

Chapter 8

Objective:

Invest in Our Future



Our Strategic Aims

- Manage our assets and investments in accordance with best practice asset management principles to deliver a high quality secure and sustainable service at lowest cost.
- Invest in our assets while maintaining a sustainable balance between meeting customer standards, protecting the environment and supporting the economic development and growth of the country.
- Establish a sustainable funding model to ensure that Irish Water can deliver the required capital investment in order to achieve the required outcomes.
- Promote research and proven, innovative technical solutions to meet standards set by our regulators including our objectives for cost and energy efficiency.

The Current Situation

An historic under-investment in our water and wastewater networks and treatment facilities means that we now have to secure significantly increased levels of funding in order to achieve adequate standards of drinking water and wastewater compliance, to provide for renewal of assets and to support the growth of the country. A particular challenge is the lack of knowledge of the condition and risk of failure of critical assets in the system. Examples of such assets which pose a threat to service reliability and standards are:

- Nineteenth century water treatment plants such as those at Roundwood (Vartry) and Cork City (Lee Road) where the original assets remain in service.
- Strategic water supply pipelines in cast iron, asbestos cement and concrete construction are in service beyond the normal design life and critical to customer service.
- Combined sewers in large urban centres of brick or masonry construction are known to be leaking, admitting fresh and salt water ingress, and structurally unsound (for example, Limerick and Cork City centre sewers).

Irish Water has been established as a customer focussed and asset management driven organisation, in line with best international practice in the water utility sector. In developing its capability, a key focus is an asset management approach to provide a radical transformation in the water services planning and delivery model in Ireland. On the basis of a sustainable funding model, Irish Water will target the necessary levels of investment to secure the condition of our critical assets to enable the required standard of quality and reliability in water services for our customers and the national economy. An informed evidence based approach to asset management will deliver the benefits of this investment, at lowest cost.

Key Challenges

Our key challenges are:

- Overcoming a deficit in knowledge of our assets location, condition, performance and life expectancy.
- Implementing an asset management strategy, with a detailed asset register and clearly defined critical assets.
- Investing in fixing current issues with water supply and wastewater service, targeting minor capital and improved operating programmes to overcome shortfalls and remove risks.
- Engaging with our customers, regulators and other stakeholders to ensure there is a sustainable balance between the interests of our customers, the environment and the need to support the economic development and growth of the country.
- Establishing a sustainable funding model to ensure that Irish Water can deliver the required capital investment in order to achieve the required outcomes for our customers, the environment and the national economy.
- Implementation of innovation, research and development in support of better asset performance and least costs new infrastructure.



What our Customers Can Expect from Us

In the future, our customers can expect us to manage and obtain the best value from our existing assets and to deliver our commitments to safe water supply, environmental compliance, resilient capacity and energy efficiency. We will utilise best international practice in the delivery of our water and wastewater services, applying innovative and state of the art solutions to upgrade our assets and provide new infrastructure where these have been proven to deliver.

Objectives and Strategies

The proposed strategies to meet the above challenges and achieve this objective are summarised in the table below and are detailed in the remaining sections of this chapter.

Strategy	Purpose
<p>IF1 – Asset Management - Manage our assets and investments in accordance with best practice asset management principles to deliver a high quality secure and sustainable service at lowest cost.</p>	
IF1a	<p>Implement asset management systems including comprehensive asset data collection and modelling tools.</p> <p>To enable the optimisation of asset performance through the optimum balance of operational, maintenance and capital investment for delivery of services at lowest long term costs.</p>
IF1b	<p>Develop long term asset strategies and implementation plans (Tier 2 Plans).</p> <p>To deliver operational cost efficiencies, meet capacity and performance needs and improve system resilience, through rationalisation and strategic forward planning.</p>
IF1c	<p>Development of initiatives such as asset standards and improved supply chain management.</p> <p>To deliver continuous improvement in value for money and reduce the cost of future investment to customers from standardisation of approach.</p>
<p>IF1 – Asset Management - Manage our assets and investments in accordance with best practice asset management principles to deliver a high quality secure and sustainable service at lowest cost.</p>	
IF2a	<p>Engage with our customers, including households, commercial and industrial customers.</p> <p>To develop a balanced picture of customer concerns, issues and priorities to inform our strategy and deliver optimal outcomes which meet customer needs.</p>
IF2b	<p>Engage collaboratively with key stakeholders including CER, EPA, DECLG, HSE, regional and local authorities.</p> <p>To achieve optimum investment outcomes for customers, the environment and the national economy which satisfy national policy and growth projections.</p>
IF2c	<p>Apply clear and transparent investment prioritisation criteria.</p> <p>To ensure an appropriate balance between the interests of our customers, the environment and the need to support balanced regional development.</p>

Strategy	Purpose
<p>IF3 - Sustainable Funding Model - Establish a sustainable funding model to ensure that Irish Water can deliver the required capital investment in order to achieve the required outcomes.</p>	
IF3a	<p>Transform the water industry in Ireland to an efficient water utility model within a regulated framework.</p> <p>To deliver a sustainable funding model including off balance sheet funding as required, while achieving efficient capital and operational delivery.</p>
IF3b	<p>Work with regulators to achieve optimum balance of affordability and service standards taking into account regulatory requirements.</p> <p>To ensure that funding and investment plans deliver the best possible outcomes taking account of affordability to customers and the state as a key issue.</p>
IF3c	<p>Deliver on Irish Water’s commitments to raise public awareness of the value of water and achievements delivered.</p> <p>To raise public awareness of the value of water resources and the benefits to customers, the environment and the national economy which Irish Water delivers.</p>
<p>IF4 - Research and Innovation - Promote research and proven, innovative technical solutions to meet standards set by our regulators including our objectives for cost and energy efficiency.</p>	
IF4a	<p>Actively pursue research and development in water services and track opportunities to develop and adopt new technologies.</p> <p>To adopt new technologies and innovation which will improve quality of service and/or reduce cost and carbon footprint.</p>
IF4b	<p>Engage effectively with universities, Institutes of Further Education, colleges and industry.</p> <p>To ensure that opportunities for innovation through existing and on-going research and development are fully exploited.</p>
IF4c	<p>Develop knowledge management capability and implementation processes.</p> <p>To maximise the benefits from innovative solutions.</p>

IF1: ASSET MANAGEMENT - Manage our assets and investments in accordance with best practice asset management principles to deliver a high quality, secure and sustainable service at lowest cost.

[IF1a] Implement Asset Management Systems including comprehensive asset data collection and modelling tools.

Asset management is the internationally accepted basis for cost effective management of extensive and spatially distributed assets in order to deliver a consistent and adequate level of service to all connected customers.

Asset management is based on robust and reliable information on infrastructure which is vital to inform critical maintenance and future investment plans and to target improvements where they are most needed. Irish Water has developed a national spatially referenced asset database in GIS format drawing together, for the first time, all available records from each of the 34 local authorities. To bring this knowledge up to the level required for asset planning and modelling, and combine this into consistent, accurate databases, we commenced a National Asset Data Gathering and Asset Condition Exercise in 2014 and it is to be completed by 2018.

In addition, the asset management function will develop consistent standards, specifications, operation and maintenance programmes to manage the asset base. This has commenced with review of relevant international practise documents from high performing water companies, which are being adapted for Irish application. We are similarly developing the technologies required for remote monitoring of critical plants and network service indicators in order to support operating staff and response to incidents.

We are seeking to implement a strategy that optimises the life of our assets; balancing capital investment with maintenance and operation of the assets and thereby improving the life and safety of the assets and reducing performance risk.

[IF1b] Develop long term asset strategies and implementation plans (Tier 2 plans).

In order to deliver on the objectives of this WSSP, Irish Water will develop a series of implementation plans defining the programmes of work to be implemented. These plans will develop the range of scenarios and options from which the optimum approaches and prioritisation will be determined. The plans will take full account of the asset standards and policies adopted by Irish Water in shaping the strategic solutions. Where required, the plans will be subjected to Strategic Environmental Assessment and Appropriate Assessment, including public consultation. The plans will include:

- National Water Resources Plan, to assess present and future needs and resources at a regional level, taking account of resource constraints, and including sustainable inter-catchment or inter-regional transfers where required for secure resilient water supplies.
- Wastewater Compliance Plan, to determine the optimum strategies towards meeting compliance with license requirements while catering for future needs.
- Wastewater Sludge Management Plan to define the optimum strategy for the re-use of sewage sludge, recovery of energy and disposal of waste residues.
- Water Supply Sludge Management Plan to develop an optimum national approach to water treatment process sludge disposal, in a sustainable cost effective manner.

All of these Implementation (Tier 2) Plans will require collection of relevant data, consideration of all relevant EU and National standards and policies, development of models and consideration of all technical, environmental and economic parameters.

[IF1c] Development of initiatives such as asset standards and improved supply chain management.

Asset standards are the technical standards used in the design and operation of water and wastewater infrastructure, which aim to ensure that the best solutions are adopted for new assets.

We will develop and adopt a single set of national asset standards that will be periodically updated to reflect new innovative technology and changes in legislation. The benefits of having Irish Water asset standards will include standardisation, the selection of optimum solutions for new investment, reduced design costs and lower maintenance costs.

Irish Water has established central procurement for all goods and services required in the operation and investment in the services. We will use our national buying power to procure goods and services, standardising what we buy and ensuring that our supply chain is aligned to our requirements, particularly our adopted standards for quality, reliability and energy efficiency. We will procure goods and services in the competitive market place based on international best practice complying with procurement legislation. We will purchase goods and services using frameworks (longer term relationships), call off contracts (purchasing one item at a time) or discrete one off contracts where it is commercially beneficial to do so.

Case Study

Asset Management

Irish Water is responsible for operation and maintenance of several hundred thousand individual mechanical and electrical pieces of equipment across around 7,000 sites required to deliver water and wastewater services. Best practice asset management involves the care and maintenance of the assets based on comprehensive asset data so that the best value is obtained from the assets and water services are delivered at least cost.

Irish Water has developed an assets register down to individual component level, against which individual standards will be put in place. Our immediate priority is the identification of Critical Assets, being those assets whose failure would give rise to high customer impact on a large scale. The priority is to address the condition and likelihood of failure and its consequences. Investment plans must address the management of these key risks.



IF2: BALANCED SUSTAINABLE INVESTMENT - Invest in our assets while maintaining a sustainable balance between meeting customer standards, protecting the environment and supporting the economic development and growth of the country.

[IF2a] Engage with our customers, including households, commercial and industrial customers.

We will consult regularly with our customers and stakeholders and provide information so that all interested parties will be informed of our activities. As we develop our strategies and plans, these will be subject to consultation as appropriate, including the preparation of Strategic Environmental Assessments and Appropriate Assessments as required.

Our approach to investment in infrastructure, operations and maintenance, will be directed to achieving our key objectives which are based on delivery of services to our customers. We will engage with our customers to outline the issues, explain the options and ascertain feedback and input to assist us to determine preferences.

[IF2b] Engage collaboratively with key stakeholders including CER, EPA, DECLG, HSE, regional and local authorities.

Our operations are regulated by both CER for economic matters and the EPA for environmental matters and water quality standards. We will liaise closely with the DECLG in relation to matters of national policy and with the Health Service Executive (HSE) in regard to public health issues. Other key statutory consultees will include the National Parks and Wildlife Service, the regional and local authorities, IDA and the Health and Safety Authority (HSA). Consultation with special interest groups and the general public will be undertaken where they are affected.

[IF2c] Apply clear and transparent investment prioritisation criteria.

When the level of available funding is less than the investment needed, then prioritisation criteria are required to decide which capital projects can proceed and which must be deferred until funding becomes available. We will develop clear and transparent prioritisation criteria for agreement with CER, EPA and DECLG. This should ensure that the best affordable outcomes are delivered for our customers, the environment and the national economy.

IF3: SUSTAINABLE FUNDING MODEL - Establish a sustainable funding model to ensure that Irish Water can deliver the required capital investment in order to achieve the required outcomes.

[IF3a] Transform the water industry in Ireland based on an efficient water utility model within a regulated framework

There has been a significant under-investment in water services infrastructure in Ireland over many decades which has resulted in current problems with water quality and reliability, high levels of leakage and below standard wastewater management across many parts of the country. From the first National Public Health Acts in 1878, to the setup of Irish Water, the responsibility for water services rested with Ireland's local authorities. In that period, the requirements evolved from a low technology, labour intensive enterprise to a modern, high technology industry. The need for a national approach with central and regional structures is evident from:

- The need for an integrated national set of asset data, technical models and development strategies on which all operational and investment decisions can be based.

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- The need to integrate capital and operational investment decision making within an asset management framework, supported by high technology analytical systems to ensure the best service outcomes at the least cost.
 - Developing the required technical competencies and specialisations (asset planning, process control, leakage reduction, trade discharge control, new connections and energy management) by combining local resources at central and regional sites.
 - Delivering economies of scale by combining procurement of both goods and services and capital delivery. We expect that this approach will enable much more effective performance in areas such as leakage reduction and energy management.
 - Achieving better outcomes from existing assets by introducing standard ways of working and maintaining assets and resolving customer problems.
 - Using detailed workflow data (capturing all operational activity onto the asset database) to transition from reactive maintenance (in response to failure) towards greater planned maintenance, which ultimately greatly reduces asset risk and therefore improves outcomes.
 - Deliver maximum savings in operation based on the best balance of staffing, technologies and asset maintenance, assuming that the critical investment needs are provided and the organisational transformation is completed.

To address the acknowledged infrastructure deficit, capital investment of around €600M per year will be required for a sustained period, probably several decades. One of the main elements of the Government's Water Sector Reform Programme was the establishment of a sustainable funding model which would enable this necessary capital investment to be put in place over the coming years. The main components included the establishment of Irish Water as an independent state-owned water utility, the introduction of a sustainable funding model including domestic water charges and independent regulation of water services by the CER.

Because of the very high levels of investment required in water services infrastructure and also the significant constraints on Government borrowing, the Water Sector Reform Programme had at its core a sustainable funding model whereby Irish Water would be able to raise finance and this would not be counted as part of the national debt.

In order for Irish Water to be able to raise significant finance at favourable interest rates, it will be necessary for Irish Water to demonstrate that it is an efficient water utility company operating within a stable regulatory framework with secure revenue streams. It is a core objective of Irish Water to deliver continuous improvement in water services delivery combined with cost efficiency to match international benchmark levels when the necessary structural reforms supported by investment in systems are in place. This should facilitate raising finance at favourable rates while ensuring that the overall cost is minimised.

[IF3b] Work with regulators to achieve optimum balance of affordability and service standards taking into account regulatory requirements

For Irish Water's investment plans to be sustainable they must be efficiently delivered at the least cost of service on a whole life basis. This consideration has to be balanced with ensuring sufficient funding to deliver the service levels required, taking account of the state of the assets and the committed costs inherited from the local authorities.

To this end, Irish Water will work closely and collaboratively with our regulators, CER and EPA, to agree priorities for the available funds from time to time to enable us to deliver the best possible outcomes in terms of drinking water quality, water services reliability, environmental protection and provision for growth. We are committed to continuing to work with the local authorities under the Service Level Agreements (SLA's) to continue the industry transformation, including regional shared working across county boundaries and implementation of those initiatives required for service improvement and cost reduction.

[IF3c] Deliver on Irish Water's commitments to customers and the country and raise public awareness of the value of water and achievements delivered.

Ireland's plentiful water resources are one of our most valuable national assets which provide tremendous economic, environmental and amenity value to our citizens and visitors. This natural resource, provided it is effectively managed, can also give us a significant advantage as we compete internationally for investment and job creation particularly in water dependant sectors of the economy.

Provision of safe, secure drinking water and effective wastewater management and treatment involves complex processes and requires significant investment in capital works as well as operation and maintenance. For a modern water utility, this requires the use of modern technologies in treatment, network management and energy efficiency. It also requires an asset management capability driving workflow activity, tracking outcomes and targeting all investments with the benefit of full asset data supporting decision making.

It is an objective of Irish Water to achieve public awareness of the value of water and the complexity of water services delivery. This will identify, over time, the benefits which Irish Water delivers in terms of drinking water safety and security, environmental protection and support for economic growth and development. This requires a secure revenue stream from customers which will in turn support the sustainable funding model to deliver the required levels of investment in our water services infrastructure.

IF4: RESEARCH AND INNOVATION - Promote research and proven, innovative technical solutions to meet standards set by our regulators including our objectives for cost and energy efficiency.

[IF4a] Actively pursue research and development in water services and track opportunities to develop and adopt new technologies.

Innovation in the provision of water services will be integral to delivering benefits in efficiency, customer service and water and environmental quality. This will enable the application of the most appropriate and sustainable solutions, drawing on best international practice and the required automation and instrumentation for central monitoring and control of asset condition and performance.

In addition to constant review of international practice, we will support local research and development to achieve the best of:

- Collaboration with academic institutions and other organisations to pursue research and innovation opportunities in solving technical challenges;
- Research and pilot innovative technologies, processes and systems for local application to meet specific quality needs and deliver cost effectiveness; and
- Collaboration with other water utilities and become a “fast follower” (i.e. learn best practices).

We will investigate alternative and innovative solutions in relation to both new projects and for the upgrading of existing plants and networks. Investment decisions will be based on solutions that provide the lowest whole life cost whilst also meeting our energy and carbon commitments.

[IF4b] Engage effectively with universities, Institutes of Further Education, colleges and industry.

We intend to engage actively with universities, colleges and industry to ensure that new technologies and innovative techniques are given due consideration on all our projects. We will work to achieve enduring relationships with the universities and technical colleges around shared objectives.

Innovation developed by industry for water services both here in Ireland and internationally can accelerate efficiencies in the delivery of our water services. Examples of this might be improvements to pump design resulting in energy efficiency, development of new wastewater treatment techniques or the reuse of chemicals to reduce our use of resources. We will work to ensure that our procurement approach is open to proven innovative options.

Case Study

Ringsend Wastewater Treatment Plant

The Ringsend Wastewater Treatment Works was designed for a capacity of 1.64 million Population Equivalent (PE) but is now operating just slightly over that capacity. To cater for the existing load and accommodate growth in the region, it is necessary to upgrade and expand the treatment works to its maximum capacity, which is estimated to be c. 2.1 million PE. The proposed upgrade must also achieve improved treated effluent quality in terms of nitrogen and phosphorus standards in order to conserve good water quality in the Liffey Estuary and Dublin Bay, based on their current designations. A scheme to expand and upgrade the treatment works has been approved by An Bord Pleanála.

Expansion and upgrading of the Ringsend Wastewater Treatment Plant is an urgent priority for Irish Water and a revision to the approved scheme to achieve required outcomes at least cost is currently being evaluated in partnership with Dublin City Council. Irish Water is proposing innovative wastewater treatment technology for the upgrade and this innovative solution can result in a higher treatment standard to the benefit of Dublin Bay and a cost saving of €170 million compared to previous project proposals. Any proposed revisions to the approved scheme will be subject to environmental/planning approvals as appropriate.



[IF4c] Develop knowledge management capability and implementation processes.







Knowledge management is the process of capturing, developing, sharing, and effectively using organisational knowledge. It refers to a multi-disciplined approach to achieving organisational objectives by making the best use of knowledge by all parts of the organisation, including the local authority staff working under the SLAs.

The management and sharing of the combined knowledge and expertise within Irish Water and the local authorities is a key objective that it will lead to improved performance, innovation, the sharing of lessons learned, integration and continuous improvement of the delivery of water services.

The use of knowledge management within Irish Water will mean that the benefits from innovative solutions will be adopted across the country and this will generate efficiencies and value for water customers.

Indicators and Targets

Indicators and targets for this Objective to Invest in Our Future are presented in the graphic below.

Strategic Objective	INVEST IN OUR FUTURE			
	Definition	Current Baseline (Based on Current Knowledge)	End of 2021 Target	2040 Target
AIM IF2	Balanced Sustainable Investment			
Outcomes of Capital Investment Plans	Capital Investment Plans delivered (on time and budget) within the Investment Period	 <p>Establish baseline condition of critical assets by 2018</p>	 <p>100% Delivery of Outcomes identified in Capital Investment Plan 2017-2022 as agreed with CER</p>	 <p>Deliver IW objectives through balanced investment at least cost within approved funding model</p>
AIM IF3	Sustainable Funding Model			
Operational and Capital Efficiency	Meet CER's requirements for operational and capital efficiency	 <p>Develop Best Practice Management Principles and Systems</p>	 <p>Meet 100% of CER Requirements</p>	 <p>Meet 100% of CER Requirements</p>