

Draft Social and Environmental Guidance for Water & Sewerage Services (2015-21)

Public Consultation



Public Consultation

What this consultation concerns

- (i) The Water and Sewerage Services (Northern Ireland) Order 2006 enables the Regional Development Minister ('Minister') to issue Social and Environmental Guidance to the Northern Ireland Authority for Utility Regulation (the 'Regulator').
- (ii) The purpose of this consultation paper is to seek your views on the draft Guidance which sets out how the Minister expects the Regulator to contribute to key areas of social and environmental policy in its regulation of water and sewerage services provided by Northern Ireland Water (NI Water). The guidance sets out investment priorities for the water and sewerage industry for the period 2015-21. **Your views will help to inform the final Guidance to be laid before the Assembly in 2014.**
- (iii) This draft Guidance has been informed by the Executive's Draft Long Term Water Strategy which is currently being developed and will be published for public consultation in 2014.

Equality Impact

- (iv) The impact of the proposed Guidance was analysed on equality of opportunity, and the need for an Equality Impact Assessment (EQIA) was screened out.
- (v) There may be equality implications for Section 75 groups from any policy decisions on the funding arrangements for water and sewerage services. However, the Executive has yet to agree the policy in these areas and will consult separately in due course. The impact on equality of opportunity will be considered as part of the Executive Consultation. A copy of the screening form can be viewed on the Equality Section of the Department for Regional Development's (DRD) website at http://www.drdni.gov.uk/index/equality_agenda/.

Other Regulatory Impacts

- (vi) No need to conduct detailed regulatory or strategic environmental assessments¹ was identified for the investment priorities within this Guidance because:
 - it sets out investment priorities for NI Water with no direct impact on any other businesses;
 - investment has been prioritised on environmental need within both rural and urban areas; and
 - investment will have beneficial effects on the environment and on public health.

¹ The Guidance informs NI Water's financial business plan and does not require assessment under the Strategic Environmental Assessment Directive (Directive 2001/42/EC).

- (vii) It should also be noted that some of the future investment priorities set out in this Guidance are mandatory and driven by European legislation. Failure to implement these European requirements could result in infraction and substantial fines for the Executive, leading to reduced investment in public services.

Where to send your views

- (viii) Responses to the consultation can either be emailed to waterpolicy@drdni.gov.uk or posted to the address below:

Eddie Dobbin
Water Policy Division
Department for Regional Development
Room 122, Clarence Court
12-18 Adelaide Street
Belfast BT2 8GB
Telephone: (028) 9054 2985

- (ix) Responses can also be faxed to: (028) 9054 0547. For audio impaired users text responses can be sent to: (028) 9054 0642.
- (x) Please note that responses to the consultation **must be received by Friday 31 January 2014**. All responses received by this date will be considered.
- (xi) Additional copies of this document can be obtained, free of charge, by contacting us at the address above or downloaded from the consultation section of the DRD website, <http://www.drdni.gov.uk/>. The consultation document can also be made available in alternative formats or languages on request.

Confidentiality of consultation responses

- (xii) A summary of responses will be published following completion of the consultation process. If you would prefer your comments not to be published, please indicate this when responding. Requests for non publication of responses will be respected but, in accordance with the Freedom of Information Act 2000, cannot be guaranteed. For further information about the confidentiality of responses please contact the Information Commissioner's office.

Next Steps

- (xiii) After consideration of all the responses received by the deadline, a Consultation Feedback Report will be published along with a further draft of the Guidance on the Department's website in 2014. The Guidance will be laid before the Assembly in 2014 for the statutory period (30 calendar days or 5 sitting days) before coming into force.

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1. Introduction

Summary

1.1 The purpose of this document is to provide the Northern Ireland Authority for Utility Regulation ('the Regulator') with guidance on the key environmental and social policies the Minister for Regional Development expects it to contribute to in carrying out its role in regulating the water industry during the 2015-21 period. This guidance has been developed with key water stakeholders² through structures set out in the Water Stakeholders Partnership Agreement³.

1.2 The Executive has continued to make significant investment in water and sewerage services. This has raised the quality of drinking water and improved environmental compliance. The Executive's policy is to maintain these quality levels, deliver affordable service improvements in key customer areas and promote a sustainable industry. Northern Ireland Water's (NI Water) key strategic investment themes for PC15 can be summarised as:

Environmental Improvement & Compliance	<ul style="list-style-type: none">▪ Maintaining water and sewerage infrastructure.▪ Meeting its legal obligations in relation to drinking water quality, wastewater quality, pollution prevention & control.▪ Working in partnership with other agencies to provide the relevant input to joint flood risk management plans & solutions and work towards separating storm water from the sewerage system.
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Service Delivery, Improvement and Affordability	<ul style="list-style-type: none">▪ Providing efficient and cost effective services for customers and taxpayers.▪ Improving customer service levels and targeting key areas such as sewer flooding and interruptions to water supply.▪ Managing and operating water and sewerage assets and estate to promote tourism, recreation & biodiversity.
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Sustainability and Climate Change	<ul style="list-style-type: none">▪ Applying a catchment based approach to investment to reduce leakage, pollution incidents and energy consumption whilst facilitating future development and growth.▪ Mitigating and adapting to climate change in all aspects of investment planning and decision making.
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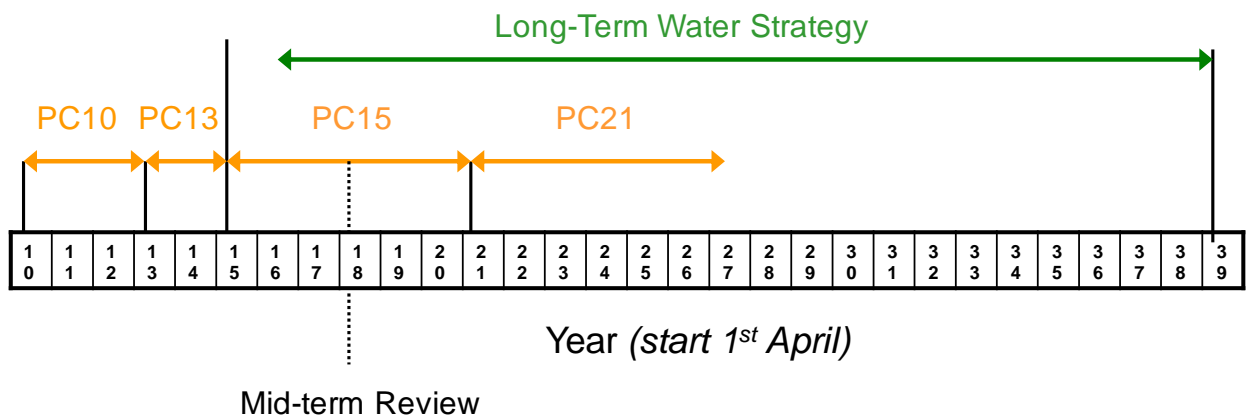
² The Regulator, Northern Ireland Water, NI Environment Agency, Drinking Water Inspectorate & Consumer Council.

³ The Agreement can be viewed at http://www.drdni.gov.uk/water_stakeholders_partnership_agreement_2012.pdf

The Price Control Process (PC15)

- 1.3 This Guidance sets out the strategic priorities for water and sewerage services for the next price control PC15 which covers the 6 year period 2015-21. The Guidance is issued by the Regional Development Minister to the Regulator under Article 7 of the Water and Sewerage Services (Northern Ireland) Order 2006⁴. The Regulator must have regard to this Guidance when discharging its functions. Through the PC15 process, the Regulator will determine the performance targets and the revenue that NI Water can raise through charges during the 2015-21 period. At present, the revenue that is attributable to domestic consumers is provided by government subsidy. While the majority of funding continues to be provided by the Executive final decisions on funding will rest with it.
- 1.4 The Regulator’s first two price controls (PC10 & PC13) covered 3 and 2 year periods respectively. PC15 will however cover a 6 year period (2015-21). This is to facilitate investment planning and assist in delivery of the longer-term water and sewerage measures set out in the Executive’s water strategy - Sustainable Water. This is illustrated in Figure 1.1 below. More information on the Regulator’s price control process can be found at http://www.uregni.gov.uk/water/price_control/.

Figure 1.1 – Long-term Investment Planning



Price Control Periods **24 Year long-term direction (Strategy Period)**

- 1.5 It is recognised that longer investment plans will have a degree of uncertainty. The Regulator has therefore proposed a mid-term review of NI Water’s PC15 Business Plan to facilitate changes to the second half of the 6 year programme. This review should however not be treated as another full price control process. It should instead be used to review the second 3 years of the investment programme in light of any new/emerging priorities and any pilot studies/research carried out. NI Water’s investment plan for the first 3 years should therefore include a well developed plan for the studies, trial work and pilot projects which will be used to fully inform the second 3 years, particularly on sustainable solutions.

⁴ Statutory Instrument 2006 No. 3336 (N.I. 21)

- 1.6 Noting Better Regulation initiatives and the burdens imposed on NI Water by current governance arrangements all stakeholders should consider options to reduce administrative burdens on the Company.

Governance and Funding Arrangements

- 1.7 The Executive has given a commitment that for householders it will ensure no additional water charges during this Programme for Government (2011-15). For the purposes of PC15 planning it is assumed existing governance arrangements will remain in place and that NI Water will continue to receive most of its funding from the public expenditure system (with non-domestic customers contributing the remainder). This means that NI Water's funding figures cannot be confirmed until the Executive agrees its next Budget.
- 1.8 The Executive's Investment Strategy (ISNI)⁵ includes an indicative allocation of £990M for water and sewerage services for the 6 year PC15 period (2015-21). This should be used for investment planning purposes. Final capital allocations will be set through the Executive's Budget process. NI Water should therefore ensure a portfolio of additional projects is prepared and ready to be implemented should additional funding become available through the Budget processes.
- 1.9 NI Water's public expenditure resource requirement for PC15 will be agreed on the basis of the Regulator's determinations. The resource requirement in the PC13 Final Determination should be used for initial planning purposes. The impact on public expenditure should be noted and given equal consideration to the impact on customers who pay directly.

European Funding Opportunities

- 1.10 During the PC15 period, the Department for Regional Development (DRD) will seek opportunities to obtain European funding for the water and sewerage industry. NI Water will be expected to work with DRD to identify funding opportunities and develop and progress potential project proposals. Any successful bids should be progressed through the stakeholders' agreed change protocol process.

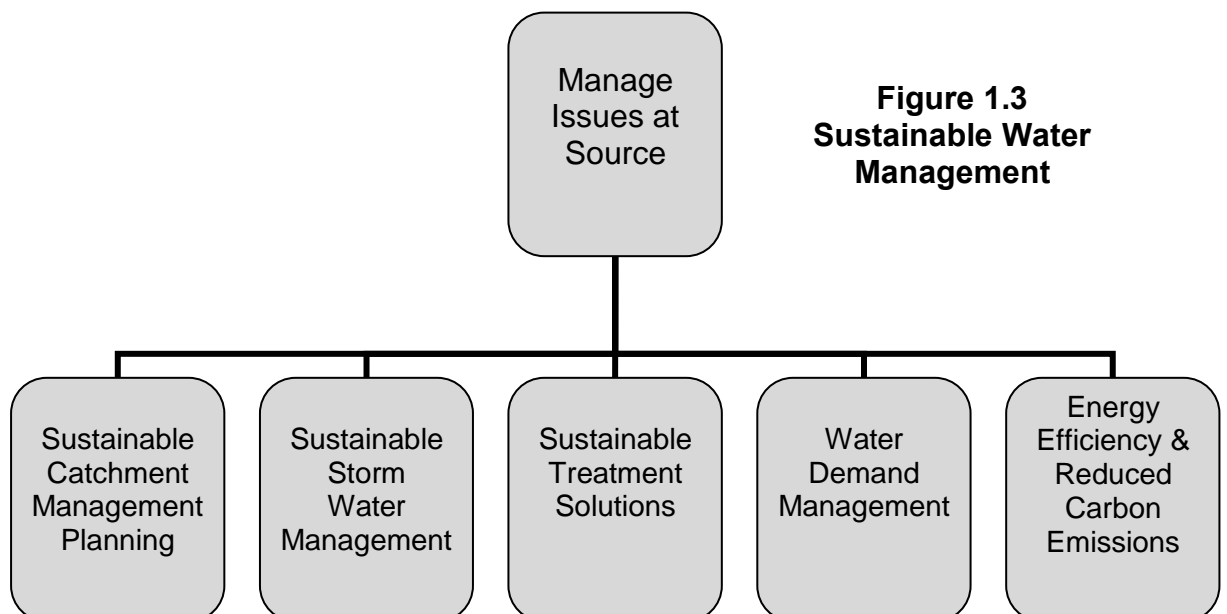
Metering

- 1.11 In line with the Executive's commitment not to introduce additional water charges to households until at least 2015, no move to universal metering is currently envisaged. DRD is reviewing the existing policy of installing meters to new water supply connections, however this still remains a legislative requirement and should continue. Metering should continue to be used as the method of billing the non-domestic sector where possible.

⁵ http://www.sibni.org/investment_strategy_for_northern_ireland_2011_-_2021.pdf

Sustainable Water Management

- 1.12 This Guidance has been informed by the Executive’s Draft Long-Term Water Strategy entitled ‘Sustainable Water’ which sets out a vision for a sustainable water sector. Sustainable water management is therefore a key theme throughout this Guidance and is about managing and investing in assets and infrastructure to improve services and protect the environment without compromising future service provision. It is recognised that NI Water cannot achieve this alone. Changes to planning legislation and building control conditions will also be needed to facilitate sustainable residential, commercial and industrial development.
- 1.13 NI Water’s role will be to deliver efficient, affordable, greener services by improving existing operations and investing in sustainable solutions. This means gradually moving away from traditional high energy water, wastewater and drainage solutions and adopting natural approaches where issues are addressed at source. This will involve consideration by NIEA when developing discharge standards to ensure that the overall benefit to the environment is optimised in terms of both water quality and carbon emissions. Figure 1.3 outlines the approach to sustainable water management and the five key policies to be taken forward during the planning period. These are detailed in chapter 6.



2 Drinking Water Quality & Supply

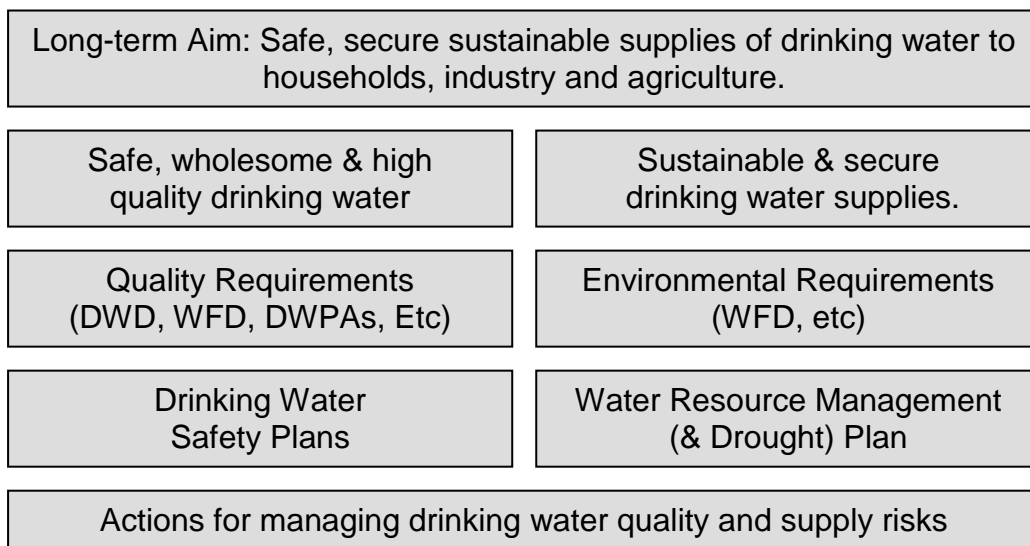
Introduction

2.1 The current high levels of drinking water quality and reduced levels of leakage and bursts have been achieved through a policy of significant investment in water treatment facilities and mains rehabilitation. These improvements should be maintained and investment targeted through a risk management approach to target specific quality and supply issues. The drinking water investment priorities for PC15 can be summarised as:

- safeguard drinking water quality through compliance with statutory European and national legislative obligations;
- provide the investment necessary to maintain the serviceability of the water infrastructure and assets;
- continue to invest in improvements in water quality, leakage, low pressure and supply interruptions; and
- place emphasis on energy efficiency, risk management, sustainable catchment management and water demand management.

2.1 The following paragraphs outline the individual investment priorities for drinking water. Figure 2.1 summarises how drinking water quality and resources should be managed in the water supply chain, from the catchment to the consumers' tap and this has been used to structure the rest of this chapter.

Figure 2.1 Managing Quality and Supply Risks

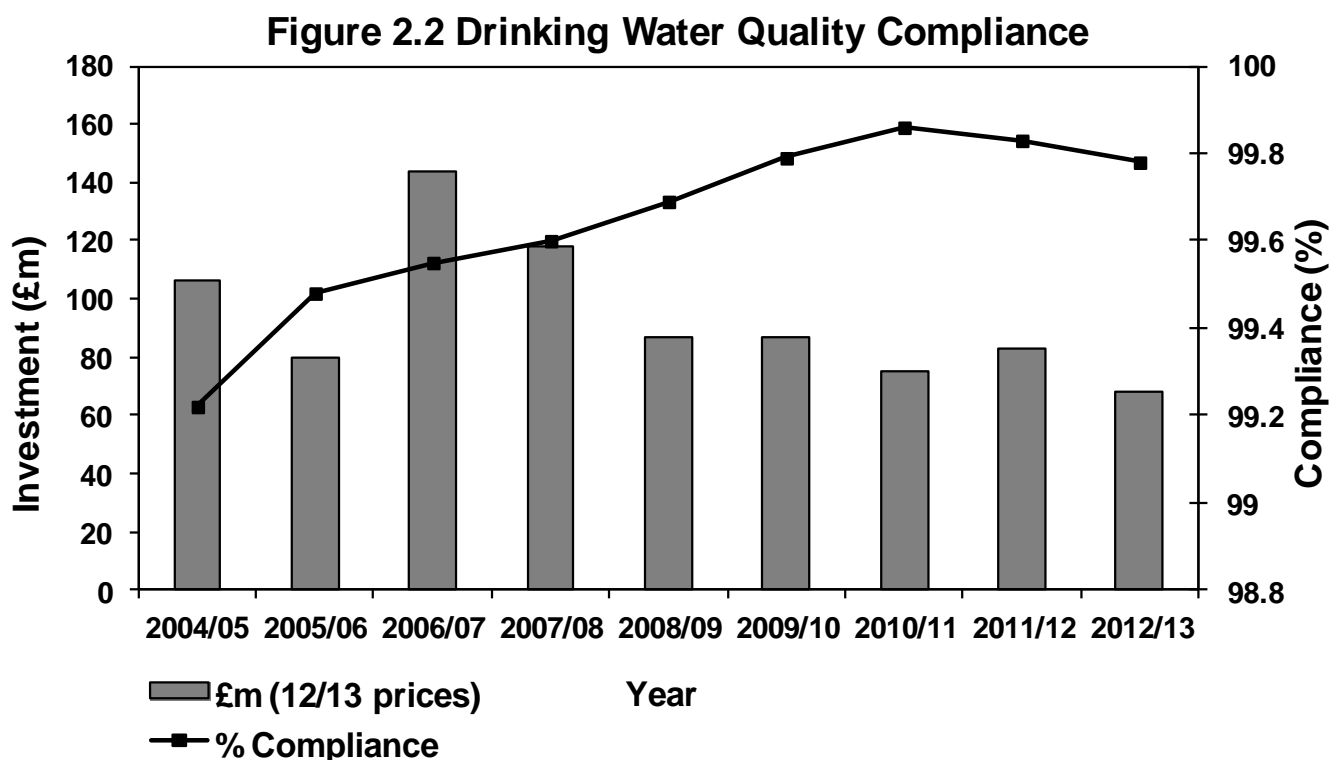


Drinking Water Quality

Drinking Water Directive

2.2 The objective of the Drinking Water Directive⁶ (DWD) is to protect the health of consumers by ensuring drinking water is wholesome and clean. It sets standards for the most common substances (or parameters) that can be found in drinking water. The DWD is transposed into our national legislation for public supplies through the Water Supply (Water Quality) Regulations (NI) 2007⁷ as amended⁸ and the Water Supply (Domestic Distribution Systems) Regulations (Northern Ireland) 2010⁹.

2.3 NI Water abstracts, treats and distributes over 580 million litres of drinking water every day using a supply chain of 25 treatment works, 354 service reservoirs and over 26,500 km of water mains. Over 100,000 tests are carried out each year to monitor the quality of the drinking water across this supply system for a range of microbiological and chemical parameters are monitored and tested. The Drinking Water Inspectorate (DWI) monitors and regulates NI Water’s drinking water quality compliance for each of these parameters. The results are summarised in DWI’s Annual Drinking Water Quality Reports which can be viewed at http://www.doeni.gov.uk/niea/water-home/drinking_water.htm. Figure 2.2 below shows drinking water quality compliance and investment over the last 8 years.



⁶ Council Directive 98/83/EC

⁷ SR 2007/147.

⁸ SR 2009/246

⁹ SR 2010/157.

- 2.4 These high levels of drinking water compliance have been achieved through sustained investment in water treatment facilities and in mains rehabilitation. NI Water must pay due regard to the need for public water supplies to be safe, clean and compliant with the regulatory standards and that provision is made for a sustainable level of asset maintenance to maintain public confidence in drinking water quality. During PC15 the priority is to sustain current high levels of drinking water quality through a risk management approach to address ongoing maintenance, specific water quality issues, and preparing for any new or emerging regulatory requirements or identified risks. NI Water should also work with stakeholders to develop robust targets for tackling current drinking water quality issues and risks.

Priority WQ1	Maintain existing water assets and infrastructure and complete any upgrades needed to sustain current ¹⁰ compliance levels
Priority WQ2	Complete any water infrastructure and treatment upgrades necessary to address enforcement notices and other statutory obligations from the Water Supply (Water Quality) Regulations (NI) 2007 (as amended).
Priority WQ3	Identify and program any infrastructure and treatment upgrades necessary to meet new or emerging drinking water quality issues or legislative changes (e.g. Radon).

Water Fittings Regulations

- 2.5 The Water Supply (Water Fittings) Regulations (NI) 2009 set out minimum performance standards for water using apparatus (e.g. toilets, dish washers, washing machines, etc) by reducing permissible water usage volumes. The Regulations aim to reduce the risk of contamination and reduce wastage of water supplied by NI Water through the use of specified water fittings and methods of installation. The Regulations apply to all plumbing systems, water fittings and appliances connected to the public water supply. NI Water is responsible for enforcing the Regulations in all properties that have a public water supply. NI Water must also comply with the Regulations at its own sites. More information on the Regulations can be found at <http://www.niwater.com/water-fittings-regulations/>.

Priority WQ4	Effectively monitor and regulate compliance with the Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 and manage the risk of contamination or waste of public water supplies through defective water fittings.
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Drinking Water Safety Plans and Drinking Water Protected Areas

- 2.6 The Water Supply (Water Quality) Regulations (NI) 2007 include raw water monitoring requirements to be based on the level of risk in the catchment. This is in line with the drinking water safety plan (DWSP) approach recommended by the World Health Organisation. Under Article 7 of the Water

¹⁰ Overall Compliance > 99.7% & OPI(TIM) > 99.1%

Framework Directive¹¹ (WFD) water bodies used for the abstraction of water for drinking water purposes are to be designated by NIEA as Drinking Water Protected Areas (DWPAs). Appropriate monitoring and protection measures are required to be put in place for these areas.

- 2.7 NI Water and NIEA should therefore continue to work together in implementing their respective responsibilities in relation to DWSPs and DWPAs. This facilitates the identification of trends in raw water quality in a timely manner enabling solutions, other than treatment, to be identified and implemented in line with the WFD principles.
- 2.8 The primary objectives of a DWSP are the identification and mitigation of risks through the minimisation of contamination of source waters, the reduction or removal of contamination through appropriate treatment processes and the prevention of contamination in the distribution network and the domestic distribution system. These objectives are applicable to all water supply areas, irrespective of their size or complexity. NI Water should keep its DWSPs under review through provision of required updated risk assessments to DWI.

Priority WQ5	Continue raw water monitoring programme at abstraction sites to manage drinking water quality risks and work with NIEA to designate Drinking Water Protected Areas to help prevent future deterioration of drinking water sources in line with WFD principles.
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- 2.9 Although standards are being met for most drinking water quality parameters, compliance was not achieved in 2012 for 15 parameters. NI Water's DWSPs should therefore include measures to manage and address all drinking water quality risks associated with the catchment (e.g. pesticides, organic matter), the treatment process (e.g. aluminium, THMs), the distribution system (e.g. coliforms, colour, taste, odour) and supply pipes (e.g. lead). These measures should be prioritised according to the public health risks associated with each exceedance.

Priority WQ6	Through the ongoing review of Drinking Water Safety Plans (DWSPs), develop and implement a prioritised programme of mitigation measures to build resilience against contamination risk for all aspects of the water supply chain (from catchment through to tap) to protect public health.
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Managing Raw Water Quality Risks

- 2.10 Sustainable Catchment Area Management Planning (SCAMP) is a project based methodology by which potential quality issues are resolved at source through land management based solutions rather than traditional high cost, high energy treatment options. Preventing and reducing substances entering our water system is often a more cost-effective and energy efficient way of tackling water quality issues. This is the concept behind sustainable catchment management.

¹¹ Council Directive 2000/60/EC

- 2.11 Through its SCAMP NI project, NI Water is already implementing sustainable catchment management within a number of catchments. This has included working in partnership with a number of organisations, including the Royal Society for the Protection of Birds (RSPB), the Mourne Heritage Trust, the Woodlands Trust, and the Ulster Wildlife Trust, on a number of projects. The recent employment of a full-time catchment officer should facilitate a further roll-out of its SCAMP work to other catchments.

Priority WQ7	Continue rolling out a prioritised SCAMP programme across all drinking water catchments to reduce raw water contaminants through interactive stakeholder working to improve or prevent deterioration of abstracted drinking water quality (e.g. natural organic matter, pesticides) and provide for more cost-effective treatment solutions in the future.
Priority WQ8	Implement the recommendation of the Inter-departmental Group on Wildfires to introduce Bye-laws on NI Water's land and work with the proposed Strategic Wildfire Forum and other stakeholders to manage the risk of wildfires within its catchments (and the risks to raw water quality).

Managing Quality Risks from the Distribution System

- 2.12 NI Water's water distribution system is an extensive network. It consists of 326 service reservoirs and approximately 26,500 kilometres of mains pipe. As water travels through the distribution system, the quality of the water may deteriorate depending on the condition and structural integrity of the distribution system, the nature of the water and the materials it comes into contact with. For example, service reservoirs whose structural integrity has not been maintained are at risk from ingress of microbiological contaminants, and old cast-iron pipes which have corroded over time may result in discoloured or 'rusty' water at the tap.

- 2.13 While there is a general high level of microbiological compliance indicating that the safety of drinking water supplies is good, the overall microbiological quality has reported a reduced level of compliance in 2011 & 2012. NI Water must have a programme in place to ensure all service reservoirs are regularly cleaned and checked for integrity. The company must also have a disinfection policy in place that ensures a residual disinfection is maintained throughout the water supply system for the protection of human health. NI Water must have systems in place which are optimised to ensure that disinfection by-products are kept to a minimum while maintaining microbiological safety.

Priority WQ9	Continue a maintenance programme to ensure all service reservoirs are cleaned and checked for integrity on a regular basis. The company should also ensure that for the protection of human health microbiological quality is not compromised; residual disinfection is maintained throughout the distribution system, and disinfection by-products are kept to a minimum.
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- 2.14 Around 10% of NI Water's water mains are made of cast iron. Deterioration in iron mains can result in discoloured drinking water due to the presence of iron or manganese. In 2012 over 60% of all customer complaints and concerns on

water quality were related to appearance. NI Water has a mains rehabilitation programme to restore/replace the existing water mains pipe work which takes into consideration many factors, including water quality, water pressure, leakage, bursts, and sufficiency of supply. Through the PC15 planning process, NI Water should work with stakeholders to develop and agree quality targets for its PC15 mains rehabilitation programme focussed on addressing iron contraventions and drinking water quality complaints (particularly complaints in relation to colour, taste & odour).

Priority WQ10	Work with DRD, DWI and stakeholders through the PC15 planning process to develop and agree a PC15 investment programme and targets to address iron exceedences & drinking water quality complaints, in particular colour, taste & odour.
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Managing the Quality Risks from Lead Pipes

- 2.15 From 25 December 2013 the regulations require compliance with the final lead standard of 10µg/l. This measurement is taken at customers' taps. Meeting this lead standard is a complex matter because although some lead pipes are owned by NI Water, most belong to consumers.
- 2.16 It is recognised that the most effective long term solution to lead in drinking water is to remove all lead pipes and fittings from the drinking water system. However, this is both expensive and difficult, particularly given that the majority of lead now lies outside NI Water's ownership. This is why orthophosphate¹² treatment is used to reduce the amount of lead dissolved in the water from these pipes. Through the use of treatment and targeted replacement of lead communication pipes throughout the distribution system, NI Water's lead strategy aims to achieve compliance with the 10 µg/l lead standard at the customer tap.
- 2.17 In 2012, just over 97% of all water samples complied with the final lead standard of 10µg/l. A significant amount of work is still required to improve compliance further, particularly on managing the risks from private lead supply pipes. During PC15, NI Water should continue to use treatment and strategic lead pipe replacement to improve compliance with the European (EU) Lead standard (10µg/l¹³). NI Water should also work with stakeholders to develop and implement a strategic risk based approach for addressing lead compliance issues associated with private supply pipes and domestic distribution systems.

Priority WQ11	Continue implementing its strategic lead policy and lead pipe replacement programme focused on improving compliance with EU Lead standard (10µg/l).
Priority WQ12	Work with DRD, DWI and stakeholders to develop and implement a strategic risk based approach for addressing lead compliance issues associated with private supply pipes and domestic distribution systems.

¹² Orthophosphoric acid is an approved treatment method used to reduce dissolved lead in water.

¹³ The permissible limit for lead in drinking water reduces from 25µg/l to 10µg/l on 25 December 2013.

Drinking Water Supply

Water Framework Directive

Water Pricing

- 2.18 The Water Framework Directive¹⁴ (WFD) promotes the sustainable use of water resources through water pricing. Water pricing arrangements for the agriculture and industrial sectors have been in place for many years. The majority of these customers are metered and charged according to usage. This is in line with the WFD's requirement for users to use water resources efficiently and promotes the polluter pays principle.
- 2.19 It is considered households pay around half the costs of their water and sewerage services through their domestic rates. The remaining costs are made up by Government subsidy paid to NI Water on behalf of households. The Executive is currently considering options for the long-term governance and funding of water and sewerage services beyond 2015.

Water Abstraction & Impoundment

- 2.20 The Water Abstraction and Impoundment (Licensing) Regulations (Northern Ireland) 2006¹⁵ provide controls on water abstractions and impoundments in Northern Ireland. All significant operators who have applied to NIEA for a licence to abstract from surface water under the regulations are required to have monitoring systems in place or, in respect of hydro operations, to produce a monitoring plan 3 months prior to commencement of the operation. NIEA needs accurate information on abstractions to carry out its duties¹⁶, to meet the WFD's objectives on preventing deterioration of, and protecting and enhancing the water environment.
- 2.21 In the first round of river basin planning cycles (2009-2015) NIEA are targeting licence reviews and flow monitoring on all licensed and deemed proposals that do not meet high or good water resource flow standards. In addition to this all new significant abstraction proposals may require the installation of continuous flow monitoring.

Priority WS1	Develop, agree and implement water abstraction monitoring and management plans with NIEA.
Priority WS2	Implement any drinking water resource-related measures set out in the Executive's River Basin Management Plans.

¹⁴ Council Directive 2000/60/EC

¹⁵ SR 2006/482

¹⁶ Duties under the Water Environment (Water Framework Directive) Regulations Northern Ireland 2003

Water Resource Management (& Drought) Plan

- 2.22 NI Water’s annual average distribution input has been reduced from circa 735 MI/day in 2001/02 to 560 MI/d in 2012/13. This is a 175 MI/d reduction (23.8%) and represents almost 98 litres per person per day. During the period NI Water should prepare a revised Water Resource Management Plan (WRMP) focused on promoting sustainable water use in line with the WFD. As part of the WRMP, NI Water should prepare and implement a Water Demand Management Strategy focused on reducing water demand and moving towards the Executive’s long-term water consumption target of 130 l/h/d.
- 2.23 The revised WRMP should identify the long-term water resource management and security of supply investment needs and incorporate drought planning requirements. The plan should also identify adaption measures in response to climate change predictions and take account of NIEA’s proposed review of water abstraction and impoundment licences. DRD will issue WRMP and Drought Plan Guidance. NI Water should follow this Guidance in preparing the plan which should be published by 1 April 2017. NI Water should ensure that the plan complies with the requirements¹⁷ of the Strategic Environmental Assessment Directive¹⁸.

Priority WS3	Prepare a revised Water Resource Management Plan (WRMP) to identify the long-term water resource management and security of supply investment needs. The WRMP should incorporate drought planning requirements, identify adaption measures in response to climate change predictions and take account of the review of water abstraction and impoundment licences. DRD will provide Guidance on this to NI Water.
Priority WS4	Develop and implement a water supply investment programme to ensure long-term security of supply (informed by revised WRMP).

Water Leakage Detection & Reduction

- 2.24 We expect NI Water to continue to deliver improvements in leakage during the period. The current focus of achieving and maintaining the Sustainable Economic Level of Leakage (SELL) within its distribution system should continue to inform the water mains replacement and rehabilitation programme. However, NI Water should go beyond the SELL for a supply zone where it is demonstrated (in its revised WRMP) that this will achieve long-term term savings (such as avoiding the need to build new assets/infrastructure to meet future water demand). NI Water will also be expected to work with DRD and other stakeholders to develop and implement a policy on reducing private supply pipe leakage.

¹⁷ Strategic Environmental Assessment is a process to ensure that significant environmental effects arising from policies, plans and programmes are identified, assessed, mitigated, communicated to decision-makers, monitored and that opportunities for public involvement are provided.

¹⁸Council Directive 2001/42/EC.

Priority WS5	Continue to focus on leakage detection and reduction with the aim of achieving and maintaining the Sustainable Economic Level of Leakage ¹⁹ (SELL), and driving below this if recommended in the 2017 WRMP.
Priority WS6	Work with DRD and stakeholders to develop and implement policy on reducing private supply pipe leakage (e.g. in conjunction with lead supply replacement).

Managing Water Consumption

2.25 During the period NI Water should prepare and implement a Water Demand Management Strategy (WDMS) focussed on reducing water consumption and moving towards the Executive's long-term water consumption target of 130 l/h/d. It is recognised that metered water charges are the most effective means of incentivising consumers to conserve and use water efficiently. The continued roll-out of meters to non-domestic customers should therefore further incentivise efficient water use in this sector.

2.26 To manage domestic consumption, NI Water should continue to promote water efficiency in homes through education and public awareness campaigns and target school children through continued work of the water bus and school visits, and other educational means. Priorities for education are covered in paragraphs 6.16-17. Through its WDMS NI Water will also be expected to work with DRD and other stakeholders to develop and implement policies in respect of water efficiency measures in homes and businesses. This includes investigating opportunities to work with other government departments, utility providers or NGOs to find mutually beneficial projects in which water efficiency can be highlighted or implemented (e.g. water efficiency and lower energy bills).

Priority WS7	Continue with a programme to install meters for non-domestic water and sewerage customers.
Priority WS8	Prepare and implement a Water Demand Management Strategy (WDMS) focussed on moving towards the proposed water strategy's long-term target of 130 l/h/day.
Priority WS9	Work with DRD and other stakeholders to develop policies in respect of water efficiency measures in homes and businesses. This includes investigating opportunities to work with other government departments, utility providers or NGOs to find mutually beneficial projects in which water efficiency can be highlighted or implemented (e.g. water efficiency and lower energy bills)

¹⁹ This is the level of water leakage where it is no longer cost effective (in carbon and financial terms) to invest in further leakage reductions.

3 Environmental Protection & Improvement

Introduction

3.1 The current high levels of wastewater compliance have been achieved through sustained investment in wastewater treatment facilities. This investment should continue to address any further compliance issues at treatment facilities. However, more emphasis now also needs to be given to sewerage networks to reduce pollution, flooding and development pressures. Wastewater treatment and sewerage upgrades should be aligned through the drainage area planning process. Success in reducing these risks is becoming increasingly important to meeting environmental quality obligations under various European Directives. The priorities can be summarised as:

- maintain the serviceability of wastewater assets and address any immediate development pressures and urgent compliance issues;
- continue a long-term Drainage Area Plan programme focused on reducing development pressures, UIDs, sewer flooding, pollution incidents, sewer infiltration and removing stormwater from combined systems;
- continue a long-term programme of wastewater treatment schemes to improve compliance levels, meet WFD objectives, reduce pollution incidents and meet development needs employing more sustainable low energy, low carbon solutions where viable; and
- work with NIEA and other stakeholders to determine wastewater treatment and sewerage requirements using catchment modelling and Water Framework Directive objectives.

3.2 The following paragraphs outline the individual investment priorities for environmental protection & improvement.

Water Framework Directive (WFD)

3.3 A key long-term driver for environmental improvements is the Water Framework Directive (WFD). This establishes an integrated approach to the protection, improvement and sustainable use of water bodies²⁰. The WFD impacts on the management of water quality and water resources, and affects conservation, fisheries, flood defence, planning and environmental monitoring. It introduces ecological objectives that are designed to protect, and where necessary restore the structure and function of aquatic ecosystems.

3.4 The WFD is delivered through an integrated framework of River Basin Management Plans (RBMPs) across Europe. These plans set the framework for future regulatory decisions within each river basin. Programmes of Measures are included within each plan to try to deliver improvements in water quality. These target pollution pressures, and identify the risk to water bodies with the aim of enabling them to attain good status. For NI Water, this means putting appropriate treatment facilities and sewerage systems in place

²⁰ These include rivers, lakes, transitional waters (estuaries), coastal waters and groundwater.

to protect and improve the quality of our inland and coastal waters. The WFD is therefore a key driver in NI Water's capital investment programme during the PC15 period and beyond.

- 3.5 There are three RBMPs covering Northern Ireland which are developed and produced by the Northern Ireland Environment Agency (NIEA) covering the period 2009-15. These can be viewed at <http://www.ni-environment.gov.uk/wfd>. The second cycle of plans (2015-21) is to be published for public consultation in December 2014. NIEA also regulates the quality aspects of waste water discharges. They monitor and enforce NI Water's compliance with environmental requirements set out in domestic and EU legislation and produce annual reports on wastewater discharge compliance²¹.

Urban Waste Water Treatment Directive (UWWTD)

- 3.6 The Urban Waste Water Treatment Directive (UWWTD)²² is one of a number of existing directives that sit below the WFD. The UWWTD is transposed through the Urban Waste Water Treatment Regulations (NI) 2007²³. Its objective is to protect the environment from sewage pollution through the effective collection, treatment and discharge of waste water. The Directive sets treatment levels based on the size of population (population equivalent) served by the sewerage system and the sensitivity of waters receiving their treated discharges. The UWWTD also requires the designation of sensitive areas for water bodies which:

- are or may become eutrophic²⁴;
- are intended to be used for drinking water and contain high nitrate levels (more than 50 mg/l of nitrates); and
- areas where further treatment is necessary to comply with other Directives (bathing waters, shellfish waters, etc.).

- 3.7 Sensitive water designations are reviewed every four years when additional water bodies can be included. New designations could require higher levels of waste water collection and treatment.

- 3.8 NI Water collects and treats 300 million litres of waste water every day from over 600,000 households and businesses. This involves the maintenance and operation of over 1,100 waste water treatment works, around 1200 pumping stations and the maintenance of more than 14,500 km of sewers. It is therefore no surprise that the UWWTD has been NI Water's main driver for wastewater investment since 2007. Investment in improved wastewater treatment facilities has seen UWWTD compliance²⁵ increase from 43% in 2004 to 96% in 2011. This is illustrated in the Figure 3.1 below.

²¹ Reports can be viewed at http://www.doeni.gov.uk/niea/water-home/regulation_of_discharges_industrial/reg_sewage.htm

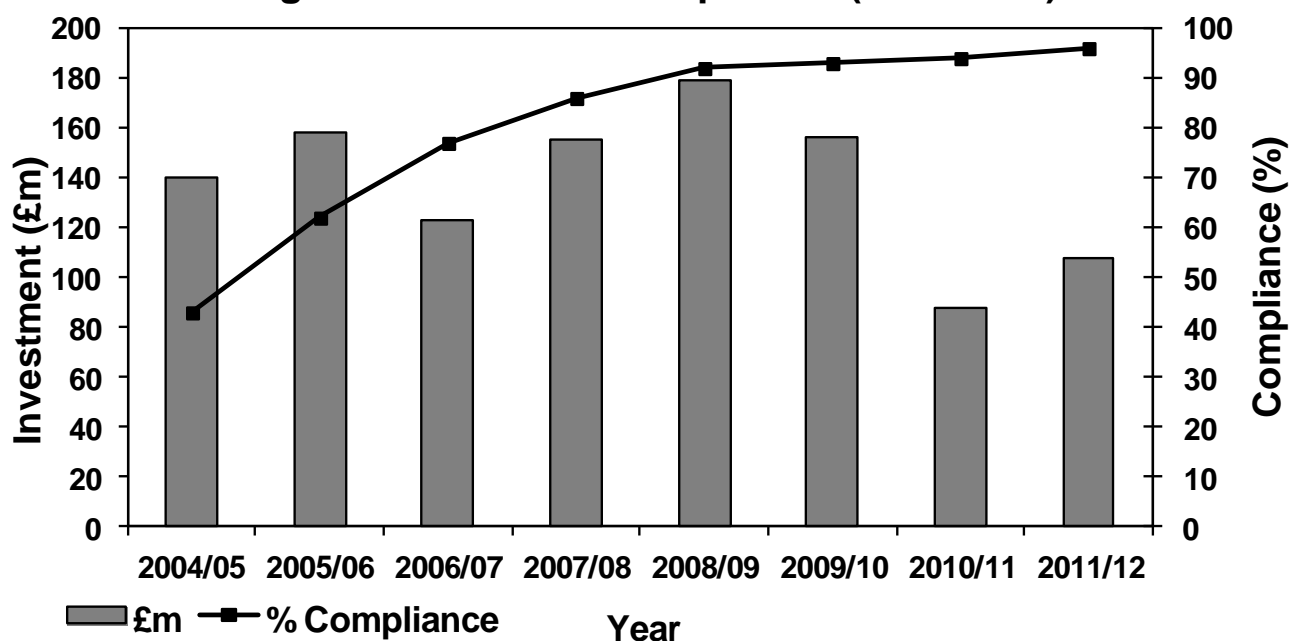
²² Council Directive 91/271/EEC

²³ The Urban Waste Water Treatment Regulations (NI) 1995 first transposed the UWWTD.

²⁴ Eutrophic describes a body of water whose oxygen content is depleted by organic nutrients.

²⁵ UWWTD compliance only covers 79 treatment works and is one of a number of compliance measures.

Figure 3.1 UWWTD Compliance (% WWTW)



3.9 During PC15 NI Water will be expected to improve compliance further by maintaining existing levels of treatment, facilitating growth and addressing non-compliant treatment facilities. This includes installing appropriate flow measurement kit to facilitate the reporting of flow compliance which is to be introduced during PC15. NI Water will also be expected to meet the requirements of the UWWTD and the Pollution Prevention and Control Regulations (Northern Ireland) 2003²⁶ (PPC) in relation to odour management. NI Water should also continue to focus on maintaining and improving existing sewerage systems to reduce unsatisfactory intermittent discharges (UIDs) to inland and coastal waters. In particular, priority should be given to installing reliable sewerage spill²⁷ monitoring equipment at all designated shellfish and bathing waters.

Priority WW1	Continue improving overall levels of compliance with Water Order Consents ²⁸ , the PPC Regulations and the CSO spill requirements of the UWWTD, WFD (including Priority Substances & SWD), MSFD & BWD.
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Urgent Waste Water Priorities

3.10 There are a number of urgent priorities for waste water treatment & sewerage for NI Water during the early part of PC15. These include addressing any treatment facilities that are non-compliant with the UWWTD (e.g. Ballycastle), putting appropriate flow monitoring systems in place at treatment works and providing any additional treatment and sewerage capacity needed to meet immediate development pressures. NI Water should develop and commence a long-term strategy and programme to install effective spill monitoring at sewer overflows (CSOs, EOs). This programme should prioritise the installation of spill monitoring systems at designated bathing and shellfish waters.

²⁶ 2003 No. 46

²⁷ When combined sewerage systems are overwhelmed during intense rainfall, combined sewer overflows (CSOs) enable wastewater to be spilled directly into coastal and inland waters to prevent sewer flooding.

²⁸ Flow compliance is to be introduced into Water Order consents during 2015.

Priority WW2	<p>Develop and deliver a prioritised investment programme on wastewater treatment facilities, pumping stations and sewerage systems to meet:</p> <ul style="list-style-type: none"> • immediate development pressures (& address overloaded works), • flow monitoring requirements (in support of the introduction of flow compliance from 2015); and • any outstanding spill monitoring requirements needed for compliance with the UWWTD, SWD & BWD. <p>And deliver the highest priority schemes during PC15 within the funding constraints.</p>
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Planning & Modelling

3.11 NI Water has completed over 100 Drainage area plans (DAPs) covering most towns and cities. DAPs are used to inform future sewerage investment decisions. A drainage area is a network of sewers that drain to a common hydraulic break point such as a pumping station or treatment works. The DAP consists of an investigation covering hydraulic, structural and operational failure mechanisms, which may result in service (e.g. flooding from sewers) or performance (e.g. pollution of receiving waters) failures. The focus of DAPs is therefore on reducing the risk of sewer flooding and pollution.

3.12 NI Water will be expected to collect accurate and reliable information on wastewater treatment facilities and sewerage infrastructure and develop robust holistic DAPs for all its catchments. These plans should consider sustainable solutions such as storm separation and sewer infiltration reduction as a priority and ensure these options have been adequately explored and costed before other options are proposed.

Priority WW3	Work with DRD, NIEA and other statutory partners in response to the Committee for Regional Development's Inquiry into Unadopted Roads.
Priority WW4	Collect accurate and reliable information on wastewater treatment facilities and sewerage infrastructure to inform development of robust holistic drainage area plans (DAPs).
Priority WW5	Ensure storm separation and sewer infiltration reduction are considered through the DAPs and that these options are adequately explored and costed before being ruled out.
Priority WW6	Work with DRD, NIEA and other statutory partners to develop and implement catchment-based solutions (from Simulated Catchment Management Modelling - SIMCAT) for wastewater collection and treatment.
Priority WW7	Work with DRD, NIEA and other statutory partners to develop a programme and target for installing appropriate spill monitoring systems across the sewerage network.
Priority WW8	Undertake work to develop a sustainable economic level of infiltration (SEIL) to inform sewerage investment decisions and deliver infiltration reduction works where this is assessed to be cost effective in addressing issues.

Priority WW9	<p>Develop and maintain a long-term investment programme for the implementation of the PPC requirements for Odour Management. In the first part of PC15 NI Water should:</p> <ul style="list-style-type: none"> • assess the cost of complying with the PPC Regulations for all sites that are determined to be 'qualifying sites' under proposed NIEA guidance. • develop and agree with NIEA a prioritised programme with the aim of achieving full compliance by the end of the PC15 period (subject to priority & funding constraints). <p>In the second part of PC15 NI Water shall commence the delivery of this programme, with the pace determined by the relative priority of this programme, as guided by the WICG.</p>
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Longer-term Investment Priorities

Waste Water Treatment Facilities (& Pumping Stations)

3.13 Throughout PC15, NI Water will be expected to continue delivery of a steady programme of investment and maintenance in its treatment facilities and pumping stations to reduce pollution incidents, meet discharge consents and meet the PPC requirements. This includes sustaining an annual investment programme in small waste water treatment works.

Priority WW10	<p>Continue a prioritised long-term maintenance and enhancement programme on wastewater treatment facilities & pumping stations to maintain serviceability and meet:</p> <ul style="list-style-type: none"> • development pressures (& address overloaded works); • reduce pollution incidents; • comply with existing/revised Water Order Consents; and • meet the PPC requirements.
Priority WW11	Continue to implement a long-term investment programme focused on providing appropriate treatment at small ²⁹ waste water treatment works.
Priority WW12	Continue to implement a prioritised investment programme on sewage sludge treatment facilities focused on providing appropriate pollution containment and odour abatement.
Priority WW13	Develop and implement a programme to bring existing wastewater pumping stations and treatment works in to compliance with the Water Supply (Water Fitting) Regulations (Northern Ireland) 2009.

Sewerage Systems

3.14 Throughout PC15, NI Water will be expected to continue delivery of a steady programme of investment and maintenance in its sewerage systems (including pumping stations) to reduce pollution incidents and sewer flooding, manage sewerage spills and provide capacity for planned development and growth. The PC15 sewerage priorities are set out below. Additional

²⁹ Small works are defined as those serving a population equivalent of less than 250 people. There are around 800 such works.

sewerage priorities including contributing to the implementation of the NI Marine Litter Strategy (priority TRB5) and consumer education (Priority SSR14) are covered in other chapters.

Priority WW14	Continue a prioritised long-term programme of Drainage Area Plan work to: <ul style="list-style-type: none"> • maintain the serviceability of the sewerage system; • meet development pressures (& address capacity issues); • reduce sewer related flooding; and • reduce UIDs and pollution incidents in line with UWWTD, MSFD, BWD & SWD.
Priority WW15	Work with DRD and NIEA to develop and implement a policy for addressing crossed connections to storm sewers focussed on the WFD's 'the polluter pays' principle.
Priority WW16	Implement any sewerage or potable water related measures set out in the Executive's River Basin Management Plans (RBMPs).
Priority WW17	Continue to reduce the number of pollution incidents through effective investment and operation of the water and sewerage assets.

4 Flood Risk Management & Drainage

Introduction

- 4.1 Instances of surface water flooding in recent years highlight the need for a more holistic and integrated approach to surface water drainage provision and flood risk management. This is recognised in the Executive's PEDU Review³⁰ of the government response to the flooding incidents on 27-28th June 2012.
- 4.2 Extreme weather resulting in flooding of properties and infrastructure is predominant among the potential long term risks associated with climate change for Northern Ireland³¹. If it is accepted that we are likely to experience more regular flooding events in the future, we need to act now to manage that risk. We can't afford to keep putting bigger pipes in the ground or building taller flood defences in all cases, so we need to think differently and sustainably manage flood risk. Such an approach will help make investment go further and reduce the future costs of maintaining and operating the drainage and flood resilience infrastructure. This is in line with the aims of the European Floods Directive on the assessment and management of flood risks.
- 4.3 The Department of Agriculture and Rural Development (DARD) is responsible for developing and overseeing the implementation of Flood risk Management Plans (FRMPs) and as the owner of key drainage infrastructure NI Water, has a major role to play in providing information and support for managing flood risk in urban areas. During PC15, NI Water will be expected to work with Rivers Agency and other drainage agencies to provide an integrated 'inter-agency' approach to managing flood risk across NI. The priorities for PC15 can be summarised as:
- Work with Rivers Agency, DRD, Councils and other stakeholders to develop and implement the relevant parts of integrated drainage solutions to manage surface water flood risk in urban areas;
 - Contribute to development and implementation of sewerage recommendations and policies arising from the Stormwater Management Group in relation to future sustainable drainage planning;
 - Implement drainage and sewerage related measures set out in the Executive's Flood Risk Management Plans (2015-21);
 - Contribute to the delivery of an efficient and effective coordinated response from Government during flooding incidents; and
 - Implement the inspection and maintenance requirements of the Executive's proposed Reservoirs Bill for all controlled reservoirs.
- 4.4 The following paragraphs outline the individual investment priorities for flood risk management & drainage.

³⁰ The PEDU Report can be viewed at <http://www.northernireland.gov.uk/pedu-review-flood-response-june-2012.pdf>.

³¹ DEFRA, 2012. UK Climate Change Risk Assessment: Climate Change Risk Assessment for Northern Ireland - http://www.doeni.gov.uk/climate_change_risk_assessment_ni_2012.pdf

The European Floods Directive³²

4.5 The impact of flooding on individual households, communities and business can be devastating. This is why protecting the needs of the community is at the heart of the Floods Directive approach. It aims to manage the adverse consequences that flooding has on human health, the environment, cultural heritage and economic activity. Flood risk is a measure of the impact of flooding and the likelihood that it will occur. While many areas may be at flood risk, the Directive requires areas at significant risk to be identified and subject to further study. The Floods Directive is transposed in Northern Ireland through the Water Environment (Floods Directive) Regulations (Northern Ireland) 2009. DARD is the Competent Authority for the implementation of the Floods Directive and carries this role out through Rivers Agency. A three stage strategy is being undertaken which will ensure that new plans will be in place to manage flood risk across the country by 2015:

- **Undertake a preliminary flood risk assessment** to identify significant flood risk areas (SFRAs) (by Dec 2011);
- **Produce flood hazard & risk maps** for the SFRAs (by Dec 2013); and
- **Produce flood risk management plans (FRMPs)** containing objectives and measures to manage flood risk in SFRAs (by Dec 2015).

4.6 The process of assessment, mapping and planning is to be reviewed in 6 year cycles, coordinated and synchronised with the Water Framework Directive. More information on the Floods Directive implementation can be found on Rivers Agency's website at <http://www.dardni.gov.uk/riversagency/eu-floods-directive.htm>. NI Water will be expected to continue working with Rivers Agency and other drainage agencies to provide an integrated 'inter-agency' approach to managing flood risk across NI. This includes implementing any sewerage related measures set out in the Executive's FRMPs and meeting the inspection and maintenance requirements of the Executive's proposed Reservoirs Bill for controlled reservoirs.

Priority FRM1	Develop & implement individual sewerage and drainage measures applicable to NI Water as set out in the Executive's FRMPs (2015-21).
Priority FRM2	Implement the inspection and maintenance requirements of the Executive's proposed Reservoirs Bill for controlled reservoirs.

Drainage Planning & Modelling

4.7 As the owner of key drainage infrastructure NI Water has a major role to play in providing information and support for managing flood risk in urban areas. This includes contributing to the development and implementation of integrated urban drainage models and plans, and progressing new policies on sustainable drainage and 'design for exceedence' arising from the inter-departmental Stormwater Management Group. During PC15 it is expected that this work will continue.

³² Council Directive 2000/60/EC

Priority FRM3	Contribute to the development of integrated drainage models and plans to manage flood risk in urban areas including completing any necessary Pilot Projects (e.g. Ballyclare).
priority FRM4	Work with DRD, NIEA and Rivers Agency through the Stormwater Management Group to progress and implement the utilisation of SuDS, design for exceedence and other policies for sustainable storm water management.

Urban Drainage Provision

4.8 The work of many agencies impact on flood risk management. No single organisation has responsibility for drainage in urban areas. It is therefore important that there is coordination between all the drainage agencies. This is recognised in the Executive's PEDU Review³³ of the Government's response to the flooding on the 27/28 June 2012 which recommends: ***'that Rivers Agency, Roads Service and NI Water work with their parent departments to review current flood defence expenditure priorities and report to the Executive on their adequacy to meet the potential threats over the next 10 years.'***

4.9 In line with this recommendation NI Water will be expected to work with Rivers Agency, Roads Service and other drainage providers to develop and deliver joint drainage schemes to manage surface water flood risk in urban areas. For example, Rivers Agency may need to upgrade a watercourse to facilitate a storm separation scheme by NI Water. In some instances, this may mean accelerating lower priority sewerage projects to accommodate delivery of integrated schemes. To encourage more joined-up working, consideration should also be given to widening the scope of Drainage Area Plans (DAPs) to include 'design for exceedence'³⁴, particularly in high flood risk areas. In addition, priority should be given to improving sewer records to ensure robust DAPs can be developed in the future. NI Water should assist in the development of integrated flood modelling in specific locations on a case by case basis, where Stakeholders agree that this is necessary, and the apportionment of appraisal, modelling, and survey costs can be agreed in advance.

Priority FRM5	Consider the costs and benefits of widening the scope of Drainage Area Studies Plans to include 'design for exceedence' in high flood risk areas and include an emphasis on improving sewerage records held on the Corporate Asset Register (CAR).
Priority FRM6	Contribute to the development and implementation of a prioritised Government programme of integrated drainage schemes to manage surface water flooding in urban areas (incorporating storm drains, sewers and watercourses). This includes assisting in the development of integrated flood modelling in specific locations on a case by case basis, where Stakeholders agree that this is necessary, and the apportionment of appraisal, modelling, and survey costs can be agreed in advance.

³³ <http://www.northernireland.gov.uk/pedu-review-flood-response-june-2012.pdf>

³⁴ Design for Exceedence is about putting measures in place to manage excess flows when drainage systems are overloaded.

Sewer Flooding (DG5)

- 4.10 NI Water will also be expected to continue maintaining a register of properties at risk of sewer flooding and deliver a prioritised programme to remove properties from this register. Internal and external sewer flooding has again been identified by consumers as priority for the PC15 period. More information on consumer priorities is included in Chapter 5.

Priority FRM7	Continue to address out-of-sewer flooding problems attributed to NI Water's sewerage and drainage networks.
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Combined Sewer Separation and Infiltration Reduction

- 4.11 Since the 1970's new developments have had to provide separate drainage systems for sewage and surface water. However due to the lack of a suitable river or drain to discharge the surface water, these systems are often merged at the site boundary and connected to an existing combined sewer. Therefore in most urban areas sewage and rainwater are still collected together in combined sewers. Groundwater can also enter sewers through defects. This is known as infiltration and reduces the sewer capacity. This rainwater and groundwater can overload the sewers causing flooding and pollution and costs millions of pounds every year to collect and treat. Sewer flooding is likely to increase with predicted increase in rainfall in the future.
- 4.12 The Executive's long-term policy is to reduce the amount of rainwater in the combined sewers by providing separate storm drains and reducing infiltration. NI Water will be expected to commence a long-term prioritised programme of combined sewer separation and infiltration reduction work. This programme should focus on reducing UIDs, surface & sewer flooding (DG5), providing capacity for development and reducing future operating (power) costs.

Priority FRM 8	Work with DRD, NIEA, Rivers Agency and other stakeholders to develop and commence a long-term storm water separation and infiltration reduction programme focussed on addressing UIDs, pollution incidents, sewer flooding, surface water flooding and providing capacity for development.
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Emergency Flood Response

- 4.13 NI Water's primary responsibility during a surface water flooding incident is to protect its assets and ensure vital water and sewerage services are maintained. But NI Water also has a key role to play in any multi-agency response. NI Water must ensure that it has the plans, equipment and staff in place to respond to an incident in cooperation with other parts of government. This should include robust communications arrangements (integrated with floodline), agreements with other agencies (for example, sandbag protocol with Councils) and tested emergency response plans. During the period, NI Water will be expected to contribute to the delivery of an efficient and effective coordinated response from Government during flooding incidents.

Priority FRM9	Contribute to the delivery of an efficient and effective coordinated response from Government during flooding incidents (in line with PEDU).
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5 Service Delivery, Improvement and Affordability

Introduction

- 5.1 NI Water's performance has steadily improved since its creation in 2007. A major business improvement programme, the introduction of full economic and environmental regulation and Executive investment of over £1.3 Billion have helped drive efficiency, improve service quality and compliance.
- 5.2 Investment targeted at water and sewerage service levels during PC10/13 has seen improvements in customer service. Throughout the period NI Water has continued to improve operational efficiency and performance resulting in lower costs and bills for customers. During PC15, these improvements should continue to ensure customers receive affordable reliable water and sewerage services that meet their needs. For initial planning purposes the draft investment priorities during PC15 can be summarised as:
- improve service levels and target key customer priorities such as drinking water quality, supply interruptions and sewer flooding;
 - review and improve performance in customer service quality and effectiveness through the development of better systems and processes;
 - consider adoption of proven technologies or systems that improve service performance or reduce operational costs; and
 - continue improving efficiency by setting targets and implementing action plans to deliver operational savings.
- 5.3 The following paragraphs outline the draft investment priorities for customer service levels & affordability for the six year PC15 period (2015-21).

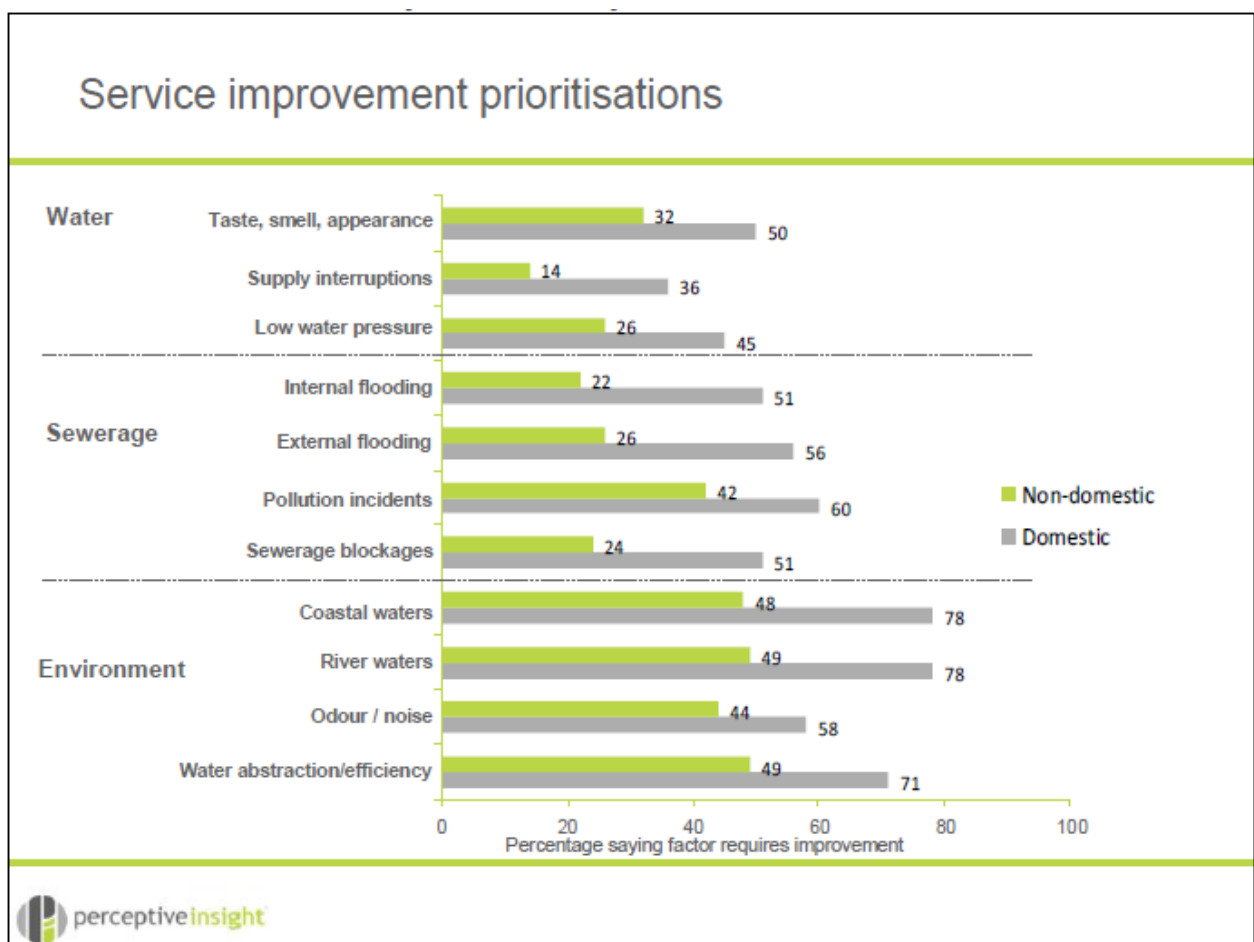
PC15 Consumer Research

- 5.4 To inform development of its PC15 Business Plan, NI Water commissioned a comprehensive study to establish which service areas customers want prioritised and improved during the PC15 period. The research project was overseen by the PC15 Customer Engagement Oversight Group (CEOG) which includes representatives from NI Water, the Consumer Council, the Regulator and DRD. The research was undertaken during 2013 and involved:
- 12 focus group discussions with 97 domestic customers;
 - 17 in-depth interviews with non-domestic customers;
 - A survey of 1,031 randomly selected households (domestic customers) across Northern Ireland;
 - 512 telephone surveys with non-domestic customers.
- 5.5 A significant component of the surveys involved the exploration of service improvement priorities. Consumers were given information about the different service levels NIW provides (water, sewerage and environmental) and were asked to score each service attribute on a scale of 1 – 5 (where 1 was no

improvement required and 5 was a lot of improvement required). Respondents were then asked to identify the top 3 service attributes which they believe require most improvement.

- 5.6 A choice experiment survey was also conducted and administered as part of the survey of domestic customers to investigate the benefits of two levels of achievable service improvement for water, sewerage and environmental service attributes and willingness to contribute to service improvements. The following paragraphs summarise respondents' feedback, highlighting their prioritisations for improvement and willingness to contribute towards water, sewerage and environmental service attributes. It also explores respondents' feedback in relation to customer service and consumer education.
- 5.7 Figure 5.1 illustrates the percentage of consumers who requested improvements in each factor of service. Domestic consumers were more likely to request improvement in all areas of service, with the highest percentages focused in the environmental area, followed by sewerage and then water.

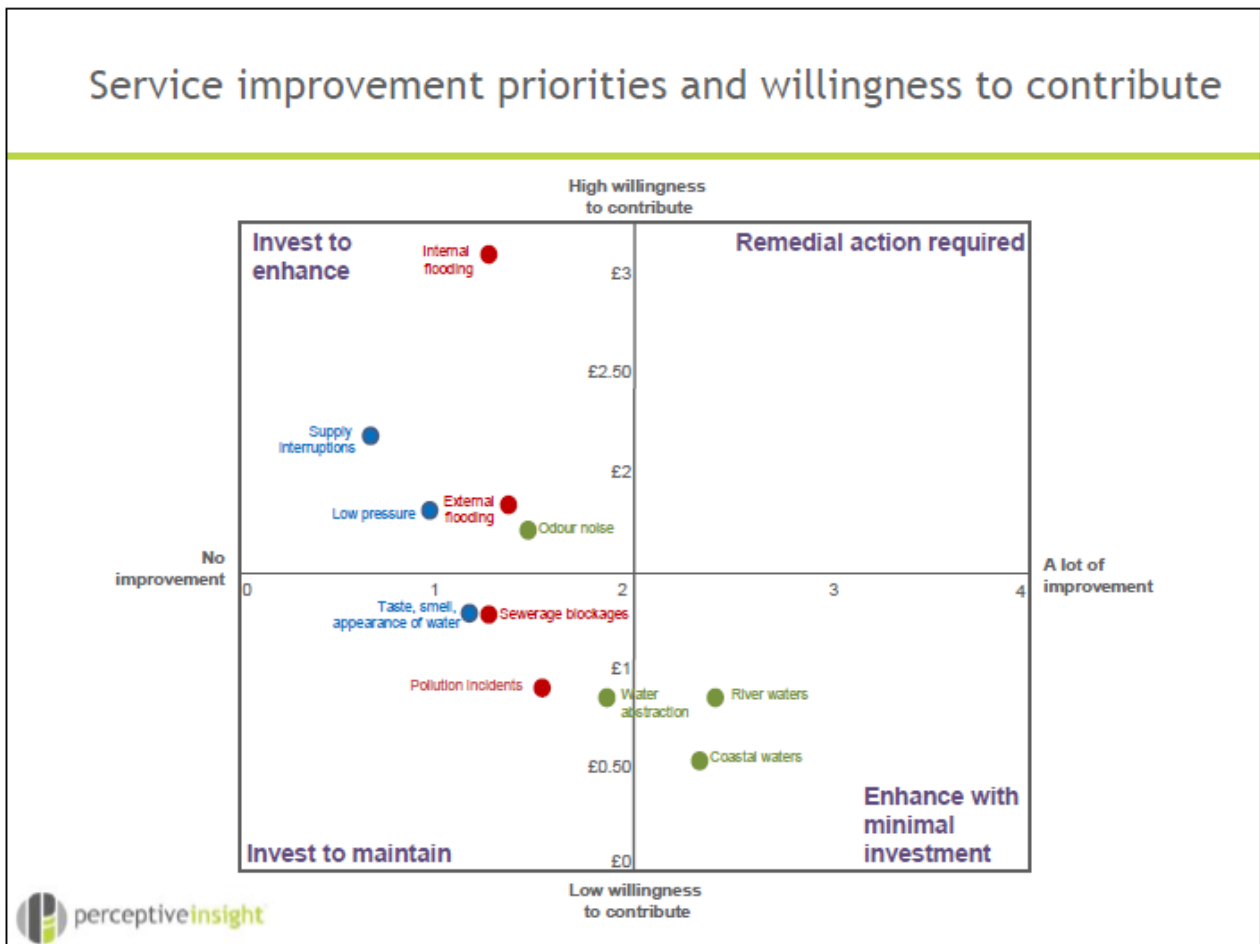
Figure 5.1: Overview of Service Improvement Prioritisations



- 5.8 Figure 5.2 below displays customers' service improvement priorities against their willingness to contribute extra to achieve service improvement to a stated level. It shows that there are no attributes receiving both a high willingness to pay score and a high improvement score, and thus no areas deemed to be

falling well short of customer expectations and requiring immediate remedial attention. This corroborates the viewpoint provided during focus group discussions that domestic customers have experienced few water and sewerage issues in the last 12 months and are therefore mainly satisfied with the current level of service.

Figure 5.2: Summary of domestic priorities and willingness to contribute



- 5.9 There are some service attributes (internal/external flooding; supply interruptions; low pressure; and odour/noise) which received the highest willingness to pay scores in the choice experiment, however were ranked moderately lowly in terms of improvement. It is evident that consumers deem these aspects of service to be vital to lifestyle and business operation (as evidenced in the qualitative research) and therefore are willing to contribute financially to ensure optimum service. However as consumers are typically satisfied with the current level of service, they did not request vast improvements in these areas. Due to consumers' high willingness to contribute, it is these areas which should be kept under review to ensure current service delivery is maintained and long-term strategic investment made to enhance these areas further.
- 5.10 Environmental attributes were prioritised most highly in terms of need for improvement, however received the lowest willingness to contribute scores in

the choice experiment. We consider that such ambiguities demonstrate an 'emotional' desire for improvement. Consumers believe NIW have a corporate responsibility to improve environmental aspects of service, however lack inclination to contribute directly towards these factors of service as they have less of an immediate impact on the household.

- 5.11 While emphasis should be given to the considered decision-making that is based on the willingness to contribute to service improvement, the emotional desire for service improvement should not be ignored. It is possible that it is these 'emotional' service improvements that will assist NI Water to determine the focus given to low/no cost service improvement options that will win the company improved esteem among their customers. Some service attributes (sewer blockages; taste/smell/appearance; pollution incidents) received both a low willingness to contribute and improvement score. Therefore consumers appear satisfied to maintain the current level of service in these areas.

Consumer Education

- 5.12 Respondents placed high priority on educating consumers to be more water efficient. It was evident that customers recognised the potential impact that this service improvement would have on improving provision in other areas, such as reducing abstraction levels. Feedback revealed that domestic and non-domestic customers tend to lack knowledge of the information and support materials available from NI Water to encourage water efficiency.
- 5.13 Similarly, the prioritisation given to educating consumers on waste disposal was highlighted spontaneously throughout the qualitative research and evidenced in the quantitative surveys. Many respondents recognised that investment in this area could reduce sewer blockages and thus reduce flooding incidents. Whilst a small number of participants expressed awareness of the 'Bag It And Bin It' campaign, it was evident that the majority either 'missed' this campaign or believe that more could be done to raise awareness.
- 5.14 Therefore, there may be merit in reviewing communication mediums and considering ways in which campaigns may reach a wider audience and understanding why people have missed previous campaigns. This may require assessing the strengths and weaknesses of previous campaigns. Priorities for consumer education are covered in paragraphs 6.16-17.

Customer Priorities for Customer Service, Information & Communication

- 5.15 On the whole, feedback through the research suggests that customers are generally satisfied with the current service provision, which is evidenced by the fact that many have not had reason to make contact with NI Water.
- 5.16 The quantitative survey of domestic consumers did not specifically assess recommendations to improve the customer service experience. However, it did explore preferred mediums for communication. Domestic customers cited

personal telephone call as their preferred communication medium across a variety of scenarios:

- To report a critical service issue e.g. flooding or interruption (94%);
- To report a critical service issue affecting lots of people (93%);
- To help NI Water e.g. report a burst main (91%);
- To report a less critical issue (85%).

5.17 The telephone survey of non-domestic customers assessed the extent to which respondents would like to see improvements to customer service attributes. Around one third (30%) believe that improvements are required to the customer service experience. A further 29% requested improvements to billing and invoicing processes. In terms of overall priorities, non-domestic customers tended to prioritise billing/invoicing processes over other aspects of service. Comparatively to domestic customers, businesses cited personal telephone call as their preferred communication medium for a variety of customer service scenarios.

5.18 Business customers appear to be less satisfied with the customer service provision than domestic customers. This may stem from the fact that non-domestic customers face billing charges, and therefore have more interaction with NI Water than householders. Indeed, non-domestic customers' main recommendations for improvement were primarily in relation to the billing experience, with requests for more frequent bills, better accuracy, and clarification on bill format and content. Qualitative feedback reiterated that non-domestic customers' key actions in terms of investment were primarily in relation to billing. Again, this included reviewing the frequency of bills to ensure better regularity, providing further guidance on how businesses can monitor their own consumption to reduce bills and providing more information on allowances available to businesses.

5.19 Despite such recommendations, non-domestic customers are not particularly willing to pay any extra to improve the customer service experience. 10% of businesses indicated that they would be willing to pay extra (8% indicated that they would be willing to pay a little bit, while 2% stated that they would pay quite a bit), while 4% were not sure and 86% were not willing to pay any extra to fund service improvements.

5.20 The draft investment priorities for customer service, information & communication during PC15 are set out below. These are informed by customer priorities identified for PC10/13 and the feedback received through the PC15 consumer research.

Priority CS1	Continue to review and improve performance in customer service quality and effectiveness through the development of better data and information systems and customer focussed processes and policies.
Priority CS2	Improve the accuracy, reliability, security, and consistency of billing information including enabling customers to self serve.

Priority CS3	Adopt any proven technology or systems that provide tangible benefits in terms of improving service performance or reducing operational costs, whilst ensuring the resilience and security of essential control and monitoring networks. (e.g. ICAT programme)
Priority CS4	Continue improvements in handling customer queries, complaints and billing (DG6-9).
Priority CS5	Work with stakeholders through the Customer Measures and Satisfaction Group (CM/SAT) to develop more consumer focussed performance measures, including: <ul style="list-style-type: none"> i) New consumer satisfaction (CSAT) Key Performance Indicator which gives a measure of customers' overall satisfaction with the service provided by NI Water; and ii) Adoption of industry best practice measures for performance on handling customer contacts for example: <ul style="list-style-type: none"> - customer contact levels (through all communication channels); - first point of contact solutions; and - repeat contacts.

Customer Priorities for Water Service Levels

Drinking Water Quality

5.21 While the taste, appearance and smell of tap water is a very important aspect of service provision to customers, as identified through the priority given to it in the survey (particularly by domestic customers), the research findings indicate that current provision is largely meeting customer expectations. Therefore the key focus for NI Water should be towards maintaining the current level of service provision and ensuring that should service provision levels fall, issues are quickly identified and addressed. Clear drinking water quality measures should be developed to target water mains investment to improve and maintain drinking water quality.

Priority CS7	Develop quality drivers and measures for the water mains rehabilitation programme informed by drinking water quality monitoring and customer complaints (iro colour, taste & odour).
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Supply Interruptions

5.22 Research findings suggest that continuous water supply is deemed to be crucial to both domestic and non-domestic customers alike. While the priority given to improving this aspect of service was relatively low, it seems that this can be attributed to perceptions that supply interruptions are generally infrequent and short-term. As respondents recognise the importance of water supply, they are willing to contribute to ensuring as few interruptions as possible. The priority should therefore be to invest in reducing the number of properties that experience unplanned and unwarned supply interruptions.

Priority CS6	Continue to reduce the number of properties that experience unplanned and unwarned interruptions to drinking water supply in excess of 3/6/12/24 hrs (DG3).
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Water Pressure

5.23 Similarly to findings in relation to supply interruptions, customers appear relatively satisfied with current pressure levels. Drops in pressure are relatively infrequent, and thus, improvements are moderately prioritised. However customers recognise the impact that a fall in pressure can have on both lifestyle and business operation, and are therefore willing to contribute towards ensuring sufficient levels of pressure. They also suggested that there may be merit in considering investment in the infrastructure to increase pressure levels and reduce the occurrence of supply interruptions. During PC15, NIW should continue to maintain a register of properties at risk of receiving low pressure and continue to remove properties from this register during the period.

Priority CS8	Target areas of low pressure to increase the number of customers who benefit from at least the minimum levels of supply.
Priority CS9	Continue to maintain a Register (DG2) of properties at risk of receiving low pressure and reduce the number of properties on the register over the PC15 period.

Customer Priorities for Sewerage Service Levels

Internal and External Sewer Flooding

5.24 The research findings suggest that customers are horrified at the prospect of internal sewer flooding, both at home and in the workplace. This sentiment was evidenced during the qualitative stage of research, whenever participants used highly emotive language and referred to internal flooding as a 'catastrophe' or 'emergency'. Analysis of service priorities and the choice experiment highlights a keen willingness from customers to place investment in this service area. Although respondents recognised the relatively infrequent incidence of internal flooding, they appeared particularly concerned with the necessity to assist those affected. This area of service also received the highest willingness to contribute score. The main focus for consumers in this instance appears to be in relation to improving systems to assist those affected by internal flooding and ensuring rapid follow up.

5.25 Customers also tended to highly prioritise external flooding incidents, both through their implied willingness to contribute and in terms of recommendations for improvement. Whilst recognised as 'unsightly' and potentially hazardous to the public, respondents also reflected upon potential long-term costs in terms of road repairs and clean-up. Focus group discussions identified a strategic rationalisation amongst participants, who recognised the potential long-term savings in reducing external flooding incidents, which may therefore have a knock-on impact on reducing the incidence of internal flooding.

5.26 The priority for sewer flooding during PC15 is to establish and maintain a register of properties at risk from internal & external sewer flooding and

reduce the number of properties on the register over the PC15 period. Sewer flooding is also captured in Priority WW12 in paragraph 3.15

Priority CS10	Establish and maintain a Register (DG5) of properties at risk from internal & external sewer flooding and reduce the number of properties on the register over the PC15 period.
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5.27 In addition, work should be undertaken with other key drainage providers to develop and maintain a register of properties at risk of surface water flooding with a view to delivering an integrated programme to remove properties from the register.

Priority CS11	Work with Roads Service, Rivers Agency and other relevant drainage providers to develop a register of properties at risk of surface water flooding to be actioned 'jointly' during PC15 and beyond. NI Water should provide the information on out-of-sewer flooding from sewerage and relevant drainage assets.
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Pollution incidents

5.28 Customer views on pollution incidents appear to stem from an emotional base. Both domestic and business customers indicated that NI Water has a responsibility to reduce pollution from operations and processes. However, respondents were less willing to contribute financially to reduce pollution incidents. Qualitative findings (as gathered from the focus groups) suggest that participants believe they have a social responsibility to improve the environment, however are more inclined to contribute towards aspects of service which affect them directly e.g. interruptions to supply. Priorities to reduce the number of pollution incidents are included in Chapter 3.

Sewer blockages

5.29 On the whole, the research showed that customers appear to be satisfied with the current service provision in relation to the incidence of sewer blockages. Several indicated that they have not been affected by sewer blockages, and thus placed a relatively low level of investment for service improvements in this area. Qualitative findings highlighted some concerns in relation to the extent to which consumers are sufficiently educated about what they can and cannot dispose of in the sewerage system. The priority during the period is to educate consumers on the importance of not flushing inappropriate items down the toilet. This is covered in paragraphs 6.15-16.

Customer Priorities for the Environment & Pollution

Quality of coastal waters & rivers

5.30 This aspect of service is one which illustrates customers' emotional desire for service improvement. Across the quantitative and qualitative stages of research, several respondents requested improvements to coastal waters, and tended to prioritise this aspect of service above other attributes. However, in terms of household willingness to contribute, this area was amongst the lowest valued factor services. Feedback suggests that respondents would like

to see improvements to coastal bathing waters, however are much more willing to contribute towards aspects of service which have an immediate impact on the householder.

- 5.31 Respondents prioritised improvements to the quality of rivers, however were much less likely to place financial stock on this aspect of service. Conflicting responses may be explained by the rationalisations made during focus groups. Participants were highly dissatisfied to learn that 22% of river length was classed as 'good' or 'very good', and reacted with alarm upon being informed of this statistic. However, they also recognised that pollution of rivers can stem from many sources, and therefore queried the extent to which investment by NI Water would have any marked improvement on river water quality. Again, when considering willingness to contribute, householders appear to be swayed by more practical considerations and how service improvements impact them directly. However, they also recognise a corporate responsibility by NI Water to ensure the company is doing all they can to reduce pollution and improve natural water sources.
- 5.32 No specific customer priorities are included for the environment as Chapter 3 sets out investment priorities for environmental protection and improvement.

Odour and noise

- 5.33 Odour and noise were identified as a low priority for improvement but received relatively high value in terms of households' willingness to contribute. This recognises that only a small number of customers are affected by odour and noise but it can have major impact on people's lives and must be addressed. Therefore the focus should be on maintaining the current service provision and reducing odour and noise pollution to ensure as few customers as practically possible are affected by NI Water's operations and processes. Priorities for complying with the PPC requirement for odour are included in Chapter 3.

Water abstraction (leakage)

- 5.34 Consistent with other environmental attributes, respondents prioritised recommendations for improvement to this service area. They tended to highlight the importance of ensuring better water efficiency and thus reducing levels of abstraction. However, this aspect was identified as amongst the lowest valued factor services in the choice experiment. Participants provided a variety of ways in which they believe abstraction could be tackled; including investing in the infrastructure, promoting better water efficiency and utilisation of natural resources. However, it is possible that customers did not fully recognise the personal contribution they could make to this aspect of service, even though they expressed a desire to learn more about how to save water.
- 5.35 Priorities for managing water resources are set out in Chapter 2. These include:
- Preparing a revised Water Resource Management Plan,

- Developing and implementing Water Demand Management Strategy
- Continuing to focus on leakage detection and reduction and achieving the Sustainable Economic Level of Leakage.
- Reducing water leakage

Customer Priorities for Affordability & Efficiency

5.36 While NI Water has successfully reduced its costs since 2007, annual operational costs were still around 24% higher than an average English company in 2011/12. If separate household charges were in place, an average water and sewerage bill here would be £408/yr compared to an average bill of £350 in England and Wales.

5.37 Various local factors including NI Water’s large operating area, length of network , smaller customer base and current governance and funding arrangements contribute to this difference in bills. However, there is no doubt that NI Water’s service delivery costs can be reduced further to close the gap with similar companies in the UK. During the period, NI Water will therefore be expected to continue to deliver efficiencies and savings to reduce operational costs. With energy costs predicted to rise sharply over the PC15 period, one of NI Water’s biggest efficiency and affordability challenges will be to manage future power costs. Priorities for energy efficiency, renewable energy and use of sustainable solutions are therefore set out in Chapter 6.

Priority CS12	Explore opportunities to maximise efficiencies within its existing Public Private Partnership contracts to reduce their long-term running costs.
Priority CS13	Reduce costs by setting targets and developing and implementing action plans to deliver operational efficiencies.

6 Sustainability, Climate Change and Resilience

Introduction

- 6.1 The challenges of delivering water & sewerage services are changing. Climate change is increasing the variability and unpredictability of rainfall, increasing the risk of flooding and increasing water scarcity. Awareness of the 'value' of water will increase the pressure to use water wisely and abstract less in order to maintain the quality of the aquatic environment and sustain biodiversity. Rising consumer expectations, improved understanding, new EU directives and an awareness of the economic value of the natural environment all drive the need for higher discharge standards.
- 6.2 It is unlikely that the best solutions to these emerging issues can be provided by NI Water alone. For example better drinking water quality might best be achieved by land management and pollution control to improve raw water quality, rather than extending treatment processes. NI Water's role will be to deliver efficient, affordable, greener services by improving existing operations. NI Water should also consider its corporate social responsibility towards wider society in developing more sustainable water and sewerage solutions. The priorities for sustainable water management during PC15 can be summarised as:
- **Sustainable Catchment Management:** achieving improvements in raw water quality (and drinking water quality) by managing diffuse pollution within an integrated catchment plan, rather than through energy-intensive treatment processes to deliver progressively marginal reductions in pollution from point discharges of wastewater.
 - **Sustainable Storm Water Management:** managing storm water locally through land management, urban design, the use of SuDS, stormwater separation & infiltration reduction rather than providing progressively larger sewerage systems.
 - **Sustainable Treatment Solutions:** gradually transforming the WWTW asset base so that it costs significantly less to operate and maintain, whilst simultaneously enhancing compliance and providing for growth.
 - **Water Demand Management:** reducing leakage and introducing demand management measures that reduce waste, rather than by increasing water abstraction, treatment and transfer – all with an associated energy demand.
 - **Energy Efficiency & Reduced Greenhouse Gas Emissions:** managing and maintaining the existing water and sewerage asset base to improve energy efficiency and minimise emissions.
- 6.3 The following paragraphs set out priorities for improving the sustainability of water and sewerage service delivery and future investment during the PC15 period.

Project Appraisals

- 6.4 The project appraisal process should be revised to ensure that investment decisions are based on 'whole-life' net present cost (NPC), the calculation of which should include the projected future cost of electricity as issued by the UK Department of Energy and Climate Change (DECC) and the cost of NI Water's inclusion with the UK CRC Energy Efficiency Scheme. Non monetary benefits such as wider environmental and social sustainability should also be considered in appraisals.
- 6.5 In addition appraisals for large capital projects (>£500k) shall also assess the whole life carbon emissions (embedded and operational carbon) for each option. For most projects it is likely that the lowest NPC solution will also offer the lowest whole life carbon emissions. Where there is a marginal NPC difference between a solution with the lowest NPC and a solution that offers significantly lower whole life emissions, the lower emission solution should be selected.
- 6.6 For every WWTW site on which NI Water needs to carry out an appraisal to inform capital investment, due to base maintenance or enhancement drivers (quality, growth or service levels), the project appraisal shall assess if a more sustainable solution option is feasible, and determine any land acquisition requirements. In addition to whole life costs, these appraisals shall consider the wider benefits to society, such as recreation benefits and reduced transport on roads due to less attendance of maintenance vehicles and sludge tankers.

Priority SSR1	Revise the project appraisal process to ensure that investment decisions take account of 'whole-life' costs (including the cost of the CRC Energy Efficiency Scheme) and benefits of proposed solutions. Whole life carbon costs should be factored into appraisals for projects costing over £500k (and any other projects where carbon is likely to be a material consideration). Where there is a marginal NPC difference between a solution with the lowest NPC and a solution that offers significantly lower whole life emissions, the lower emission solution should be selected.
Priority SSR2	Long-term social, economic & environmental sustainability should be considered in all project appraisals.
Priority SSR 3	Explore opportunities with Forest Service and other partners to offset existing and future energy demands (e.g. carbon offsetting through forestry, green energy production through wind turbines or wood chipping).
Priority SSR 4	For every WWTW site on which NI Water needs to carry out an appraisal to inform capital investment, due to base maintenance or enhancement drivers (quality, growth or service levels), the project appraisal shall assess if a more sustainable solution option is feasible, and determine any land acquisition requirements.

Project Planning and Risk

- 6.7 DRD recognises that the development and delivery of sustainable solutions will require a fresh approach to risks. An approach which is too risk adverse can constrain the ability of NI Water to deliver more flexible and responsive approaches as required to deliver core aims of the Executive’s proposed water strategy. It is also recognised that some innovative solutions may not succeed, and may have to be delivered through conventional means.
- 6.8 Another key barrier to the implementation of sustainable solutions in any of these areas is the time it takes to: undertake the strategic studies and pilot trials; address any legislative and regulatory barriers; allocate actions across different stakeholders; secure funding to ensure co-ordinated delivery and; allow the benefits of each stage of development to be assessed before the next stage of implementation begins. The development of integrated sustainable solutions therefore needs:
- careful planning of strategic investigations, trial projects and solution development leading up to project delivery;
 - a more flexible and responsive approach to solutions allowing a phased approach where this is appropriate;
 - funding for innovative development with uncertain outcomes; and
 - the willingness to accept that some solutions will not perform as expected and further investment may be required to secure the desired outcome.
- 6.9 NI Water should carefully plan the early stages of project development and consider risks to project delivery, which may include progressing trial projects and working with other stakeholders to identify solutions and secure support that these risks be accepted and managed. NI Water should also plan for the risks associated with taking on responsibility for infrastructure which affects water and sewerage service delivery but is not currently within its asset base. This includes risks associated with relevant unadopted infrastructure such as reservoirs, drinking water infrastructure, sewerage infrastructure and works; and drainage infrastructure (e.g. culverts and storm sewers).

Priority SSR5	NI Water should carefully plan the early stages of project development and consider risks to project delivery, which may include progressing trial projects and working with other stakeholders to identify solutions and secure support that these risks be accepted and managed.
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Research Development and Innovation

- 6.10 NI Water should maintain and implement a Research Development and Innovation (RDI) strategy with the aim that this will assist improved performance and the delivery of further efficiencies through the timely provision of focused applied research and development support to all areas of business need. Where possible this should be through collaborative projects, such as through UK Water Industry Research, to make full use of opportunities for sharing RDI costs with other organisations.

Priority SSR6	Maintain and implement a Research Development and Innovation (RDI) strategy.
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Renewable Energy

6.11 As our largest single consumer of electricity, NI Water can make a valuable contribution towards achieving Government targets for energy use, greenhouse gases and renewables. The gradual introduction of more sustainable approaches to water and sewerage provision will help manage future increases in energy consumption. NI Water should also set targets for improving energy efficiency over the period. However, it is recognised that NI Water will always require large amounts of electricity to pump and treat drinking water and wastewater and comply with EU quality standards. It is therefore important that NI Water secures energy from renewable sources.

Priority SSR7	Explore opportunities to invest in renewable energy generation to reduce running costs at existing high-energy facilities.
Priority SSR8	Explore opportunities to generate renewable electricity through innovative management of existing water and sewerage assets such as: generating hydro-power from excess water mains pressure; leasing land for wind farms; and installing solar panels at facilities.
Priority SSR9	NI Water shall seek to maintain the level of energy purchased from external renewable sources to that achieved in the PC13 period, whilst increasing the percentage of renewable energy generated by use of its own assets and lands and contribute to achieving the Executive's greenhouse gas emissions reduction target.

Sustainable Treatment & Regulation

6.12 NI Water should invest wisely with the long term aim of gradually transforming the WWTW asset base so that it costs significantly less to operate, whilst simultaneously enhancing compliance. It is recognised that this will be via a wide number of means, and by taking full advantage of every other need to carry out investment on WWTW sites. Part of this will include increasing the number of WWTWs that make use of low operating cost 'sustainable' processes, such as, and not limited to, Integrated Constructed Wetlands (ICW) and lagoon type processes.

6.13 A more sustainable solution is one that provides essential services that the environment can sustain and that each generation can afford to operate and maintain. The 3 defining characteristics of 'more sustainable WWTW solutions' are that when compared to conventional processes they:

- reduce electricity consumption;
- reduce the amount of mechanical, electrical, instrumentation, control & automation equipment - which is expensive to procure, operate and maintain; and

- reduce the quantity of sludge produced - which is a benefit as sludge generates odours and is expensive to thicken, dewater and haul to a disposal facility, where a disposal fee must be paid.

6.14 It is recognised that the development of sustainable WWTW solutions presents NI Water with investment planning and delivery challenges compared to ‘conventional solutions.’ They often require more planning at the appraisal and scope development stages due to increased stakeholder engagement and land purchase. There are also different types of risks to be managed. NI Water resources for appraisal, planning, and project delivery should therefore be aligned to deliver solutions that provide the optimum long term benefits. Appropriate effort should be made to identify and secure sufficient land early in the project phase to give the option of larger footprint process solutions that typically result in lower operating costs. NI Water should also consider the advanced purchase of land to accommodate future expansion of works using more sustainable solutions.

6.15 The priorities include an annually increasing target for delivering sustainable solutions. NI Water should include sustainability considerations in its business cases (where appropriate). This will allow NI Water and stakeholders’ knowledge of ‘sustainable WWTW solutions’ to gradually increase and inform investment in subsequent years. This will allow the necessary specialist project delivery, risk management, and operation skills to gradually increase.

Priority SSR10	Where NI Water believes that a license, consent, or permit proposed or set by NIEA is unnecessarily stringent or does not adequately consider a catchment based approach, NI Water should seek to challenge and resolve this with NIEA initially, and then if not resolved, by escalating this to the WICG for wider consideration and direction by stakeholders. The objective should be to develop more sustainable treatment solutions.
Priority SSR11	Complete a number of sustainable wastewater treatment ‘pilots’ early in PC15 to compare the costs and performance of various options. Develop & commence a long-term investment programme of sustainable wastewater treatment schemes (including the land requirements) with the core aim that this reduces NI Water’s long-term operating costs and emissions.
Priority SSR 12	Identify and secure sufficient land early in the project phase to give the option of the selection of larger footprint process solutions that typically result in lower operating costs. Consider the advanced purchase of land to accommodate future expansion of works using more sustainable solutions.
Priority SSR13	Aim to gradually deliver year on year increases in the percentage of new WWTW investment (assessed by Population Equivalent served) delivered by ‘more sustainable solutions’ so that: By 2020/21 33% of all WWTW upgrades to works serving a PE of <2,000 are delivered by more sustainable solutions. Where viable, more sustainable WWTW solutions should also be used for works serving a PE > 2,000.

Education & Public Awareness

- 6.16 With less funding available in the current economic climate to invest in water and sewerage services, it is important that NI Water manages its assets efficiently to reduce water waste and reduce pollution incidents. An important part of this will be to try and influence consumer behaviour through effective education and public awareness campaigns designed to increase awareness of the need for water conservation and more environmentally friendly lifestyle choices. Over 30% of consumers interviewed through the independent consumer research said that they wanted more education on how they can improve their behaviours.
- 6.17 During the period, NI Water will be expected to continue to invest in education and campaigns to promote prioritised key messages such as the importance of insulating (freeze-thaw), using water wisely (water efficiency), bag it and bin it (preventing pollution) and measures to prevent flooding due to other causes through continued work of the water bus and school visits, and other educational means. NI Water should also seek to develop partnerships with other organisations where there are shared benefits. The Consumer Research has indicated that consumers would appreciate improved education from NI Water. NI Water should learn from the impact of previous campaigns and demonstrate how future campaigns will reach consumers more effectively.

Priority SSR14	NI Water should continue to invest in education and campaigns to promote prioritised key messages such as the importance of insulating (freeze-thaw), using water wisely (water efficiency), bag it and bin it (preventing pollution) and measures to prevent flooding due to other causes through continued work of the water bus and school visits, and other educational means. NI Water should learn from the impact of previous campaigns and demonstrate how future campaigns will reach consumers more effectively.
Priority SSR15	NI Water should seek to develop effective partnerships with other organisations where there are shared benefits of the campaign (such as with DSD on Lead).

Preservation of Services

- 6.18 The Preservation of Services and Civil Emergency Measures (Relevant Undertaker) (Northern Ireland) Direction 2010 lays out requirements for the water industry to make plans and provisions for mitigating the effects of a civil emergency and to preserve services. It is important that NI Water complies with any Guidance issued under this Direction.
- 6.19 Recently NI Water has experienced increased instances of metal theft including copper wiring from telemetry sites and iron covers from manholes. This not only impacts on service delivery but also has health and safety implications. It is therefore important that NI Water ensures its infrastructure and assets are safe and secure.
- 6.20 NI Water has instituted winter preparedness campaigns since the major freeze- thaw event in 2010/11. During the PC15 period, this should continue

along with training staff to respond to major incidents and the use and implementation of Guidance and protocol documents issued under this Direction.

Priority SSR16	Comply with the requirements of the Preservation of Services and Civil Emergency Measures (Relevant Undertaker) (Northern Ireland) Direction 2010 and any supplementary Guidance issued by DRD. <ul style="list-style-type: none"> • Provide DRD with an annual audit laying out the requirements in the Direction.
Priority SSR17	Ensure: <ul style="list-style-type: none"> • All CNI sites continue to meet latest security advice; and • Implementation of a prioritised plan for securing other identified sites to required standards.
Priority SSR18	Provide training and testing of appropriate protocols and Guidance issued under the Direction. Review and update major incident plans to reflect lessons learned.

Resilience

6.21 It is important that our water treatment and distribution systems are resilient to extreme weather events. NI Water has had to contend with a number of different climatic extremes over the last few years including:

- Flooding after intense rainfall in the summer months;
- Prolonged periods of dry weather leading to water scarcity/supply issues;
- Freeze-thaw events following sustained periods of sub-zero temperatures causing 1000s of bursts and major supply interruptions; and
- Wild gorse fires in the peat lands in the catchment during periods of hot dry weather causing ash/residue to enter the raw water source.

6.22 Each of these climatic extremes brings its own set of challenges that NI Water must deal with. NI Water is therefore expected to consider the vulnerability of its services to these hazards and other risks as well as assess the resilience of its water and sewerage assets and systems to inform future investment requirements. Since the major freeze-thaw event in December 2010, NI Water has implemented most of the recommendations in the Regulator's report into the handling of the incident. This has included improving customer communication, information and emergency planning. NI Water is expected to keep these areas under review during PC15.

Priority SSR19	Commence a programme of investment to improve and maintain the resilience of the wider water and sewerage asset base and systems prioritised as follows: <ol style="list-style-type: none"> 1) Water supply 2) Prevention of internal flooding (e.g. due to a sewer pumping station being flooded) 3) Prevention of pollution (e.g. due to WWTWs or SPS being flooded)
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7 Tourism, Recreation & Biodiversity

Introduction

7.1 NI Water has a key role to play in achieving the Executive’s long-term aim of *‘managing our inland and coastal waters to support tourism, recreation and biodiversity.’* Recent improvements in bathing water quality and beach cleanliness have been assisted by higher wastewater treatment standards. Priorities for improvement in these areas are included in Chapter 3. The investment priorities for tourism, recreation and biodiversity during PC15 are:

- Continue to invest in WWTWs and sewerage systems to meet future development needs and compliance requirements.
- Continue to develop partnerships (e.g. SCAMP) with other public, community & voluntary sector organisations to jointly deliver sustainable catchment initiatives.
- Develop and implement a strategy for NI Water estate which focuses on: delivering primary water and sewerage functions; sustainably managing protected areas; enhancing biodiversity; wildfire prevention and mitigation; promoting and maintaining public access to its land (where appropriate); and supporting recreation & tourism.

Estate Management

7.2 It is important that NI Water recognises the wider public value of its land for tourism, recreation and biodiversity. Whilst delivering core services is paramount, NI Water should work with others to promote wider recreational and biodiversity aims. This includes working with Environmental Non-Government Organisations (eNGO’s) and others. Identified areas of biodiversity, including Areas of Special Scientific Interest and Special Areas of Conservation, should be protected and enhanced in line with the Wild Life and Natural Environment Act (Northern Ireland) 2011. Where appropriate, NI Water should seek external funding for recreation and tourism purposes.

7.3 NI Water is expected to develop and implement a long-term estate management strategy in partnership with key stakeholders to enhance the recreational and biodiversity benefits of its land and assets. Consideration should be given to replicating the current partnership arrangement with the Mourne Heritage Trust for the Silent Valley Catchment in other catchments. NI Water should be encouraged to generate income from non-appointed activities such as leasing land for renewable energy generation.

Priority TRB1	Contribute to the development and implementation of the NI Biodiversity Plan.
Priority TRB2	Develop & implement an estate management strategy to take account of: the primary water and sewerage functions; protected areas ³⁵ ; the need to

³⁵ This includes: Areas of Special Scientific Interest (ASSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Nature Reserves, Marine Nature Reserves (MNRs), Ramsar Sites, Natura 2000 Sites, Areas of Outstanding Natural Beauty (AONBs) & World Heritage

	enhance biodiversity; the need to permit public access to support tourism; and the need to increase opportunities for providing recreational amenities for interest groups.
Priority TRB3	Continue to develop partnerships (e.g. SCAMP) with other public, community & voluntary sector organisations to deliver sustainable catchment initiatives.
Priority TRB4	Explore opportunities for leasing NI Water land and assets for leisure, tourism and income generation where appropriate.

Bathing Waters & Clean Beaches

7.4 NI Water has a valuable role to play in protecting and improving the quality of our bathing waters and beaches. Chapters 3 & 6 include priorities to invest in education campaigns and improve wastewater infrastructure and monitoring systems to prevent bathing water pollution and sewage related debris on beaches. NI Water is expected to work with stakeholders to contribute to the implementation of the NI Marine Litter Strategy.

Priority TRB5	Contribute to the implementation of the NI Marine Litter Strategy and the protection of Bathing Waters and Shellfish Waters from pollution.
Priority TRB6	Put a programme in place to reduce the risk of pollution from the sewerage system during PC15, informed by the Marine Conservation Society Pollution Policy and Position Statement on CSOs ³⁶ .

Reservoirs

7.5 NI Water owns 46 reservoirs. Some are now out of service and listed for sale in its Estate Management Plan (EMP). DRD recognises that there are a number of factors that require NI Water's EMP to be revised, including:

- Recent economic issues impacting upon land values;
- The introduction of the NI Reservoirs Bill which will regulate the maintenance of all reservoirs;
- The public amenity value of a number of 'out of service' reservoirs; and
- The liability costs and risks associated with 'out of service' reservoirs.

7.6 To inform the development of reservoir disposal and any associated policy, NI Water should complete assessments for its 'unused' reservoirs taking account of the above factors. In some cases, DRD acknowledges that there is significant public concern about areas that have wider recreational and social value. DRD would welcome views on this issue.

Priority TRB7	Progress the assessment of 'unused' reservoirs to determine the approach to disposal.
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³⁶ <http://www.mcsuk.org/downloads/pollution/CSO%20policy.pdf>

Glossary

Authorised Drinking Water Departure	An authorisation issued by the Drinking Water Inspectorate enabling NI Water to depart from the drinking water quality standards set out in the Drinking Water Directive for a set period of time.
Better Regulation	Delivering policies and laws that bring the greatest possible benefits to people and businesses in the most effective way.
Category A/B Shellfish Classifications	Shellfish Classifications provide a measure of shellfish quality harvested from certain beds. Classifications are determined by the Foods Standards Agency.
CNI	Critical National Infrastructure
Consumer Council	The Consumer Council for Northern Ireland. CCNI represents the interests of water and sewerage customers to NI Water and Government.
Combined Sewer Overflow (CSO)	Combined Sewer Overflows are overflows used in combined sewerage system to discharge storm waste water directly into surface waters to relieve hydraulic pressure in the system under storm conditions.
Combined Sewer	A sewerage system that collects both waste water and rain water.
DEFRA	Department for Environment Food and Rural Affairs. National Government Department, based in London.
DETI	The Department of Enterprise, Trade and Investment
Discharge Consent	All discharges to the water environment are regulated and controlled by NIEA through Discharge Consents.
Discharge Standard	A standard issued by NIEA to allow the discharge of sewage/waste water into a water body, such as a river. The standard will include conditions, to minimise the effects on the receiving water.
DOE	The Department of the Environment, based in Belfast.

Drainage Area Plan (DAP)	A list of necessary sewerage improvements within a catchment area determined by a Drainage Area Study. The DAP normally takes the form of a prioritised list of unsatisfactory intermittent discharges.
DRD	The Department for Regional Development, based in Belfast.
Drainage Area Study (DAS)	A comprehensive study of an entire drainage catchment which uses a vast amount of asset and performance data on the condition, performance and future capabilities of the sewers in a given area.
Drinking Water Inspectorate	The Drinking Water Inspectorate monitors and regulates public drinking water supplies on behalf of the Department for Regional Development. It monitors and regulates private water supplies on behalf of the Department of the Environment.
Economic Level of Leakage (ELL)	The level at which it would cost more to reduce water leaking from pipes than pump more water into them.
EQIA	Equality Impact Assessment. A detailed assessment of a Government policy on equality grounds.
Eutrophic	A body of water whose oxygen content is depleted by organic nutrients.
European Union	The European Union (EU) is an economic and political union of 27 member states, located primarily in Europe. It was established by the Treaty of Maastricht on 1 November 1993 upon the foundations of the pre-existing European Economic Community.
European Commission	The European Commission (formally the Commission of the European Communities) is the executive branch of the European Union. The body is responsible for proposing legislation, implementing decisions, upholding the Union's treaties and the general day-to-day running of the Union
European Directive	European Directives are laws which apply in European Union countries. Examples include: the Drinking Water Directive; the Urban Waste water Treatment Directive; the Water Framework Directive and others.

Flood Risk Management Plan (FRMP)	Under the EU Floods Directive, Flood Risk Management Plans must be prepared at a river basin district level or a set of Plans co-ordinated at river basin district. The plans must include policies for managing flood risk in the long term taking account of the possible effects of climate change. DARD Rivers Agency is the designated authority for the implementation of the Directive.
Investment Strategy for Northern Ireland	The Investment Strategy for Northern Ireland sets out the Executive's priorities for investment in infrastructure (for example new roads, hospitals or sewers) for the years 2011 to 2021.
Independent Review	The Independent Review of Water and Sewerage Services commissioned by the Executive in 2007 to determine the longer term approach for delivering water and sewerage services.
The Minister	The Minister for Regional Development
NIEA	The Northern Ireland Environment Agency
NI Water	Northern Ireland Water
PC15	Price Control 2015-20213. PC15 is the process by which the Regular determines what NI Water should deliver during the period by agreeing the Business Plan for the Company. This will be based on the priorities set out in this Guidance.
PEDU	Performance and Efficiency Delivery Unit in the Department of Finance and Personnel
Population Equivalent (PE)	PE is a measure of the amount of sewage treated by a waste water treatment works.
Protected Areas	This includes: Areas of Special Scientific Interest (ASSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Nature Reserves, Marine Nature Reserves (MNRs), Ramsar Sites, Natura 2000 Sites, Areas of Outstanding Natural Beauty (AONBs) & World Heritage Sites.
Public Private Partnership (PPP)	A PPP is a joint government/private business project which is funded and operated through a partnership of government and one or more private sector companies. A number of NI Water's large water and wastewater

	treatment works and sludge disposal are operated through PPP contracts.
Raw Water	Water abstracted for drinking water purpose before treatment.
River Basin Management Plan (RBMP)	A River Basin Management Plan contains a range of measures aimed at protecting, improving and sustaining the use of the water environment, from source to sea.
Regional Development Strategy (RDS)	The RDS sets out the Executive's broad plans for the future development and planning up to 2035.
Regulator	The Northern Ireland Authority for Utility Regulation
RIA	Regulatory Impact Assessment. A RIA is an assessment of the impact of a policy in terms of its costs, benefits and risks.
Rivers Agency	The Rivers Agency is an agency of the Department for Agriculture and Rural Development. The Rivers Agency is responsible for managing the risk of flooding from rivers and the sea.
Section 75	Section 75 of the Northern Ireland Act 1998. This law requires the Government to have due regard to the need to promote equality of opportunity. Government policies must be reviewed, in a process known as 'screening'. If this screening identifies a potential equality issue then an EQIA (see above) must also be completed.
Sewerage system/ infrastructure	A system of pipes and ducting which collects and transports sewage.
Sustainable Drainage System (SuDS)	A drainage system that controls the quantity and quality of run-off waters by providing storage in tanks or ponds. This delays or prevents discharge to streams or rivers until there is capacity to accommodate it.
UKWIR	UK Water Industry Research – a research organisation for the water sector in the UK.
Water Resource Management Plan	A water resources plan shows how a water company intends to maintain the balance between supply and demand for water over the next 25 years.

Waste Water Treatment Works (WWTWs)	The treatment plant or site where sewage/waste water is received, treated and discharged.
Water Safety Plan	A Water Safety Plan (WSP) is the most effective way of ensuring that a water supply is safe for human consumption and that it meets the health based standards and other regulatory requirements. It is based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain from catchment to consumer.
Water Service	The Water and Sewerage Services Order (Northern Ireland) 2006 set up “undertakers” to deliver water and sewerage services. NI Water has been appointed as the undertaker. Before then Water Service, which was a part of the Department for Regional Development (DRD), ran the water and sewerage industry.
WICG	Water Investment Coordination Group. This Group is made up of key water stakeholders including the Department, the Regulator, NI Water, the Consumer Council, the NI Environment Agency & the Drinking Water Inspectorate.
Water Treatment Works (WTWs)	The treatment plant or site where raw water is treated to provide safe and wholesome drinking water for public supply.

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