Irish Water

Proposed Capital Investment Plan 2014-2016

May 2014

Contents

Executive Summary

Irish Water's proposed 2014-2016 Capital Investment Plan (CIP) outlines the indicative investment priorities in water services infrastructure over the next three years. The CIP consists of a targeted programme consisting of over 386 individual projects and a range of sub-programmes, which will deliver improvements in drinking water quality, leakage, wastewater compliance, business efficiencies and customer service.

It also includes an indicative schedule of projects at various stages of planning. These projects are intended for implementation beyond the period of this CIP. They will be advanced subject to full planning and environmental assessment of Irish Water's Plans and strategies and of the individual projects, having regard to all regulatory requirements. To that end, planned future measures are indicative at this stage, pending compliance with specific legal obligations under, Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) directives and regulations.

The proposed CIP is required under Section 34 of the Water Services (No. 2) Act 2013 to "set out and particularise the investment in water services infrastructure that Irish Water considers necessary for the effective performance by it of its functions". We have also commenced work on our 25 Year Water Services Strategic Plan (WSSP) which will set out our long term strategy and objectives. The WSSP will address the requirements of the Water Services (No. 2) Act 2013, Section 33. It will be subject to Strategic Environmental Assessment and Appropriate Assessment (Habitats Directive). The CIP will be adjusted as required to meet the objectives and priorities of the WSSP as adopted following assessment.

The proposed CIP requires €1.77bn to meet the objectives identified by Irish Water and previous programmes of the Department of the Environment, Community and Local Government (DECLG). The current funding is €1.2bn which includes the additional €200m announced by Government on 6th May 2014 and €280m to be raised through Irish Water. Irish Water will work to bridge the funding gap by avoiding/reducing cost through its asset management approach and by seeking to raise additional funding. The proposed CIP has been submitted to the Commission for Energy Regulation (CER) under the Interim Price Control Process.

Background to the Investment Plan

In January 2014, Irish Water took over responsibility for the provision of public Water Services from the 34 local authorities. For decades, Local Authorities have provided water and wastewater services within the resources available to them. In order to maintain continuity of service, Irish Water has entered into Service Level Agreements (SLA) for the operation of Irish Water's assets for the next twelve years.

Irish Water now has responsibility for the supply of drinking water to over 80% of the population via 1,027 separate public water supplies as well as the collection and treatment of wastewater from 1,069 separate agglomerations. Irish Water has taken over a large portfolio of assets, including several thousand smaller installations including pump stations, 58,000km of water pipelines and an estimated 35,000km of wastewater pipelines. Due to the fragmented nature of Water Services across 34 Local Authorities, the level and quality of asset records varies widely. Consequently, Irish Water does not have comprehensive and detailed knowledge of the asset base and this programme will begin the process of ensuring that information about critical national infrastructure is captured.

The CIP 2014–2016 represents the transition between the capital programmes previously overseen and largely funded by the DECLG and Irish Water's full price control period investment plans to be regulated by the CER.

The CIP is dominated by contractual commitments entered into previously by Local Authorities, and which have now transitioned to Irish Water. In the 2014-2016 period, Irish Water will fund these contracts to completion and bring forward programmes and prioritised projects to commence. At the same time, it will progress a large portfolio of projects that are at the planning and design stage, reviewing their scope, budgets and, where appropriate, timing to favour maximising the performance of the existing assets through intensified capital maintenance that might allow deferral of major capital investment. This includes progressing the plans for new capacity for both water and wastewater to meet the long term needs of the Greater Dublin Area (GDA). Throughout the duration of the CIP, Irish Water will continuously review the programmes, adjusting priorities to take account of emerging information and needs in order to optimise the investments being made.

The current state of Irish Water's water and wastewater asset base is highly variable, ranging from very good performance for many of the newer schemes to very poor performance for a large number of schemes, notably the smaller ones. Of particular importance is the fact that a significant number of smaller water supplies are considered vulnerable to microbiological contamination and several are the subject of 'Boil Water Notices', including 4 schemes in County Roscommon.

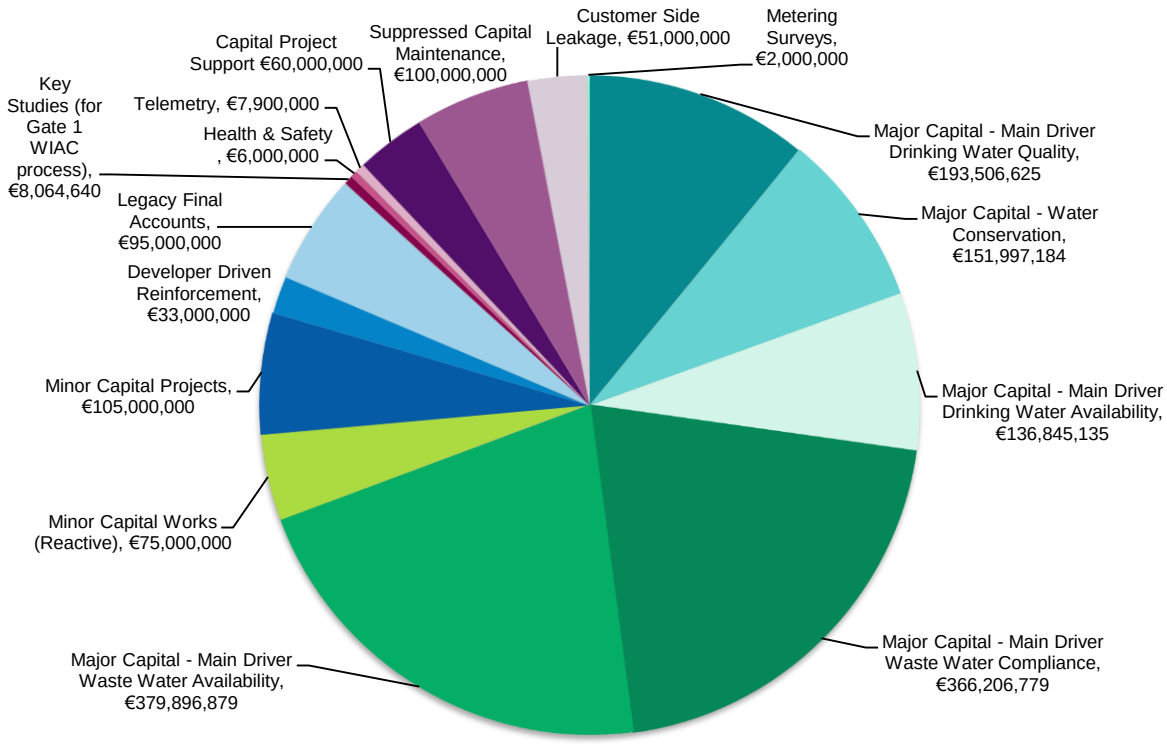
Leakage from the water networks averages over 41% across the country, twice the level of that in the UK, where the assets are comparable but have been more intensively managed over the last 20 years. Leakage is several times the typical figures in Germany, Denmark and the Netherlands, where networks are much newer from decades of investment in mains renewal. This gives a general indication of the relative state of our water infrastructure and that significant investment will be needed over several years for us to catch up with international norms in the water utility sector.

While major investment has been made in wastewater treatment over the past decade, there is still a long way to go to achieve full compliance with the Urban Wastewater Treatment Directive.

Ireland is currently on Formal Notice of an EU Infringement Case to be taken which requires improvements at 66 agglomerations. Programmes of Measures required under the Water Framework Directive to meet objectives could cost Irish Water €3-4bn with emerging requirements under the Priority Substances Directive potentially having a further cost of €2-€3bn. Irish Water will address these compliance requirements in the most cost effective manner possible.

The transfer of the DECLG Water Services Investment Programme (WSIP) to Irish Water includes projects that are under construction, projects completed but not commercially closed-out and a number of projects tendered in 2013, which were approved to proceed to contract by the DECLG. These in-flight projects have to a significant degree defined the budget commitment in 2014, 2015 and 2016. One of the key roles for Irish Water will be to manage the project portfolio to deliver the optimum investment outcomes within its funding constraints. The chart below illustrates the summary status of the Capital Investment Plan projects and the investment required to complete them.

Figure 1: 2014-2016 Capital Investment Plan Summary



The Programmes and Implementation

In order to address historic deficiencies and to transition Ireland's Water infrastructure towards a high performance utility model, the CIP focuses on the following key areas:

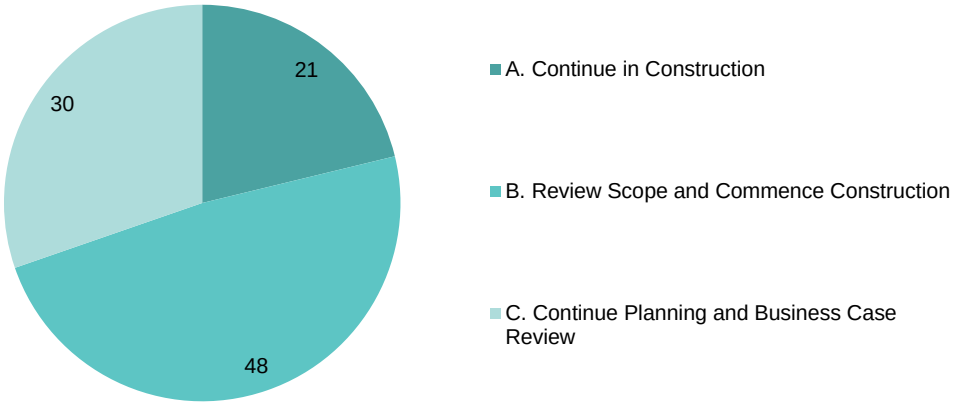
Asset Management: Irish Water has been established as an asset management driven business, in line with best international practice in the water utility sector and this represents a radical transformation in the water services planning and delivery model in Ireland. Irish Water prioritises investments from a whole-life cost perspective where the previous model tended to run to failure, with minimal maintenance and over-reliance on major one-off exchequer investment.

In this plan, Irish Water will prioritise major compliance issues using the best combination of capital and operational responses, recognising that major plant upgrades are generally required where a step change in standards is needed. In the first instance, we will seek to maximise capacity of existing assets, including upgrading operation, supported by targeted capital maintenance. We will review options to upgrade existing assets as the next step, reviewing all technical opportunities to do so. These measures may not be sufficient for long term needs, and in those cases (e.g. GDA), we will develop plans for new capacity to be delivered in a timely fashion to provide the required headroom. During 2014, we are commencing the rollout of asset management processes and systems and to build a reliable asset database on which to base investment decisions for the 2016 – 2021 Price Control Period. Minor Capital programmes will target areas where significant performance improvements can be achieved with low level investment.

Drinking Water Quality: Good progress has been made in recent years where investment has focussed on non-compliant water supplies on the EPA Remedial Action List (RAL), but significant risks to drinking water quality remain at a number of Water Supply Zones (WSZ). Microbiological non-compliance represents an immediate risk to public health and is one of Irish Water's highest priority investment drivers. Irish Water will develop programmes to collect the detailed asset information required to develop comprehensive risk reduction measures. We expect to address elimination of lead services (including shared backyard common service pipes) over a 10-15 year timeframe when we have fully quantified the problem.

The CIP targets drinking water compliance through both large scale capital upgrades and a Minor Capital Programme that will eliminate many of the legacy non-compliances. In tandem with water quality driven programmes, Irish Water will be aggressively targeting leakage management in areas where a reduction in leakage levels would defer the need to invest in new treatment infrastructure or reduce stress on treatment. The chart below illustrates the number and status of projects in the drinking water quality programme.

Figure 2: Proposed Water Supply Projects (2014-2016)



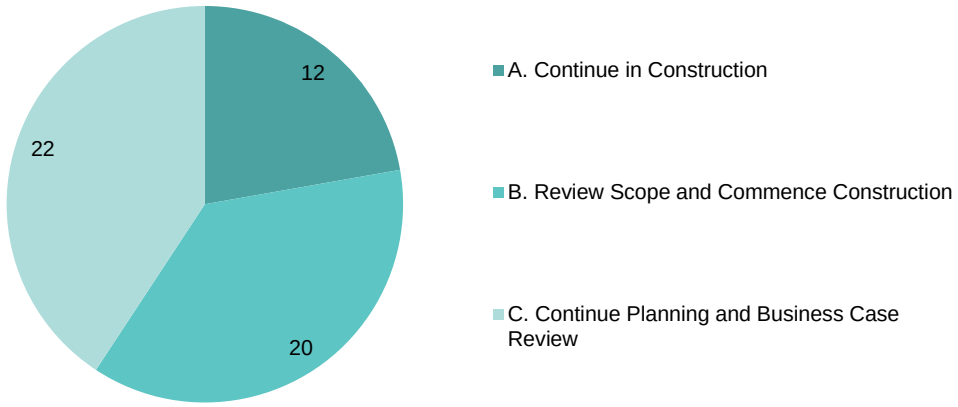
Water Conservation: High levels of leakage across the country are placing a strain on water treatment facilities and, in some cases, on water sources, reducing the availability of drinking water to customers, increasing operating costs, impacting plant performance and water quality. Water conservation and leakage levels vary from county to county, with some local authorities lacking the basic infrastructure and resources to manage leakage. Irish Water will establish systems and infrastructure to accurately assess leakage levels across all Water Supply Zones. Irish Water will introduce an asset management approach to leakage reduction that will balance funding between active leakage control, speed and quality of repairs, pressure management and investment in water main rehabilitation.

Customer side leakage is a significant component of unaccounted for water. The domestic water metering programme has already started to quantify the extent of customer side leakage and Irish Water is preparing a strategy to a deal with this issue. This strategy will involve the government's proposal for a "first fix" offer to customers for leaks reported post meter installation to be repaired subject to terms and conditions. A separate paper on our *Approach to Water Conservation* is being launched with the CIP.

Drinking Water Capacity: Under the previous WSIP process, the delivery of additional drinking water capacity and supply resilience through new infrastructure could take up to 15 years. As a consequence and despite significant investment in recent years, over 25% of Water Supply Zones are currently operating beyond their design capacity limits.

Irish Water has a key role in meeting current demand as well as forecasting and planning the programmes to meet future demand, supporting national development and growth. Irish Water will define water supply needs with a 25 year forward view, combined with appropriate headroom to cater for demand growth, demand peaks and source risks whilst meeting the social and economic needs of balanced regional development. In the short term Irish Water propose to deliver a number of key water supply capacity projects.

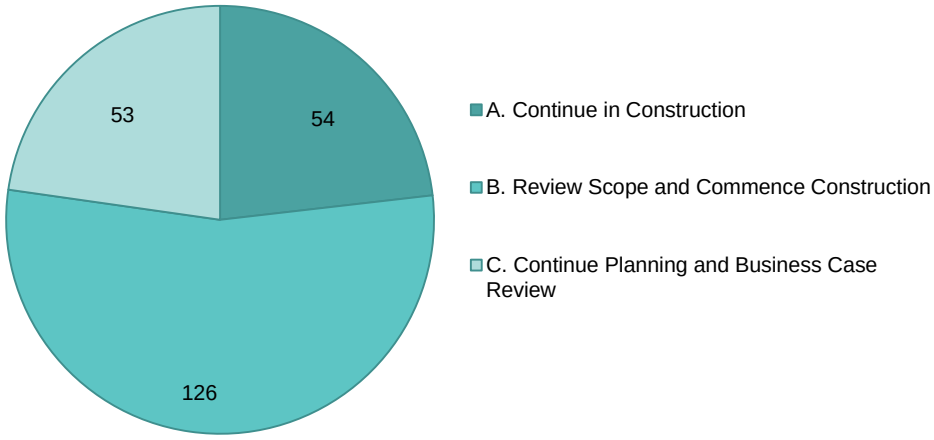
Figure 3: Water Capacity Projects (2014-2016)



Wastewater Environmental Compliance: Irish Water will develop its environmental capability and engage collaboratively with the EPA, DECLG and at EU level so as to achieve cost-effective and sustainable environmental improvements in compliance with statutory obligations. A study into urban wastewater compliance and the longer term approach has already commenced. More stringent standards required by the Directive for larger schemes (Dublin Bay, Cork Harbour) and for Combined Sewer Overflows (CSO's) are being reviewed in order that the most appropriate and affordable solutions are developed.

In the short term, the CIP includes urgent schemes required to meet existing discharge licence conditions and where pollution impacts are most evident.

Figure 4: Proposed Wastewater Environmental Compliance Projects (2014-2016)



As a result of large population growth over the last two decades, there has been significant investment in new wastewater network infrastructure to connect new developments into existing networks and also in the upgrading and replacement of the existing networks to accommodate additional flows and in providing new assets to transfer flows to new/upgraded Wastewater Treatment Plants.

Although investment has been made on the below ground assets, there is still a requirement for considerable investment in the future to replace infrastructure that is at the end of its service life (especially in the larger cities), to cater for future development needs.

Within existing agglomerations, there is a requirement to assess the Combined Sewer Overflows to ensure that they are in compliance with the relevant standards so that Water Framework Directive 'good' quality status can be achieved. With very limited information on the condition of wastewater networks, investment is required to survey and monitor current performance as a first step and then to implement appropriate solutions on a priority basis.

Customer Serviceability Standards: Ability to deliver a high quality customer service will be a key focus for Irish Water. As domestic consumers are charged, it will be incumbent on Irish Water to achieve an acceptable level of service across the country. The CIP includes a range of programmes that will address some of the existing issues and commence programmes to address challenges such as low supply pressure and localised drinking water quality issues.

Targeted Investment: Irish Water has undertaken a number of actions to support an asset management based approach to investment, as well as achieving business efficiencies over the original 34 Local Authority model. These include the introduction of procurement frameworks for large expenditure categories such as energy, materials and construction contracts. It has also implemented systems in the areas of finance, workflow and project management that will help to streamline processes and achieve increased efficiencies as well as providing Irish Water with the key information required to manage its business and deliver higher performance.

Minor Capital Programmes

In addition to the actions outlined above, Irish Water has launched the Minor Capital Programme group which consists of programmes aimed at optimising the performance of existing assets with targeted low level investment. These programmes aim to address known asset deficiencies to deliver improvements in Health and Safety, quality/compliance, reliability, maintainability, operational costs and sustainability. The programme will target standardisation and best practice, achieving significant business efficiencies and cost reductions. The programme will also target the asset information deficits required to develop future investment plans. The following are two examples from the Minor Capital Programme:

Energy Efficiency: Irish Water's operations use over €60m of electrical energy annually (excluding Design Build and Operate - DBO contracts). Minor Capital Energy efficiency programmes recognise the Government's climate mitigation policy, public sector energy targets and Irish Water's commitment to sustainability principles as well as reducing operating costs within a target payback period on capital. The programme will target reductions at significant energy consuming sites, consistent with the principles of the ISO 50001 energy management standard. In conjunction with other programmes that will optimise energy tariffs, it is anticipated that this programme has the capacity to deliver savings ranging from 10% to 40% on individual projects.

Critical Assets: Failure of critical assets could have significant impact on services, public health or the environment. Lack of capital replacement in the past has led to the dilapidation of many critical assets, to the point that they are now at risk of imminent failure. Due to the scale of Irish Water's asset portfolio, it is not feasible to carry out a condition and performance evaluation of all assets in the short term. In order to both mitigate risk and develop risk management based investment programmes, the objectives of the Minor Capital Critical Asset Programme are to:

- Identify critical assets
- Assess the level of risk
- Establish indicative cost of replacement, operational cost impacts and solution options
- Implement solutions for highest risk critical assets

The targets being established for year one i.e. 2014 of this programme are set out in Appendix 2. These targets may change depending on emerging issues under the various sub-programmes.

Summary

The CIP 2014-2016 outlines the targeted programmes and projects that Irish Water needs to deliver over the next three years to facilitate the urgently required improvements in drinking water quality, leakage, wastewater compliance, business efficiencies and customer service.

The CIP includes a large number of projects that Irish Water will complete. It includes closing out the contractual commitments made by Local Authorities and the DECLG under the last investment programme. It also includes programmes of projects which have yet to be progressed through specific legal obligations and which, subject to statutory approvals, will be included in future investment programmes.

To deliver on its objectives, the CIP (subject to the deliberations of the CER) will require €1.77bn. This is more than current funding of €1.2bn which includes the additional €200m announced by Government on 6th May 2014 and €280m funding through Irish Water. Irish Water will work to bridge the funding gap by avoiding/reducing cost through its asset management approach and by seeking to raise additional funding. The proposed CIP has been submitted to the Commission for Energy Regulation (CER) under the Interim Price Control Process.

The proposed CIP requires €1.77bn to meet the objectives identified by Irish Water and previous programmes of the Department of the Environment, Community and Local Government (DECLG). The current funding is €1.2bn which includes the additional €200m announced by Government on 6th May 2014 and €280m to be raised through Irish Water.

Proposed Capital Investment Plan Summary 2014-2016

Category	2014-2016 Projected Spend
Major Capital - Main Driver Drinking Water Quality	€193,506,625
Major Capital - Water Conservation	€151,997,184
Major Capital - Main Driver Drinking Water Availability	€136,845,135
Water Total	€482,348,944
Major Capital - Main Driver Wastewater Compliance	€366,206,779
Major Capital - Main Driver Wastewater Availability	€379,896,879
Wastewater Total	€746,103,658
Minor Capital Works (Reactive)	€75,000,000
Minor Capital Projects	€105,000,000
Developer Driven Reinforcement	€33,000,000
Legacy Final Accounts	€95,000,000
Key Studies (for Gate 1 WIAC process)	€8,064,640
Health & Safety	€6,000,000
Telemetry	€7,900,000
Capital Project Support	€60,000,000
Suppressed Capital Maintenance	€100,000,000
Customer Side Leakage	€51,000,000
Metering Surveys	€2,000,000
Grand Total	€1,771,417,242

Appendix 1: Investment Plan Project Summary

Appendix 2: Minor Capital Programme 2014

Service Reservoir Refurbishment Programme €500,000	Process Optimisation and Control Programme €800,000	Filter and Coagulation Programme €1m
Objective: Identifying and remediating critical service reservoir assets (treated water storage structures and associated infrastructure) at risk of failure that could impact significantly on service, water quality, costs, environment or safety. **Implementation:** LA's will submit template that will identify high risk assets. Work scope to be defined by expert review and delivered via framework. Two streams focusing on remediation of known defective assets and completion of condition assessments will be progressed. **Key Outcomes**: • Improved Asset Integrity (Condition/ Performance) • Improved Water Quality(THM Risk and discoloration reduction) • Reduced leakage • Improved system resilience • Improved security **Outputs:** • Refurbishment works carried out on known defective reservoirs. (10 No) • Investigations and scoping of future works (40 Sites) • Standard condition assessment tool • Cost data for standard categories of repairs • Initial projection of overall condition and capital maintenance requirements to inform investment Programme. • Standardised maintenance, inspection and operational manuals will be developed	**Objective:** To ensure that adequate control, monitoring and alarm systems are in place to protect quality of water produced. To optimise process operation including consumption of energy and consumables and to harness potential for process automation. **Implementation:** LA's will submit template that will identify high risk assets. Selection will be informed by open EPA Compliance and Audit files, IW prioritisation rules and audit of existing plant alarm and control systems. Work scope to be defined by expert review of plant and delivered via MECIA framework **Key Outcomes:** • Compliant water quality • Reduced input costs • Reduced operational cost • Lower risk scoring in Water Safety Plan assessment **Outputs:** • 8 sites with upgraded Control systems • 2 sites with plans for upgrades • Development of standardised procedure for plant assessment • Development of standards for control philosophies including testing and performance evaluation. • Capture of necessary operational data regulatory and management purposes	**Objective:** To rehabilitate coagulation, dosing control and filter units to minimise risk of breakthrough of contaminants and to optimise chemical usage. **Implementation:** LA's will submit template that will identify high risk assets. Selection will be informed by open EPA Compliance and Audit files, IW prioritisation rules and audit of prioritised plants. Work scope to be defined by expert review of plant and delivered via MECIA framework. **Key Outcomes:** • Compliant water quality • Reduced risk scoring in water safety plans • Input savings • Reduced process water losses :**Outputs:** • 8 sites upgraded through rehabilitation of existing facilities • 2 sites with plans prepared for upgrades • Development of standardised procedure for plant assessment • Development of standardised solutions for upgrade of assets • Capture of necessary operational data regulatory and management purposes

Disinfection Programme €250,000

Objective: To enhance quality and security of disinfection processes so as to minimise risk of water contamination.

Implementation: LA's will submit template that will identify high risk assets. Selection will be informed by open EPA Compliance and Audit files, IW prioritisation rules and audit of prioritised plants. Work scope to be defined by expert review of plant and delivered via MECIA framework

Key Output:
Reduced bacteriological non-compliance DWR's

Outcomes:

- 10 Sites inspected and upgraded
- 10 Sites inspected and upgrade plans prepared
- Standard condition assessment tool
- Cost data for standard categories of upgrade
- Standardised maintenance, inspection and operational manuals will be developed.

Unidirectional Scouring Facilitation Programme €200,000

Objective: To enhance quality of water supplied to consumer through enabling effective scouring of networks. Programme to focus on networks where sedimentation and or discoloration are known to be an issue impacting on water quality.

Implementation: LA's will submit template that will identify high risk assets. Selection will be informed by open EPA Compliance and Audit files and IW prioritisation rules. Work scope to be defined by expert review of plant and delivered via Small Contract framework

Key Output:

- Reduced discoloration in customer water
- Reduced non-compliance DWR

Outcomes:

- Improved water quality
- Reduced consumer complaints
- Reduced scouring costs and development of structured scouring plans

Plant Refurbishment Programme €3m

Objective: To upgrade treatment facilities to meet quality standards or demands based on identification of specific issues impacting on performance as identified through a systematic analysis of facility.

Implementation: LA's will submit template that will identify high risk assets. Selection will be informed by open EPA Compliance and Audit files, IW prioritisation rules and audit of prioritised plants. Work scope to be defined by expert review of plant and delivered via MECIA framework.

Key Output:

- Compliance with Regulatory standards.
- Lower risk to service

Outcomes:

- Specific problems affecting operation and maintenance of plants will be addressed
- Closure of existing incident files
- Development of standardised procedure for assessment and project definition
- Development of standardised solutions
- Implementation and testing of design solutions through evaluation of subsequent performance
- Closure of existing programmes being implemented through small schemes programme

Source Protection Programme €450, 000 Study + 10 Sites

Objective: Investigation, scoping and implementation of measures necessary to protect sources and in particular groundwater sources in order to reduce risk of raw water contamination, improve quality of water supplied /reduce treatment requirements.

Implementation: LA's will submit template that will identify high risk assets. Selection will be informed by open EPA Compliance and Audit files, prioritisation rules and audit of prioritised plants. A specific study to evaluate upgrade/abandonment criteria and solution options for wells serving small populations will form element of work.

Key Output:

- Toolkit for evaluation of source sustainability
- Development of standardised solutions
- Reduced risk to sources
- Reduced treatment costs

Outcomes:

- Improved water quality with lower risk of bacteriological contamination
- Report setting out basis for rational decision making on refurbish /abandonment /amalgamation of small well sources
- Preparation of appropriate protection plans based on surveys
- Protection from overland flow contamination. Protection of inner zones through fencing /land acquisition leasing

Remedial Action List Programme €7m 140 sites

Objective: To address deficiencies highlighted in Remedial Action List as published by EPA with view to improving quality security of supply and having schemes removed from listing.

Implementation: LA's have a significant tranche of projects in train to address RAL schemes these will progress to completion. Design and design reviews will be required in the case of a number of proposals at earlier stage of progress with delivery trough frameworks. Review of completed schemes required to assess efficacy and potential for solution replication standardisation.

Key Output:

- Compliance with Drinking water regulations
- Removal from RAL Listing

Outcomes:

- Reduced risk of non-compliance with Drinking Water Regulations.

Critical Asset Identification and Rehabilitation Project €4m

Objective: This is a Pilot Project aimed at identifying critical above ground assets at risk of failure a treatment plants, pump stations etc. that could impact significantly on service, costs, environment or safety. Typically such assets will be specific individual structures, mechanical plant units or control systems. It is envisaged that identification of such assets shall be based on operational experience and performance data and will be determined in consultation with staff responsible for operational and maintenance activities.

Implementation: LAs will prepare a listing of critical assets at water and wastewater plants, pump stations and reservoirs that are considered to be at highest risk of failure along with estimated cost of replacing or refurbishing same.

Key Output:

- Identification of number of identified asset groups and certain specific assets at risk.

Outcomes:

- Development of prioritised programmes of work to reduce failure risk

Pressure Management Programme
€500,000

Objective: Reduction in overall leakage from networks through pressure management.

Implementation: Scheme confined to areas where flow metering and pressure monitoring data is available and where it can be demonstrated that pressure reduction is feasible and will reduce losses or burst occurrences. LA's will submit proposals. Delivery by framework contractor or LA staff.

Key Outcomes:

- Reduced leakage
- Reduced burst occurrences

Outputs:

- Improved head room on overall scheme.
- Reduced production costs.
- Standardised design and costing data.
- Evaluation of network calming options

DMA Programme
€500,000

Objective: To enable the provision of additional District Metering Area's (DMAs) where warranted including subdivision of existing DMA's and the refurbishment of assets (valves and metering assets) to restore integrity of existing DMA's.

Implementation: Existing DMA's and newly developed areas or areas where sub-division of DMA's is justified on size, topography or asset data. Delivery by Framework Contractor or LA staff.

Key Output:

- Enhanced knowledge on leakage
- Capacity to more effectively reduce leakage levels

Outputs*:*

- Improved data on water usage
- Standardised design and costing data
- Refurbishment of assets to extend working life

Small Mains Rehabilitation Programme
€800,000

Objective: To address the rehabilitation or provision of new mains where the quality of existing infrastructure impacts significantly on customer service. Primary focus will be on local quality and pressure issues, discoloration and other non- compliance with DW Requirements.

Implementation: LA's will submit template that will identify nature of problem, number of consumers affected and cost of remediation. Prioritisation will be based on above.

Key Output:

- Enhanced customer service
- DW regulation compliance

Outputs:

- New or renewed assets improved

Nutrient Management Programme €300,000

Objective: Nutrient management programme will provide funding for installation of standardised ferric dosing packages at plants where Wastewater Discharge Licences require phosphorous reduction and where capacity exists to facilitate same. It will also evaluate options for sites where high phosphorous removal is required. Prioritisation will be based on evidence of phosphorus related deterioration in receiving water. Initially will focus on smaller plants.

Implementation: LA's will submit template which will rank plants based on prioritisation rules. A standardised unit will be acquired and installed by contractors at selected plants.

Key Outcome:

- Compliance with Licence requirements

Outputs:

- Standardised design
- Impact assessment on operating costs of P removal
- Potential solutions to sensitive water discharges

Network Flow Monitoring and Rehabilitation Programme €1.5m

Objective: Programme will fund the investigation and rehabilitation of sewer networks to eliminate base flow infiltration. It will also fund a programme to carry out limited monitoring of CSO's (event recording). Projects may be considered where it can clearly be demonstrated that significant removal of surface water from a combined sewer network can be achieved, by providing separate storm sewers (to be handed over to LA operation) and where such work can be carried out in conjunction with road restoration projects or similar projects, and where existing drainage or treatment assets are stressed.

Implementation: Programme will fund a number of flow surveys in smaller networks where it can be demonstrated that base flow infiltration contributes significantly to hydraulic loading through template response. Based on survey a focussed on the ground and CCTV survey is to be carried out with a view to carrying out remedial works. Funding of provision for separation of road drainage will be considered on case by case basis.

Key Outcome:

- Compliance with Licence requirements
- Reduction in pumping costs
- De-stressing of hydraulically overloaded treatment facilities.

Outputs:

- Standardised assessment methodology
- Data to establish cost benefit basis for investment
- Increased compliance (WWTP and CSO Discharge reduction)

Network Survey Programme €500,000

Objective: The programme will initially focus on defining the extent of networks affected by the formal ECJ notice and thereafter mapping of assets (manholes) and condition assessments. Will inform agglomeration definition compliant with UWWD requirements and WWDA licencing. Will also allow more effective reconciliation of generated and received loads at treatment plants.

Implementation: Programme will fund the mapping of network limits and survey of existing networks where mapped data is not available. Works will be carried out by Local Authorities or Contractors and may incorporate condition surveys of sewer infrastructure. Focus will be on networks that are part of Formal ECJ Notice or are connected to overloaded plants.

Key Outcome:

- Capacity to respond to Formal ECJ Notice
- Asset condition data to inform rehabilitation programmes

Outputs:

- Reliable Asset data
- Capacity to meet statutory reporting requirements
- Capacity to evaluate agglomeration load components.

Pump Station Upgrade Programme €1 m

Objective: To address wastewater pump stations with a view to optimising energy usage, minimising maintenance requirements and minimising emergency overflows to receiving water. Programme will focus on pump control, monitoring systems, rehabilitation and upgrades where evidence exists of excessive operational and maintenance costs and intermittent discharges. It is not intended that this funding will be used to replace individual pumps or pump sets that require replacement through normal wear and tear or accidental damage unless significant saving can accrue from use of different pump configuration.

Implementation: LA's will submit template which will rank plants based on IW prioritisation rules. An assessment of the station will be undertaken by IW and based on same a programme of works as required to reach an acceptable serviceability standard will be developed and imp standardised unit will be acquired and installed by contractors at selected plants.

Key Outcome:

- Compliance with Licence Standards in respect of discharges
- Reduced operational costs(energy and maintenance)

Outputs:

- Standardised modular design approach to component elements
- Data acquisition for statutory reporting
- Optimisation of operations
- Reduced maintenance and attendance costs

Energy Efficiency Programme €2m

Objective: The energy efficiency programme recognises Irish Water's commitment to sustainability principles as well as reducing operating costs within a target payback period on capital. Programme will initially focus on high energy usage sites and will run in parallel with an operations driven focus on power factor and tariff optimisation. Primary areas of investment will be driven by the energy management principles of ISO50001 and will focus initially on Significant Energy Users (SEUs) such as high lift pumping arrangements and energy efficient aeration systems. Investment will be based on payback period.

Implementation: Analysis of energy usage and key performance indicators will identify sites where opportunities exist to make significant energy savings. Ready to run projects developed by LA's will also be reviewed. Progress will be contingent on basis of meeting a target payback period.

Key Outcome:

- Reduced energy costs
- Reduced carbon footprint

Outputs:

- Integration of energy monitoring facilities into upgraded units to ensure on-going sustainability of savings
- Development of framework for assessing savings opportunities

Sludge Programme €250,000

Objective: This programme aims to harness savings from reduction in sludge transportation costs through reducing frequency of collection by providing additional on site storage and sludge thickening.

Implementation: This programme will support the provision of onsite sludge storage facilities incorporating capacity to thicken sludge where it can be demonstrated that this leads to a reduction in transportation costs and also possibly improve process control where capacity to control sludge age inhibits optimisation. Priority will initially be given to larger plants that are located at distance from sludge hubs. Selection will be based on evaluation template with a standardised design solution being delivered.

Key Outcomes:

- Reduced operating costs

Outputs:

- Standardised design solutions
- Possible plant efficiency/capacity gains

Flow Monitoring and Sampling Programme €2m 40 sites	Process Optimisation Programme €500,000 8 sites	Inlet Works Programme €2m 25 Sites
Objective: To provide accurate measurement of flows at WWTPs. In particular to ensure compliance with Statutory requirements, to facilitate effective assessment of loading and management of plant through installation and refurbishment of flow monitoring and sampling equipment. **Implementation:** LA's will submit template that will identify deficient plants which will be ranked based on prioritisation rules. An inspection of prioritised plants will be carried out to ascertain specific design requirements. **Key Outcome:** compliance with UWWD and WWDA requirements. **Outputs:** Accurate data on flow being treated, overflowed and process flows. Standardised design and data recording philosophy. Improved visibility of plant capacity. Capacity to improve operational performance Standardised designs and cost data	**Objective:** To upgrade control systems in order to optimise plant operation with a view to improving compliance performance, collection of operational data to track asset performance and reducing energy consumption, A subset of this programme will address Waste Discharges to sewers with a view to assessing impact of same on performance and where necessary short term on line monitoring discharges to facilitate justification of licensing or review of same. Upgrade of pump station controls to optimise forward flow management for treatment will also be considered. **Implementation:** LA's will submit template which will rank plants based on prioritisation rules. In case of impact of discharges, known details and impacts will be submitted. An inspection of prioritised plants will be carried out to ascertain specific design requirements. Monitoring programs will implemented through framework contracts. **Key Outcomes:** Compliance with discharge requirements and identification of significant discharges impacting on performance. **Outputs:** More effective energy usage. Improved load management Improved process control capability Better control of discharges to networks Assessment methodology	**Objective:** This programme aims to install or refurbish inlet works at WWTPs that currently have inadequate screening. These will incorporate automated screening, flow monitoring, grit removal and flow balancing where appropriate. Manually raked bar-screens are still commonplace and require more frequent on-site presence which leads to higher operations costs, more frequent discharges from upstream CSO's and also impacts on the performance of plants, where unscreened waste water enters the treatment process and reduces the hydraulic capacity over time as well as causing wear and tear on pumps etc. that requires a higher level of reactive maintenance. **Implementation:** LA's will submit template which will rank plants based on prioritisation rules. An inspection of prioritised plants will be carried out to ascertain specific design requirements. **Key Outcomes:** Compliance arising from reduction in intermittent discharges from overflows Reduced maintenance and attendance requirement. Prolongation of downstream asset life.. **Outputs:** Prolonged plant life.(Pumps/aerators) Reduction in blockages of pumps and aerators Standardised design • Better use of plant capacity through control of through flow through balancing.

Quick Win Programme €3m- variable	Small Plant Improvement Programme €1.75 6+ Sites	ECJ Programme €1.2m 5 Sites
Objective: The programme targeted at specific problems at plants that are not overloaded but nevertheless fail to meet basic compliance targets as set by EPA (BOD, COD, SS limits) and is an element of IW Urban wastewater compliance strategy. **Implementation:** IW will identify plants based on compliance data which will trigger an initial operational review, asset assessment and the development of a structured programme of interventions aimed at addressing compliance issues and thereafter developing a planned programme for asset refurbishment and replacement based on comprehensive asset survey. Focus will be on use of low cost interventions coupled with operational modifications to ensure compliance. **Key Outcome:** compliance with UWWD and WWDA requirements. **Outputs:** Asset capacity assessment. Identification and condition of Critical assets. Updated Operational Plan. Asset Investment Plan (10 year).	**Objective:** The small plant improvement programme is aimed primarily at the upgrading of existing plants with capacity of less than 1000 PE through refurbishment programs where appropriate and the installation of upstream or downstream units Installation of replacement or additional package plants where existing units are at end of life or where loading is in excess of plant capacity. **Implementation:** LA's will submit template which will rank plants based on prioritisation rules. Initially aimed at completion of on-going works .Priority will be given to plants on basis of impact and classification of receiving waters and the extent to which they are overloaded. A technical assessment of asset along with options to upgrade is required focusing on utilisation of residual value of existing asset. Totex perspective required in assessing proposed options. **Key Outcomes:** Compliance with discharge standards and prolongation of asset life. **Outputs:** Additional capacity based on realistic growth projections. Standardised solution packages.	**Objective:** To address a number of schemes that are subject of Pilot Infringement Case 4058.12ENVI where small scale interventions have been identified as having potential to mitigate impacts of plants on receiving waters. **Implementation:** Assessments of proposals and development of solutions will be carried out by wastewater experts. These will be implemented through Framework Contracts. Proposals is based on 5 plants where solutions have been partly developed , however scope exists for fall out from Major capital Programme once review of other plants is carried out. **Key Outcome:** Removal from ECJ Listing