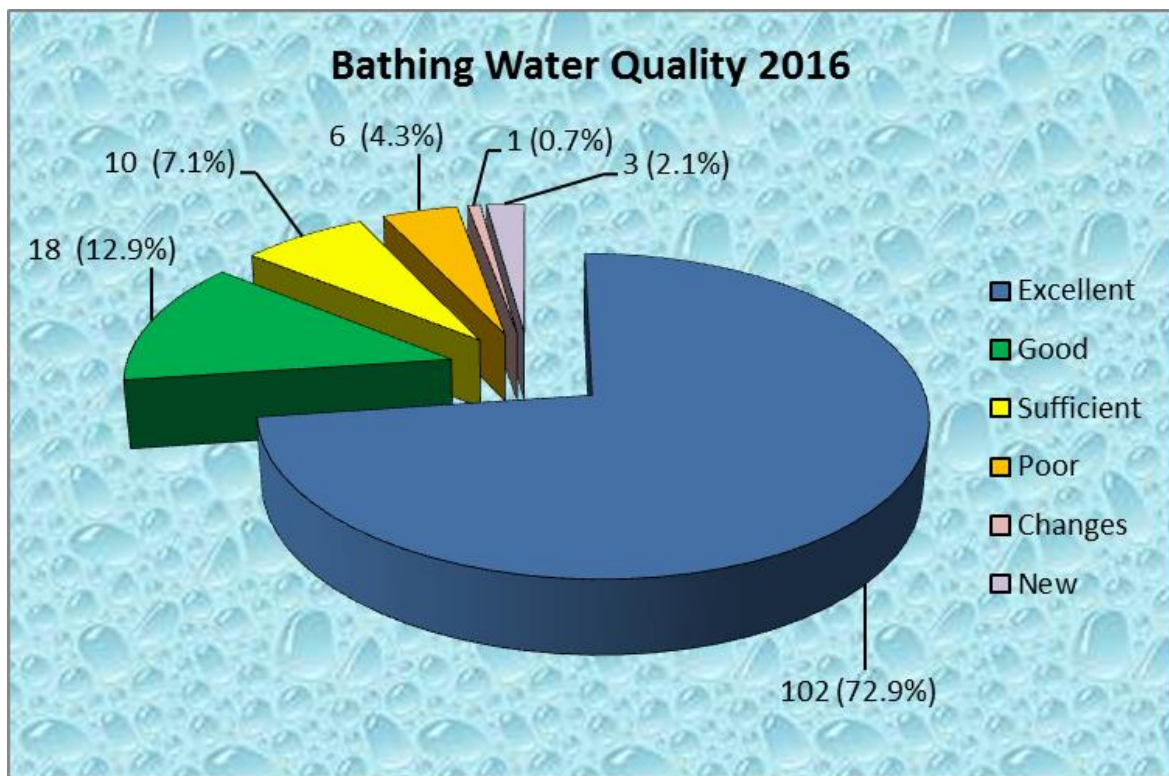
**What is encouraging is that the number of waters achieving 'Excellent' classification remains fairly stable (103 in 2014, 101 in 2015, and currently 102). This reflects that around three quarters of Ireland's bathing waters appear to be relatively unaffected by pollution impacts.**

As is only to be expected there is some variation in the numbers of 'Good' and 'Sufficient' quality waters reflecting their greater vulnerability to pollution events, however despite this, the overall numbers of waters meeting the minimum standard of 'Sufficient' quality is generally consistent at around 93%.

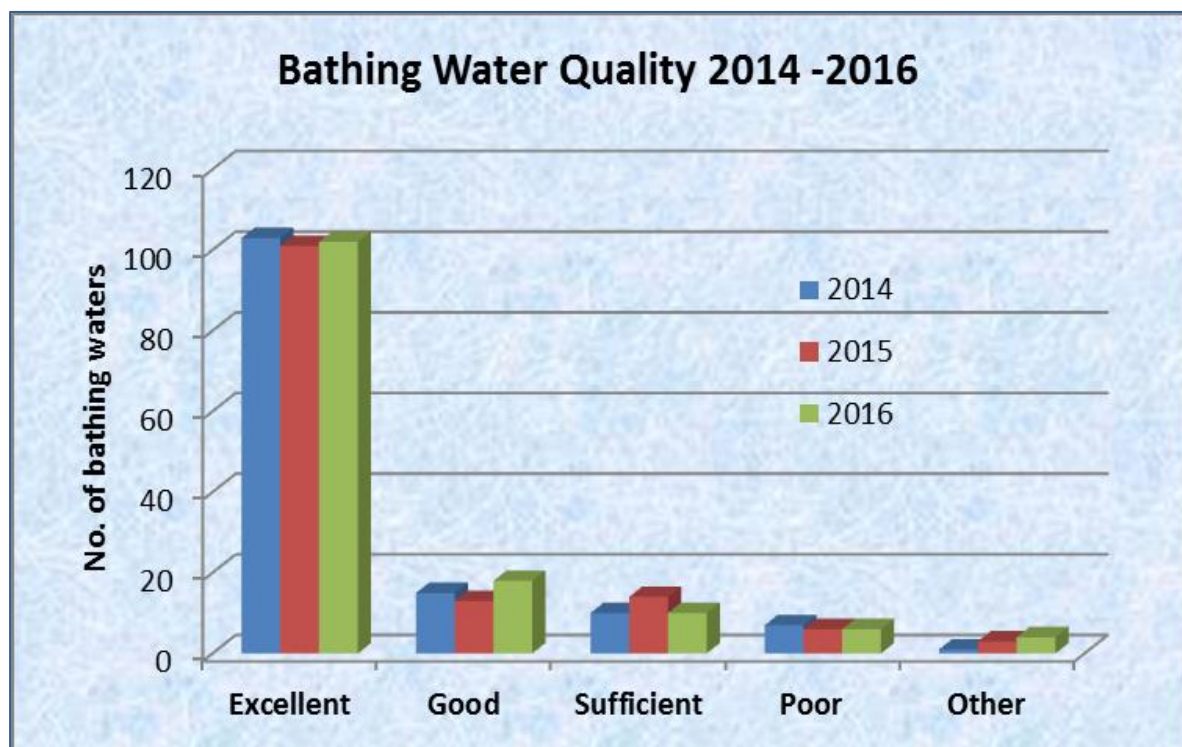
# Bathing Water Quality Map of Ireland 2016



## Bathing Water Quality 2016



## Bathing water quality comparison (2014 - 2016)



Although the number of bathing waters classified as 'Poor' remains unchanged in 2016, three of those previously classified as 'Poor', Duncannon, Youghal Front Strand, and Rush (South Beach) all improved. Portrane (Brook beach), Tra na bhForbacha, and Clifden were newly classified as Poor.

Those waters exhibiting changes in quality are listed below:

### Water quality changes - Improvements

Local Authority	Bathing Water	2015 Quality	2016 Quality
Cork	Coolmaine	Sufficient	Good
	Fountainstown	Sufficient	Excellent
	Garretstown	Good	Excellent
	Redbarn	Good	Excellent
	Youghal Claycastle	Sufficient	Good
	Youghal Front Strand	Poor	Sufficient
Dublin City	Dollymount Strand	Sufficient	Good
Fingal	Rush, South Beach	Poor	Sufficient
	Skerries, South Beach	Sufficient	Good
Galway City	Grattan Road Beach	Sufficient	Good
Galway County	Tra Inis Oir	New	Excellent
Waterford	Ardmore Beach *	Sufficient	Changes
Westmeath	Lilliput (L. Ennel)	Changes	Good
Wexford	Duncannon	Poor	Sufficient
Wicklow	Bray South Promenade	Good	Excellent

\* Ardmore achieved 'Good' water quality in 2016 but was placed in the 'Changes' category pending assessment of the performance arising from the commissioning of a new wastewater treatment plant in early 2016.

### Water quality changes – deterioration

Local Authority	Bathing Water	2015 Quality	2016 Quality
Cork	Warren, Cregane Strand	Good	Sufficient
Donegal	Lisfannon	Excellent	Good
Dun Laoghaire Rathdown	Killiney	Excellent	Good
Fingal	Donabate – Balcarrick beach	Excellent	Good
	Portrane - Brook beach	Good	Poor
Galway County	Clifden	Changes	Poor
	Tra na bhForbacha	Sufficient	Poor
Sligo	Mullaghmore beach	Excellent	Good

Movement from one category to the next (particularly from Excellent to Good) can be influenced by the inclusion of just a few poor samples out of a 4 year data set leading to a wider spread of results and thus a higher 95 percentile value. By contrast improvements are most notably observed when a "bad" year with some high results is no longer part of the rolling 4 year data set. One such example is Youghal Front Strand. While water quality in 2015 and 2016 has shown marked improvements the overall assessments was being influenced by a very poor 2012 bathing season.

A number of bathing waters have been identified as vulnerable to pollution impacts and it is generally these which will tend to move within the Sufficient / Poor categories.

## Waters considered as vulnerable to pollution

In addition to those waters currently classified as 'Poor' there are a number of waters currently achieving Good or Sufficient quality, or which have been classified as 'Sufficient' in previous years, which have the potential for 'Poor' classification as a consequence of significant pollution impacts. This list is not exclusive but includes the following beaches. In each case the most likely pollution source is also identified based on the bathing water profiles and management plans.

Status	Local Authority	Bathing Water	Likely pollution source(s)
<b>Poor</b>			
	Dublin City	Merrion Strand	Surface waters / drainage misconnections / birds
	Fingal	Loughshinny	Septic tank discharges
		Portrane	Sewage discharges / surface run-off
	Galway County	Clifden	Sewage / Septic tank discharges
		Tra na bhForbacha	River inputs / septic tanks
	Galway City	Ballyloughane	Urban sewage discharges / sewer misconnections
<b>Vulnerable</b>			
	Cork	Garryvoe	Surface water stream
		Warrane, Cregane Strand	Sewage discharges
		Youghal Front Strand	Sewage discharges
	Donegal	Lady's Bay, Buncrana	Sewage discharges / river inputs
	Dublin City	Sandymount	Surface waters / birds / dogs
	Fingal	Balbriggan	River inputs / Harbour activities
		Rush South beach	Sewage discharges
		Rush North beach	Sewage discharges
		Skerries	Sewage discharges
	Galway city	Grattan Road	Sewage discharges / urban runoff
	Galway	Tra na mBan	Sewage / Stream discharges
	Waterford	Bunmahon	River inputs / agriculture
	Wexford	Duncannon	Sewage / surface waters

**It is strongly recommended that local authorities review possible pollution sources and any mitigation measures needed to reduce the likelihood of 'vulnerable' waters attaining 'Poor' quality.**

## 4. Who does what?

In Ireland, Local authorities have the primary responsibility for the management and monitoring of bathing waters and for the implementation of management measures to reduce or eliminate sources of pollution. They undertake the sampling and analysis of bathing waters as well as the day to day practical aspects of litter removal, maintenance of facilities, and the investigation of pollution events.

The EPA's role, as regulator, is to ensure that the local authorities carry out these functions in accordance with the Bathing Water Regulations. We collate the monitored data and undertake the formal assessment of water quality together with reviewing actions taken by local authorities in relation to pollution incidents. We report this data to the European Commission in December of each year. We provide, and support, the Splash national bathing water website and its associated Twitter™ account. The Splash website will be replaced during 2017 by a new mobile-friendly application entitled **beaches.ie**

By 24<sup>th</sup> March of each year local authorities are required to identify to the EPA all bathing waters that they wish to be formally identified to the EU. Any newly identified bathing areas require the provision of supporting information including a bathing water profile which identifies the characteristics of the bathing water, its catchment area, and an assessment of potential pollution risks. Identified bathing waters would generally be those which have historically been used for bathing and where a large number of bathers would be expected. These would, in most cases, also have adequate car parking and facilities such as toilets, picnic areas etc. Some smaller beaches which can be important for eco-tourism may also be monitored by local authorities. Where this information has been made available to EPA the water quality has been reviewed.

Bathing in Ireland can be an all year round activity in some locations; however for the purposes of assessing water quality the bathing season in Ireland runs from 1<sup>st</sup> June to 15<sup>th</sup> September each year. In other European countries it varies widely from just a few weeks in mid-summer in Scandinavia to several months in the Mediterranean regions.

The public can make representation to local authorities for the identification of new bathing areas and each year local authorities provide an opportunity to make such submissions. Information can be found on local authority websites – usually in their Environment sections. In 2016 the EPA issued guidance for both the public and local authorities on what information should be provided and how this should be assessed. These documents are available at the following links:

Public Guidance: <http://www.epa.ie/pubs/reports/water/bathing/publicadvicebathingwaters.html>

Local Authority Guidance:

<http://www.epa.ie/pubs/reports/water/bathing/frameworkforlocalauthoritiesofnewbathingwaterssubmissions.html>

To date, very few submissions have been made in this way however EPA would encourage the public to use this guidance to alert local authorities to popular beaches. Several inland local authorities have not identified any bathing waters and if you know that there are locations which are used for swimming on a regular basis then you should make this information known to them using the above guidance. Similarly, if you know of locations that are not currently being monitored, but where swimming is commonplace, then it is important to make these locations known to the local authority. This information is extremely helpful in determining whether the location meets the criteria for identification as a bathing water to be managed under the requirements of the Bathing Water Regulations.

**Many coastal waters are used for recreational activities such as surfing outside of the bathing season and, in general, these are not monitored by local authorities for bacteriological quality.**

**Recreational users should be mindful of the possible risks of deterioration in water quality, especially after heavy rainfall, due to potential pollution from agricultural sources or from the impacts of discharges from sewage overflows.**

Local authorities provide to the EPA details of their planned sampling programme (their annual monitoring calendar) prior to the start of each bathing season. Sampling is required to be undertaken within 4 days of the planned date to allow for contingencies such as stormy conditions which would render sampling unsafe or where, especially for those island bathing waters, air or ferry transport schedules are disrupted by bad weather. A 'pre-season' sample is taken in late May and thereafter there is a requirement for a minimum of monthly sampling.

The minimum required monitoring frequency is monthly however most local authorities in Ireland sample at frequencies of typically fortnightly, even weekly in some areas. Increased sampling frequency provides greater certainty to the overall water quality. Results are reported to the EPA via the

Environmental Data Exchange Network (EDEN) shared service and the results are reported on the national website however, there is always a short time delay between sampling and the availability of results. It can take up to 72 hours for results to be available once samples have been received by the laboratory due to the time it takes to culture the relevant bacteria and, unlike other areas of water quality assessment; **there are no quick alternatives to microbiological testing**. Local authorities are encouraged to report their results promptly so that water quality data is kept up to date but the display of information and status assessment does depend on how quickly this data is reported.

When a pollution incident occurs, or when sampling identifies a pollution risk which could have an impact on bather health local authorities will take action based on the microbiological thresholds established in conjunction with the HSE. Both the HSE and EPA are notified of the incident and may advise the local authority on any potential bathing restrictions. Several local authorities monitor weather forecasts in an effort to predict possible pollution events e.g. as the result of heavy rainfall, and will often put in place 'Prior Warning' notices to advise the public of possible pollution risks. Details of these, and any other pollution incidents, are notified by local authorities via the EPA Bathing Water Information System (BWIS) and subsequently will be notified to the public via the **splash.epa.ie** and **beaches.ie** websites and the @EPABathingWater Twitter™ account.

The public are also notified by means of signage located at the beach notice boards or main access routes. Notices are also displayed on local authority websites and may also include media broadcasts. Splash automatically issues Twitter™ alerts and the relevant details will be displayed on the Splash website. Where the pollution is considered to be linked to wastewater discharges the local authority is required to contact with Irish Water staff.

Incident details are regularly updated by local authorities via Bathing Water Information System and their impacts will be assessed by the EPA Bathing Water Unit and depending on the source of the pollution, the EPA Office of Evidence & Assessment (OEA) or the EPA Office of Environmental Enforcement (OEE). At the end of each season the EPA undertakes a review of water quality information and submits the monitoring data and the water quality status assessments to the European Commission, along with details of any bathing restrictions, and management measures taken in respect of any incidents.

## 4.1 Warning signs and Incident management

A key requirement of the Bathing Water Regulations is the notification to the public of any potential risks to bathing water quality. This has necessitated the development of a range of signage to cover the following commonly occurring situations:

- \* Where a deterioration in water quality is predicted (in advance) as being likely to occur;
- \* When routine sampling shows a deterioration in water quality which indicates that bathing is not advisable; and
- \* When bacterial pollution is detected at concentrations which present an acute health risk and a bathing prohibition is required.

It is difficult to forecast or predict, with absolute certainty, when any deterioration in bathing water quality is likely to occur, or indeed how significant it might be, however some local authorities have adopted either mathematical modelling or a risk-matrix linking the likely impacts of bacterial pollution to rainfall. Additionally, protocols have been developed which take account of extreme weather warnings issued by Met Éireann allowing them to forewarn the public of a possible pollution event. In the case of predicted possible pollution (e.g. forecasts of very heavy rainfall) many local authorities will erect 'Prior Warning' notices at bathing waters they consider likely to be affected. These notices are very much a **precautionary** approach and do not necessarily mean that any pollution **will** definitely occur.

Their purpose is simply to advise the public of possible Short Term Pollution which usually lasts for only a few days at most, however if the water remains discolored bathing would not be advisable. If any deterioration in quality is identified this may then be replaced by either a 'Swimming not advised' or a 'Do not Swim' notice depending on the severity of the pollution.

Local authorities will generally monitor the bathing water to confirm whether or not pollution has actually occurred and also when it is no longer evident. They may update the signage depending on the levels of pollution found and / or advice received from the HSE. Restrictions remain in place until it has been shown that pollution did not occur or that the water quality has returned to normal.

These signs (as an A3 sized template) are available in both English and Irish and will normally be placed on the beach notice boards and on local authority websites. Electronic copies of any signage erected is also required to be submitted to the EPA along with full details of the incident, the likely source of pollution, and the expected duration of the event. The EPA closely monitors each incident as it is ongoing.

Pollution can also be detected in bathing waters through planned compliance monitoring and in such circumstances local authorities will take action based on HSE microbial thresholds while seeking their advice as to the nature of any bathing restrictions. Depending the severity this will either be an 'Advice against bathing' or, in the case of more serious pollution a 'Bathing prohibition'. In both cases the purpose of this signage is to advise the public of a possible increased risk to health as result of any deterioration in water quality.

Where incidents are reported as being potentially linked to wastewater discharges, diffuse pollution, or domestic wastewater treatment systems (septic tanks) then the EPA's Office of Environmental Enforcement is notified and may open an enforcement file depending on the severity and frequency of incident notification. Management measures and investigations undertaken by the local authority, are reported to EPA prior to the Agency's assessment of bathing water quality and reporting to the EU at the end of each bathing season.

For those waters classified as 'Poor' (based on the 4 year assessment) there is an additional legal requirement that local authorities advise the public of this classification. To assist in this task two additional signs have been developed to help provide information on not only the likely pollution sources but what is being done to rectify the situation. Though similar in style the information they contain is much more detailed.

Work is in progress to refine and simplify these signs and your feedback would help us in this task. Please submit any comments to [bathingwater@epa.ie](mailto:bathingwater@epa.ie)

## 4.2 Interpreting what 'Poor' Water Quality means

Assessment for the Bathing Water Regulations requires the application of a statistical approach to the calculation of water quality over a four year period. The use of such an approach is to accommodate the minimum required sampling frequency of 5 samples per season.

**The fact that a bathing water receives a classification of 'Poor' water quality reflects that, from time to time, these waters may be subject to periodic, or more significant pollution events, than waters of better quality.**

**This often reflects the sensitivity of the bathing water to diffuse pollution from surface waters, or from the impacts of nearby sewage discharges, most commonly as a result of heavy rainfall.**

**‘Poor’ classification means that the bathing water has not met the minimum required standard required under the Bathing Water Regulations and that management measures to improve its quality are required to be identified and implemented.**

**It is however important to note that a ‘Poor’ classification is based on a 4 year data set and is assessed on a rolling basis each year whereas the current water quality (as previously shown on Splash) ... and in future on Beaches.ie) is based on the last reported sample and is gauged against the criteria in section 2.1.**

For the assessment period 2013-2016 there are 6 bathing waters currently classed as being of ‘Poor’ quality. Three of these were also rated as ‘Poor’ in the 2015 assessment due to the presence of elevated pollution levels at some stage during the summer. In each case the problems have been linked to the impacts of pollution from either wastewater discharges or surface waters.

The EPA’s “*Guidance on the Management of Poor Bathing waters*” requires that a bathing restriction be applied for the entire season which explains the reasons for the poor water quality and what is being done to rectify the problems.

Monitoring of these ‘Poor’ waters will continue to be undertaken throughout the bathing season and the results will be available on beach noticeboards and on the Splash website.

While an ‘advice against swimming / bathing’ is the most likely restriction, a local authority may choose to implement a ‘Bathing prohibition’ which is, in effect, a ban on all bathing.

**In neither case does this mean that the beach itself is “off-limits” since the restriction applies to the bathing water rather than use of the landward area of the beach.**

In early 2017 the EPA reviewed plans for the implementation of management measures to remediate ‘Poor’ waters along with the implementation and effectiveness of any management measures undertaken during the 2016 bathing season.

### **4.3 Management Measures for ‘Poor’ Waters**

The following tables show the progress and issues relating to those waters previously classified as ‘Poor’ together with the planned measures for those currently identified in 2016. Much of the infrastructure investment required to rectify issues with wastewater discharges features in Irish Water’s Capital Investment Programme however in most cases the timeframe is several years off due to the conflicting priorities of balancing investment in other areas of drinking water and wastewater infrastructure.

On a positive note the new wastewater treatment plant commissioned at Ardmore in 2016 has resulted in a marked improvement in the water quality there. Irish Water has also announced the commencement of major infrastructural works to improve water quality at Rush South Beach and its environs.

Duncannon (Poor in 2014) continued its improvement in quality achieving ‘Sufficient’ quality in 2016. This is despite little progress having been made towards the construction of a suitable wastewater treatment plant for the town. It is considered that changes in land use or a reduction in pollution sources inland is the major factor here.

In Galway City, Grattan Road beach showed a marked improvement in quality as did Fountainstown in Co. Cork. Youghal Front Strand has also finally recovered from the impacts of the wet summer of 2012 and achieved ‘Sufficient’ quality. It is expected that the new Youghal wastewater treatment plant, which is under construction, should make a marked impact on water quality when it becomes operational in 2018.

The one disappointment in the year was Clifden (Co. Galway) where despite the commissioning of a new wastewater plant in 2015, and a series of Excellent quality samples in that year, 2016 saw the occurrence of high bacterial concentrations on several occasions often preceded by heavy rainfall. Investigations by Galway County Council have shown up a number of additional potential pollution sources as well as raising concerns over the operation of storm discharges from the Waste Water Treatment Plant itself. The net result is that Clifden will again be classified as 'Poor' – possibly for several years - until remedial measures are put in place.

All of the three newly classified Poor waters are unlikely to see much improvement over the next few years as they all exhibited very high results in recent years which will influence their general classification. Planned management measures are summarized below.

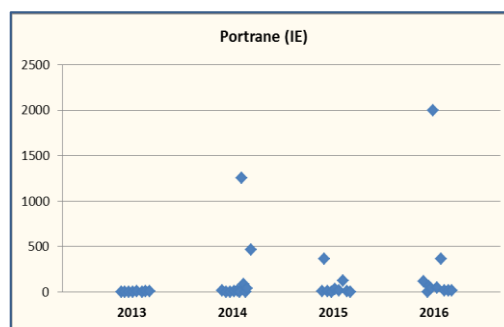
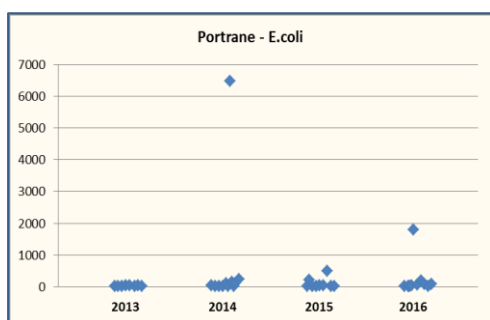
Previously Poor waters – now improved						
Bathing Water	Local Authority	First year classified as 'Poor' under 2006/7/EC	Action taken and Outcomes achieved	Performance in 2016 using single sample assessment criteria	Water Quality Classification 2013 -2016	Comment
Ardmore	Waterford City & County Council	2014	A new wastewater treatment plant was constructed and commissioned in late 2015.	15 Excellent	Changes	Improvements in bacterial levels were observed in 2016 as a direct result of the new WWTP. Water quality met Good status (2013-2016) but has been put into Changes class following commissioning of the WWTP
Duncannon	Wexford County Council	2014	Issues with the location of the proposed WWTP meant no infrastructural remedial action was undertaken in 2016. Duncannon forms part of an 18 location review by Irish Water and a WWTP is not expected before 2021. Substantive investigative work was undertaken in 2015 to identify possible pollution impacts.	15 Excellent	Sufficient	Duncannon showed a marked improvement in performance in 2016 when compared with previous years however the absence of a suitable wastewater treatment system means this location remains potentially at risk of a decline in quality.
Lilliput	Westmeath County Council	2014	In 2015 Westmeath Co. Co. opted to tanker offsite all wastewaters from the small WWTP at Lilliput.	11 Excellent 4 Good	Good	The offsite treatment of wastewater at Lilliput has significantly improved water quality based on 2015 and 2016 data. This allows its re-classification from 'Changes' to 'Good' quality. Continuation of this practice is necessary to avoid any deterioration in quality
Youghal Front Strand	Cork County Council	2014	Interception of the main CSO to reduce likelihood of discharges to the Front Strand. Sewer network contract largely complete. Groundwork on the construction of new WWTP commenced in Sept. 2015 with expected completion by late 2017.	9 Excellent 2 Good	Sufficient	Youghal Front Strand showed improved performance in both 2015 and 2016 but its current improved quality is largely down due to the loss of the influence of the high bacterial counts from CSO (storm outfalls) operation during the wet summer of 2012.
Rush South Beach	Fingal County Council	2014	No major infrastructure work in 2015. Water quality improved on that observed in 2014.  Construction contracts are at the pre-qualification stage and not expected to be complete before end 2018.  Irish Water announced commencement of ground works for Rush infrastructure improvements in August 2016	9 Excellent 1Poor	Sufficient	While most of the 2016 samples showed Excellent quality Rush continues to show episodic pollution which appears to be linked to wastewater discharges. While meeting Good for E.Coli, the Enterococci levels just meet Sufficient and show the continued vulnerability of this beach to pollution events.

Currently Poor waters – 2016						
Bathing Water	Local Authority	First year classified as 'Poor' under 2006/7/EC	Summary of key management measures proposed	Performance in 2016 using single sample assessment criteria	Water Quality Classification 2013 -2016	Comment
Ballyloughane	Galway City Council	2014	<p>Investigative surveys to identify and correct misconnections to surface water drainage systems in the Ballyloughane outfall catchment area were undertaken in 2016 and remedial works on combined storm overflows to limit their operation have also been undertaken.</p> <p>Longer term plans for sewer network upgrades will be identified through the Galway City Drainage Plan as required in conjunction with Irish Water.</p> <p>A detailed examination of the Merlin Park sewer network is planned to be complete by Q4 of 2017.</p>	<p>10 Excellent</p> <p>3 Good</p> <p>2 Poor</p>	Poor	<p>Ballyloughane beach remains as 'Poor' with elevated bacterial levels being observed in all years since 2013.</p> <p>Although the Renmore outfall has now been decommissioned investigations by the local authority and Irish Water have revealed a number of misconnections in the areas served by the Ballyloughane and Murrough outfalls.</p>
Clifden	Galway County Council	2014 and again in 2016	<p>An extensive overhaul of the sewer network has been completed with separation of surface and foul water in the town center.</p> <p>The new WWTP has been operational since Q3 of 2015 with disinfection of the effluent discharge during the bathing season.</p> <p>Current proposed measures include the optimization of capacity at the WWTP during the bathing season together with remedial works to improve the further segregation of surface and foul water flows in the town.</p>	<p>7 Excellent</p> <p>1 Good</p> <p>1 Sufficient</p> <p>3 Poor</p>	Poor	<p>Clifden was sampled at the minimum required frequency in 2015 with all 5 samples being of excellent quality. In 2016 several poor samples were obtained mostly after heavy rainfall resulting in reclassification as 'Poor'.</p> <p>Investigations have revealed additional possible pollution inputs and WWTP storm water management issues.</p>

Currently Poor waters – 2016						
Bathing Water	Local Authority	First year classified as 'Poor' under 2006/7/EC	Summary of key management measures proposed	Performance in 2016 using single sample assessment criteria	Water Quality Classification 2013 -2016	Comment
Loughshinny	Fingal County Council	2015	<p>Irish Water has two sewerage projects planned to facilitate the decommissioning of the existing septic tank at Loughshinny and to provide transfer of existing pumping station discharges to the Skerries WWTP however completion of this project is not expected until Q4 2018 at the earliest.</p> <p>Proposed measures for 2017 include the inspection of domestic wastewater systems within the catchment together with monitoring of surface water outfalls.</p>	<p>6 Excellent 2 Good 1 Sufficient</p>	Poor	<p>Loughshinny was first classified as Poor in 2015 and at risk of failing from the combined impacts of septic tank discharges and surface water drainage.</p> <p>There are possible impacts from wastewater discharges to north of the bathing area.</p> <p>But for one high sample in 2014 the beach would have achieved Sufficient quality.</p>
Merrion Strand	Dublin City Council	2015	<p>Merrion Strand was first classified as Poor in 2015 based on 2012-2015 data.</p> <p>Management plans focus primarily on the identification and remediation of possible misconnections to both the Elm Park and Trimblestown streams draining onto the beach.</p> <p>Irish Water has indicated its willingness to cooperate with the relevant Local Authorities into investigations required in ascertaining misconnections to the surface water systems. Irish Water will use and develop current network models to assess possible pressures on the bathing water quality.</p> <p>Irish Water proposes to assess the current CSO spill data to the Elm Stream and correlate with the bathing water samples to check their impact and relevance.</p>	<p>9 Excellent 5 Good 5 Sufficient 1 Poor</p>	Poor	<p>Merrion Strand exhibited a number of sporadic but significant pollution events during 2015 and again in 2016 which appear to be largely linked the quality of nearby surface waters / streams or other urban run-off.</p> <p>Inputs from the Elm Park stream and changes in flow direction due to a build-up of near shore sandbars have been linked to these events.</p> <p>Genetic profiling of bacteria indicates the presence of both human and avian (bird) genetic markers. Further work to identify which is the predominant influence is planned.</p> <p>Daily bird population surveys undertaken in 2016 showed high numbers of seabirds in the vicinity of the beach.</p>

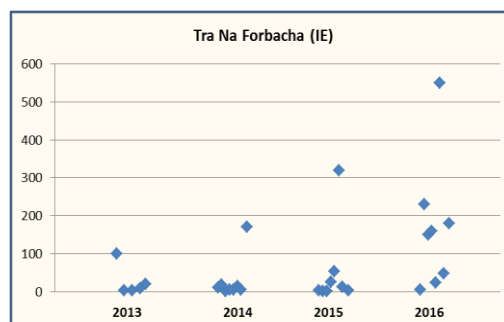
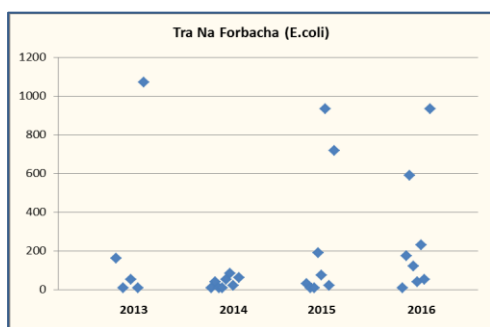
Currently Poor waters – 2016						
Bathing Water	Local Authority	First year classified as 'Poor' under 2006/7/EC	Summary of key management measures proposed	Performance in 2016 using single sample assessment criteria	Water Quality Classification 2013 -2016	Comment
<b>Portrane (Brook beach)</b>	Fingal County Council	2016	Proposals include investigation of domestic WWTP systems in the catchment together with more targeted inspections by dog wardens and sampling of stream outfalls to determine water quality Q2 - Q4 2017.	7 Excellent 1 Good 2 Poor	Poor	<p>Water quality at Portrane meets Sufficient quality for <i>E.coli</i> despite a very high value in 2014 following heavy rainfall.</p> <p>In 2016 another very high value for Enterococci influenced the Poor outcome and demonstrates the vulnerability of this location to sporadic pollution events. This high value is likely to have an impact on future quality assessments until at least 2018.</p> <p>The Council has been requested by EPA to consider, in conjunction with Irish Water, any potential impacts of wastewater discharges to the Rogerstown Estuary to the north of the bathing area.</p>
<b>Tra na Forbacha</b>	Galway County Council	2016	<p>Proposals include the review of a Section 4 discharge license for a facility adjacent to the beach together with additional inspections of domestic wastewater systems under the National Inspection Programme.</p> <p>The timeframe is set as Q2 of 2017 / ongoing monitoring</p>	3 Excellent 1 Good 3 Sufficient 1 Poor	Poor	<p>Tra na Forbacha has shown consistent episodic pollution but is influenced to some degree by the Knock River which drains to the western end of the beach.</p> <p>Monitoring indicates this is subject to contamination from bacterial inputs – possibly from septic tanks as agriculture is limited by the geography of the catchment.</p>

## Portrane (Brook Beach)



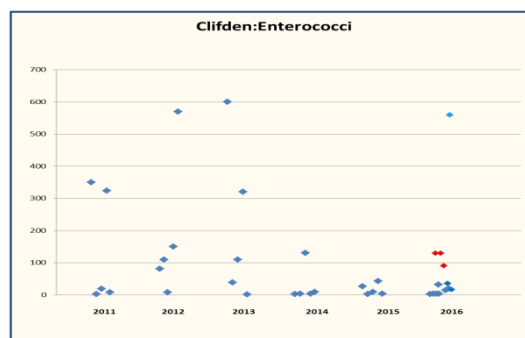
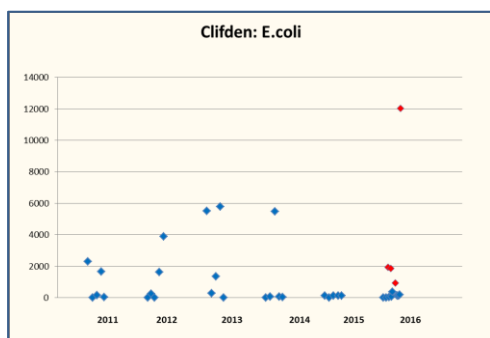
Water quality at Portrane is influenced by the high results obtained in August 2014 following extensive heavy rainfall over the Bank Holiday weekend and in July 2016 another very high Enterococci result was obtained following routine sampling. On that occasion there had been no appreciable rainfall and investigations showed no evidence of any wastewater discharges. Fouling from animals was considered to be the most probable cause.

## Tra na Forbacha



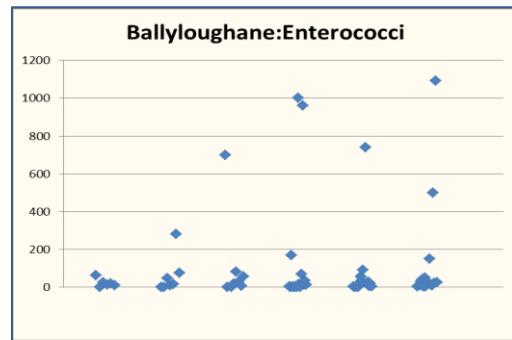
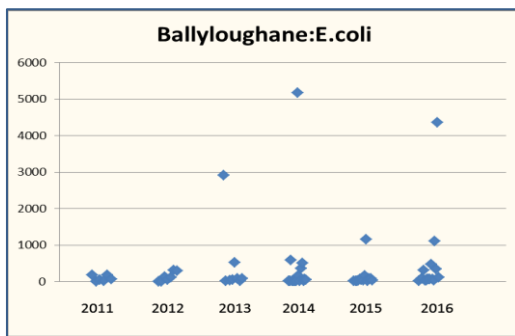
Tra na Forbacha has exhibited episodically high bacterial counts in most years especially for Enterococci. While bacterial counts for both parameters are elevated, compared to many other beaches in Co. Galway, it is primarily the frequency of their occurrence which has resulted in the current classification. A key influence on overall quality may be possible pollution from the Knock river which discharges at the western end of the beach.

## Clifden



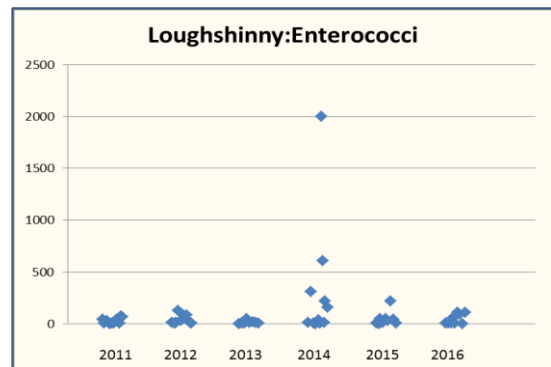
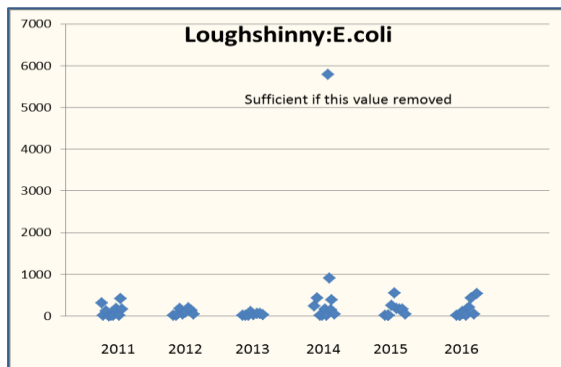
The highly variable nature of water quality at Clifden is illustrated by comparison with 2015 data. Wastewater treatment plant storm discharges may have been a contributory factor in 2016.

## Ballyloughane



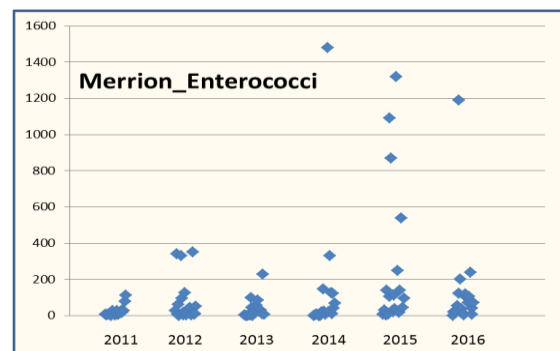
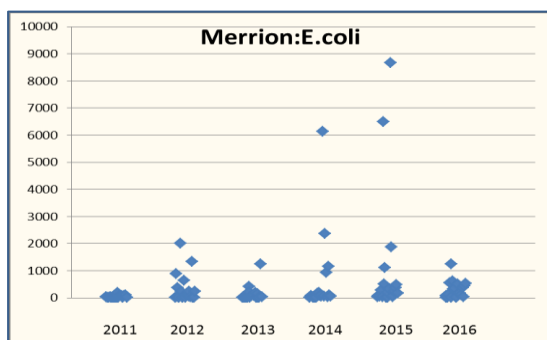
The large variations in both E.coli, but more so Enterococci counts, is the principal factor influencing Poor quality at Ballyloughane.

## Loughshinny



Loughshinny shows regular pollution impacts resulting in spikes in the numbers of bacteria found. While overall bacterial counts are not generally of a level to merit extreme public health concern the frequency of elevated counts indicates a background pollution source.

## Merrion Strand



Merrion Strand has shown a significant increase in the frequency and magnitude of pollution events in recent years with 2014 and 2015 being particularly poor.

## 5. Summary of Ireland's identified bathing waters

Water quality assessments have been undertaken on all of the EU identified bathing waters for the period 2013-2016 involving statistical assessment of the 95 and 90 percentile values following logarithmic transformation of the bacteriological results. This information is presented in the following table. All locations are coastal waters unless specified.

Local Authority / Bathing Water	2014	2015	2016	Change from 2015	Comments
<b>Clare County Council</b>					
Ballyallia Lake, Ennis (freshwater)	Excellent	Excellent	Excellent	-	Overall water quality in Co. Clare bathing waters remains extremely high with all bathing waters showing Excellent classification.
Ballycuggeran (freshwater)	Excellent	Excellent	Excellent	-	
Bishopsquarter	Excellent	Excellent	Excellent	-	
Cappagh Pier Kilrush	Excellent	Excellent	Excellent	-	
Fanore	Excellent	Excellent	Excellent	-	
Kilkee	Excellent	Excellent	Excellent	-	
Lahinch	Excellent	Excellent	Excellent	-	
Mountshannon (L. Derg – freshwater)	Excellent	Excellent	Excellent	-	
Spanish Point	Excellent	Excellent	Excellent	-	
White Strand , Doonbeg	Excellent	Excellent	Excellent	-	
White Strand, Miltown Malbay	Excellent	Excellent	Excellent	-	
<b>Cork County Council</b>					
Barley Cove	Excellent	Excellent	Excellent	-	
Coolmaine	Good	Sufficient	Good	↗	
Fountainstown	Sufficient	Sufficient	Excellent	↗	
Garretstown	Excellent	Good	Excellent	↗	
Garrylucas White Strand	Excellent	Excellent	Excellent	-	
Garryvoe	Good	Sufficient	Sufficient	-	Garryvoe suffers from episodic pollution which may be linked to impacts from surface water quality
Inchydoney	Excellent	Excellent	Excellent	-	
Owenahinch Little Island Strand	Excellent	Excellent	Excellent	-	
Redbarn	Excellent	Good	Excellent	↗	

Local Authority / Bathing Water	2014	2015	2016	Change from 2015	Comments
Tragumna	Excellent	Excellent	Excellent	-	
Warren, Cregane Strand	Good	Good	Sufficient	↘	Warren was periodically affected by wastewater discharges in 2016
Youghal Claycastle	Sufficient	Sufficient	Good	↗	
Youghal Front Strand Beach	Poor	Poor	Sufficient	↗	All of the Youghal beaches have improved as a result of wastewater infrastructure improvements.
<b>Donegal County Council</b>					
Ballyhiernan, Fanad	Excellent	Excellent	Excellent	-	These waters continue to be of extremely high quality with few pollution sources or events identified.
Bundoran	Excellent	Excellent	Excellent	-	
Carrickfinn	Excellent	Excellent	Excellent	-	
Culdaff	Excellent	Excellent	Excellent	-	
Downings	Excellent	Excellent	Excellent	-	
Drumnatinny	Excellent	Excellent	Excellent	-	
Fintra	Excellent	Excellent	Excellent	-	
Killahoey	Excellent	Excellent	Excellent	-	
Lady's Bay, Buncrana	Sufficient	Sufficient	Sufficient	-	Lady's Bay appears to exhibit episodic low level pollution possibly arising from wastewater discharges
Lisfannon	Excellent	Excellent	Good	↘	Lisfannon just exceeded the threshold for Excellent quality due to Enterococci counts.
Marble Hill	Excellent	Excellent	Excellent	-	These waters continue to be of extremely high quality with few pollution sources or events identified.
Murvagh	Excellent	Excellent	Excellent	-	
Naran	Excellent	Excellent	Excellent	-	
Portarthur, Derrybeg	Excellent	Excellent	Excellent	-	
Portnablagh	Good	Good	Good	-	Portnablagh shows very variable Enterococci counts and just exceeded the criteria for Excellent quality
Portsalon	Excellent	Excellent	Excellent	-	
Rathmullen	Good	Good	Good	-	Rathmullen showed consistently poorer water quality in 2016 than in previous years for E.coli in particular
Rossnowlagh	Excellent	Excellent	Excellent	-	
Stroove	Excellent	Excellent	Excellent	-	Both beaches were newly identified in 2015 and currently have insufficient samples for full classification but would appear to be likely to meet Excellent quality in 2017 given current performance
Dooley	n/a	n/a	New		
Magheroarty	n/a	n/a	New		

Local Authority / Bathing Water	2014	2015	2016	Change from 2015	Comments
<b>Dublin City Council</b>					
Dollymount Strand	Good	Sufficient	Good	↗	Dollymount showed improved bacterial counts in 2016
Merrion Strand	Sufficient	Poor	Poor	-	Several pollution incidents were reported for Merrion Strand in 2016 due mainly to impacts of surface water streams or urban runoff
Sandymount Strand	Good	Sufficient	Sufficient	-	Sandymount also exhibited a number of pollution incidents which may have been linked to wastewaters or urban runoff
<b>Dun Laoghaire Rathdown Co. Co.</b>					
Killiney	Excellent	Excellent	Good	↘	Quality was influenced by 2 pollution events in 2016
Seapoint	Excellent	Excellent	Excellent	-	
<b>Fingal County Council</b>					
Balbriggan, Front Strand Beach	Sufficient	Sufficient	Sufficient	-	Balbriggan remains extremely vulnerable to pollution from the Matt River and activities within Balbriggan harbour area
Claremont Beach	Good	Good	Good	-	
Donabate, Balcarrick Beach	Excellent	Excellent	Good	↘	Increased bacterial counts during 2016 in most samples
Loughshinny Beach	Sufficient	Poor	Poor	-	Loughshinny was downgraded to poor status in 2015 due to impacts of pollution events
Portmarnock, Velvet Strand Beach	Excellent	Excellent	Excellent	-	
Portrane, the Brook Beach	Excellent	Good	Poor	↘	See discussion on Poor waters
Rush, North Beach	n/a	n/a	New		Insufficient samples for classification but could be Poor in 2017 due to high E.coli results during 2016
Rush, South Beach	Poor	Poor	Sufficient	↗	Rush South improved but continues to be at risk from wastewater discharges
Skerries, South Beach	Good	Sufficient	Good	↗	Skerries improved but shows episodic elevated E.coli at times
Sutton, Burrow Beach	Excellent	Excellent	Excellent	-	
<b>Galway City Council</b>					
Ballyloughane Beach	Poor	Poor	Poor	-	Ballyloughane showed slightly improved quality in 2015 but its classification is being influenced by sporadic pollution events occurring in most years
Grattan Road Beach	Sufficient	Sufficient	Good	↗	Improved quality in 2016 but remains at risk from wastewater discharges
Salthill Beach	Excellent	Excellent	Excellent	-	
Silverstrand Beach	Excellent	Excellent	Excellent	-	

Local Authority / Bathing Water	2014	2015	2016	Change from 2015	Comments
<b>Galway County Council</b>					
An Tra Mor, Coill Rua, Indreabhain	Excellent	Excellent	Excellent	-	
Bathing Place at Portumna (freshwater)	Excellent	Excellent	Excellent	-	
Céibh an Spidéil	Good	Good	Good	-	
Cill Mhuirbhígh, Inis Mór	Excellent	Excellent	Excellent	-	
Clifden	Poor	Changes	Poor	↘	All 5 samples taken in 2015 showed Excellent quality but 2016 saw several high bacterial counts after rainfall.  See general text in the report.
Goirtin, Cloch na Rón	Excellent	Excellent	Excellent	-	
Loughrea Lake (freshwater)	Excellent	Excellent	Excellent	-	
Trá an Dóilín, An Ceathrú Rua	Excellent	Excellent	Excellent	-	
Trá Chaladh Finis, Carna	Excellent	Excellent	Excellent	-	
Trá Inis Oírr	New	New	Excellent	↗	First classification
Trá na bhForbacha, Na Forbacha	Sufficient	Sufficient	Poor	↘	General deterioration observed. See main text for details
Trá na mBan, An Spidéal	Sufficient	Sufficient	Sufficient	-	Continued periodic impacts from surface waters and wastewater discharge
Traught, Kinvara	Excellent	Excellent	Excellent	-	
<b>Kerry County Council</b>					
Baile an Sceilig (Ballinskelligs)	Excellent	Excellent	Excellent	-	All of Kerry County Council's identified bathing waters continue to be of Excellent quality.
Ballybunnion North	Excellent	Excellent	Excellent	-	
Ballybunnion South	Excellent	Excellent	Excellent	-	
Ballyheigue	Excellent	Excellent	Excellent	-	
Banna Strand	Excellent	Excellent	Excellent	-	
Castlegregory	Excellent	Excellent	Excellent	-	
Doire Fhíonáin (Derrynane)	Excellent	Excellent	Excellent	-	
Fenit	Excellent	Excellent	Excellent	-	
Fionntrá (Ventry)	Excellent	Excellent	Excellent	-	
Inch	Excellent	Excellent	Excellent	-	
Kells	Excellent	Excellent	Excellent	-	

Local Authority / Bathing Water	2014	2015	2016	Change from 2015	Comments
<b>Kerry County Council</b>					
Maharabeg	Excellent	Excellent	Excellent	-	
Rossbeigh, White Strand	Excellent	Excellent	Excellent	-	
Trá na hUíne (Inny Strand, Waterville)	Excellent	Excellent	Excellent	-	
White Strand, Caherciveen	Excellent	Excellent	Excellent	-	
<b>Leitrim County Council</b>					
Keeldra Lough (freshwater)	Excellent	Excellent	Excellent	-	
<b>Louth County Council</b>					
Clogherhead	Excellent	Excellent	Excellent	-	Bathing waters in Co. Louth continue to be of a very high quality with few pollution sources having been identified.
Port Lurganboy	Excellent	Excellent	Excellent	-	
Seapoint	Excellent	Excellent	Excellent	-	
Shelling Hill/Templetown	Excellent	Excellent	Excellent	-	
<b>Mayo County Council</b>					
Bertra Beach, Murrisk	Excellent	Excellent	Excellent	-	Bathing waters in Co. Mayo continue to be of a very high quality with few pollution sources having been identified.
Carrowmore Beach, Louisburgh	Excellent	Excellent	Excellent	-	
Carrowniskey, Louisburgh	Excellent	Excellent	Excellent	-	
Clare Island, Louisburgh	Excellent	Excellent	Excellent	-	
Dooega Beach, Achill Island	Excellent	Excellent	Excellent	-	
Dugort Beach, Achill Island	Excellent	Excellent	Excellent	-	
Elly Bay, Belmullet	Excellent	Excellent	Excellent	-	
Golden Strand, Achill Island	Excellent	Excellent	Excellent	-	
Keel Beach, Achill Island	Excellent	Excellent	Excellent	-	
Keem Beach, Achill Island	Excellent	Excellent	Excellent	-	
Mullaghroe Beach, Belmullet	Excellent	Excellent	Excellent	-	
Mulranny Beach	Excellent	Excellent	Excellent	-	
Old Head Beach, Louisburgh	Good	Good	Good	-	
Rinroe Beach, Carrowtigue	Excellent	Excellent	Excellent	-	
Ross Beach, Killala	Excellent	Excellent	Excellent	-	

Local Authority / Bathing Water	2014	2015	2016	Change from 2015	Comments
<b>Meath County Council</b>					
Laytown/Bettystown	Good	Good	Good	-	
<b>Sligo County Council</b>					
Dunmorán Beach	Excellent	Excellent	Excellent	-	
Enniscrone Beach	Good	Good	Good	-	
Mullaghmore Beach	Excellent	Excellent	Good	↘	Several high Enterococci results in 2016 causing overall deterioration in quality
Rosses Point Beach	Excellent	Excellent	Excellent	-	
Streedagh Beach	Excellent	Excellent	Excellent	-	
<b>Waterford City and County Council</b>					
Ardmore Beach	Poor	Sufficient	Changes	↗	All samples from Ardmore in 2016 were excellent quality. Classified as 'Changes' resulting from commissioning of a new WWTP
Bunmahon Beach	Good	Sufficient	Sufficient	-	Bunmahon remains vulnerable to pollution from the Mahon river which drains adjacent to the bathing area
Clonea Beach	Excellent	Excellent	Excellent	-	
Counsellors' Strand, Dunmore East	Excellent	Excellent	Excellent	-	
Dunmore Strand, Dunmore East	Excellent	Excellent	Excellent	-	
Tramore Beach	Excellent	Excellent	Excellent	-	
<b>Westmeath County Council</b>					
Lilliput, L. Ennel (freshwater)	Poor	Changes	Good	↗	Lilliput showed much improved in quality due to remedial actions to remove wastewater discharges
Portnashangan, L. Owel (freshwater)	Excellent	Excellent	Excellent	-	
The Cut, L. Lene (freshwater)	Excellent	Excellent	Excellent	-	
<b>Wexford County Council</b>					
Ballinesker	n/a	Excellent	Excellent	-	New in 2015
Ballymoney North Beach	Excellent	Excellent	Excellent	-	
Courtown North Beach	Excellent	Excellent	Excellent	-	
Curraclloe	Excellent	Excellent	Excellent	-	
Duncannon	Poor	Poor	Sufficient	↗	Duncannon showed improved water quality during 2015 and in 2016. Quality is being influenced by episodic pollution events of previous years

Local Authority / Bathing water	2014	2015	2016	Change from 2015	Comments
<b>Wexford County Council</b>					
Morriscastle	Excellent	Excellent	Excellent	-	
Rosslare Strand	Excellent	Excellent	Excellent	-	
<b>Wicklow County Council</b>					
Bray South Promenade	Good	Good	Excellent	↗	
Brittas Bay North	Good	Excellent	Excellent	-	
Brittas Bay South	Excellent	Excellent	Excellent	-	
Clogga	Excellent	Excellent	Excellent	-	
Greystones South	Excellent	Excellent	Excellent	-	
Silver Strand	Excellent	Good	Good	-	Silver Strand only just failed to meet Excellent due to impacts from frequent low levels of E.coli

## Overall Summary

Overall		Improved	Previous	Currently	
			New	Excellent	1
Improved quality	14		Sufficient	Excellent	1
No Change	114		Good	Excellent	3
Poorer quality	8		Sufficient	Good	5
New	3		Poor	Sufficient	3
Changes	1		Changes	Good	1
					(14)
		<b>Deteriorated</b>			
			Excellent	Good	4
			Good	Sufficient	1
			Good	Poor	1
			Sufficient	Poor	1
			Changes	Poor	1
					(8)

## 6. Summary of Other Monitored Waters

Although there are currently 140 waters (for 2016) which Ireland has formally identified to the EU as bathing waters there are many locations around the country which are monitored by local authorities because swimming or recreational activities are known to take place there. These are generally smaller, or more remote, coastal beaches and fresh waters where the infrastructure to cater for a large numbers of users (e.g. car parking facilities etc.) may not be as well developed as the popular bathing areas but which are considered important for eco-tourism purposes. Many of these waters are monitored in connection with the Green Coast award scheme run by An Taisce.

Examination of data held in the EDEN database for the period 2013-2016 shows the quality **likely to be achieved** at these waters. This data is un-validated, unlike that used for identified bathing waters, though the same quality criteria have been applied. It should be stressed that these waters have no formal EU classification and thus their expected status is reflected solely by means of a comparison with the current bathing water standards. Names highlighted in blue indicate a freshwater location.

The EPA is working with local authorities with the aim of bringing as many of these high quality waters as is practicable into the national monitoring programme as formally identified bathing waters under the 2008 Bathing Water Quality Regulations.

**Many of these locations may have no lifeguards, first aid / safety equipment, or general facilities such as those found at identified bathing waters. It is strongly recommended that, before visiting any of these locations, bathers check with the local authority to identify any bathing restrictions which may be in place and check any local signage for information relating to water quality.**

**While water quality monitoring is undertaken by local authorities this is often at the minimum frequency required by the Bathing Water Regulations. Though they are not specifically covered by the legislative and management requirements of the Regulations, the same water quality standards have been applied in their assessment. These bathing areas may not necessarily display the same signage as applied to the identified bathing waters.**

**Swimming in unmonitored locations such as rivers, flooded quarries, lakes, or canals carries with it many possible dangers. In addition to possible microbiological hazards there may also be risks due to strong currents, hidden objects such as rocks, and also potential hypothermia. Do not swim alone but if you so always make sure someone knows where you are!**

**Further information can be obtained from Irish Water Safety.**

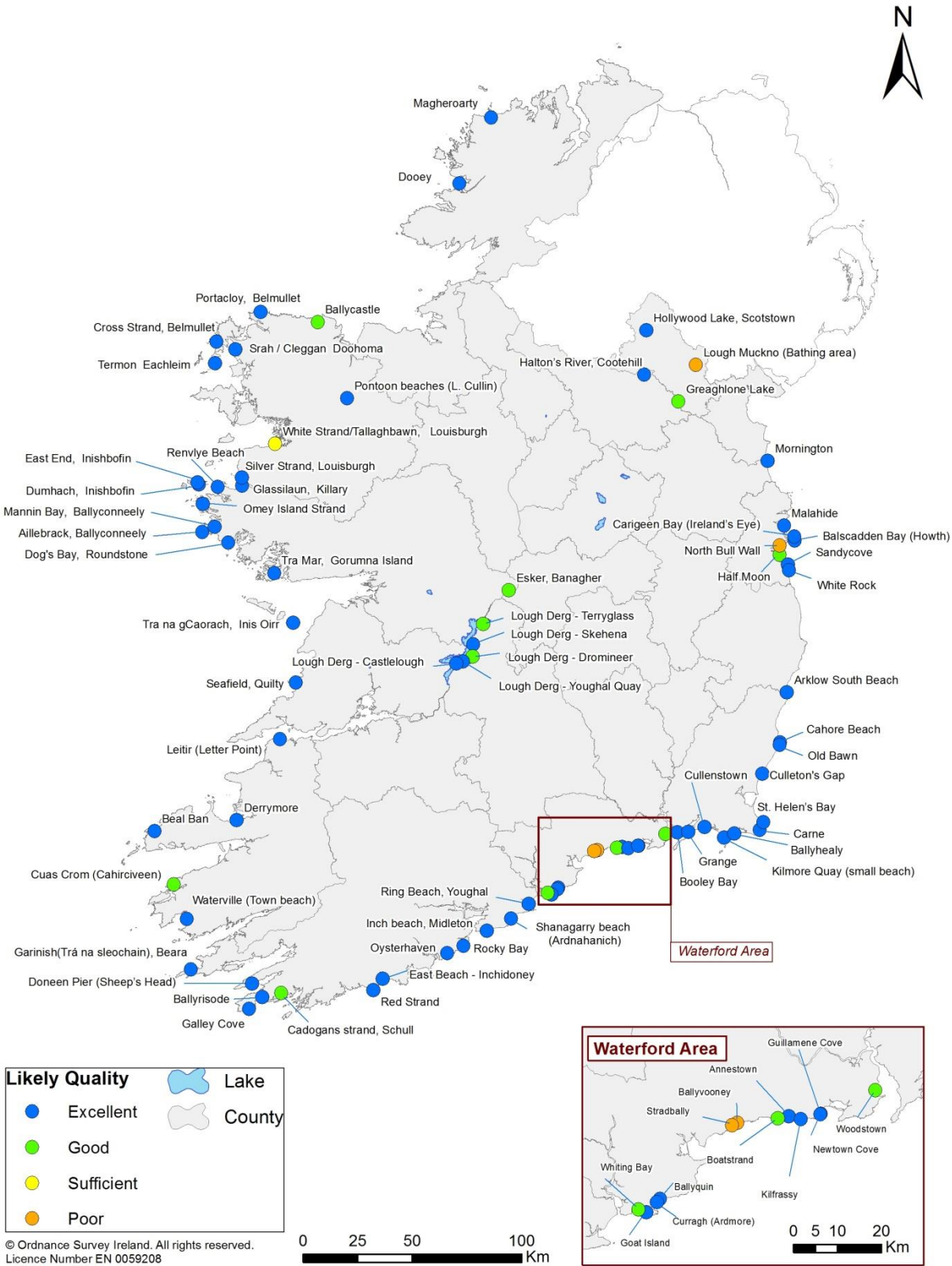
Of these 'other monitored waters' just four, Stradbally and Ballyvooney in Co. Waterford, the North Bull Wall (R. Liffey), and Lough Muckno, Castleblaney, Co. Monaghan are indicated as 'likely to be of 'Poor quality' due to impacts from nearby wastewater or agricultural discharges into surface waters which subsequently impact on those bathing areas. The watersports area in Lough Muckno is also of poor quality but this location is not specifically designated for bathing.

## Other waters monitored by Local Authorities (2013 – 2016 data)

Local Authority	Bathing water	Likely Quality (2013 - 2016)
<b>Clare County Council</b>	Seafield, Quilty	Excellent
<b>Cork County Council</b>	Ballyrisode	Excellent
	Cadogans strand, Schull	Good
	East Beach - Inchidoney	Excellent
	Galley Cove	Excellent
	Garinish(Trá na sleochain), Beara	Excellent
	Inch beach, Midleton	Excellent
	Oysterhaven	Excellent
	Red Strand	Excellent
	Ring Beach, Youghal	Excellent
	Rocky Bay	Excellent
	Shanagarry beach (Ardnahanich)	Excellent
	Doneen Pier (Sheep's Head)	Excellent
<b>Donegal County Council</b>	Dooey	Excellent
	Magheroarty	Excellent
<b>Dublin City Council</b>	Half Moon	Good
	North Bull Wall	Poor
<b>Dun Laoghaire - Rathdown County Council</b>	Sandycove	Excellent
	White Rock	Excellent
<b>Fingal County Council</b>	Malahide	Excellent
	Balscadden Bay (Howth)	Excellent
	Ireland's Eye	Excellent
<b>Galway County Council</b>	Aillebrack, Ballyconneely	Excellent
	Dog's Bay, Roundstone	Excellent
	Dumhach, Inishbofin	Excellent
	East End, Inishbofin	Excellent
	Esker, Banagher	Good
	Glassilaun, Killary	Excellent
	Mannin Bay, Ballyconneely	Excellent
	Omev Island Strand	Excellent
	Tra na gCaorach, Inis Oirr	Excellent
	Renvlye Beach	Excellent
	Tra Mar, Gorumna Island	Excellent
<b>Kerry County Council</b>	Beal Ban	Excellent
	Derrymore	Excellent
	Cuas Crom (Cahirciveen)	Good
	Leitir (Letter Point)	Excellent
	Waterville (Town beach)	Excellent
<b>Mayo County Council</b>	Ballycastle	Good
	Pontoon beaches (L. Cullin)	Excellent
	Portacloy, Belmullet	Excellent
	Srah / Cleggan Doohoma	Excellent
	Termon Eachleim	Excellent
	White Strand/Tallaghbawn, Louisburgh	Sufficient
	Silver Strand, Louisburgh	Excellent
	Cross Strand, Belmullet	Excellent
<b>Meath County Council</b>	Mornington	Excellent
<b>Monaghan County Council</b>	Halton's River (Cootehill)	Excellent
	Hollywood Lake	Excellent
	Lough Muckno (Bathing area)	Poor
	Greaghlonge Lake	Good
<b>Tipperary County Council</b>	Lough Derg - Terryglass	Good
	Lough Derg - Skehena	Excellent
	Lough Derg - Dromineer	Good
	Lough Derg - Youghal Quay	Excellent
	Lough Derg - Castletlough	Excellent

Local Authority	Bathing water	Likely Quality (2013 - 2016)
<b>Waterford City and County Council</b>	Annestown	Excellent
	Ballyquin	Excellent
	Ballyvooney	Poor
	Boatstrand	Good
	Curragh (Ardmore)	Excellent
	Goat Island	Excellent
	Guillamene Cove	Excellent
	Kilfrassy	Excellent
	Newtown Cove	Excellent
	Stradbally	Poor
	Whiting Bay	Good
	Woodstown	Good
<b>Wexford County Council</b>	Ballyhealy	Excellent
	Booley Bay	Excellent
	Cahore Beach	Excellent
	Carne	Excellent
	Cullenstown	Excellent
	Culleton's Gap	Excellent
	Grange	Excellent
	Kilmore Quay (small beach)	Excellent
	Old Bawn	Excellent
	St. Helen's Bay	Excellent
<b>Wicklow County Council</b>	Arklow South Beach	Excellent

# Bathing Water Quality (Other Monitored Waters) 2016





## AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Gníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaoil a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaoil a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

## Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

**Rialú:** Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.

**Eolas:** Soláthraimid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírith agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.

**Tacaíocht:** Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaoil atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaoil inbhuanaithe.

## Ár bhFreagrachtaí

### Ceadúnú

Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaoil:

- saoráidí dramhaíola (*m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola*);
- gníomhaíochtaí tionsclaíocha ar scála mór (*m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta*);
- an diantalmhaíocht (*m.sh. muca, éanlaith*);
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (*OGM*);
- foinsí radaíochta ianúcháin (*m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha*);
- áiseanna móra stórála peitрил;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

### Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhírú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a idíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaoil.

### Bainistíocht Uisce

- Monatóireacht agus tuairiscí a dhéanamh ar cháilíocht aibhneacha, lochanna, uisce idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairiscí a dhéanamh ar Cháilíocht an Uisce Snámha.

## Monatóireacht, Anailís agus Tuairiscíú ar an gComhshaoil

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairiscíú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil (*m.sh. tuairiscíú tréimhsiúil ar staid Chomhshaoil na hÉireann agus Tuarascálacha ar Tháscairí*).

### Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

### Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainithint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

### Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaoil in Éirinn (*m.sh. mórfheananna forbartha*).

### Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

### Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaoil ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaoil (*m.sh. Timpeall an Tí, léarscáileanna radóin*).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

### Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

## Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an ghníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.



## ENVIRONMENTAL PROTECTION AGENCY

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