

# Chapter 6

Objective:

# Protect and Enhance the Environment



---

## Our Strategic Aims

- Ensure that Irish Water services are delivered in a sustainable manner which contributes to the protection of the environment.
- Operate our water services infrastructure in a manner that supports the achievement of water body objectives under the Water Framework Directive and our obligations under the Birds and Habitats Directives.
- Manage all our residual waste in a sustainable manner.

### Introduction

Protecting and improving the future, long term quality of the water environment is fundamental to providing safe water services and for the protection of human health and biodiversity. The water environment is inextricably linked to the wider environment and it is important to consider protection of the environment in a holistic way. Irish Water protects the water environment in its role in delivering water services, but also the broader environment in terms of the impacts of our activities, for example in our use of energy and our carbon footprint.

An enhanced water environment results in a reduced requirement for water treatment and supports recreational activities, biodiversity, tourism and the natural character of our countryside.

The need to protect and improve the water environment and the environment generally has been recognised in a number of European Directives that afford special protection to identified areas that are important for drinking water supply, nature conservation, bathing and fisheries. Examples include the Birds Directive, Habitats Directive, Bathing Water Directive and the Water Framework Directive (WFD). The WFD is the overarching Directive within which all matters impacting the water environment are managed.

This chapter will consider the implementation of sustainable strategies and measures to support our objectives in protecting and enhancing the environment.

### Our Legal Obligations

Irish Water has multiple environmental obligations which regulate its water services functions, operations and developments. The principal obligations result from Directives of the European Commission as detailed in the paragraphs below.

#### Birds and Habitats Directives

The Habitats Directive (92/43/EEC) placed an obligation on all Member States of the EU to establish the Natura 2000 network and require protection of defined habitats and species. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC), and Special Areas of Conservation (SACs). The Directives were transposed into Irish national regulations and have been subsequently revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011.

Priority Habitats have been defined for Ireland that include amongst others raised and blanket bogs and turloughs which can be impacted by water abstraction and wastewater discharges. Over 400 SACs and about 150 SPAs have been designated to date in Ireland. Article 6 of the Habitats Directive requires member states to establish necessary conservation measures to protect sites and to take appropriate steps to avoid the deterioration of (or restore) natural habitats and species. Natural Heritage Areas (NHAs) have a national designation and protect features not covered by the Directives.

---

As a public authority, Irish Water has duties under the above regulations “to take the appropriate steps to avoid, in European Sites, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated in so far as such disturbance could be significant in relation to the objectives of the Habitats Directive.”

### Water Framework Directive

The Water Framework Directive (WFD) establishes a catchment based approach to the protection, improvement and sustainable use of rivers, lakes, transitional waters (estuaries), coastal waters and groundwater. It adopts the ‘polluter pays’ principle and will, over time, integrate the requirements of a number of existing directives for the protection of the water environment. It seeks to develop a holistic approach to sustainable water use, balancing social and economic factors with the need to protect and improve our water environment.

The WFD is implemented through river basin management plans which assess the current status of our inland and coastal water bodies (known as characterisation and classification). Where the status of a water body is less than “Good” (for example from pollution or over-abstraction), remedial actions or measures must be proposed and implemented to achieve the objectives set for each water body. Collectively, these are known as “programmes of measures”. The river basin management plans are currently being updated and will be published in 2017.

The Water Policy Regulations (S.I. No. 722 of 2003), Surface Waters Regulations (S.I. No. 272 of 2009) and Groundwater Regulations (S.I. No. 9 of 2010) govern the shape of the WFD characterisation, monitoring and status assessment programmes in terms of assigning responsibilities for the monitoring of different water categories, determining the quality elements and undertaking the characterisation and classification assessments.

The Surface Waters Regulations institute a wide-ranging set of environmental standards for Irish surface waters. The Groundwater Regulations establish environmental objectives to be achieved in groundwater bodies and include groundwater quality standards and threshold values for the classification of groundwater and the protection of groundwater against pollution and deterioration in groundwater quality.



*Reflections in Vartry Reservoir. Photo: Jean Clarke*

Irish Water’s key objectives in relation to the WFD will be the implementation of measures to reduce the impact of our wastewater discharges and thus improve water quality. Our discharge licences will be reviewed on a six yearly basis (by the EPA) and will be targeted to contribute to the delivery of the programmes of measures mentioned above. Where an urban wastewater discharge is the single significant pressure on a water body in relation to achieving its quality status, compliance with our discharge licence requirements should ensure that the water body achieves “Good” status. However, where there are other significant pressures effecting water quality, compliance with the wastewater discharge licence alone may not deliver “Good” status and thus all stakeholders causing significant pressures must play their part in reducing their impact in order to improve water quality. Irish Water will also actively participate in measures aimed at protecting drinking water supply zones and in ensuring ecological flows are maintained in the water bodies we abstract water from. We will undertake monitoring of water bodies used for the abstraction of public drinking water supply and assist stakeholders in the identification of significant pressures on these water resources.

---

## The Current Situation

The current State of the Environment Report published by the EPA (2012) reports that 29% of rivers and canals and 53% of lakes were not Good or High status under the WFD and therefore required improvement. The recent trend in river water quality indicates an overall increase in the length of river channel which is slightly polluted which is mainly due to eutrophication (over-enrichment of nutrients resulting from agriculture and other land use). However, the number of seriously polluted river sites has decreased significantly since monitoring began, reflecting investment in basic wastewater treatment and improved environmental management of agriculture and other land use activities. The number of High status water bodies with sensitive and rare ecology like the Freshwater Pearl Mussel has declined in recent years and site specific, targeted work is required to remediate these and prevent further loss.

Groundwater is faring better with 85% of groundwater bodies being at good status. The principal reasons for failing groundwater bodies resulted from nutrient loading resulting from agricultural practices. A small number of water bodies failed due to site specific contamination from historical mining or other sources. There has been a general reduction in nitrate concentration in groundwater since monitoring commenced, attributed to reductions in the use of inorganic fertilisers and restrictions on land spreading in agriculture.

The EPA is responsible for licensing wastewater discharges from treatment plants for large towns, and for certification of discharges from treatment plants for smaller agglomerations (under 500 Population Equivalent). Currently, water abstractions are not licenced or regulated by the EPA. Compliance with wastewater discharge licences and certificates will continue to drive improvements in treatment and water quality. The current status of wastewater compliance is outlined in Chapter 5 (Provide Effective Management of Wastewater).

Irish Water is a high energy user with an annual cost estimated at €60M. In general, energy efficiency has not been a primary consideration in the construction and operation of water and wastewater treatment infrastructure in the past.

## What our Customers can Expect from Us

Our Customers should expect that in the future, following a period of sustained increased investment, all of our operations will meet their statutory compliance requirements, in particular our wastewater discharges. We will work closely with our environmental regulator, the EPA, and other environmental stakeholders and the general public to participate fully in the process of developing river basin management plans and the associated programmes of measures in the implementation of the WFD in Ireland.

## Key Challenges

Nationally, discharges from wastewater and agriculture are the principal activities currently impacting on the quality of the water environment and therefore we have a significant role in the protection of catchments.

A balance needs to be struck between our activities that impact on the environment and the ability of the environment to sustain these impacts over both the short and longer terms. Meeting the requirements of the WFD programmes of measures with regard to the sustainability of our abstractions, discharge licences and input to catchment management planning will be a significant challenge to our new organisation.

There are risks to water ecosystems outside our control from invasive species and from climate change which need to be considered in the future planning of our infrastructure.

With water and wastewater services delivered across local authorities there was previously no national sustainability policy or guidance on operations. Each local authority had its own policy with regard to works design and procurement.

With an ageing infrastructure, meeting our obligations for energy efficiency will require significant investment, in both the upgrade and replacement of inefficient systems whilst ensuring the best whole life options are selected for new capital investments.

The provision of water and wastewater services generates a significant volume of both water and wastewater sludge which is dispersed around the many water and wastewater treatment plants and other sites we operate. Effective and safe management of this sludge, utilising its potential for energy generation or reuse where feasible, is a key challenge.

## Objectives and Strategies

The proposed strategies to achieve this objective of protecting and enhancing the environment are summarised in the table below and are detailed in the remaining sections of this chapter.

Strategy	Purpose
<b>Aim EN1 – Ensure that Irish Water services are delivered in a sustainable manner which contributes to the protection of the environment</b>	
EN1a	Implement a Sustainability Policy and Sustainability Framework
EN1b	Prepare and implement a Sustainable Energy Strategy.
EN1c	Prepare and implement a Climate Change Adaptation and Mitigation Strategy.
EN1d	Adopt a Green Procurement Approach and drive efficient use of all our resources.
EN1e	Adhere to environmental and planning legislation when planning and developing water services assets.



Strategy	Purpose	
<p><b>Aim EN2 - Operate our water services infrastructure in a manner that supports the achievement of water body objectives under the Water Framework Directive and our obligations under the Birds and Habitats Directives</b></p>		
EN2a	Work effectively with other stakeholders to support a catchment based approach.	To contribute to the achievement of water body objectives under the Water Framework Directive.
EN2b	Manage the operation of our water and wastewater infrastructure towards the achievement of water body objectives and the conservation of protected sites and species.	To ensure that the operation of our water and wastewater infrastructure assists the achievement of water body objectives under the WFD and the conservation of protected sites and species under the Birds and Habitats Directives.
<p><b>Aim EN3 – Manage all our Residual Waste in a Sustainable Manner</b></p>		
EN3a	Develop and implement a Corporate Waste Management Strategy.	To ensure Irish Water meets its corporate sustainability responsibilities.
EN3b	Develop and implement a National Wastewater Sludge Management Plan.	To reduce the environmental impacts from wastewater treatment by re-use and renewable energy generation, where feasible.
EN3c	Develop and implement a National Water Treatment Plant Sludge Management Plan.	To reduce the environmental impacts from water treatment processes.



## **EN1: ENSURE THAT IRISH WATER SERVICES ARE DELIVERED IN A SUSTAINABLE MANNER WHICH CONTRIBUTES TO THE PROTECTION OF THE ENVIRONMENT.**

### **[EN1a] Implement a Sustainability Policy and Sustainability Framework**

Water services face a range of environmental challenges from changing climate and extreme weather events, escalating energy costs and the impacts of demands of other stakeholders on water resources. It is important that Irish Water implements all of its operations in a way that enables long term sustainability (i.e. in a way that can continue indefinitely without long term harm to the environment).

Irish Water will prepare and implement a Sustainability Policy and a Framework to support the policy. These documents will represent our long term commitment to protecting and enhancing the environment in relation to the construction and operation of our infrastructure and the delivery of our services. The eight key framework components are Resource Efficiency, Climate Change, Habitats & Wildlife, Equity & Economic Development, Health, Amenity, Social Impact and Culture & Heritage. Our commitments under each of these headings will be established and documented. We aim to continually improve our environmental performance and will ensure that its requirements are communicated to all our employees and those working on our behalf.

### **[EN1b] Prepare and implement a Sustainable Energy Strategy**

The National Energy Efficiency Action Plan (NEEAP) is the Government policy setting out plans and actions to achieve energy efficiency savings across the economy. The action plan was updated in 2014 (NEEAP3) to take account of the Communication from the European Commission setting out its ambition for a 2030 Climate and Energy Policy Framework. The Commission's proposals for 2030 include a reduction in greenhouse gas emissions (GHG) by 40% below the 1990 level, an EU-wide binding target for renewable energy of at least 27% and renewed ambitions for energy efficiency policies. The review of the Energy Efficiency Directive, published in July 2014, calls for an efficiency target of 30% in 2030.

Irish Water is the largest single public user of electricity in Ireland. Our sustainable energy strategy will document how Irish Water will achieve energy efficiency through the use of technologies and initiatives designed to improve energy efficiency. The use of renewable energy sources will be considered where appropriate and economically viable. We intend to target asset investment and operational changes to meet targets for energy use, consumption and efficiency.

Irish Water's target is an improvement in energy efficiency by 33% by 2020 from the 2009 baseline. Irish Water has entered into an energy partnership with SEAI to avail of their support, resources and expertise in meeting this target.

### **[EN1c] Prepare and implement a Climate Change Adaptation and Mitigation Strategy**

Climate change impacts in Ireland are expected to include more intense rainfall events as well as periods of increased drought along with a rise in sea level. These events will impact on water services through increased risk of sewer flooding, possible inundation of treatment plants and other assets; deterioration in water quality in our rivers and lower dry weather river flows reducing the water available for abstraction or for diluting treated effluent.

Adapting to climate change will require careful planning, preparation, investment and management. Our strategy will address the vulnerability of water services and associated environment (including protected sites) to climate change events and identify actions to modify our infrastructure or operations. This could include, for example, the relocation of abstractions to larger more sustainable water sources, the blending of multiple sources and the implementation of flood protection measures.

---

## **[EN1d] Adopt a green procurement approach and drive efficient use of all of our resources.**

We will implement a 'green procurement' approach and seek to reduce and remove wastage in our investment and operations decisions. We will work to ensure all goods and services are procured in accordance with the Green Procurement Guidelines. We will adopt a low carbon approach and consider the whole life carbon cost of all new investments. We will implement annual reporting of the actions being taken to improve energy efficiency. We will consider the carbon footprint in the design of our future infrastructure and seek, through value engineering, to minimise the embodied energy of each development.

Irish Water will optimise use of chemicals in our treatment processes and review the use of chemicals that have the potential to impact negatively on the environment. We will strive to support the purchase of energy-efficient products and services, where possible and applicable. We will ensure that significant new capital projects are designed and optimised for energy performance as far as possible.

## **[EN1e] Adhere to environmental and planning legislation when planning and developing water services assets.**

All Irish Water projects follow a systematic process to determine the appropriate strategy, option, design and method of implementation prior to construction and operation of new assets. This approach includes extensive consultation, where appropriate, with relevant planning authorities (local authorities, regional planning agencies, An Bord Pleanála) and our regulators (the Commission for Energy Regulation and the Environmental Protection Agency) in addition to key stakeholders such as government departments, non-governmental organisations, special interest groups and the general public.

All our projects are designed and developed in accordance with statutory planning processes and environmental regulations from the outset. We will comply with the statutory processes relevant to our programmes and projects, including Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) under the Habitat's Directive, ensuring the avoidance of potential significant adverse effects on biodiversity (including protected sites), human health, water, air quality, cultural heritage (including archaeology), soil and landscape and visual amenity as a result of the upgrade to/construction of new infrastructure, including potential transboundary effects.

## **EN2: OPERATE OUR WATER SERVICES INFRASTRUCTURE IN A MANNER THAT SUPPORTS THE ACHIEVEMENT OF WATER BODY OBJECTIVES UNDER THE WATER FRAMEWORK DIRECTIVE AND OUR OBLIGATIONS UNDER THE BIRDS AND HABITATS DIRECTIVES.**

### **[EN2a] Work effectively with other stakeholders to support a catchment based approach.**

We will participate in river basin management planning at an international, national and river basin level for the development and implementation of programmes of measures in relation to water services in support of the WFD. We consider that each programme of measures should be proportionate to each sector, based on the polluter pays principle, and planned over a timescale which is affordable.

We will work with the EPA and other relevant stakeholders to identify 'on-the-ground' measures to be implemented. Our approach will focus on holistic solutions for the management of the catchment which will consider impacts from all catchment land uses including water services, tourism, agriculture and industry.

We will develop, collaboratively where feasible, catchment based assessments of receiving waters, identifying the impact of our operations and other impacts on water status and assess the environmental benefit of options available to us.

### **[EN2b] Manage the operation of our water and wastewater infrastructure towards the achievement of water body objectives and the conservation of protected sites and species.**

Delivery of water services, particularly the abstraction of water for supply and discharges from our wastewater and water treatment plants, directly interact with the water environment which the Water Framework Directive (WFD) seeks to protect and enhance. We will plan for the development and management (construction and operation) of our water



---

supply and wastewater infrastructure taking into account the whole water cycle and will target investment to meet the agreed Programmes of Measures related to treated effluent discharges set for specific water body objectives under the WFD, prioritising the greatest environmental benefit from the funding available.

As part of the Wastewater Licencing process undertaken by the EPA for all of Irish Waters discharges, an Appropriate Assessment is carried out where necessary by the Competent Authority (i.e. the EPA) to ensure that our discharges do not impact on Natura 2000 sites and their nature conservation interests (including the Freshwater Pearl Mussel).

We will manage our water abstractions sustainably to minimise impact on water body status, protected habitats and species and use by other stakeholders (for example, maintaining minimum environmental and navigation flows), and in accordance with current and future legislation.

We will work towards meeting the requirements of the Priority Substances Directive which sets environmental quality standards (EQS) for the specified substances (i.e. pollutant chemicals) in surface waters (river, lake, transitional and coastal) and will include for targeted monitoring and compliance (where applicable) in our detailed plans and programmes. We will target our efforts in this respect to wastewater discharges to drinking water protected areas and shellfish waters. We will, where appropriate, regulate the discharge of such priority substances to our collection systems and hence to our treatment works under our trade effluent licences.

### **EN3: MANAGE ALL OUR RESIDUAL WASTE IN A SUSTAINABLE MANNER**

#### **[EN3a] Develop and implement a Corporate Waste Management Strategy.**

Irish Water will develop and implement a Corporate Waste Management Policy and Plan as part of the resource efficiency element of our Sustainability Framework [Strategy EN1a].

We will manage waste generation and waste streams within the organisation to promote reduction, reuse and recycling of materials. Our plans will propose suitable transportation and disposal routes for waste and require annual reporting of the waste generated and recycled onsite with on-going targets for reduction.

#### **[EN3b] Develop and implement a National Wastewater Sludge Management Plan.**

Irish Water will prepare and implement a national plan to manage all wastewater sludges generated by our treatment processes and where feasible, sludges generated by septic tanks serving domestic residences..

The wastewater treatment process generates sludges which require further treatment prior to re-use or disposal. There is a deficit of sludge management facilities nationally and additional facilities are required to manage wastewater sludge.

We aim to treat all wastewater sludges to meet the requirements of the DECLG Code of Practice for re-use where possible as fertilizer and soil conditioner. This requires a stable pasteurised product, complying with chemical standards for safe use in agriculture or equivalent use.

Irish Water will accept wastewater sludges generated by septic tanks serving domestic residences from licenced contractors at specific sludge management facilities subject to appropriate commercial agreements. The acceptance of sludge from septic tanks will depend on suitable import facilities and spare capacity being available at the WWTP where sludge is accepted. At present there is insufficient capacity to accept all the septic tank sludge generated within Ireland. Where IW does not currently have capacity to meet the demand for accepting septic tank sludge, we will investigate the feasibility of developing this capacity on a commercial basis. Development of additional capacity for septic tank sludge would be dependent on IW having secure and sustainable outlets for all IW generated sludges in the first instance.

Transport and re-use/disposal of all wastewater sludges will be managed by Irish Water to ensure compliance with our standards for treatment and disposal by registered Contractors with full traceability. This will include any imported sludge from septic tanks accepted at Irish Water facilities. Re-use in agriculture or forestry will be managed in accordance with Nutrient Management Plans to ensure compliance with nitrogen and phosphorus controls.

Irish Water will work with industry to develop alternatives for the beneficial re-use of wastewater sludge and the possible recovery of energy and/or constituents in a sustainable and economically viable manner. Anaerobic digestion plants reduce the organic solids and create biogas which can be used to generate electricity for use in the treatment plants. These will be developed where feasible and economically viable.









## [EN3c] Develop and implement a National Water Treatment Plant Sludge Management Plan.

Sludges are also generated from the water treatment process through the removal of colour and fine sediments from the abstracted water using chemicals. These sludges contain aluminium, ferric salts or other chemical residues from the purification process and require dewatering prior to disposal. To date the sludges have limited re-use and have principally been disposed at landfill.

Irish Water will work with industry to develop alternatives for the beneficial re-use of water treatment residual sludge and the possible recovery of constituents in a sustainable and economically viable manner. Landfill disposal will continue to play a major role in managing these sludges. We will ensure that transport and disposal of these wastes are carried out in compliance with waste legislation and with least environmental impact.

### Indicators and Targets

Indicators and targets for Irish Water to protect and enhance the environment are presented in the table below.

PROTECT AND ENHANCE THE ENVIRONMENT					
Indicators	Definition	Current Baseline	End of 2021 Target	End of 2027 Target	2040 Target
AIM EN1	Ensure that Irish Water Services are Delivered in a Sustainable Manner which contributes to the Protection of the Environment				
Water and Wastewater Residual Sludge Disposal	% compliance of treatment and disposal of sludges with Irish Standards	 96% (Best estimate based on available data)	 99%	 100%	 100%
Energy Efficiency	% increase in overall energy efficiency at Irish Water facilities	 Baseline 2009	 33% energy efficiency improvement over baseline (by 2020)	 Meet relevant targets that will be established by national energy policy	 Meet relevant targets that will be established by national energy policy
AIM EN2	Operate our water services infrastructure in a manner that supports the achievement of water body objectives under the Water Framework Directive and our obligations under the Birds and Habitats Directives				
Appropriate & Effective Wastewater Treatment	Achieve Targets for Aim WW1				
Sustainable Water Supply	Achieve Targets for Aim WS3				