

Glossary of terms (from A–Z)

Words and descriptions we use explained in plain English

We compiled the following words and descriptions to help you understand what we do to improve the quality of water, and how you can help us with this.

We try to explain technical words as we write them. We always try to explain these terms consistently across all our reports.

Some terms in this glossary refer to other terms, so rather than defining all terms each time we have put in internal links back to where we explained them originally. This means you can check back to read terms you may wish to check.

We consulted several references in order to explain these technical terms.

Help us with these terms

If you notice a term we use that you think we need to add to this glossary, please tell us what it is, and we will add it and an explanation of what it means in plain English.

We hope you find this glossary particularly useful when you read our reports.

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

A

Abstraction

Abstraction is the process of taking water from a [groundwater](#) source, river, or lake, either temporarily or permanently. Most water is abstracted and treated to produce clean drinking water. Water may also be diverted into canals to keep them full, or for generating electricity at hydroelectric power stations, or for industrial use or irrigation. Over abstraction can lead to rivers drying up or the level of groundwater aquifers or lakes reducing unacceptably.

Acidification

This is a change in an environment's natural chemical balance caused by an increase in the concentration of acidic elements. Higher concentrations of acid in the rivers and lakes systems can damage water quality. High concentration of acid is linked to:

- higher levels of pollutants—[nitrate](#) and sulphate; and
- some forestry plantations on certain rock or soil types (acid sensitive geology).

Impact: It can affect the [macroinvertebrates](#) such as mayflies living in the water.

Algae

The term algae is used to represent a diverse group of living things in our waters. Algae are an important part of river and lake systems.

Impact:

Too much algae can grow in rivers and lakes because of too much [nutrients](#). This becomes harmful for the fish and [macroinvertebrates](#) as it takes up the oxygen, blocks the light, and clogs the channel.

Too much algae can sometimes lead to algal blooms that produce chemicals or toxins that are harmful to humans and animals, especially pets like dogs.

Cyanobacteria, also known as blue-green algae is the form that produces toxins. One way we can control algal blooms is by preventing too much nutrients from getting into the water.

Ammonia (NH₄):

Ammonia is a form of nitrogen that exists in different forms in the environment.

Ammonium is the form found in waters. It occurs when:

- domestic sewage or animal slurry gets in our water.
- the breakdown of [nitrogen](#) compounds in organic matter and waste.
- some industrial activities release ammonia into our water.
- Peatlands or organic soils are drained, and the organic material degrades.

Free ammonia (NH₃) is also present in waters and is toxic to aquatic organisms under certain conditions.

Agricultural Sustainability Support and Advisory Programme

This is a free advisory service from [Teagasc](#) and from the dairy industry in [catchments](#) or [priority areas for action](#) (PAAs) in Ireland.

Advisors visit farms and work with farmers to improve water quality by reducing runoff, prevent sediment and chemicals entering the river and reduce nutrient levels by:

- Identifying ways with farmers to improve nutrient management (especially nitrate and phosphorus) by using slurry and fertiliser when and where the grass needs it and reduction in fertiliser use e.g., using nature-based methods like multi-species swards.
- Sharing new approaches to land management (especially in [critical source areas](#), where the runoff can get into the rivers relatively easily).
- Advising on better farmyard management and practices.

Together, the advisor and farmer agree on where the farmer should focus improvements or actions, if any are required, on the farm. The **practical advice** helps prevent nutrients from entering water.

Attenuation

A process to reduce (attenuate) the quantity of pollutants in water. This process particularly works to decrease harmful pollutants in water, including tiny harmful

organisms (called [pathogens](#)) and unacceptable changes in chemical or biological levels in water and in soil.

Methods used to attenuate pollution concentrations include:

- Dilution of the pollutant with the water that it mixes with.
- Filtering poor quality water through the soils, [subsoils](#), and constructed wetlands to remove the pollutants.

Aquifer

A below the ground layer or layers of rock or other geological strata such as gravel that allow either a significant flow of [groundwater](#) or the [abstraction](#) of (taking out) significant quantities of groundwater.

Aquifers are important as they act as a groundwater reservoir, which may be used by wells for domestic, agricultural, or industrial use. In Ireland, nearly all bedrock types are classified as aquifers, as they are able to provide water in at least sufficient amounts of water for houses and farms.

As scientists, we consider aquifers to be regionally important, locally important, or poor. We base this on the type of rocks involved and how much groundwater they can provide to wells and as flow to rivers. There are three major categories of aquifer, with different sub-categories.

Regionally Important Aquifers

- [Karst](#) aquifers
- [Fissured](#) bedrock aquifers
- Extensive sand/gravel

Locally Important Aquifers

- Sand/gravel
- Karst bedrock
- Bedrock which is Generally Moderately [Productive](#)
- Bedrock which is Moderately Productive only in Local Zones

Poor (P) Aquifers

- Bedrock which is Generally Unproductive except for Local Zones
- Bedrock which is Generally Unproductive

Want to know more?

You can find out more about aquifers in Ireland and access these aquifer maps at:

- www.gsi.ie/en-ie/programmes-and-projects/groundwater/Pages/default.aspx
- and www.gsi.ie/documents/IrishAquifersPropertiesAreferencemanualandguideVersion10March2015.pdf.

B

Baseflow is that part of stream flow derived from groundwater flowing into a stream.

Biological kick sampling

This is a way [macroinvertebrates](#) (small animals such as insects, snails, worms) that live in the bed of a river can be examined through a **sampling** process called **kick sampling**. This involves kicking the bed of the river at various points within a river stretch and this kicking disturbs macroinvertebrates. The sample is collected in a net and the macroinvertebrates are counted and identified. Based on this study an assessment of the health of the river can be made.

A kick sample is an example of a [biological sample](#).

Biological sample

A biological sample is a collection of biological material or organisms that we study to check for indicators (signs of quality) of quality water.

A sample could be, for example, from plant material ([algae](#), [macrophytes](#)), [macroinvertebrates](#), and fish among others.

Blue Dot Water Body

Blue Dot water bodies are those that have a High Status objective and should not be allowed to decline to Good Status or worse. They include rivers, lakes, estuaries, and coastal waters. High Status means really good quality, the best water quality in the country.

A Blue Dot area is an area that drains into a high status objective water body.

Nationally, three hundred and eighty-four water bodies have been identified as having a high status objective. This means we work with everyone living and working in these areas to either:

- restore them to high status, **or**
- protect them so that they do not deteriorate from their high status condition.

Blue Dot Catchments Programme

The Blue Dot Catchments Programme is a programme delivered by a range of agencies to:

- focus attention and resources to protect and restore our high status objective (Blue Dot) water bodies, and
- raise awareness amongst land managers and state bodies on the sensitivity of these waters.

The Blue Dot Steering Group develops and co-ordinates the Blue Dot Catchments Programme. The steering group meets four times per year and is responsible for developing and delivery of a work programme to implement protection and restoration actions for blue dot areas. This includes prioritisation of measures implementation via national plans, e.g., Irish Water Capital Investment Plan, Common Agricultural Policy delivery in Ireland, and Forestry Policies. A key element of the programme is communication and engagement with stakeholders and local communities.

The organisations represented in the steering group are:

- Department of Housing, Local Government and Heritage (Water Policy Advisory Unit and National Parks and Wildlife Service)
- Department of Agriculture, Food and the Marine (Agriculture and Forest Service)
- Environmental Protection Agency
- Local Authority Waters Programme
- Representative Local Authorities (Kerry, Wicklow, Donegal, and Mayo)
- Coillte

- Inland Fisheries Ireland
- Irish Water
- Office of Public Works

BOD (Biochemical Oxygen Demand, also known as Biological Oxygen Demand)

BOD is a measure of the amount of oxygen that bacteria and other micro-organisms use up when they break down organic matter in the water. If the water has a high BOD, this means that there is a risk that dissolved oxygen levels might drop to critically low levels, causing damage to aquatic life.

Bridge hop

Bridge hop is a term used to describe the first stage in the fieldwork that LAWPRO scientists carry out in [Priority Areas for Action](#) to start to build a picture of water quality in a defined area, and in particular in the small streams which are largely not monitored. We take samples (chemical samples or biological kick samples or both) at different bridge locations. The results of the bridge hop sampling help us to focus our fieldwork when we carry out the more detailed [local catchment assessments](#).

C

Catchment

A catchment is an area of land around a river, lake, or other body of water. Rainwater that falls within a catchment eventually flows into rivers, lakes, or directly into estuaries or coastal waters, bringing with it any pollutants that may be in the landscape.

When we assess the water quality in a catchment, we look upstream where the water is coming from to help us find out what happens to the water as it makes its journey towards the sea.

Catchment Assessment Team

The catchment assessment team working for the [Local Authority Waters Programme](#) (LAWPRO) comprises catchment scientists, a Blue Dot scientist and five catchment

managers across five regions. Our role is to undertake [scientific assessment](#) in the Priority Areas for Action and identifying possible ways to fix the cause of pollution.

Catchment Walk

A [catchment](#) walk is where our scientists walk along, or in, rivers and beside lakes to observe and record the condition of the river or lake. They use common-sense science and assessment techniques to help refine the exact location and nature of the problem, and the appropriate measures to help fix it.

We write catchment reports based on our walks that outline where the problems are and what needs to be done to fix the problems and you can read these on our site when completed.

Channelisation

This refers to the natural or intentional straightening, widening and/or deepening of stream channels, so water moves faster and causes less flooding. However, channelisation can sometimes increase flooding in other downstream areas.

Chemical sampling

This is the term used to describe when we collect a water sample for chemical analysis in a laboratory. When we do this type of analysis, we can see the types and amount of chemicals parameters (indicators or signs of quality) in the water. In most cases, we are looking for the level of [nutrients](#) such as nitrate and phosphorus in water, as high levels cause unhealthy ecosystems.

Chemical status

The assessment of the surface water body quality against the environmental standards for certain chemicals. Chemical status is recorded as good or fail. A status of good means that concentrations of substances do not exceed the standards in the Environmental Quality Standards Directive. The chemical status classification for the water body is determined by the worst test result.

For groundwater see "[Groundwater chemical status](#)".

Commonage land

Commonage refers to land on which two or more farmers have grazing rights. Under common law in the Republic of Ireland, land held in commonage is seen as a tenancy in common. Each tenant holds an undivided share in the property and has a distinct and separate interest in the property. An example would be land high on the mountains around Ireland.

Community Water Officers

Community Water Officers work for the [Local Authority Waters Programme](#) (LAWPRO) to build awareness of the importance of water, help build community group capacity to deliver on projects, support training and strengthen links between public bodies, funders, and communities. They also promote citizen science initiatives the WaterBlitz 2021 coordinated with the Water Institute, Dublin City University.

Conductivity

Conductivity is the measurement of the ability of water to conduct an electric current. The more dissolved salts in the water, the more current the water can carry. We often use this measure to assess the level of dissolved solids in water. Significant increases in conductivity could be an indicator that a discharge or some other source of pollution has entered the river.

Critical Source Areas

Critical sources areas are areas that cause us concern as they contribute disproportionately high amounts of pollutants to a waterbody compared to other areas of the [catchment](#). These are the areas that pose the highest risk of impacting a water body, but they also represent the areas with the greatest opportunity for fixing problems.

Example: an area in a field where all the rainfall [runoff](#) gathers before it flows into the river. If there is too much fertilizer in this area it can then be washed with the runoff into the river.

D

Desk study

This report is the first step of our work in assessing water quality. We gather available information about the river into a single document. The information comes from the Environmental Protection Agency, the local authorities, Inland Fisheries Ireland, Irish Water, and all other public agencies.

This report tells us and you:

- the water quality of the river and if it has changed in the past 3-6 years.
- the importance of the river, if there are any rare plants, animals or habitats that must be protected or if it is used for drinking water supplies, and
- the known human activities (such as wastewater treatment, agriculture, forestry, physical modifications to the river) that might be damaging water quality.

Diffuse Pressures

Human activities that are potential sources of pollution that are spread over wider geographical areas rather than individual point locations, e.g., a pipe.

Examples include land spreading of organic and inorganic fertilizers, forestry, peat drainage or harvesting, urban areas. These impact the area where they occur as well as other surrounding areas.

Diffuse Pollution

Pollution that comes from many sources described as [diffuse pressures](#). These sources may be small individually but damaging collectively.

Dissolved Inorganic Nitrogen (DIN)

It is a measure of the sum of [Ammonia](#) and [Total Oxidised Nitrogen](#) in waters. We use this as a measure of pollution impact when we assess estuaries and coastal waters.

Dissolved oxygen

Dissolved oxygen is a measure of the amount of free available oxygen in the water and is a very important indicator of water quality. Fish and other aquatic organisms need oxygen to survive. Too much or too little will harm aquatic life.

E

Ecological status

Surface waters are classified into five quality classes (status), with high being unpolluted and bad being the most polluted.



The Environmental Protection Agency assigns status (every 3-years) based on the standards set out in European legislation and the [Water Framework Directive](#). Status is based on many different elements that all together indicate the overall health of the river ecosystem.

For example, the elements we record in river habitats includes:

- records of its oxygen levels,
- nutrient levels,
- biological condition (macroinvertebrates, macrophytes, algae, fish)
- signs (indicators) of pollution—both organic and chemical, and
- the physical condition of the river bed and bank ([‘hydromorphology’](#)).

Waters at high and good ecological status show only minor or slight changes from natural conditions, whereas waters at less than good status (that is moderate, poor, or bad) are moderately to severely damaged by pollution or habitat degradation. Assessing the ecological status of water bodies helps us to identify appropriate measures to protect and restore water quality. Water bodies should be at least good status unless they are [heavily modified](#).

Eutrophication

A process of pollution that occurs when waters become over-rich in plant nutrient; as a result, they become overgrown with algae and other aquatic plants. The plants die

and decompose. The decomposition uses up the oxygen in the water, and causes problems for the aquatic life in the lake, river, stream, estuary, or coastal water.

Fertilisers which drain from the fields, nutrients from animal wastes and human sewage are the primary causes of eutrophication.

F

Field parameters

This term refers to the tests that are carried out on water samples in the field (at rivers and lakes) rather than in a laboratory. It includes water quality parameters, such as

- dissolved oxygen levels,
- acidity levels (pH levels), and
- conductivity (how well electricity flows through water based on salts dissolved in it).

Fissured

This term refers to the fractures, joints, and other weaknesses in the bedrock.

G

Groundwater

Water that flows or seeps downward and saturates soil or rock, supplying springs and wells ([aquifers](#)). Groundwater is susceptible (prone) to pollution by nutrients. Once groundwater is polluted, it is very difficult to clean up.

Groundwater chemical status

Groundwater chemical status expresses the overall quality of the groundwater body based on five tests and takes into consideration defined threshold values and trends.

Groundwater quantitative status

Groundwater quantitative status expresses the overall impact that groundwater abstraction has on the groundwater body and dependent ecosystems. It is based on four tests.

Where the quantitative status is poor, that means that too much water is being taken from the groundwater body and so lowers the water levels too much in wells and in rivers.

Groundwater vulnerability

Groundwater vulnerability is a term used to represent the natural characteristics that determine the ease with which groundwater may be contaminated by human activities. The groundwater **vulnerability** concept is based on the answer to these questions:

- Can water and contaminants move in the subsurface materials (soil and subsoil)?
- Can it get down to groundwater easily?

Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly, and consequently in lower quantities. Also, the slower the movement and the longer the pathway, the greater the chance of [attenuation](#) of many contaminants.

Example: In the Burren in Co Clare, the groundwater vulnerability is extreme because there are very thin soils (less than 1m) above the bedrock to protect the groundwater from potential pollution.

Groundwater bodies

A distinct volume of groundwater within an [aquifer](#) or aquifers. An aquifer may have one or more groundwater bodies.

H

Headwater (s)

The source and upper reaches of a stream or river.

Heavily Modified Water Body

A 'heavily modified' [water body](#) is a surface water which has been significantly altered by human activity and so must be considered in a different way to an 'unmodified' water body.

High-status objective water body

High-status objective water bodies are those where High Status must be achieved to support the most sensitive aquatic ecosystems that depend on the highest quality water.

The Water Framework Directive has several objectives. One is to prevent deterioration of the status of all surface waters. This means that water bodies that are achieving High Status should not decline to Good Status or worse. The Environmental Protection Agency has identified the waters in Ireland that should have a high status objective, and these are more commonly known as **Blue Dot waters** or Blue Dots (see above for [Blue Dot Catchments Programme](#) and Blue Dot Steering Group). Our Blue Dot Waters include rivers, lakes, estuaries, and coastal waters.

High Ecological Status

This is a state, in a surface water body, where the values of water quality are very high in terms of its biological, chemical, and physical make up and have not been significantly disturbed by human activity.

Hydrogeologically susceptible

The Environmental Protection Agency has maps of these areas (susceptibility maps). These show us where ground conditions, such as the drainage characteristics or [hydrology](#) of the soil and bedrock. At the moment the EPA have published maps that show where the waterbody is likely to be affected by too much nutrients such as phosphate or nitrate.

Hydrology

Hydrology is the science that covers the occurrence, distribution, movement and properties of the waters of the earth and each phase of the hydrologic cycle. [The water cycle](#), or hydrologic cycle, is a continuous process by which water is transported from the earth's surface (including the [oceans](#)) by [evaporation](#) to the [atmosphere](#), and falls back to the land and oceans by rainfall.

Hydromorphology

Hydromorphology is the physical characteristics of both the water flows ([hydrology](#)) and the physical condition of water bodies such as our rivers, lakes, and transitional

waters. Good hydromorphological condition means a healthy habitat that functions properly in the surrounding landscape and supports healthy aquatic ecosystems (that is, elements such as water flow and that provide a good physical habitat for fish, [macroinvertebrates](#) and aquatic [macrophytes](#)).

The [Water Framework Directive](#) requires surface waters to be managed in such a way as to safeguard their [hydrology](#) and the physical habitat conditions so that ecology is protected.

Example: A river has good hydromorphology when it is connected to the natural floodplain, has not been drained, flows naturally through the landscape and has a healthy river bank and bed.

I

Impacted (and probably impacted)

Impacted is a term used to show that a pollutant or [pressure](#) has negatively affected (or probably affected) the water quality.

J

K

Karstification

Karstification is the erosion process of limestone rocks that results in a [karst landscape](#) like you would see in the Burren in Co Clare.

Rainwater [runoff](#), seeping through soil, combines with carbon dioxide and makes it more acidic. The slightly acidic water that falls and flows on and through the fractured limestone dissolved the rock over time, known as chemical erosion, creating a [karst landscape](#).

Karst

Karst is a landscape with [hydrology](#) and landforms that arises when the underlying rock is soluble. Although karst can develop on rocks such as gypsum and quartzite, most karst landforms in Ireland are found on carbonate rocks, such as limestones.

L

Local Catchment Assessment

Local Catchment Assessment is the assessment of the water quality of rivers and lakes and the identification of the causes of pollution. It follows from our [desk studies](#) and uses that information to guide what further assessment needs to be done in the [catchment](#).

It involves:

- taking water samples for chemical analysis.
- examining [macroinvertebrates](#) (worms and insects) which are a good indicator of water quality over time because of their different levels of sensitivity to pollution.
- assessing the bed of the river to make sure there is not too much sediment for the macroinvertebrates to live in.
- assessing the aquatic plant life.
- walking along the river bank and/or lake shore to identify possible causes of pollution, and
- identifying possible ways to fix the cause of pollution.

Local Authorities Waters Programme (LAWPRO)

This programme is a local authority shared service managed by Kilkenny and Tipperary County Councils on behalf of all local authorities. It co-ordinates with the water quality work of Local Authorities through agreed regional structures, and this results in a collaborative approach to river [catchment](#) management. It also seeks to engage local communities and promote public participation in how the water environment is managed. This management involves the work of a team of [water community officers](#).

LAWPRO has recently started [local catchment assessments](#) of the causes of water quality issues within the 189 areas set out in the River Basin Management Programme (through the work of its [catchment assessment team](#)).

M

Measures

This term is used in the EU [Water Framework Directive](#) and domestic legislation. It means an action which will be taken to help achieve Water Framework Directive objectives.

Macroinvertebrates

Macroinvertebrates are invertebrates (do not have a backbone) that can be seen with the naked eye or without a microscope. These include many species of insects, worms and snails. We sample macroinvertebrates using [biological kick-sampling](#) to help us determine the health of the river at that location.

Macrophytes

Larger plants, typically including flowering plants, mosses and larger algae but not including single-celled phytoplankton or diatoms.

Misconnections

Misconnections happen when wastewater (domestic plumbing) has been connected into surface water drains instead of the foul sewer. This means untreated dirty water goes directly into rivers/waterways without being treated. Misconnections of foul sewage into surface water drains are a significant source of urban [diffuse pollution](#) in those areas where a separate drainage system is used.

N

Near surface flow

Near surface flow is the [groundwater](#) that flows in the upper part of the [aquifer](#) and close to the ground surface.

Nitrate

An important plant nutrient. In water, the major **sources of nitrate** are:

- septic tanks,
- farmyards, and
- organic and inorganic fertilisers

- urban waste water.

Nitrogen in rivers is a particular concern in the south and south east of the country. Too much nitrogen in these waters results in excess growth of [algae](#) and aquatic plants. This damages other aquatic species and also causes foul odours which occur when the algae dies and decays.

Nutrients

Nutrients are chemicals like phosphorus and nitrogen that fertilise plants and algae and cause them to grow. However, high levels of nutrients such as phosphorus and nitrogen are also the most widespread water quality problem in Ireland. These problems arise mainly from human activities such as agriculture and waste water discharges from human settlements, including towns, villages, and rural houses.

O

Oligotrophic lake

An oligotrophic lake is one which has a low nutrient content. The waters of these lakes are usually quite clear due to the limited growth of [algae](#) in these types of lake. These usually have good water quality.

Overland flow (also called surface runoff or direct runoff)

Overland flow is generally regarded as flow of water after rainfall on the surface of the ground to a nearby drain or river. It is sometimes termed surface [runoff](#) or direct runoff and produces a rapid response in a stream hydrograph. Overland flow can readily pick up excess nutrients, chemicals or sediment on the land surface and deliver them to the nearest watercourse.

P

Pathogens

Organisms, including bacteria, viruses or cysts, capable of causing diseases (typhoid, cholera, dysentery) in a host (such as a person). There are many types of organisms which do NOT cause disease. These organisms are called non-pathogenic.

Pesticide

Pesticide is a term that covers a range of products that are used to control insects, weeds, or diseases. The most common type of pesticides are the plant protection products (PPPs) used in agriculture. (Pesticides are also used for non-agricultural purposes such as in your garden).

Phosphorus

Phosphorus is a mineral that is used in agriculture for plant growth. It can be in either organic form as in the case of slurries, or inorganic form as in chemical fertiliser. In rivers, lakes and in some of our more river-dominated estuaries, phosphorus is often the nutrient of most concern to water quality.

Source of phosphorus are mainly from wastewater discharges and run-off from agricultural land on poorly draining soils. Diffuse phosphorus losses from agriculture are difficult to tackle, as the sources do not occur uniformly in the landscape but in 'hot spots' or critical source areas.

Pollutant Impact Potential (PIP) maps

PIP maps for nitrogen (N) and phosphorus (P) show the highest risk areas in the landscape for losses of N and P to waters (not something we want). These maps can be used to target areas where there may be a problem that needs to be fixed.

Point source (PS) pollution (or pressure)

It is the source of surface or groundwater pollution that originates at a single point from a well-defined source, such as a discharge from a pipe.

Examples: industrial effluent (liquid waste or sewage discharged into a river or sea); large animal containment facilities; city waste water treatment discharges; or chemical spills.

Pressures

Human activities such as agriculture, forestry, [abstraction](#), effluent discharges (liquid waste or sewage discharged into surface water bodies) **or** engineering works that have the potential to have adverse effects on the water environment.

Priority Areas for Action

LAWPRO catchment scientists work in specific [catchment](#) areas called Priority Areas for Action (PAAs) that have been selected for action to restore waters in the national river basin management plan. [Local catchment assessment](#) is the term used to describe the work we do in each of the Priority Areas for Action.

Pristine waters

The best quality waters are assigned a high ecological status classification, and a portion of these high status water bodies are defined as being pristine. Sometimes they are also referred to as “Q5” sites (achieving an ecological quality score of 5 out of 5) or reference condition sites, and they are regarded as being largely unaffected by human activities.

Productive

This is a term to describe the amount of water you can expect to get out of a well when it is pumped.

Q

Q-Value

A biological index, known as the Q-value system, is used in Irish rivers. It gives a measure of the ecological health of each river stretch based on the known sensitivities and tolerances of [macroinvertebrates](#) to water pollution. This allows us to classify our rivers into five quality classes based on the Q-value result. ‘High’ river water quality is when the water is not polluted at all, and ‘bad’ river water quality is when the water is most polluted. This system assigns a score between 1 and 5 (1 being lowest and 5 being highest) based on the relative numbers and types of [macroinvertebrates](#).

Example: In a river, there is typically a wide range of macroinvertebrates and the different types show the amount of pollution in the river.

R

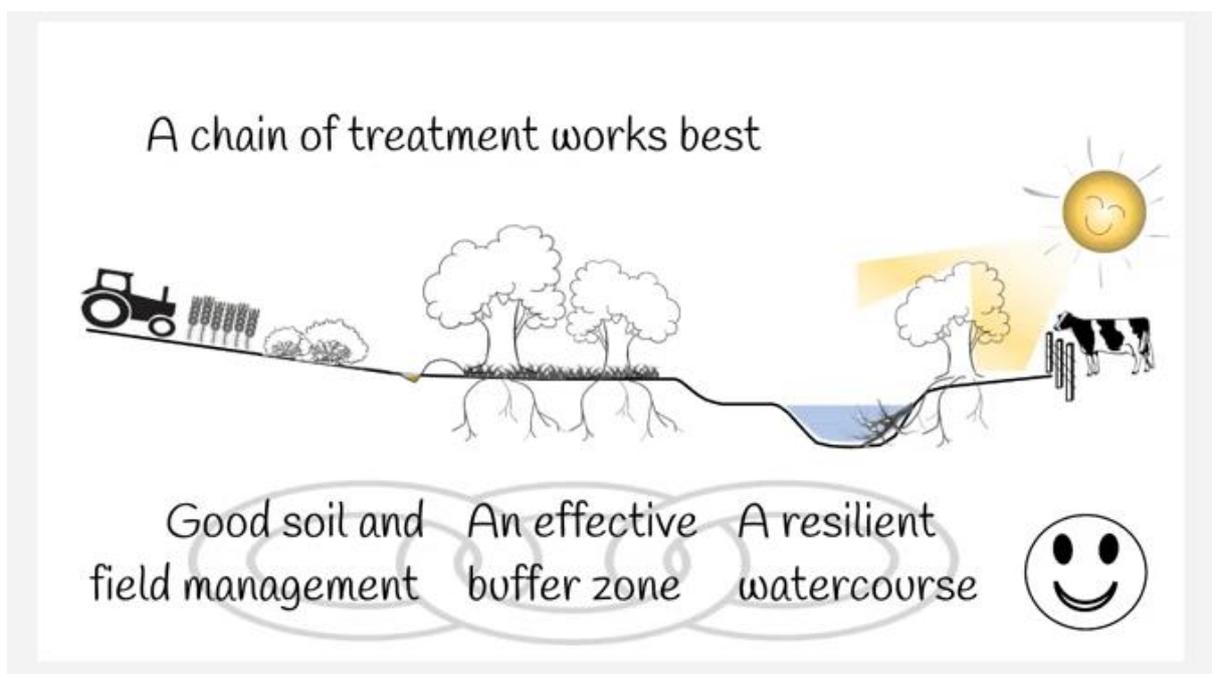
Risk Assessment

The analysis that predicts the likelihood that a water body is at significant risk of failing to achieve one or more of the [Water Framework Directive](#) objectives.

Riparian Buffer Zones

These are areas near or on a stream bank, sometimes forested, which help partially protect the stream from nutrient, sediment and pesticide losses from adjacent land. These areas help increase water quality in associated streams, rivers, and lakes, and also help improve:

- **biodiversity** the variety of plant and animal life in an area and how they interact within habitats and ecosystems (like lakes and native forests), and,
- **carbon sequestration** removing carbon dioxide from the air and storing it securely for a long period, for example, in our soils, our hedgerows and our trees.



See this 3.30 minute video on smart buffers:

[SMARTER BufferZ - better buffer zones, with the right measure in the right place - Catchments.ie - Catchments.ie](#)

River Basin Management Plan

The River Basin Management Plan 2018-2021 sets out the actions that will be taken to improve and protect water quality up to the end of 2021. A draft of the Plan for the period 2022 to 2027 can be read [here](#) .

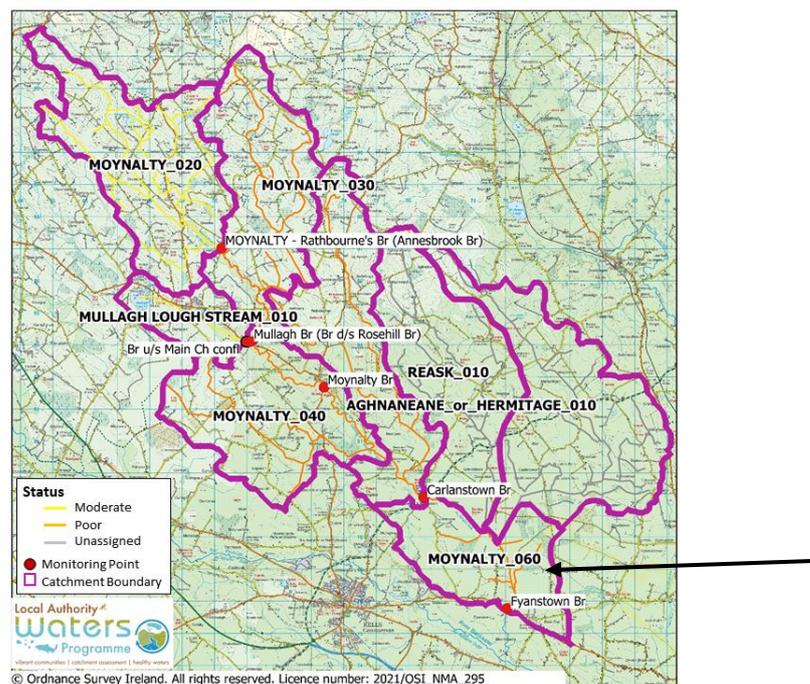
You can find further information about the National River Basin Management Plan on the [Department of Housing, Planning, Communities and Local Government website](#).

River management units

Rivers are divided into smaller sections called [water bodies](#). This is done to allow us to measure and report on water quality in a standard way across the EU. So very large rivers could be divided into many waterbodies and smaller rivers may only have one or two waterbodies associated with them.

Numbering starts with Rivername_010 at the headwaters of a river or stream and the number increases as you move down the river: Rivername_010, flows into Rivername_020, and so on.

Example: The River Moynalty is split into six different sections (water bodies) from Moynalty_010 at the start of the River Moynalty south of Bailieborough Co Cavan and continues until Moynalty_060 where the river flows into the Blackwater (Kells) river, east of Kells Co Meath.



Local river names may be different to what is shown here. There are often several small streams within a water body and too many to show on a single map.

Runoff

The portion of rainfall, melted snow or irrigation water that flows across the ground's surface and is eventually returned to streams. It is also sometimes called [overland flow](#). Runoff can pick up pollutants from air or land and carry them to river or lakes.

S

Sediment

This is the term to describe the sand, pebbles or mud transported and deposited by a river, or found in a lake or estuary.

Sedimentation

This is where sediment of different sizes is deposited (settles) after it has been moved by water, wind, gravity, or ice.

Example: In a flood, material such as sand and mud can be moved down stream and it can settle in areas where the river is deep, and the flow slows down.

Significant pressures

Significant pressures are the human activities that are impacting on our waters and preventing them from meeting their environmental objectives. They include agriculture, wastewater discharges and impacts on the physical habitat conditions for example.

Silt plume

This is the [sediment](#) that is disturbed when [kick sampling](#) or when the bed of a river is otherwise disturbed. When kicking the river bed, sediment is disturbed, and you can see it flowing downstream. Too much sediment causes problems for the [macroinvertebrates](#) such as mayfly as it clogs up the river habitat.

Small Stream Impact Score (SSIS)

Small Stream Impact Score is an assessment system used to show if a river is probably [impacted](#) (polluted). The method involves assessing the [macroinvertebrate](#)

community captured as a sample as part of [kick sampling](#) and assessing the [algae](#) and other aquatic plants that are in the river.

Subsoils

The soil lying immediately under the surface soil.

T

Total Oxidized Nitrogen (TON)

Total Oxidised Nitrogen is the sum of nitrate and nitrite. Nitrite is a very small fraction of the TON concentration in rivers, and TON is taken to be equivalent to the nitrate concentration. A high concentration can cause [eutrophication](#).

Total Ammoniacal Nitrogen (NH₄⁺ & NH₃-)

Laboratories measure total ammoniacal nitrogen, which includes both ammonia (NH₃) and ammonium (NH₄⁺). The form which dominates depends mostly on pH and, to a lesser extent, temperature. If pH is 7 or less, then the bulk of the ammoniacal N is ionised i.e., it is ammonium. As you go up to a pH of 8, you may get 90% ammonium and 10% ammonia. As you go up to 9, you might get 50:50. In most flowing river systems, pH is typically below 8, so for most cases, ammonium is the dominant form. The distinction is important when comparing against EQS thresholds, as ammonia is more toxic than ammonium.

Typical sources of ammonium include:

- Domestic sewage or animal slurry
- the breakdown of nitrogen compounds in organic matter and waste.
- Some industrial activities release ammoniacal N into our water.
- Drained peatlands or organic soil rich soils lose ammonium to water when organic N breaks down in soil.
- Free ammonia (NH₃) is also present in waters and is toxic to aquatic organisms under certain conditions.

Tributaries

A tributary is a stream or river which flows into another river (a parent river) or body of water, but which may not flow directly into the sea.

U

Unassigned water body

Unassigned water bodies are [water bodies](#) that the Environmental Protection Authority does not regularly monitor as part of [Water Framework Directive](#) monitoring programmes. This will often mean that there is no water quality data available for these water bodies, however the water quality can sometimes be estimated using other available evidence such as the characteristics of the [catchment](#) and any pressures, and the quality of surrounding waterbodies.

Unpolluted

These are water bodies with minimal pollutants, such as nitrate and phosphorous impacting them.

V

W

Water Body

A water body is an individual unit of a water feature used for monitoring and planning purposes. For example, in groundwater, this is part of an aquifer. For surface water, this is a discrete and significant element of surface water, such as part of a stream, river or canal, a transitional water, or a stretch of coastal water. There are various types including a body of surface water, a body of groundwater and artificial water bodies.

Example: Lough Ree is one water body, whereas the River Lee is divided into nine water bodies when we monitor its water quality.

A 'groundwater body' is a distinct volume of groundwater within an [aquifer](#) or aquifers.

Water Framework Directive

The Water Framework Directive (WFD) is the primary Directive that sets out water quality objectives and a programme of measures to address and report on the quality of rivers and lakes in Europe. These assessments are done every six years. Their results are reported for river basin districts. Ireland has one river basin management

plan. It requires that waters should achieve at least good status and to prevent deterioration in status.

Water Quality

This is a term used to describe the chemical, physical, and biological characteristics of water, usually in relation to healthy aquatic ecosystems.

For information on Ireland's national Water Framework Directive monitoring programme and links to individual factsheets on different aspects of the programme please see: - [Monitoring & Assessment: Freshwater & Marine Publications | Environmental Protection Agency \(epa.ie\)](#)

Wastewater Treatment Plant (WWTP)

A treatment plant where bacteria, viruses, solids including human waste are removed from residential, commercial, and industrial wastewaters before they are discharged into rivers, lakes, and seas. These components are removed through special scientific processes. This leaves the water fit so that it meets the relevant environmental standards or other quality expectations for recycling or reuse.

Did you know?

- Irish Water operates most of the wastewater treatment plants in Ireland's towns and villages.
- The Environmental Protection Agency regulates discharges from these wastewater treatment plants, to ensure they meet the appropriate environmental standards.

X

Y

Z