# Urban Waste Water Treatment in 2019

Environmental Protection Agency
*An Ghníomhaireacht um Chaomhnú Comhshaoil*

**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.

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**Environmental Protection Agency**

An Ghníomhaireacht um Chaomhnú Comhshaoil

P.O. Box 3000, Johnstown Castle Estate, County Wexford, Ireland, Y35 W821

**Telephone**: +353 53 916 0600

**Email**: info@epa.ie

**Website**: www.epa.ie

**LoCall**: 1890 33 55 99

**Published by the Environmental Protection Agency, Ireland**

November 2020

**ISBN**: 978-1-84095-938-3

# Contents

# List of figures



# List of tables

# Executive summary

Waste water from many urban areas is released into rivers, estuaries and coastal waters without adequate treatment and this is putting our natural environment and public health at risk. It is not possible to fix the problems at all areas in the short term. Therefore, available resources must be directed to deliver improvements to areas where they are most needed.

The number of large urban areas failing to meet European Union (EU) treatment standards continues to decrease, falling from 28 to 19 in the past two years. The significant threat of pollution by waste water discharges from nine towns and villages has been addressed and raw sewage discharges from one area in Cork ceased at the end of 2019. Despite these improvements there is still a long way to go.

This report identifies the 113 priority areas where improvements are needed to prevent water pollution, eliminate discharges of raw sewage, meet EU treatment standards and protect bathing waters and freshwater pearl mussels. These range from Ireland's largest treatment plant at Ringsend in Dublin to smaller towns and villages where waste water is significantly impacting on the local environment or creating a health risk. The following are key concerns:

- **Delays and uncertainty** in Irish Water's delivery of critical improvements to infrastructure are prolonging risks to the environment and public health.
- Treatment at 19 of our 172 **large urban areas** failed the mandatory EU treatment standards set to protect the environment. These 19 areas generate more than half of Ireland's sewage.
- **Raw sewage** is released into our waters every day from 35 towns and villages.
- **Critical Assessments** are being delayed which are needed to inform Irish Water's investment plans.

### Delays and uncertainty

There are significant delays in upgrading treatment around the country. Almost half of all improvement works required by EPA licences are overdue, with many of these more than four years late. In addition, Irish Water has no clear action programme or timeframe to

improve treatment at almost half the areas (23 of 48) where waste water is a significant threat to inland and coastal waters at risk of pollution. Infrastructure upgrades that may be needed at these areas are not provided for in Irish Water's capital investment plan 2020-2024 and are therefore unlikely to start construction before 2025.

### Large urban areas

The final deadline for all large urban areas to meet EU treatment standards was 2005 and it is unacceptable that treatment at 19 areas failed to meet the standards in 2019. These include the greater Dublin area, served by Ringsend treatment plant, which is of significant concern because it produces almost half (44%) of Ireland's waste water. The Ringsend plant repeatedly failed the treatment standards in 2019 because it does not have the capacity to effectively treat all the sewage it receives. Irish Water is upgrading the plant and advises it will be completed by 2025. Irish Water must give its utmost priority to this project to make sure that treatment at Ringsend meets all necessary standards without further delay.

### Raw sewage

Irish Water has extended the timeframe to provide treatment for many of the 35 towns and villages that continue to discharge raw sewage every day. Two years ago, Irish Water advised it would provide treatment for 30 of these areas by 2021. It will fall far short of this and now plans to connect just two of these areas to treatment by the end of 2021.

### Critical Assessments

Irish Water has not completed overdue assessments of the impacts of waste water discharges on 26 of Ireland's designated shellfish waters. These assessments are urgently needed to help plan any improvement works necessary to protect shellfish waters.

### The EPA recommends the following actions for Irish Water

- Identify and remedy the underlying causes for the delays in upgrading deficient treatment systems.
- Target resources to resolve environmental issues at the 113 priority areas and make sure each of these has an action programme and timeframe to improve treatment.
- Accelerate the pace at which the overdue impact assessments on shellfish waters are carried out and use the findings to plan and implement improvement works.

# 1 Introduction

This report by the Environmental Protection Agency (EPA) is about urban waste water treatment in Ireland during 2019. It is based on our assessment of information and monitoring results reported to us by Irish Water and on the findings of our enforcement activities. The report focuses on the national priorities to protect our environment from the harmful effects of waste water discharges.

### Why is it important to treat waste water?

The objective of waste water treatment is to collect the waste water generated within communities and remove polluting material so that the treated water can be released safely back into the water environment (Figure 1). If waste water is not properly treated it can pollute our waters and create a public health risk.

### Who does what?

- Irish Water is the national water utility, responsible for all public waste water works including sewers, pump stations and treatment plants.
- The EPA is the environmental regulator. We issue and enforce authorisations which specify how Irish Water must operate and manage waste water discharges.
- The Commission for Regulation of Utilities is the economic regulator, responsible for ensuring Irish Water spends its money efficiently and effectively to improve services.

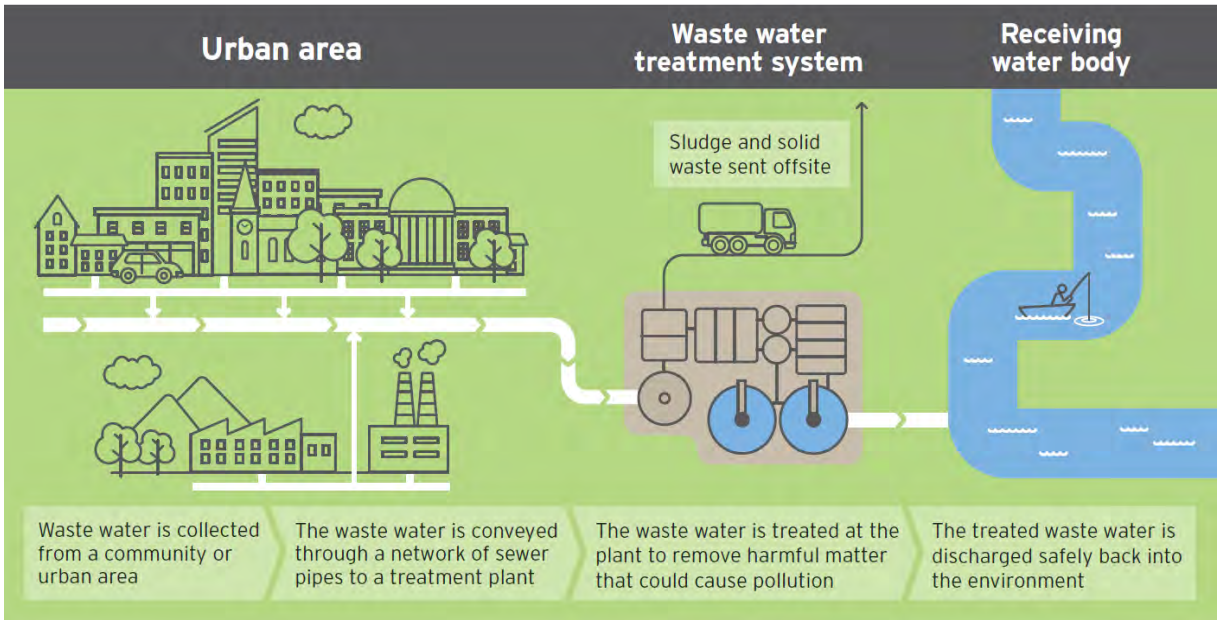



**Figure 1: Waste water collection and treatment.**

## Environmental priorities

There are deficiencies in many treatment plants and public sewers and waste water is still discharged from many areas without adequate treatment. This puts our water environment and public health at risk. It will take significant investment over many years to bring treatment at all these areas up to standard. As all these problems cannot be fixed in the short term, it is essential to direct the resources that are available to the right areas. This will deliver improvements where they are most needed and where they will bring the greatest environmental benefits.

The EPA has identified the following as the priority issues that must be addressed to protect our environment from the harmful effects of waste water discharges.

- Ensure waste water treatment at all large urban areas meets European Union standards.
- Eliminate discharges of raw sewage.
- Improve treatment where waste water is the main threat to waters at risk of pollution or where waste water contributes to poor quality bathing waters.
- Improve treatment where needed to protect endangered freshwater pearl mussels.
- Upgrade the sewerage systems found non-compliant with European Union requirements.

**Table 1: Where are improvements needed to resolve environmental priorities?**

| | | |
|---|---|---|
| 19 large towns and cities that did not treat waste water to European Union standards in 2019. | 35 areas that continue to discharge raw sewage into the environment every day. | 48 areas where waste water is the main significant threat to inland and coastal waters at risk of pollution. |
| 3 areas where waste water contributed to poor quality bathing waters. | 13 areas where waste water discharges must improve to protect endangered freshwater pearl mussels. | 7 non-compliant sewerage systems that must be upgraded to meet European Union standards. |

There is more than one priority issue at some areas. For example, Bailieborough in County Cavan is one of the 19 areas in Table 1 that did not meet European Union treatment standards in 2019 and is also one of the 48 areas in Table 1 where waste water is the main significant threat to waters at risk of pollution. The total number of urban areas where the EPA requires Irish Water to improve treatment to resolve the priority issues is 113. These areas, and the priority issues to be resolved at each area, are shown in *Appendix A*.

Figure 2 shows the gradual decrease in the number of areas with priority environmental issues since 2017.

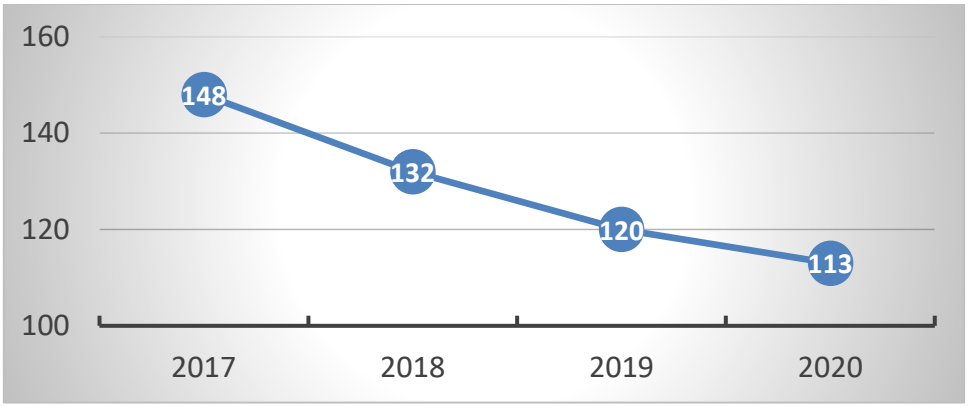



**Figure 2: Decrease in the number of priority areas since 2017.**

## Concerns at resolving priority issues

There is uncertainty around the planning and delivery of works to resolve some priority issues. For example, Irish Water has still not identified how it will improve discharges from almost half the areas (23 of 48) where waste water is the main significant threat to waters at risk of pollution. Infrastructure upgrades that may be needed at these areas are not provided for in Irish Water's capital investment plan 2020-2024 and are therefore unlikely to start construction before 2025. Irish Water must plan for the earliest possible upgrades to priority areas and actively progress projects through the pre-construction stages so that uncertainty around the delivery of these works is removed.

Even when funding is available, for example to eliminate raw sewage, Irish Water often does not meet its own timeframe to complete the required works because it is taking much longer than expected to progress through the various project stages prior to construction. Irish Water must address the underlying causes for these delays and deliver upgrade works in as timely and efficient a manner as possible.

# 2 Waste water treatment and effluent quality

More than a billion litres of waste water is collected every day in Ireland's public sewers and treated at over 1,100 treatment plants. The treated effluent is then released back into the environment, mostly to rivers, estuaries or coastal waters. The type of treatment is summarised below:

- Most waste water is treated at plants designed to provide secondary treatment (67.2%) or secondary treatment with nutrient removal (30.4%)[1].
- A small amount (1%) is conveyed to plants that provide a more basic form of treatment, known as primary treatment.
- The remainder (1.4%) is collected and discharged directly into the water environment without any treatment.

## 2.1 Compliance with European Union requirements

Large urban areas collectively generate 92% of Ireland's urban waste water. The European Union's *Urban Waste Water Treatment Directive* sets requirements for treating waste water from these large urban areas, with the objective of protecting the environment from the adverse effects of waste water discharges. The final deadline to implement these requirements in full was 2005. In 2019 there were 172 towns and cities in Ireland subject to these requirements. 153 met the requirements but the remaining 19 areas did not treat waste water to the necessary standards. Figure 3 shows the gradual decrease since 2017 in the number of areas that did not meet the treatment standards.

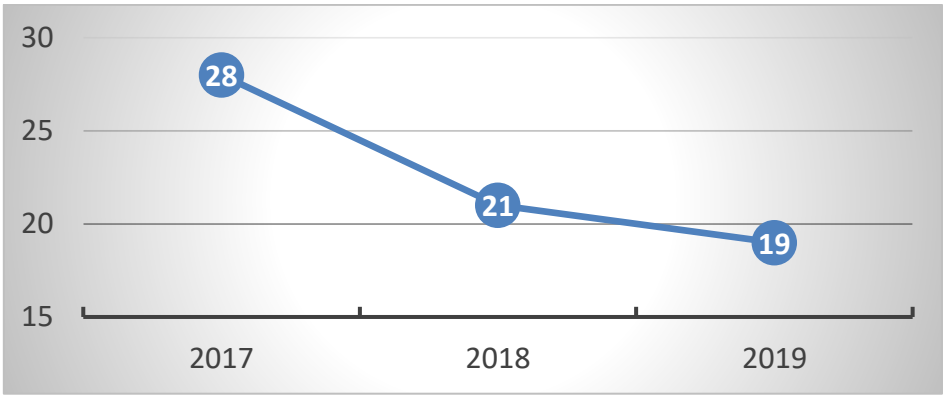



**Figure 3: Number of large urban areas failing the European Union's treatment standards.**

[1] There is information on technical terms used in this report, such as a description of the different levels of waste water treatment and the definition of a large urban area, in the *Glossary and background information*.

Over half of all the urban waste water collected in Ireland's public sewers is generated in the 19 areas, shown in Figure 4, that failed the standards. Consequently just 44% of waste water from Ireland's large urban areas was treated at plants that complied with the European Union standards. This is up from 42% in 2018 but still far below the European Union average of 81%. The main factor in Ireland's poor compliance is the failure at Ringsend in Dublin, which treats almost half (44%) of the country's urban waste water.

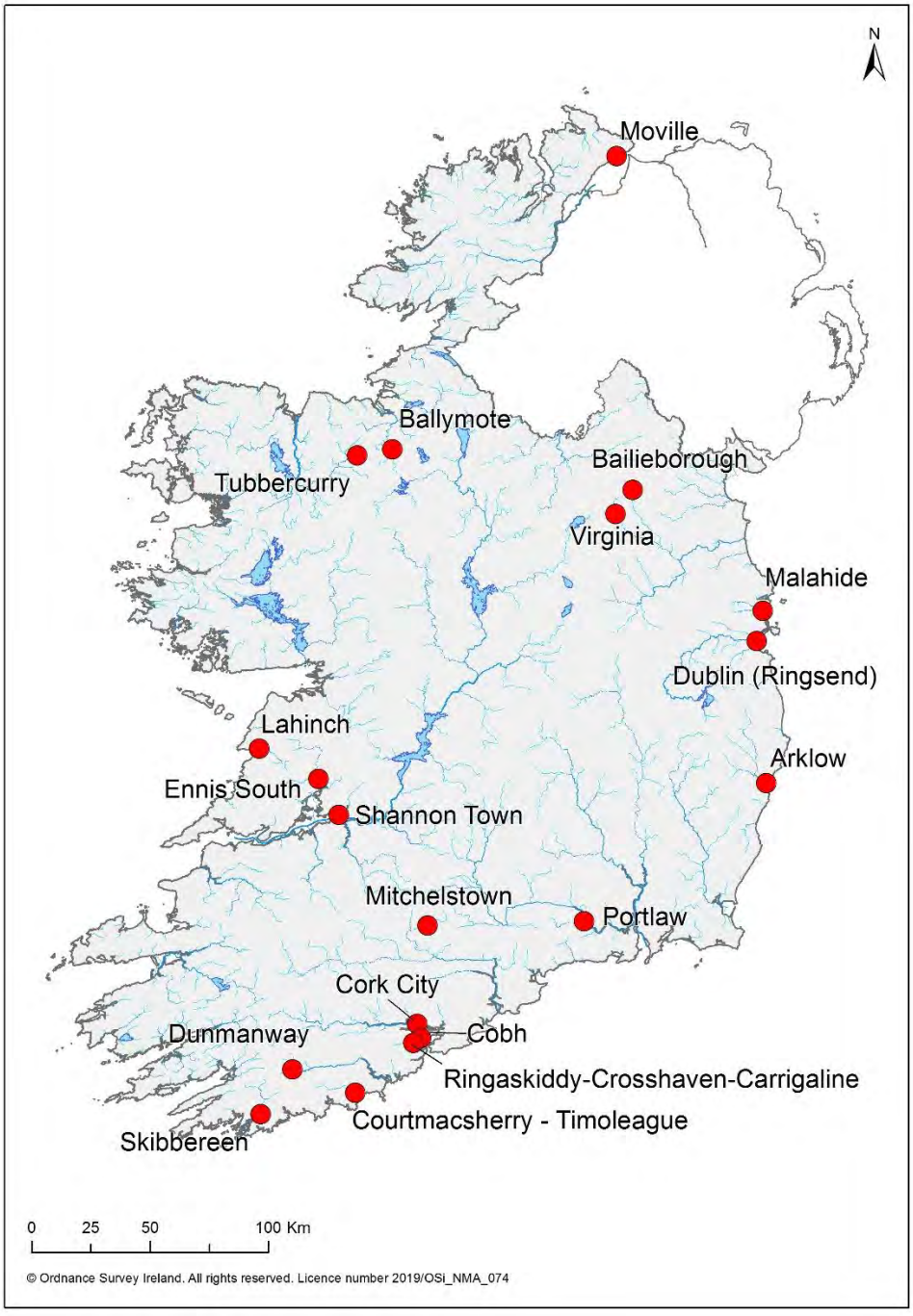



**Figure 4: Large urban areas that failed to meet the European Union's treatment standards in 2019.**

You can find further information in *Appendix B* on the European Union requirements and the standards breached at the 19 areas that failed to meet these requirements.

### What are the risks if waste water is not properly treated?

Untreated or poorly treated waste water can be contaminated with harmful bacteria and viruses and can pose a health risk to people who come into contact with infected water. It can damage aquatic ecosystems by decreasing the level of oxygen in the water and releasing nutrients that can lead to excessive and unwanted growth of algae and aquatic plants.

### Why is Ireland failing to treat waste water properly?

The underlying problem at some areas is a lack of adequate treatment infrastructure, for example:

- The treatment plant at Ringsend in Dublin is not large enough and does not have a sufficient level of treatment to adequately treat all the waste water it receives.
- There are no treatment plants serving Arklow, Cobh and Moville. These three towns continuously discharge untreated sewage into the environment[2].
- Five towns and cities, including Cork, do not have the more stringent level of treatment needed to remove nutrients from waste water discharged into sensitive areas.
- Some towns such as Shannon have ageing treatment plants that were designed and built for a time when the town was smaller and the amount of waste water needing treatment was less. These plants no longer have the capacity or resilience to consistently treat all the waste water they receive to the required standards.

Other large urban areas that failed the treatment standards in 2019, such as Skibbereen and Dunmanway, already have treatment infrastructure capable of meeting the standards. However, the treatment plants did not perform as well as they should on some occasions during 2019 and as a result waste water discharged from the plants was not always adequately treated.

[2] These are the only large urban areas with no treatment. Section 2.2 provides information on all areas discharging untreated sewage, including the smaller towns and villages.

## What actions are needed to improve treatment?

Ireland must invest significantly to provide the new or upgraded treatment plants required at areas with inadequate treatment infrastructure. The following are examples of key projects to improve infrastructure at some of the large urban areas that failed the mandatory treatment standards in 2019[3]:

- The overloaded plant at Ringsend will be upgraded in two phases. Construction of additional treatment capacity for a population equivalent of 400,000, which was due to be completed in 2020, has been delayed due to Covid-19 restrictions and is now expected to be completed in 2021. Further work to increase capacity by another 400,000 and provide a more stringent level of treatment is due to begin shortly and continue until 2025.
- Cork City's treatment plant is being upgraded to provide a higher level of treatment and reduce the amount of phosphorus released into Lough Mahon, which is a nutrient sensitive area. This work is expected to be completed in early 2021.
- The sewer network in Cobh is being extended to connect it to a new treatment plant in Shanbally. This work, which will eliminate discharges of raw sewage from Cobh, is due to be completed at the end of 2021.
- Irish Water recently completed new or upgraded treatment plants at Portlaw, Tubbercurry and Courtmacsherry to replace the ageing plants that were unable to treat waste water to the necessary standards. These remain as priority areas pending confirmation through monitoring that discharges meet the standards.

In addition, Irish Water must make sure that plants are always operated, managed and maintained properly. This will minimise breakdowns, improve resilience and get the best from the plants.

[3] Irish Water provided the dates for completion of these works.

The EPA has identified for many years the towns and cities where waste water treatment must improve to protect our environment and meet the requirements of the Urban Waste Water Treatment Directive. In 2019 the Court of Justice of the European Union declared that Ireland has failed to fulfil its obligations under the Directive. Ireland now risks substantial fines if Irish Water does not promptly complete the works needed to ensure waste water from all large urban areas is properly treated before it is released into rivers, estuaries and coastal waters. Investing now to fix the deficiencies in Ireland's waste water treatment infrastructure will protect our environment and public health and reduce the risk of money needed for water services being used to pay financial penalties in the future.

Treatment at all large urban areas should have complied with the European Union standards by 2005. In working towards compliance, Irish Water set itself a target in 2015 of ensuring 90% of waste water from large urban areas is treated at plants that comply with the treatment standards by the end of 2021[4]. Delays in works to improve treatment mean that Irish Water is likely to fall far short of its own target.

[4] https://www.water.ie/docs/WSSP_Final.pdf.

## 2.2 Untreated waste water

The previous section of this report highlights the three large urban areas with no waste water treatment plant (Arklow, Cobh and Moville). This section covers all areas, including the smaller towns and villages, where waste water is collected in public sewers and discharged into rivers, estuaries or the sea without treatment.

Untreated waste water from the equivalent of 78,000[5] people in 35 towns and villages (shown in Figure 5) is still released into the environment every day.

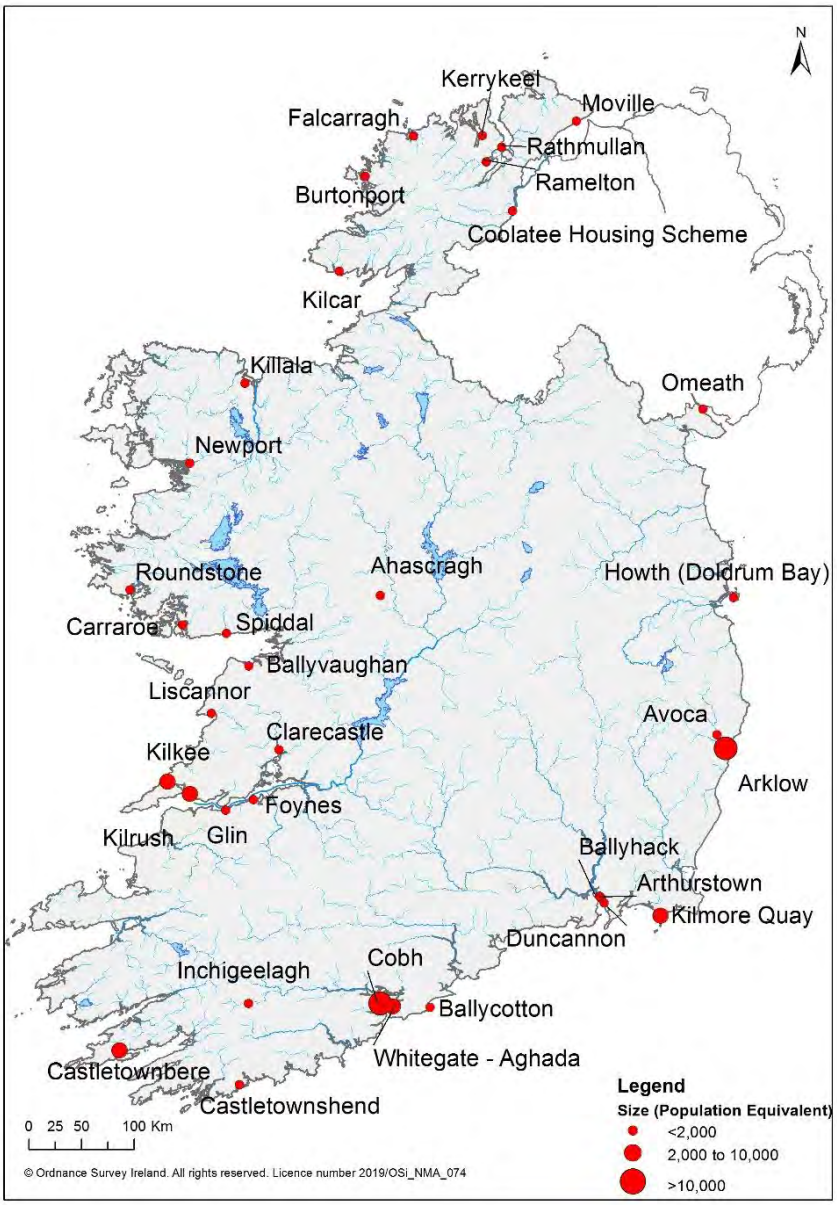



**Figure 5: Areas discharging untreated waste water (raw sewage).**

[5] This is up from 77,000 in 2018 following increases in the amount of sewage collected within these areas during 2019.

Discharges of raw sewage from the village of Timoleague, County Cork ceased at the end of 2019 when the village was connected to a new treatment plant. This is the only area where Irish Water eliminated discharges of raw sewage in the past 12 months. This brings the number of areas that ceased discharging untreated waste water since 2014 to 15.

### When will discharges of untreated waste water cease?

Irish Water has not met its obligation to eliminate discharges of raw sewage and has repeatedly revised its plans and extended the timeframe to provide treatment for towns and villages discharging untreated waste water.

In 2018 Irish Water advised it would provide treatment by 2021 for 30 of the 35 towns and villages still discharging raw sewage. It has now revised this down to just two areas. The average delay during this period is 1.3 years. The delays in carrying out these important works are prolonging the risks to the environment and people's health.

Figure 6 summarises Irish Water's timeframe to provide treatment for the 35 areas still discharging raw sewage. You can see more detail on when each area is scheduled to be connected to treatment in *Appendix C*.


**Figure 6: Number of areas to be connected to treatment each year[6].**

It is essential that Irish Water provides the infrastructure needed to stop discharges of untreated waste water without any further delays.

[6] Based on information provided by Irish Water in September 2020. These dates do not include any potential delays arising from Covid-19 restrictions.

# 3 Risks to water quality

Good water quality is fundamental to the natural environment and to our own wellbeing and quality of life. Clean rivers, lakes, estuaries and coastal waters support local communities, healthy ecosystems and a diverse range of plants and animals within them. The waste water that we produce in our day to day activities must be properly treated before it is discharged to prevent pollution and protect the quality of our inland and coastal waters.

If waste water is not properly treated it may contain nutrients such as phosphorus and nitrogen which adversely impact on surface water ecosystems, and bacteria and viruses which can pollute bathing waters and contaminate shellfish waters.

## 3.1 Inland and coastal waters

The EPA assessed Ireland's rivers, lakes, estuaries and coastal waters and identified the water bodies at risk of pollution. We then investigated the main pollution pressures putting these water bodies at risk. Our investigations confirmed that urban waste water is one of the most common pollution pressures, affecting one-fifth of the water bodies that are at risk.

The pollution pressures from urban waste water can arise through:

- discharges from treatment plants that are not providing adequate treatment, and
- intermittent overflows, leaks or spills of untreated waste water from sewers and pump stations.

The EPA has prioritised 48 areas where waste water is still considered the main significant pressure on inland and coastal waters at risk of pollution (*Appendix D)*. This has reduced from 57 areas in 2018, following improvements in treatment to protect waters at nine towns and villages. These nine areas are also listed in *Appendix D*.

## What is being done to protect waters at risk of pollution?

The EPA requires Irish Water to identify and implement clear action programmes to improve waste water discharges from these 48 areas and thereby protect and enhance the quality of the receiving water bodies. The corrective actions may include upgrading the collection and treatment systems, as well as improving the operation and management of these systems.

- Irish Water made some improvements at 13 of these areas. The EPA will monitor the affected waters to determine if these works have resolved the threat of pollution by waste water discharges, or if additional improvements are needed.
- Work to improve treatment at a further 12 areas is planned or ongoing. Irish Water must confirm if these works will be enough to protect the waters from pollution.
- Irish Water has still not identified a clear programme of actions to improve treatment at the remaining 23[7] towns and villages, despite knowing for over three years of the need to identify a solution to protect the waters in these areas.

## Where can I find out more information about Ireland's water environment?

The EPA catchments website[8] shares science and stories about Ireland's water environment. The website includes details on the condition of local rivers, lakes and beaches, and the environmental pressures which may be causing problems. The River Basin Management Plan 2018 – 2021[9] outlines what Ireland is doing to protect and improve our water environment.

[7] This up is from 22 last year because the action programme previously proposed by Irish Water for Tralee will not sufficiently protect the local estuary and the EPA therefore requires a new action programme.

[8] www.catchments.ie/. The website was developed by the EPA, Department of Housing, Planning and Local Government and the Local Authority Waters Programme.

[9] www.housing.gov.ie/water/water-quality/river-basin-management-plans/river-basin-management-plan-2018-2021.

**Topic Box: Protecting a river from pollution by waste water.**

Prior to 2018 waste water from Convoy, County Donegal was treated at an old treatment plant built in 1967. This outdated plant was overloaded and could no longer adequately treat waste water from the village. Effluent discharged from the plant was adversely impacting water quality in the River Deele. The EPA highlighted Convoy as one of Ireland's national priority areas. We required Irish Water to upgrade the treatment plant to protect the River Deele and resolve this priority issue.

Irish Water completed a major upgrade of the plant in 2018. The plant is now treating waste water to a much higher standard than before. Because of these improvements waste water is no longer a significant pressure on the river and the EPA has removed Convoy from the list of priority areas.

The graph in Figure 7 shows the biochemical oxygen demand of the effluent and illustrates the marked improvement in quality following the plant upgrade. High concentrations of biochemical oxygen demand indicate there is too much organic, polluting matter in the effluent discharging from a treatment plant. When this organic matter decays it can lead to an unwanted drop in oxygen levels within a river, which can harm aquatic life and biodiversity.

This example shows how targeting resources at priority areas identified by the EPA brings environmental improvements where they are most needed.

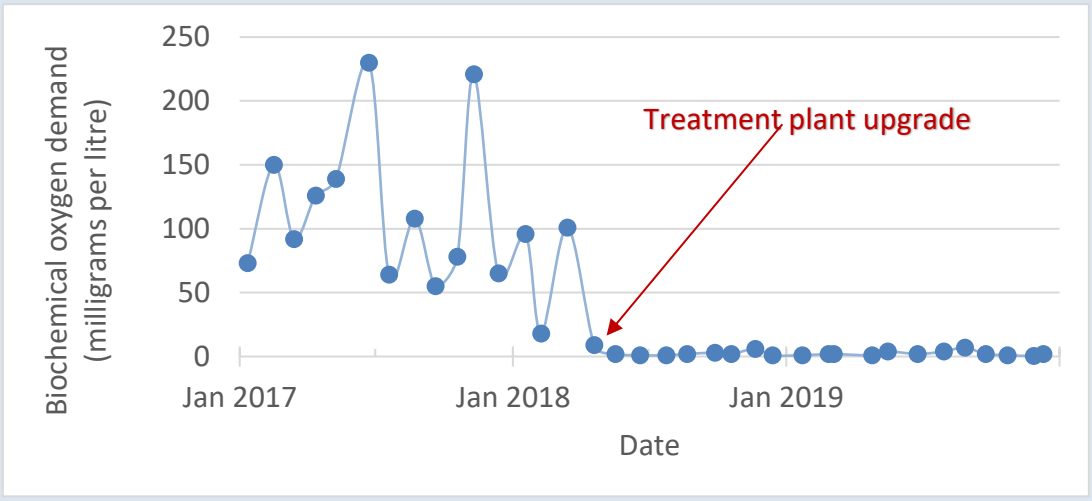



**Figure 7: Effluent quality at Convoy.**

## 3.2 Bathing waters

The EPA classify a bathing water as 'poor' if the quality of the bathing water does not meet the minimum standard required under the Bathing Water Regulations[10]. When a bathing water is classified as poor it means there is a risk of periodic pollution, with the potential to cause illness such as stomach upset, skin rash and infections of the eye, ear, nose and throat. The classification of bathing water quality is based on water testing results over four years, rather than just the past season's information or the most recent water test.

Most of Ireland's bathing waters (95%) met or exceeded the minimum required standards in 2019 and almost three quarters (73%) were classified as excellent quality[11]. However, waste water discharges still contribute to pollution at some beaches.

### Poor bathing waters

Intermittent discharges of untreated waste water, for example through storm water overflows, were one of the contributing factors to a poor bathing water classification for three beaches in 2019. Two are in Galway (Clifden and Ballyloughane Beaches) and one in Dublin (Merrion Strand). There is further information on these in *Appendix E* and in the EPA's Bathing Water Quality report. Chapter 5 has information on storm water overflows.

### Short term incidents

Local authorities also reported that waste water discharges caused 27 bathing water pollution incidents during 2019[12]. A bathing water pollution incident is a short term event that has the potential to cause a deterioration in bathing water quality. Local authorities may put a temporary bathing prohibition or advice against bathing in place following such incidents. A precautionary approach is taken when reporting bathing water pollution incidents meaning that not all incidents actually result in a deterioration in water quality. This precautionary approach is taken to protect bathers' health. Most of these incidents were associated with storm water overflows.

[10] Statutory Instrument number 79 of 2008 http://www.irishstatutebook.ie/eli/2008/si/79/made/en/print.

[11] EPA report on Bathing Water Quality in 2019 https://www.epa.ie/pubs/reports/water/bathing/bathingwaterqualityinireland2019.html.

[12] Local authorities are responsible for managing and monitoring bathing waters. Their responsibilities include reporting and investigating pollution incidents.

# 4 Protecting freshwater pearl mussels and shellfish

The EPA consider it a priority that waste water discharges must not harm the habitats of endangered freshwater pearl mussels in our rivers and must not adversely impact the shellfish waters around our coast. We require Irish Water to carry out site-specific assessments of the impacts of waste water discharges on these habitats. We review the findings of these assessments and identify the priority areas where Irish Water must improve treatment to protect freshwater pearl mussels and shellfish.

## 4.1 Freshwater pearl mussels

The freshwater pearl mussel is a globally endangered mollusc that requires clean, fast flowing, well oxygenated rivers and a clean river bed. Freshwater pearl mussels are declining both nationally and internationally due to deteriorating river quality. Pollution from inadequately treated waste water can be detrimental to the survival of new generations of mussels.

The EPA has prioritised 13 towns and villages, listed in *Appendix F*, where Irish Water must improve waste water treatment to protect freshwater pearl mussels. Upon completion of improvements we require Irish Water to continue regular monitoring of discharges and river water quality to allow us to assess the effectiveness of the improvements. The site will remain a priority until the monitoring results demonstrate that waste water discharges have improved sufficiently to protect freshwater pearl mussel habitats.

- Monitoring is being carried out to assess the effectiveness of recent improvements at five areas.
- Irish Water plans to upgrade treatment plants at four areas by 2023.
- Irish Water has still not provided a clear timeframe to complete improvements at the remaining four priority areas.

## 4.2 Shellfish

There are 64 formally identified shellfish waters around our coast. Ireland has designated these as protected areas to support the life and growth of shellfish such as oysters, mussels, cockles and clams. Sewage can contaminate shellfish with bacteria and viruses if it discharges into the catchments of these waters without adequate treatment. People may fall ill by eating contaminated shellfish and can suffer stomach cramps, vomiting, nausea and diarrhoea.

A common way to improve treatment near shellfish waters is to include a disinfection stage at the end of the treatment process, using ultraviolet lamps to kill or inactivate bacteria and viruses in the waste water.

The following summarises Irish Water's progress at meeting its obligation to assess the impacts of waste water discharges on Ireland's shellfish waters.

- Irish Water has completed the assessments for 17 shellfish waters.
    - 14 of these assessments concluded there was no adverse impact from waste water.
    - Assessments completed for Donegal Bay, Drumcliffe Bay and Killary Harbour found that waste water discharges need to improve to protect these shellfish waters. The EPA is requiring Irish Water to put in place clear action programmes with defined timeframes to carry out these improvements.
- Irish Water has still not completed assessments for the 26 shellfish waters listed in *Appendix G*. Waste water may potentially be impacting on some of these waters and it is unacceptable that so many impact assessments are overdue. It is essential that Irish Water completes the assessments promptly as the findings are urgently needed to inform any improvements necessary to protect these shellfish waters.

The EPA does not require impact assessments for the remaining 21 shellfish waters. We may not require an assessment if, for example, there are no discharges near the shellfish waters, or if we have already specified in a waste water discharge authorisation the controls necessary to protect the designated shellfish water.

# 5 Collection systems

Ireland's waste water collection systems include approximately 30,000 kilometres of underground sewers and around 2,000 pumping stations. These carry sewage away from our homes and communities and convey it to over 1,100 treatment plants. In many areas the sewers also collect surface water runoff from roads and other impermeable surfaces.

If waste water in a collection system spills out before it reaches a treatment plant it can pollute the water environment and put people's health at risk. This may happen if:

- the sewer is blocked, for example by wet wipes, sanitary products, tree roots or a build-up of grease and fats;
- a pump breaks down or stops working causing an emergency overflow;
- the sewer has inadequate capacity or structural defects; or
- waste water is released through outlets on the collection system called storm water overflows.

### Why do sewers have storm water overflows?

Ireland's sewer network has an estimated 2,200 storm water overflow outlets. These outlets are designed to relieve sewers of excess flows caused by heavy rainfall. They act as emergency safety valves and release excess flow from the sewer directly into the water environment. Without such releases there could be a greater risk to the environment and people's health because the sewer and treatment plant could become inundated, and homes and streets flooded by sewage[13]. These releases are diluted by rainwater but are typically untreated and may cause pollution; for example, overflows in some coastal areas could cause deteriorations in the quality of shellfish waters or bathing waters. In order to limit pollution, storm water overflows must meet certain standards[14]; for example, they must not operate in dry weather or cause significant visual impact and public complaints.

[13] The Urban Waste Water Treatment Directive recognises it is not possible in practice to construct collecting systems and treatment plants in a way such that all waste water can be treated during situations such as unusually heavy rainfall.

[14] The standards are set out in the 'Procedures and criteria in relation to storm water overflows', which is on the EPA's website at: www.epa.ie/pubs/advice/wastewater/UrbanWasteWater2.pdf.

Sewers should have enough capacity to collect and retain waste water during all normal local weather conditions and all normal seasonal variations in waste water load. In other words, storm water overflows should only trigger in extreme rainfall, and should not be used in normal conditions to compensate for a lack of sewer capacity.

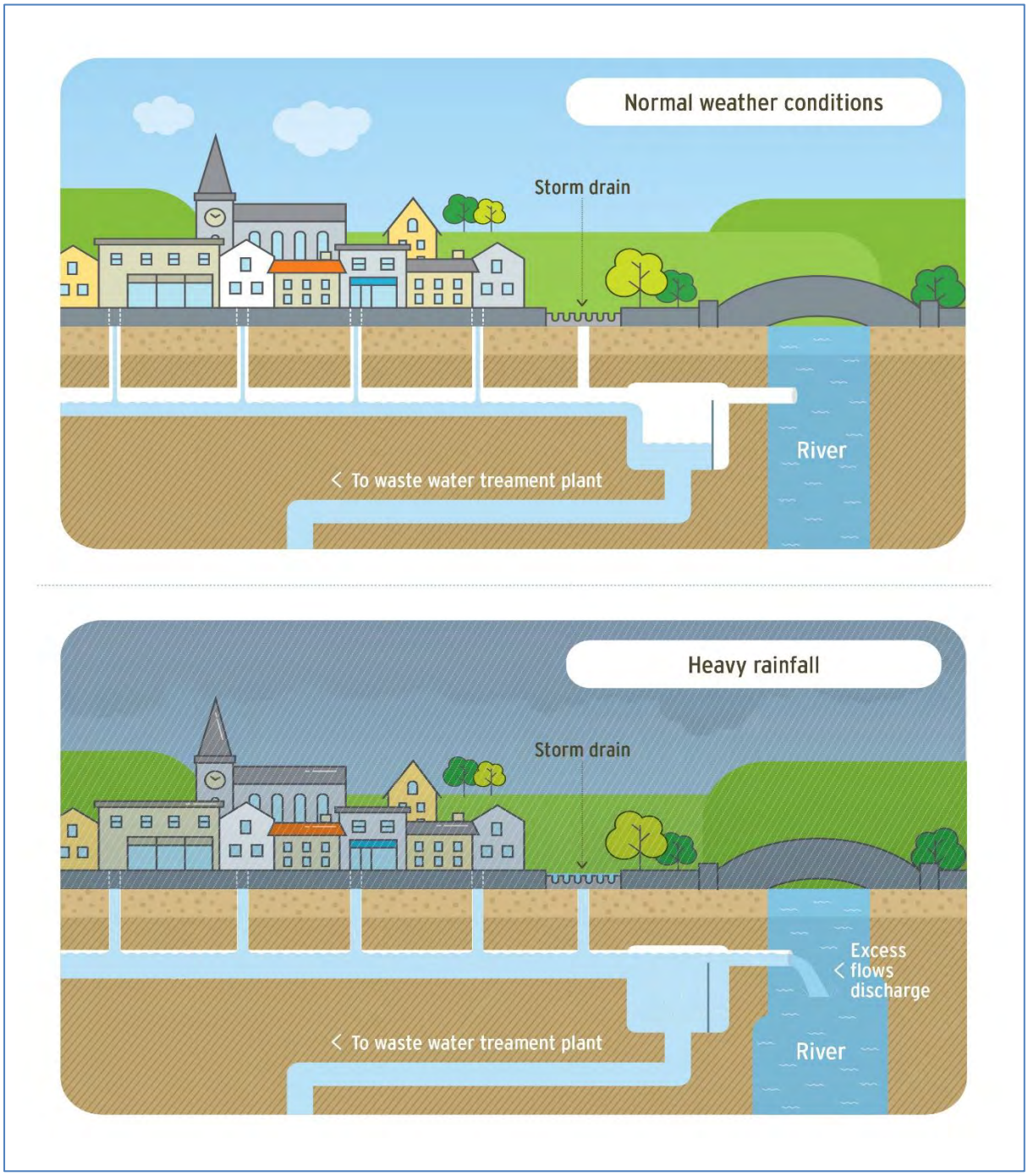



**Figure 8: Storm water overflow.**

### What are emergency overflows?

Pump stations often have overflow outlets called emergency overflows. These can release untreated waste water into local watercourses in emergency situations, such as when a pump stops working due to a mechanical breakdown or electrical power failure.

The EPA requires Irish Water to regularly service and maintain pump station equipment to minimise the risk of emergency overflows. Further measures that we recommend to avoid overflows include telemetry warning systems that trigger a rapid response in emergency situations; standby pumps that run automatically if duty pumps break down; backup power supply; and storage capacity to retain waste water if a pump is not working.

We expect Irish Water to react promptly to any emergency overflow event and take all steps necessary to mitigate risks to the environment. The EPA prosecuted Irish Water in 2019 for failing to respond appropriately to an emergency overflow of untreated sewage into Malahide Marina[15].

### Assessing the performance of collection systems

Reliable data is fundamental to managing collection systems and planning sewer improvement works. There is a considerable shortage of information on the condition and performance of many systems. For example, Irish Water does not have enough data on the volume of waste water discharged into the environment from collection systems each year.

The EPA requires Irish Water to assess the condition and performance of collection systems to inform the need for improvements and upgrades. It will take substantial work and significant investment over several years to build up the necessary understanding of the condition of Ireland's collection systems and to fix deficient systems.

Irish Water assessed the performance of 994 out of the estimated 2,200 storm water overflow outlets by the end of 2019.

[15] http://www.epa.ie/enforcement/prosecute/2019/name,67423,en.html.

## Priority collection systems

In 2019 the Court of Justice of the European Union ruled that the collection systems were inadequate at eight large urban areas in Ireland. When a collection system is inadequate it cannot retain all the waste water collected in the sewer and convey it for treatment.

Improvements works have now been completed on the collection system for one of these areas, namely the Ringaskiddy-Crosshaven-Carrigaline area of County Cork.

Irish Water must complete all improvements needed at the remaining seven priority collection systems, listed in *Appendix H*, to bring the systems up to standard. Ireland risks substantial fines from the Court of Justice of the European Union if this work is not completed promptly.

# 6 Improving waste water treatment

## 6.1 Progress on infrastructure improvements

Waste water discharge licences issued by the EPA require Irish Water to carry out improvement works within specified timeframes, where such works are needed to reduce environmental risks. The pace at which Irish Water is improving Ireland's waste water treatment infrastructure falls far short of these requirements. Irish Water has completed around half (52%) of the improvements due up to the end of 2019 (Figure 9). Some 280 individual works are overdue by more than four years, and half of these are at priority areas.

Examples of improvements completed during 2019 include:

- Elimination of discharges of raw sewage from Timoleague, County Cork.
- A major upgrade of the treatment plant in Portlaw, County Waterford to treat waste water to EPA and European Union treatment standards from 2020 onwards.
- A new treatment plant in Tubbercurry, County Sligo to prevent pollution of the local river.

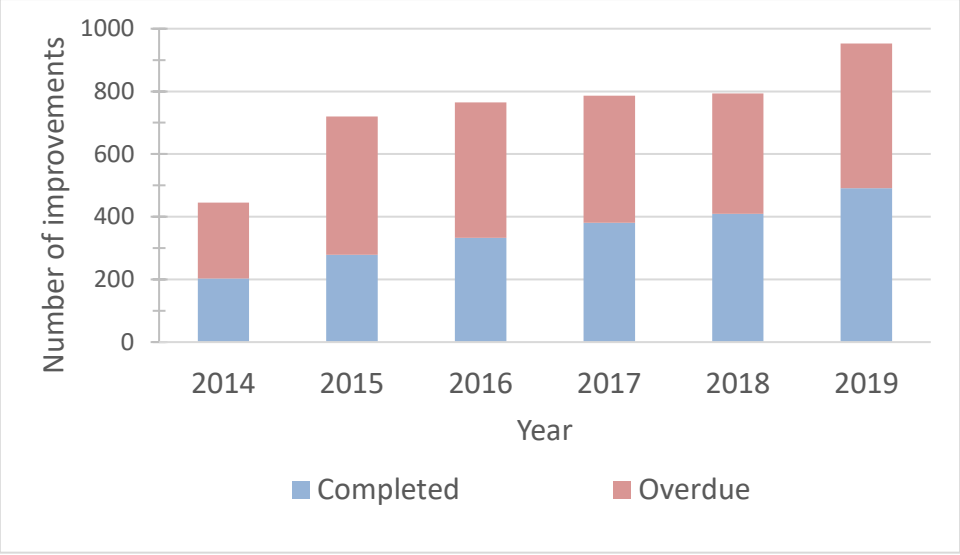



**Figure 9: Cumulative status of infrastructural improvements at the end of each year (2014 to 2019).**

Ireland will require substantial and sustained investment for many years to build the infrastructure necessary to treat our waste water properly and release it safely back into the environment. As funding becomes available, it is essential that it is invested efficiently and effectively in the right areas to prioritise improvements where they are most needed.

## 6.2 Operation and maintenance

Sometimes treatment and effluent quality can be improved without significant investment. Simply operating and maintaining existing treatment systems in a manner that gets the best from them can boost performance, improve resilience and reduce breakdowns.

- Approximately 330 of the short duration environmental incidents during 2019 were caused by issues around the operation, management and maintenance of treatment plants, down from 441 the previous year.
- 34 of the longer term unresolved environmental incidents that were either ongoing or likely to recur at the end of 2019 could be fixed by improving how the treatment plants are run. For example, the elevated nutrients in the effluent discharged from Mullingar was resolved by adjusting the rate at which chemicals were added to the treatment process.

There is further information on environmental incidents in *Appendix I*.

Maintaining and servicing plant and equipment is key to reducing breakdowns and keeping treatment systems in the best condition. Maintenance should take a preventative approach, for example by servicing and calibrating equipment regularly, rather than just reacting to problems when they occur. When equipment does break down, it must be fixed as soon as possible to minimise the risk of damage to the environment.

### Sewage sludge

Sewage sludge is a thick, soft mix of solid and liquid matter left over from the treatment of waste water. Sludge management, such as removing sludge from the treatment process at appropriate intervals, plays an important role in waste water treatment. Irish Water removed 58,630 tonnes of sewage sludge from its treatment plants in 2019. Most of this was reused as a soil enhancer or fertiliser on agricultural land. You can find more information on the reuse and disposal of sludge in *Appendix J*.

# 7 Concluding remarks

Waste water from many areas is released into rivers, estuaries and coastal waters without adequate treatment. This puts our natural environment and public health at risk.

It is not possible to fix all the issues in the short term. Therefore, it is essential that improvements are prioritised where they are most needed and will bring the greatest benefits. This report identifies the most important issues that must be addressed to protect our environment and public health from the harmful effects of waste water discharges.

While there has been some progress over the past year, there are delays in completing important works and uncertainties around the plans to resolve some priority issues. Irish Water must remedy the underlying causes for delays and make sure there are clear solutions and action programmes in place to resolve all the priority issues highlighted in this report.

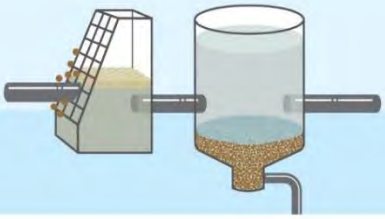
Reliable information is fundamental to identify environmental risks and plan improvements to mitigate these risks. Irish Water must complete the overdue assessments of the impacts of waste water discharges on shellfish waters and address the information gaps on the condition of sewerage systems. The findings of this work will inform the need for improvements and upgrades.

**Figure 10: New treatment plant at Tubbercurry, County Sligo.**

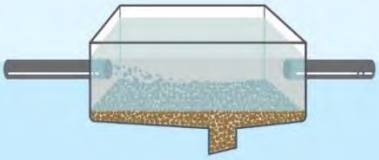
# Glossary and background information

## How is waste water treated?

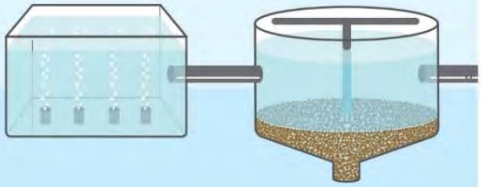
**Preliminary treatment.** Waste water flows through screens and tanks that remove rags, large pieces of plastic, grit, fat and grease. This prepares the waste water for the next stages of treatment outlined below.



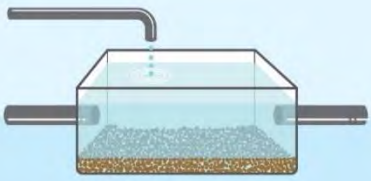
**Primary treatment.** The waste water enters large sedimentation tanks. Particles in suspension within the waste water sink down by gravity to the bottom of the tanks and are removed.



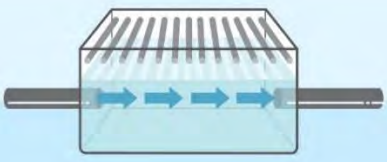
**Secondary treatment.** This is a biological process whereby microorganisms such as bacteria break down and remove the organic (polluting) matter. The clean water is then separated from the solid particles (referred to as 'sludge') in a final settlement tank. Secondary treatment is a higher level of treatment than primary treatment, and it significantly reduces the amount of polluting matter.



**Nutrient removal.** Additional treatment is sometimes carried out to further reduce nutrients such as nitrogen and phosphorus. This may be through biological processes whereby bacteria remove the nutrients, or by adding chemicals that cause the nutrients to precipitate out of the waste water.



**Disinfection.** This may be carried out after the other stages of treatment, to kill or inactivate any remaining bugs or viruses. Disinfection is typically achieved by irradiating the treated water with ultraviolet light.



| | |
|---|---|
| Directive | The Urban Waste Water Treatment Directive. The EPA assesses compliance with the Directive using effluent monitoring results and information on the type of treatment, the size of the urban area and the type of receiving water the effluent discharges into. Irish Water provides this information to us and is responsible for ensuring it is true and accurate. |
| Effluent | The waste water discharged from a waste water collection and treatment system. |
| Effluent quality standards | Irish Water must sample and monitor effluent regularly to check if it is properly treated and meets the necessary quality standards.<br><br>Standards for secondary treatment.<br><br>The Urban Waste Water Treatment Directive sets mandatory effluent quality standards for two parameters used to assess polluting potential, namely biochemical oxygen demand and chemical oxygen demand. These measure the amount of oxygen used up (demanded) to break down and get rid of polluting matter in the effluent. If effluent does not meet these quality standards it may lead to a drop in the oxygen levels in the receiving waters, which could harm aquatic life and biodiversity. Effluent discharged from all 172 large urban areas must meet these basic standards.<br><br>Standards for more stringent treatment.<br><br>Effluent discharged to sensitive areas requires a higher level of treatment to reduce the nutrients that could lead to pollution. Phosphorous and nitrogen are the main nutrients that drive pollution in sensitive areas. The Directive sets maximum limits on the concentration of phosphorus and nitrogen in effluent discharged to sensitive areas from towns and cities with a population equivalent of at least 10,000. A total of 39 towns and cities were subject to these standards in 2019. |

| | |
|---|---|
| Large urban area | Towns and cities with a population equivalent of at least 2,000 that discharge effluent to freshwater or estuaries, and areas with a population equivalent of at least 10,000 that discharge effluent to coastal waters.<br><br>The population equivalent can change from year to year, for example population growth or a new industrial unit could lead to an increase in waste water within a town. Consequently, the number of areas that meet the size threshold for a large urban area can vary from year to year. |
| Population equivalent | This is a term used to indicate how much waste water is generated in an urban area. It includes the load generated by the resident population, the non-resident population (for example, tourists) and industries. A population equivalent of one is defined as the organic biodegradable load having a five-day biochemical oxygen demand of 60g of oxygen per day. |
| Sensitive area | A water body is classified as a sensitive area if it is eutrophic; may become eutrophic if protective action is not taken; or is intended for abstraction of drinking water and contains more than 50 milligrams per litre of nitrates. Ireland's sensitive areas are listed in the Urban Waste Water Treatment (Amendment) Regulations, 2010 (Statutory Instrument number 48 of 2010).<br><br>Eutrophic refers to the enrichment of waters by nutrients, leading to an accelerated growth of algae and aquatic plants. This can cause a decrease in oxygen levels in the water and a loss of sensitive aquatic species. Eutrophication is the most significant pollution issue for surface waters in Ireland. Phosphorus enrichment tends to drive eutrophication in rivers and lakes, whereas nitrogen enrichment tends to drive eutrophication in estuaries and coastal waters. |

| | |
|---|---|
| Shellfish waters | Shellfish waters are protected areas that are designated to support shellfish life and growth. They are identified in the following national legislation: Statutory Instrument (S.I.) 268 of 2006, S.I. 55 of 2009 and S.I. 464 of 2009. |
| Urban waste water | Domestic waste water, or the mixture of domestic waste water with industrial waste water and / or rainwater runoff.<br>- Domestic waste water is waste water from residential settlements and services, which originate predominantly from human metabolism and from household activities.<br>- Industrial waste water is the waste water discharged from premises used to carry on any trade or industry.<br>Urban waste water is commonly referred to as 'sewage'. |
| Waste water discharge authorisation | This is a legal document issued by the EPA to Irish Water which sets out the conditions under which Irish Water must control and manage waste water discharges from an urban area.<br>A waste water discharge licence is required for discharges from areas with a population equivalent of 500 or more. A certificate of authorisation is required for discharges from areas with a population equivalent below 500.<br>The EPA has issued over 1,070 waste water discharge authorisations. You can view these authorisations on the EPA's website at www.epa.ie/terminalfour/wwda/index.jsp. |

# Appendix A: Priority areas.

This table lists the 113 urban areas where improvements are needed to resolve environmental priorities identified by the EPA.

| County | Urban area | Failed EU treatment standards | No treatment (discharging raw sewage) | Sole pressure on waters at risk of pollution | Contributing to poor quality bathing water | Improvements needed to protect pearl mussels | Improvements needed to collection system |
|---|---|---|---|---|---|---|---|
| Carlow | Nurney | | | x | | | |
| Carlow | Tullow | | | x | | | |
| Cavan | Baileborough | x | | x | | | |
| Cavan | Blacklion | | | x | | | |
| Cavan | Mullagh | | | x | | | |
| Cavan | Virginia | x | | | | | |
| Clare | Ballyvaughan | | x | | | | |
| Clare | Clarecastle | | x | | | | |
| Clare | Ennis South | x | | | | | |
| Clare | Kilkee | | x | | | | |
| Clare | Kilmihil | | | x | | | |
| Clare | Kilrush | | x | | | | |
| Clare | Lahinch | x | | | | | |
| Clare | Liscannor | | x | | | | |
| Clare | Shannon | x | | | | | |
| Cork | Ballycotton | | x | | | | |
| Cork | Ballydesmond | | | | | x | |
| Cork | Boherbue | | | | | x | |
| Cork | Castletownbere | | x | | | | |
| Cork | Castletownroche | | | | | x | |
| Cork | Castletownshend | | x | | | | |

| County | Urban area | Failed EU treatment standards | No treatment (discharging raw sewage) | Sole pressure on waters at risk of pollution | Contributing to poor quality bathing water | Improvements needed to protect pearl mussels | Improvements needed to collection system |
|---|---|---|---|---|---|---|---|
| Cork | Cecilstown | | | | | x | |
| Cork | Cobh | x | x | | | | |
| Cork | Cork City | x | | x | | | x |
| Cork | Courtmacsherry - Timoleague | x | | | | | |
| Cork | Crookstown | | | x | | | |
| Cork | Dunmanway | x | | | | | |
| Cork | Fermoy | | | | | | x |
| Cork | Inchigeelagh | | x | | | x | |
| Cork | Kanturk | | | | | x | |
| Cork | Kealkill | | | | | x | |
| Cork | Lombardstown | | | | | x | |
| Cork | Mallow | | | | | x | x |
| Cork | Midleton | | | | | | x |
| Cork | Millstreet | | | | | x | |
| Cork | Mitchelstown | x | | | | | |
| Cork | Ringaskiddy & environs | x | | | | | |
| Cork | Skibbereen | x | | | | | |
| Cork | Whitegate - Agada | | x | | | | |
| Donegal | Ballintra | | | x | | | |
| Donegal | Bridgend | | | x | | | |
| Donegal | Burnfoot | | | x | | | |
| Donegal | Burtonport | | x | | | | |
| Donegal | Carndonagh-Malin | | | x | | | |
| Donegal | Coolatee | | x | | | | |

| County | Urban area | Failed EU treatment standards | No treatment (discharging raw sewage) | Sole pressure on waters at risk of pollution | Contributing to poor quality bathing water | Improvements needed to protect pearl mussels | Improvements needed to collection system |
|---|---|---|---|---|---|---|---|
| Donegal | Falcarragh | | x | | | | |
| Donegal | Kerrykeel | | x | | | | |
| Donegal | Kilcar | | x | | | | |
| Donegal | Kilmacrennan | | | x | | | |
| Donegal | Milford | | | x | | | |
| Donegal | Moville | x | x | | | | |
| Donegal | Ramelton | | x | | | | |
| Donegal | Rathmullan | | x | | | | |
| Donegal | Termon | | | x | | | |
| Dublin | Ringsend | x | x[16] | x | x | | |
| Dublin | Malahide | x | | x | | | |
| Galway | Ahascragh | | x | | | | |
| Galway | Athenry | | | x | | | |
| Galway | Ballymoe | | | x | | | |
| Galway | Carraroe | | x | | | | |
| Galway | Clifden | | | | x | | |
| Galway | Galway City | | | | x | | |
| Galway | Loughrea | | | x | | | |
| Galway | Mountbellew | | | x | | | |
| Galway | Roundstone | | x | | | | |
| Galway | Spiddal | | x | | | | |
| Galway | Woodford | | | x | | | |

[16] This refers to an area around Howth with a population of approximately 130 that discharges into Doldrum Bay.

| County | Urban area | Failed EU treatment standards | No treatment (discharging raw sewage) | Sole pressure on waters at risk of pollution | Contributing to poor quality bathing water | Improvements needed to protect pearl mussels | Improvements needed to collection system |
|---|---|---|---|---|---|---|---|
| Kerry | Abbeydorney | | | x | | | |
| Kerry | Castleisland | | | x | | | |
| Kerry | Kilgarvan | | | | | x | |
| Kerry | Tralee | | | x | | | |
| Kilkenny | Freshford | | | x | | | |
| Laois | Ballyroan | | | | | x | |
| Laois | Castletown | | | | | x | |
| Laois | Portarlington | | | x | | | |
| Leitrim | Mohill | | | x | | | |
| Limerick | Foynes | | x | | | | |
| Limerick | Glin | | x | | | | |
| Limerick | Herbertstown | | | x | | | |
| Limerick | Hospital | | | x | | | |
| Louth | Blackrock | | | x | | | |
| Louth | Castlebellingham | | | x | | | |
| Louth | Dundalk | | | x | | | |
| Louth | Dunleer | | | x | | | |
| Louth | Omeath | | x | | | | |
| Louth | Tallanstown | | | x | | | |
| Mayo | Killala | | x | | | | |
| Mayo | Newport | | x | | | | |
| Monaghan | Carrickmacross | | | x | | | |
| Monaghan | Castleblaney | | | x | | | |
| Offaly | Kilcormac | | | x | | | |
| Roscommon | Roscommon | | | | | | x |

| County | Urban area | Failed EU treatment standards | No treatment (discharging raw sewage) | Sole pressure on waters at risk of pollution | Contributing to poor quality bathing water | Improvements needed to protect pearl mussels | Improvements needed to collection system |
|---|---|---|---|---|---|---|---|
| Sligo | Ballymote | x | | | | | |
| Sligo | Collooney | | | x | | | |
| Sligo | Grange | | | x | | | |
| Sligo | Tubbercurry | x | | | | | |
| Tipperary | Mullinahone | | | x | | | |
| Waterford | Dungarvan | | | x | | | |
| Waterford | Kill | | | x | | | |
| Waterford | Portlaw | x | | | | | |
| Westmeath | Athlone | | | | | | x |
| Westmeath | Ballymore | | | x | | | |
| Westmeath | Multyfarnham | | | x | | | |
| Wexford | Arthurstown | | x | | | | |
| Wexford | Ballycanew | | | x | | | |
| Wexford | Ballyhack | | x | | | | |
| Wexford | Duncannon | | x | | | | |
| Wexford | Enniscorthy | | | | | | x |
| Wexford | Kilmore Quay | | x | | | | |
| Wicklow | Arklow | x | x | | | | |
| Wicklow | Avoca | | x | | | | |
| Wicklow | Kilcoole | | | x | | | |
| Wicklow | Kilpedder | | | x | | | |
| **Total** | **113** | **19** | **35** | **48** | **3** | **13** | **7** |

# Appendix B: Urban Waste Water Treatment Directive non-compliance.

The following table shows the 19 towns and cities that did not meet the European Union's legally binding standards for waste water treatment in 2019.

| County | Urban area | Did not meet the secondary treatment requirements | Did not meet the more stringent treatment requirements |
|---|---|---|---|
| Cavan | Bailieborough | x | |
| | Virginia | x | |
| Clare | Ennis South | x | |
| | Lahinch | x | |
| | Shannon | x | |
| Cork | Cork | | x |
| | Cobh | x | x |
| | Courtmacsherry - Timoleague | x | |
| | Dunmanway | x | |
| | Mitchelstown | x | |
| | Ringaskiddy & environs | | x[Note 1] |
| | Skibbereen | x | |
| Donegal | Moville | x | |
| Dublin | Dublin (Ringsend) | x | x |
| | Malahide | | x[Note 1] |
| Sligo | Ballymote | x | |
| | Tubbercurry | x | |
| Waterford | Portlaw | x | |
| Wicklow | Arklow | x | |

**Note 1**. Waste water released from the treatment plant met the effluent quality standards. However, the Directive requires the treatment plant to provide a more stringent level of treatment than secondary treatment to remove nutrients, and Irish Water confirmed the plant did not have such treatment in 2019.

## What are the EU treatment requirements that apply to Ireland's large urban areas?

1. Waste water from all 172 large urban areas must receive secondary or biological treatment to remove organic matter. The treated waste water must also meet certain effluent quality standards to demonstrate that it has been properly treated before it is released into the environment.
2. Waste water from 39 of the 172 large urban areas requires an additional, more stringent level of treatment to remove nutrients (nitrogen and/or phosphorus) and the concentration of nutrients in the treated waste water must not exceed specified limits. These additional standards apply at towns and cities with a population equivalent of 10,000 or more discharging into sensitive areas.

# Appendix C: Areas discharging untreated waste water.

The table below lists the 35 areas that continue to release untreated waste water (raw sewage) into the environment at the end of 2019.

| County | Urban area | Date for treatment[17] |
|---|---|---|
| Clare | Ballyvaughan | 2022 |
| | Clarecastle | 2022 |
| | Kilkee | 2023 |
| | Kilrush | 2022 |
| | Liscannor | 2022 |
| Cork | Ballycotton | 2022 |
| | Castletownbere | 2022 |
| | Castletownshend | 2022 |
| | Cobh | 2021 |
| | Inchigeelagh | 2022 |
| | Whitegate - Aghada | 2022 |
| Donegal | Burtonport | 2022 |
| | Coolatee Housing Scheme | 2024 |
| | Falcarragh | 2022 |
| | Kerrykeel | 2022 |
| | Kilcar | 2022 |
| | Moville | 2024 |
| | Ramelton | 2023 |
| | Rathmullan | 2023 |
| Dublin | Howth (Doldrum Bay) | 2023 |

[17] Irish Water provided these dates in September 2020. Over the past year Irish Water has extended the timeframe to provide treatment for most of these areas.

| County | Urban area | Date for treatment |
|---|---|---|
| Galway | Ahascragh | 2022 |
| | Carraroe | 2023 |
| | Roundstone | 2023 |
| | Spiddal | 2022 |
| Limerick | Foynes | 2024 |
| | Glin | 2024 |
| Louth | Omeath | 2022 |
| Mayo | Killala | 2020 |
| | Newport | 2023 |
| Wexford | Arthurstown | 2023 |
| | Ballyhack | 2023 |
| | Duncannon | 2023 |
| | Kilmore Quay | 2023 |
| Wicklow | Arklow | 2024 |
| | Avoca | 2024 |

# Appendix D: Pressures on inland and coastal waters.

The table shows the 48 areas where the EPA identified waste water discharges as the main significant pressure on water bodies at risk of pollution.

| County | Urban area | Water body name[18] |
|---|---|---|
| Carlow | Nurney | Ballynaboley Stream_010 |
| | Tullow | Slaney_100 |
| Cavan | Bailieborough | Blackwater (Kells)_020 |
| | Blacklion | Macnean |
| | Mullagh | Mullagh Lough Stream_010 |
| Clare | Kilmihil | Kilmihil Stream_010 |
| Cork | Cork City | Lough Mahon |
| | Crookstown | Bride (Lee)_020 |
| Donegal | Ballintra | Ballintra_010 |
| | Bridgend | Skeoge_010 |
| | Burnfoot | Burnfoot_020 |
| | Carndonagh - Malin | Donagh_030 |
| | Kilmacrennan | Leannan_050 |
| | Milford | Fern,<br>Maggy's Burn_010 |
| | Termon | Leannan_050 |
| Dublin | Malahide | Malahide Bay |
| | Ringsend | Liffey Estuary Lower,<br>Liffey Estuary Upper,<br>Tolka Estuary |
| Galway | Athenry | Clarinbridge_030,<br>Clarinbridge_040 |
| | Ballymoe | Island_030 |

[18] The number at the end of each river water body name indicates where the water body is located along the main river channel. For example, the water body at the source of the Barrow is named Barrow_010. The next water body downstream is named Barrow_020. The final water body before the river becomes transitional (also referred to as estuarine) is Barrow_240. Transitional, coastal and lake water bodies do not have a number at the end of the water body name.

| County | Urban area | Water body name[18] |
|---|---|---|
| | Loughrea | Kilcolgan_020 |
| | Mountbellew | Castlegar_020 |
| | Woodford | Woodford (Galway)_020 |
| Kerry | Abbeydorney | Brick_020 |
| | Castleisland | Maine_020 |
| | Tralee | Lee K Estuary |
| Kilkenny | Freshford | Nuenna_020 |
| Laois | Portarlington | Barrow_080 |
| Leitrim | Mohill | Rinn_010 |
| Limerick | Herbertstown | Camoge_010 |
| | Hospital | Mahore_020 |
| Louth | Blackrock | Inner Dundalk Bay |
| | Castlebellingham | Glyde_070 |
| | Dundalk | Castletown Estuary, Inner Dundalk Bay |
| | Dunleer | White (Louth)_020 |
| | Tallanstown | Glyde_050 |
| Monaghan | Carrickmacross | Proules_020 |
| | Castleblayney | Muckno |
| Offaly | Kilcormac | Silver (Kilcormac)_030 |
| Sligo | Collooney | Owenmore (Sligo)_080 |
| | Grange | Grange (Sligo)_010 |
| Tipperary | Mullinahone | Mullinahone Stream_010 |
| Waterford | Dungarvan | Colligan Estuary |
| | Kill | Kilmurrin Cove Stream_010 |
| Westmeath | Ballymore | Dungolman_030 |
| | Multyfarnham | Gaine_020 |
| Wexford | Ballycanew | Owenavorragh_050, Owenavorragh_060 |
| Wicklow | Kilcoole | Kilcoole Stream_010 |
| | Kilpedder | Kilcoole Stream_010 |

The number of areas where waste water is considered the main significant pressure on water bodies at risk of pollution reduced by nine since 2018 following improvements in treatment at the following nine towns and villages.

| County | Urban area |
|---|---|
| Cork | Passage-Monkstown |
| Donegal | Convoy |
| Kilkenny | Goresbridge |
| | Johnstown |
| Offaly | Tullamore |
| Sligo | Tubbercurry |
| Westmeath | Tyrellspass |
| Wexford | Clonroche |
| | Coolgreany |

### What do we mean by 'at risk of pollution'?

The European Union's *Water Framework Directive* is a key piece of legislation aimed at protecting and enhancing waters across Europe. The Directive requires Ireland to protect and enhance our inland and coastal waters to meet the following environmental objectives:

- achieve at least good status; and
- prevent any deterioration in existing status.

Water bodies that are of good status support healthy ecosystems and a diverse range of plants and animals. When we refer to a water body '*at risk of pollution*' in this report, we mean it is at risk of not meeting the specific environmental objective set for that water body.

# Appendix E: Impacts on bathing water.

The table below shows the three areas where waste water discharges were one of the contributing factors to poor quality bathing waters in 2019[19].

| County | Urban area | Bathing Water |
|---|---|---|
| Dublin | Dublin City (Ringsend collection system) | Merrion Strand |
| Galway | Clifden | Clifden Beach |
| | Galway City | Ballyloughane Beach |

Merrion Strand was classified as poor for the last five years and as a result the Bathing Water Quality Regulations require it to be closed or 'declassified' as a bathing water in 2020.

The *Urban Waste Water Treatment in 2018* report identified three beaches where waste water contributed to poor quality bathing waters in 2018. Two of these, Merrion Strand and Clifden Beach, were classified as poor again in 2019.

### What are the changes since 2018?

Water quality improved at one beach (Sandymount Strand) where waste water had contributed to a poor bathing water classification in 2018. This was classified as sufficient in 2019, meaning the water quality met the minimum standard.

The bathing water classification for Ballyloughane Beach deteriorated from sufficient in 2018 to poor in 2019. Irish Water recently installed monitors on the storm water overflows in the catchment of this bathing water to assess their performance during the 2020 bathing season.

### Where can I find more information on bathing water quality?

During the bathing season (1st June to 15th September) the EPA's bathing water website www.beaches.ie shares the latest information on bathing water quality at over 200 beaches.

[19] You can find details on the other contributing factors in the EPA report on Bathing Water Quality in 2019 at https://www.epa.ie/pubs/reports/water/bathing/bathingwaterqualityinireland2019.html.

# Appendix F: Improvements to protect freshwater pearl mussels.

The table below lists the 13 areas where:

- waste water treatment must improve to protect freshwater pearl mussels, or
- the EPA awaits confirmation through monitoring results that recent improvements have resolved the risk to freshwater pearl mussels from waste water discharges.

| County | Urban area |
|---|---|
| Cork | Ballydesmond |
| | Boherbue |
| | Castletownroche[20] |
| | Cecilstown[20] |
| | Inchigeelagh |
| | Kanturk |
| | Kealkill[20] |
| | Lombardstown |
| | Mallow |
| | Millstreet[20] |
| Kerry | Kilgarvan[20] |
| Laois | Ballyroan |
| | Castletown |

[20] Monitoring of waste water discharges and river water quality is ongoing to determine if recent improvement works at this area are sufficient to protect freshwater pearl mussels from the adverse effects of waste water discharges.

# Appendix G: Shellfish assessments.

Irish Water must complete assessments of the impacts of waste water discharges on the following 26 shellfish waters to inform the need for any improvements.

| County | Shellfish waters |
|---|---|
| Cork | Baltimore Harbour / Sherkin |
| | Castletownbere |
| | Cork Great Island North Channel |
| | Glengarriff |
| | Oysterhaven |
| | Rostellan North |
| | Rostellan South |
| | Rostellan West |
| Donegal | Lough Swilly |
| | McSwynes Bay |
| | Sheephaven |
| Galway | Ballinakill Harbour |
| Kerry | Cromane |
| | Maherees |
| | Tralee Bay |
| | Valentia Harbour |
| Kerry and Cork | Kenmare River |
| Louth | Carlingford Lough |
| | Dundalk Bay |
| Mayo | Blacksod Bay |
| Sligo | Sligo Bay |
| Waterford | Dungarvan Harbour |
| Waterford and Wexford | Waterford Harbour |
| Wexford | Bannow Bay |
| | Wexford Harbour Inner |
| | Wexford Harbour Outer |

# Appendix H: Priority collection systems.

Irish Water must complete any improvements needed at the following seven large urban areas to make sure all waste water collected in the sewers is retained and conveyed for treatment under all normal local weather conditions and all normal seasonal variations of waste water load.

| County | Urban Area |
|---|---|
| Cork | Cork City |
| | Fermoy |
| | Mallow |
| | Midleton |
| Roscommon | Roscommon |
| Westmeath | Athlone |
| Wexford | Enniscorthy |

# Appendix I: Environmental incidents.

An incident is:

- any discharge that does not comply with the requirements of a waste water discharge licence; or
- any occurrence at a waste water works with the potential for environmental contamination or requiring an emergency response.

At the end of 2019 there were 224 incidents that were either still ongoing or were likely to recur until Irish Water resolves the underlying cause of the incident. These are referred to as '*recurring incidents*'. Figure 11 shows the number of recurring incidents at the end of each year since 2016.

- Most recurring incidents (70%) at the end of 2019 were caused by a lack of treatment infrastructure. These are medium to long term problems, which are unlikely to be solved until Irish Water upgrades the treatment plant.
- 15% of recurring incidents can be fixed by improving operation and management practices at treatment plants. This can be achieved in a shorter timeframe, without the need for capital investment.
- The remainder (15%) are due to problems with the waste water collection systems. Many of these are medium to long term problems that require infrastructure upgrades.

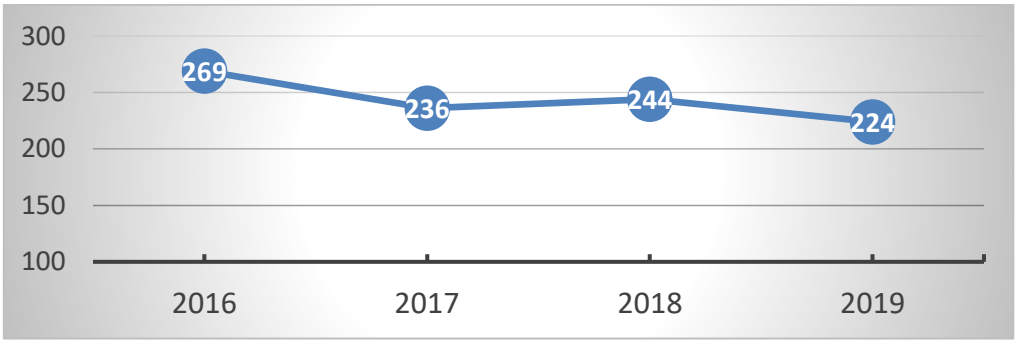



**Figure 11: Number of recurring incidents at the end of each year.**

There were also 745 short duration or one-off incidents during 2019. Most of these were caused by short term issues with the operation, management and maintenance of treatment plants, and by blocked sewers and problems at pump stations.

# Appendix J: Sewage sludge.

The table below shows the re-use or disposal routes for the 58,630 tonnes of sewage sludge removed from Irish Water's waste water treatment plants during 2019.

Sludge is rich in nutrients such as nitrogen and phosphorus and is mostly used as a soil enhancer or fertiliser on agricultural land. When used in this manner, it must be spread in a way that ensures the nutrients are effectively used for plant growth or assimilated into the soil, and it must not impair the soil, surface water or groundwater.

All sludge sent for composting was subsequently reused in soil / agriculture. The category 'Other' in the table below refers to treated sludge that was in storage at the end of 2019 awaiting reuse on soil / agricultural land.

**Sewage sludge reuse and disposal routes in 2019.**

| | Agriculture | Compost | Landfill | Other | Total |
|---|---|---|---|---|---|
| Tonnes dry solids | 52,139 | 6,099 | 115 | 277 | **58,630** |

**AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL**
Tá an Ghníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaol a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol 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:** *Soláthraímid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

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

## Ár bhFreagrachtaí

### Ceadúnú
Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaol:
- 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 peitril;
- 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 dhíriú 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 ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

### Bainistíocht Uisce
- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí 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 tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

### Monatóireacht, Anailís agus Tuairisciú ar an gComhshaol
- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil *(m.sh. tuairisciú tréimhsiúil ar staid Chomhshaol 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 shainaithint, 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 gcomhshaol in Éirinn *(m.sh. mórphleananna 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 gcomhshaol ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaol *(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
An Ghníomhaireacht um Chaomhnú Comhshaoil

Headquarters
PO Box 3000, Johnstown Castle Estate
County Wexford, Y35 W821, Ireland
Bosca Poist 3000, Eastát Chaisleán Bhaile Sheáin Contae Loch Garman, Y35 W821, Éire

T: +353 53 9160600
F: +353 53 9160699
E: info@epa.ie
W: www.epa.ie
Lo Call: 1890 33 55 99

EPA Regional Inspectorate Dublin
McCumiskey House
Richview
Clonskeagh Road
Dublin 14
D14 YR62
Tel: 01-268 0100
Fax: 01-268 0199

EPA Regional Inspectorate Cork
Inniscarra
Co. Cork
P31 VX59
Tel: 021-4875540
Fax: 021-4875545

EPA Regional Inspectorate Castlebar
John Moore Road
Castlebar
Co. Mayo
F23 KT91
Tel: 094-9048400
Fax: 094-9021934

EPA Regional Inspectorate Kilkenny
Seville Lodge
Callan Road
Kilkenny
R95 ED28
Tel: 056-7796700
Fax: 056-7796798

EPA Regional Inspectorate Monaghan
The Glen
Monaghan
H18 YT02
Tel: 047-77600
Fax: 047-84987

E: info@epa.ie
W: www.epa.ie
LoCall: 1890 33 55 99