

A 25 Year Strategic Plan

The challenges which face the provision of water services are identified as:

- Meeting Customer Needs in an Economic and Efficient Manner
- Providing Safe Water Supplies
- Managing Wastewater
- Protecting the Environment
- Becoming more efficient in Energy use



Roundstone, Connemara. Photo: Alan Forsyth

Chapter 2 Challenges and Strategic Priorities

The Current State of Water Services

Irish Water currently operates many fragmented and disjointed networks of water and wastewater systems. The origins of this position lie in the dispersed and rural nature of a significant part of the Irish population and the development of water and wastewater services within individual local authority boundaries. The services also reflect the historic development of our assets dating from the 19th Century up to the most recent investments.

The majority of Ireland's drinking water is of excellent quality. However, in some of our water supply zones, water quality does not meet European Union (EU) Directive and Irish Drinking Water Regulations due to microbiological contamination or exceedances of other water quality parameters. This can be due to the quality of the water source, the performance of the treatment plant or the condition of the distribution network.

Water abstractions have in many areas been sourced from smaller water bodies (lakes, rivers or groundwater) which are not capable of meeting future growth in demand without adversely affecting the surrounding environment. Likewise, smaller water bodies have a lower capacity to accept discharges from wastewater treatment plants without significant impact to the ecology (e.g. mammals, fish, invertebrates and plants).

The security of supply of water services is weak in many areas of the country with networks reliant on a single source, treatment plant or storage reservoir and low available headroom (spare capacity above normal demand) to cater for emergencies, planned maintenance or equipment failures. For example, there is frequently just 2% headroom available to supply water to the Greater Dublin Area. The vulnerability of this supply was seen in 2013 when water restrictions impacted many areas of Dublin due to a production problem at the Ballymore Eustace water treatment plant which delivers over 50% of the supply to Dublin.

A comparison with water services in Scotland is instructive. Scottish Water operates around a quarter of the number of water treatment plants as Irish Water to serve 2.4 million domestic households. The higher number of smaller water treatment plants controlled by Irish Water (many of which rely on small vulnerable sources) are more difficult and expensive to operate and we need to reduce this number through rationalisation where funding permits.

Local authorities were reliant on the exchequer for the bulk of their capital and operational funding. Capital funding rarely met the levels required especially over the last 30 years when EU standards drove the need for massive investment in upgraded treatment of drinking water and to an even greater extent in wastewater treatment. More seriously, operational budgets made only very limited provision for asset maintenance and even less for planned maintenance to preserve design capacity. The absence of an asset management approach meant that assets deteriorated over time and this is now reflected in the performance deficits giving rise to compliance failures and excessive leakage in water and wastewater networks.

Challenges over a 25 year Period

This Water Services Strategic Plan challenges us to think holistically about water, and commit ourselves to what that means for the delivery of water services to our customers, so that we provide a strong policy-driven framework for our implementation plans and projects.

Looking beyond the current transitional challenges and immediate priorities to enable service delivery, the strategic challenges that face the provision of effective and efficient water services are:

- **Meeting Customer Needs in an Economic and Efficient Manner;**
- **Providing Safe Water Supplies;**
- **Managing Wastewater;**
- **Protecting the Environment;**
- **Becoming more efficient in Energy use; and**
- **Providing water services for future population and economic growth.**

Within each of the later chapters on the Strategic Objectives we propose strategies to address these challenges. At the end of this chapter we identify our current, short term priorities. But first it is necessary to define their context.

Meeting Customer Needs in an Economic and Efficient Manner

Meeting compliance standards and providing capacity for new development requires significant capital investment in our water services assets, particularly our treatment plants and networks. This capital investment must be delivered within efficiency targets set by CER, our economic regulator.

We must meet the service commitments to which we have agreed in the Customer Handbook, particularly in relation to accuracy of customer billing, reaction time to service requests and our relationships with customers whilst carrying out our operations. Our overall challenge is to meet the required level of customer satisfaction consistent with other utility companies within a short timescale.

Providing Safe Water Supplies

Meeting the EU and Irish drinking water quality standards for all of our water supplies is a significant challenge. Pollution of water sources, groundwater and surface water, poses a significant risk of contamination to drinking water supplies and increases the cost of producing high quality potable water. Groundwater, in many areas of the country, is highly vulnerable due to the local geology and is susceptible to pollution from agricultural activities, septic tanks and other discharges to ground. Surface water sources are vulnerable to runoff of pollution from adjacent land and properties.

Leakage of water from supply networks is a serious problem on a national scale. Leakage, both in Irish Water's networks and within customer properties, is estimated nationally at approximately 49% of the water produced for supply. This is twice the level of that in the UK and several times the typical figures in Germany, Denmark and the Netherlands, indicating that significant investment will be needed over a number of investment cycles to catch up with international norms in the water utility sector. High levels of leakage result in more raw water being abstracted and treated. This uses more energy and chemicals, requires larger treatment plants and pipelines, and leaves less water in our natural environment.

Water supply within our cities and large towns does not meet international norms for available headroom. Headroom is the spare capacity of all infrastructure (abstractions, treatment plants, pumps and networks). This spare capacity is used in the event of adverse weather conditions or during unplanned incidents such as breaks in trunk mains or problems at a water treatment plant. Planning for resilient water supplies must also take place, independently of any progress in demand management (reducing unnecessary use of water) or success in reducing leakage, because loss of a key water source, treatment plant, or pipeline remains a separate risk to be managed.

Adapting to the impact of climate change places additional challenges in providing safe and reliable water supplies. Periods of drought and greater frequencies of high intensity rainfall events are predicted to result from climate change. These events will affect the reliability and quality of smaller water sources which may become unavailable or suffer deterioration in water quality for periods of the year.

Managing Wastewater

The European Commission reported adversely in 2013 on Ireland's implementation of the Urban Waste Water Treatment Directive (UWWTD) and has initiated an Infringement Case against Ireland in relation to 71 wastewater agglomerations. The UWWTD sets minimum standards for collection systems, wastewater treatment plants and discharge of treated wastewater back to water bodies. The most recently available Environmental Protection Agency (EPA) publication on wastewater compliance reported that 38 (23%) of the discharges from 162 larger urban (>10,000 population equivalent (PE) and >2000 PE if discharging to freshwater bodies or estuaries) agglomerations in the country are not meeting the relevant effluent quality and sampling standards set by the Directive. These include 7 agglomerations that have no treatment or only preliminary treatment. While 77% of the 162 agglomerations meet the relevant discharge and sampling standards, they represent only 39% of the total load (PE) discharged from these agglomerations.

Historically, combined sewer systems have been constructed in many urban areas. During periods of heavy rainfall, surface drainage from roads and other impermeable areas combines with household and business wastewater in a 'combined' sewer. This places a large stress and capacity requirement on our wastewater networks and treatment plants. In a few cases flows from combined sewers also result in the periodic flooding of nearby properties with sewage effluent. Network modelling is required to identify the level of risk and the appropriate investment needed to manage such flows.

Additionally, periods of drought impact on the ability of smaller water bodies to dilute wastewater discharges to acceptable levels. Greater frequencies of drought, as a result of climate change, will result in the requirement for increased treatment of wastewater prior to its discharge.

Protecting the Environment

Irish Water is faced with a major challenge in meeting EU and national environmental obligations.

The Birds and Habitats Directives designate specific habitats and species for special protection and set up a network of protected sites (Natura 2000). Many of these sites include water bodies and others rely on water bodies such as groundwater to support key habitats and species. The EU Water Framework Directive (WFD) focuses on the environmental quality of surface (both inland and coastal) and groundwater bodies, under all influencing factors including water abstractions and treated wastewater discharges. The WFD is implemented through river basin management plans which contain programmes of measures needed to deliver the water quality targets. The implementation of the UWWTD is one of a number of basic measures that must be implemented as part of an overall WFD programme of measures. The EPA, in licensing municipal wastewater discharges, has regard to the Environmental Objectives set under the WFD, the requirements of the Birds and Habitats Directives and the timelines set out in the river basin management plans to achieve these objectives. The key objective of the WFD is to protect and prevent deterioration in all water bodies and to return all waters to at least good status.

On the forthcoming review of the river basin management plans by the EPA, Irish Water will seek to agree effective and affordable measures that will have the greatest impact in terms of water quality improvement, recognising that other water users must also play their part in achieving water quality objectives.

Irish Water recognises the significant environmental compliance challenges that must be met. The range of issues across which progress must be made is broad and we must seek agreement with our environmental and financial regulators on the balance of priorities and necessary phasing of investments.

Becoming More Efficient in Energy Use

Inefficient use of energy results in higher emissions of carbon dioxide, a contributor to climate change, and higher costs. As one of the largest single users of energy in Ireland, it is important that we optimise our energy use and seek to reduce it where possible.

We will seek to optimise our daily use of energy to take advantage of cheaper, off-peak and night time energy through, for example, running pumps and treatment plants to top-up reservoirs during these periods when feasible and without compromising service levels. We will improve energy efficiency through effective operation and replacement of inefficient plant and through energy recovery.

As a major energy user on a national scale we need to develop our use of renewable energy sources through working with the energy utility companies and to maximise generation of renewable energy from wastewater sludge where feasible.

Providing for Future Population and Economic Growth

The challenge of providing for population and economic growth is one of making careful, timely and cost-effective investments in new plants and upgrades, based on forecasted growth rates. This will require close interaction with the preparation of spatial planning policy at the national level and with regional and local development planning.

Irish Water needs to plan across a range of growth and demographic scenarios and to ensure that plans are consistent with national and regional spatial planning policy. As a national utility we must regularly update our strategic planning to ensure that we provide water services where and when they are needed and that water supplies and wastewater treatment capacity are not limiting constraints to the economic development of the country.

Building Our Capacity to Address these Challenges

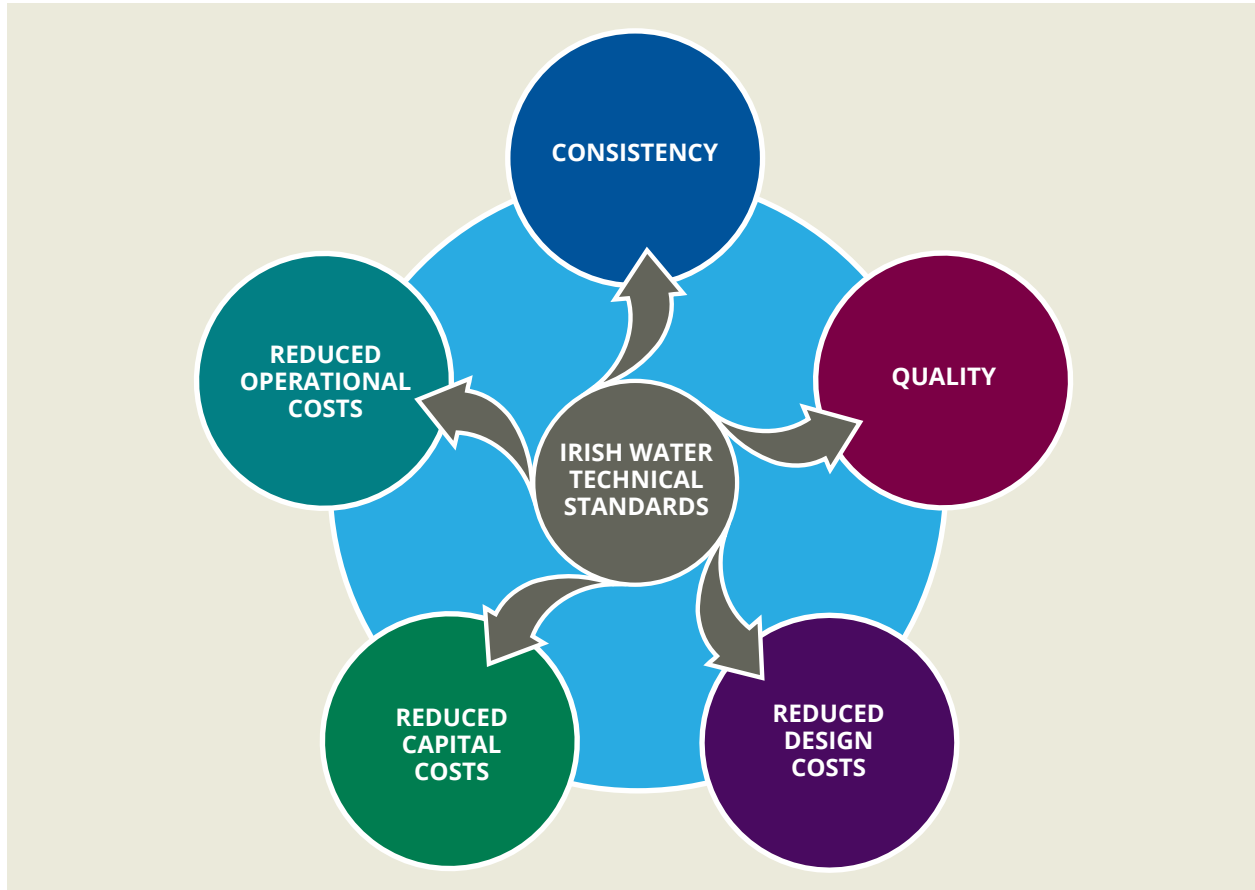
Irish Water was established to bring a consistent and efficient approach to the provision of water services. A key part of this approach is the development of our systems and processes, drawing on international best practice, where appropriate.

We will apply an asset management approach to achieve the optimum capacity from our existing infrastructure on a national basis. This will require the development of IT systems, including databases and Geographical Information Systems, to collate and display the location, condition and performance of our assets. These decision support systems will enable us to plan future maintenance and planned replacement of our asset base at least cost.

Prior to the creation of Irish Water, each local authority used its own standards based on local experience. We have begun the process of introducing Standard Operational Procedures across plants and networks. We are also introducing standardisation for spare parts, improved health and safety procedures for operatives and planned maintenance schedules. This planning and standardisation will in time improve safety and reduce the cost to operate and maintain our assets.

We will develop national approaches and specifications for the design and construction of new treatment plants and networks. This will ensure that our new infrastructure achieves the required performance in operation, that it maximises its design life and that it can be operated in a safe and efficient manner for the lowest whole life cost. The benefits from the above approaches are represented in Figure 4.)

Figure 4 Benefits of Standardisation



Working With Our Regulators, Customers and other Stakeholders

To improve provision of water services, enable future growth and protect the environment, we will work closely and collaboratively with our regulators, customers and other stakeholders in all our planning, development and operational activities.

Irish Water is regulated by both the Commission for Energy Regulation (CER) for economic matters and the Environmental Protection Agency (EPA) for environmental matters and drinking water quality standards.

Irish Water's financial responsibilities (under the regulatory supervision of CER) extend to:

- The need to ensure that we perform our functions in a commercially viable manner whilst maintaining a balance between commercial viability and the cost of the service to customers.

The Environmental Protection Agency (EPA) regulates environmental matters and drinking water quality standards and our responsibilities relate to;

- The quality of the drinking water we supply.
- The impact of our activities on the water cycle (quantity and quality).
- The quality of the effluent we discharge to the environment.

The Health and Safety Authority (HSA) is responsible for Health and Safety whilst the Health Service Executive (HSE) is responsible for public health.

Irish Water also has obligations under the Water Services Act, 2013 in relation to spatial planning and is required to work with the DECLG, Regional Planning Authorities and Local Authorities in the delivery of future water services to support agreed national, regional and local spatial planning policies and plans.

Our Current Priorities

In this first strategic plan, we need to address urgent issues in the quality of our water services and in the integrity of our infrastructure, subject to adequate funding being available to us, while ensuring that water services that currently meet required standards continue to do so. We have therefore prioritised the following six areas:

1. Our Customers

Demonstrating our commitment to the delivery of an improved quality water and wastewater service through the appropriate management of our assets in an economic and efficient manner ensuring least cost for our customers.

2. Reducing Drinking Water Quality Problems

Where water supplies are subject to Boil Water Notices, due to microbiological contamination, or have other drinking water quality problems, these must be resolved as key priorities through capital investment in infrastructure or changes to operational procedures where appropriate.

3. Achieving Compliance with the Urban Waste Water Treatment Directive

Bringing Ireland into compliance with the Urban Waste Water Treatment Directive must be an immediate priority. The European Commission's Infringement Case against Ireland for the 71 non-compliant agglomerations is likely to be progressed in 2015 and will require committed plans to meet the compliance limits on these and other schemes within a prescribed period.

4. Reducing Leakage in Water Supply Networks

We are currently utilising the early returns from the water metering programme to help us refine estimates of legitimate usage and levels of leakage within customers' properties. This will better define the size of the leakage problem, the optimum solutions and help us to determine where the largest leaks are. Works can then be prioritised which bring the largest water savings with targeted deployment of repair teams. We will also seek to reduce overall leakage within a network through better management of water pressure. We are determined to achieve the lowest level of leakage which is technically and economically sustainable, taking account of the state of the networks.

5. Addressing Inadequate Asset Condition Information

Gathering accurate information on all of our assets into a quality assured database is a strategic priority. It is an essential tool for asset management over the lifetime of this plan and we cannot function effectively without it. We have currently drawn together all asset records onto a common national database (Geographical Information System) and are improving the accuracy and quality of these records on an on-going basis.

6. Catering for Growth

Irish Water will prioritise the allocation of resources to cater for growth using a risk based approach to determine which strategic assets are likely to constrain growth in the near future and taking into account the priorities set by the Minister and national planning policy. For example, the Minister has identified the need to address infrastructure constraints impacting on the delivery of housing units in urban areas as a current priority.

How we will prioritise the allocation of funding.

Irish Water will prepare and publish a Capital Investment Plan (CIP) and submit this to the CER for approval of funding. The CIP will be prepared on at least a five year basis and will propose investment priorities in line with the policy set by the Minister taking into account the objectives and targets identified in this and subsequent revisions of the WSSP. Our proposed investment prioritisation methodology will be set out in each CIP.

Monitoring Our Performance

This Water Services Strategic Plan proposes a suite of targets and indicators for each Strategic Objective presented in the later chapters. Our performance against these targets and the monitoring plan included in the SEA Statement will be assessed and reported by us within each revision of the Plan. This performance will therefore be available for scrutiny by our regulators (CER and EPA), other stakeholders and the general public. However, our progress against these targets is subject to adequate funding being available. Indicators and targets may change in subsequent revisions of the WSSP to reflect the priorities identified for the following period.

Our economic regulator, the CER, has published and will maintain **'The Customer Handbook'** which is primarily concerned with customer billing and communication. In accordance with this, we have published a set of Codes of Practice for the delivery of customer operations which will be subject to periodic revision and approval by CER.

As part of our regulatory framework, and in line with our commitment to customer care, we also operate a Customer Charter relating to our provision of water services for network operations and Terms and Conditions for both domestic and non-domestic customers. These will be published and periodically updated throughout the life of this plan.



Lough Gur, Co. Limerick. Photo: Alan Forsyth