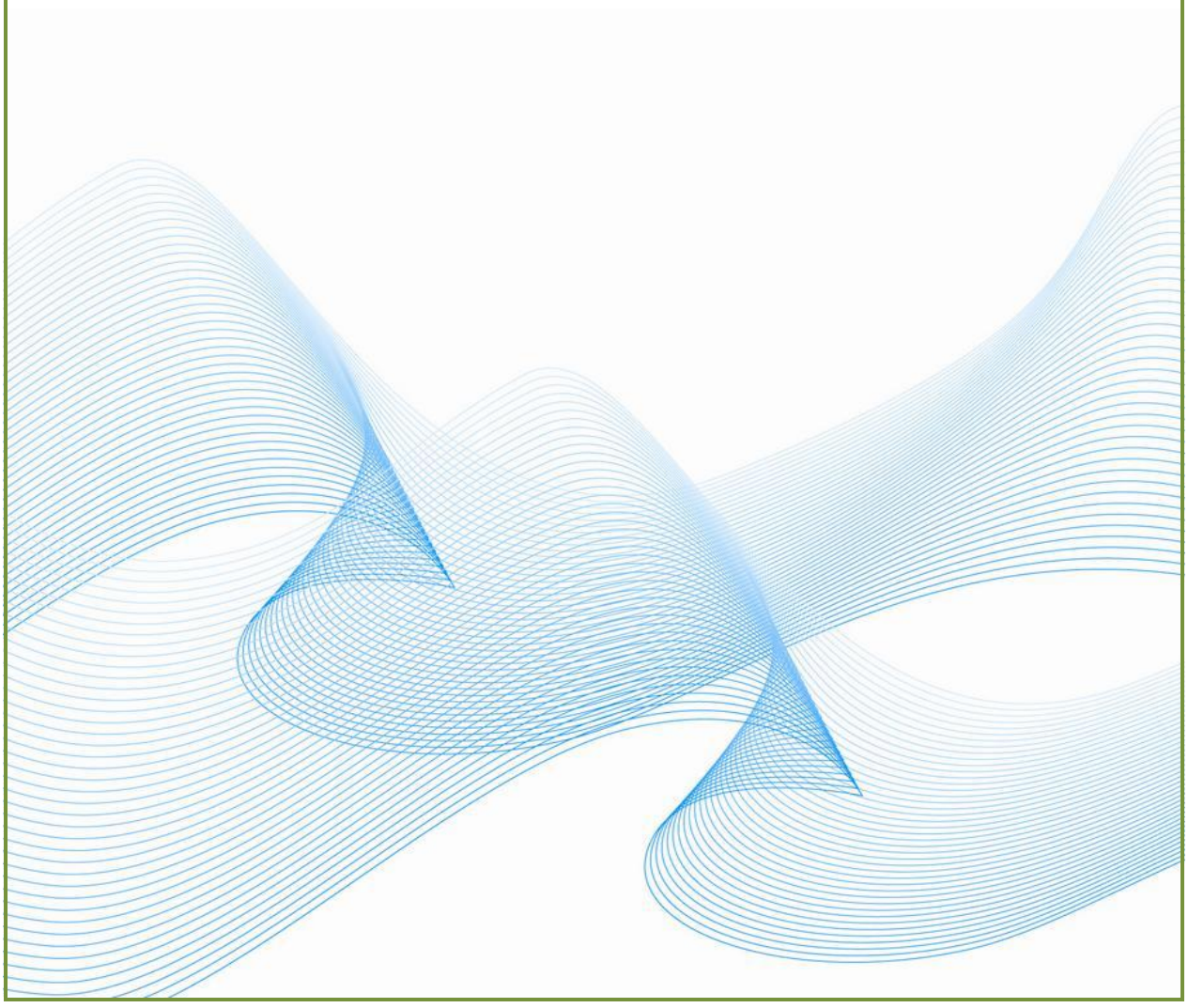
Utility Regulator
ELECTRICITY GAS WATER

Water and Sewerage Service
Price Control 2010-13

Final Determination Main Report

February 2010



Water and Sewerage Revenue and Charges Price Control 2010-2013

Final Determination Main Report

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1.0 Introduction

1.1. PC10 Final Determination of K Factors

1.1.1. When arriving at our final determination for NI Water for 2010-13, our primary duty is to publish the adjustment factors for charges commonly referred to as K factors.

1.1.2. The K factors are the annual percentage increase or decrease in tariff basket charge caps above or below inflation as measured by the Retail Prices Index (RPI). We have set K factors for each of the five tariff baskets to allow for fair allocation of revenue to be raised from each customer group. The K factors for this final determination are set out in Table 1.1.

Table 1.1 – K factors for PC10

Tariff Basket	2010-11	2011-12	2012-13
Unmeasured water supply	-2.7%	-3.3%	-4.7%
Unmeasured sewerage supply	1.9%	1.4%	1.0%
Measured water supply	-1.8%	-1.8%	-1.8%
Measured sewerage supply	4.3%	4.3%	4.3%
Trade effluent	-1.3%	-1.3%	-1.3%
Overall K factor	-0.2%	-0.6%	-1.2%

1.1.3. The K factors vary between customer groups but the overall K factor is negative throughout PC10.

1.1.4. We have summarised our assessment of the K factors in our "Final Determination Summary Report" which can be found on our website www.niaur.gov.uk/. In this main report we provide further information on our approach to the final determination, and the decisions we made on key issues including the reasonable levels of expenditure, revenue and outputs on which our assessment of K factors is based.

1.2. Background

1.2.1. The Utility Regulator was established to protect the interests of consumers in relation to the supply of water and the provision of sewerage services by water and sewerage undertakers.

1.2.2. Our duties require us to secure that the functions of water undertakers and sewerage undertakers are properly carried out and to secure that a company holding an appointment as a water and sewerage undertaker can properly finance the services it provides to consumers.

1.2.3. The PC10 'Price Control' process is a key part of discharging our duties in respect of Northern Ireland Water Limited (NI Water). Through the PC10 process we determine price limits for NI Water for the three year period 2010-13. These limits are based on our assessment of the lowest reasonable costs which the company should incur in delivering the priorities for consumer services, water quality and environmental compliance which are set out in the Social and Environmental Guidance for the PC10 period produced by the Department for Regional Development.

1.2.4. In September 2009 we published our draft determination for the PC10 period in response to NI Water's Business Plan. In our draft determination we sought representations from NI Water, other stakeholders and consumers. In addition to detailed representations from NI Water we received 16 responses to our draft determination from key stakeholders, public representatives, individuals and organisations. We have all responses in full except one on our website and provided a response to the consultation. We have carefully considered the representations received on the draft determination and the additional information provided by NI Water and we have reached a final determination of price limits for PC10.

1.2.5. We have published a summary of our final determination for PC10 in 'Water and Sewerage Service – Price Control 2010-13 – Final Determination Summary Report'. In this supporting publication and its annexes, we provide more detail of how we arrived at our conclusions on the outputs to be delivered by the company and the reasonable level of costs to deliver these outputs. We have provided this additional level of detail to help NI Water consider our final determination and to inform other stakeholders and consumers.

1.2.6. NI Water obtains its revenue from a combination of direct charges to non-domestic customers, direct charges to the Department for Regional Development Roads Service for road drainage costs, subsidy paid by the Department for Regional Development for services provided to domestic consumers and various charges made for new connections and other direct services provided by the company. The future of charging for water and sewerage services was considered by an Independent Water Review Panel (IWRP) appointed by the Executive in 2007. The NI Executive has yet to finalise its views on the recommendations of the IWRP before reaching further decisions. This final determination does not pre-judge the decisions that the NI Executive will make in due course. The final determination is based on the current structure and sources of funding of NI Water.

1.2.7. NI Water's PC10 Business Plan recognised that its operational activities are relatively inefficient when compared to companies providing similar services in England,

Wales and Scotland, taking account of its particular operating environment. It set out plans to close this gap in 2010-13. However, it recognised that it will still lag behind comparative companies at the end of the PC10 period and there will be further work to do in improving efficiency over time. We agree with these conclusions.

1.2.8. In the development of PC10 we set out a rigorous methodology for reviewing operational efficiency. We have continued this approach for the final determination. We have taken account of additional information provided by NI Water including its updated estimate of expenditure in 2009/10. This revised estimate, which is lower than the projections we made in the draft determination, supports our methodology and confirms that the efficiency improvements which underpin our final determination are realistic.

1.2.9. We challenged the scope, costing and efficiencies of the capital programme and concluded that the company will be able to deliver all the outputs set out in its plan and additional outputs which meet urgent quality objectives.

1.2.10. By challenging the company on the delivery of efficiencies and outputs we believe that we have struck a reasonable balance between a sustainable rate of change for NI Water and the need to deliver best value water and sewerage services to consumers in the longer term.

1.3. Acknowledgements

1.3.1. We wish to acknowledge the efforts of the many stakeholders who contributed to the development of NI Water's Business Plan and this final determination over the period 2008 to 2010.

1.3.2. We acknowledge the contribution of the Department for Regional Development, the Northern Ireland Environment Agency, the Drinking Water Inspectorate and the Consumer Council in formulating the future outputs to be delivered in PC10 and providing us with constructive feedback and advice on the future development of water and sewerage services.

1.3.3. We also recognise the work undertaken by NI Water in developing its PC10 Business Plan, responding to our draft determination and its continued efforts to maintain and improve the essential water and sewerage services it provides.

1.3.4. We are grateful to all stakeholders, public representatives, individuals and organisations who provided us with their views on the draft determination and contributed to the development of this final determination. We have summarised the key changes between draft and final determination in Section 1.4 below.

1.4. Summary of Key Changes from the Draft Determination

1.4.1. In developing our final determination we have reviewed our initial assessment of reasonable costs taking account of the representations received and the additional information submitted by NI Water. As a result, our final determination includes an

increase in capital expenditure of £44m (8.5%) and an increase in operational expenditure of £38m (7.1%) compared to the draft determination.

1.4.2. As a result of these and other changes, we have increased the allowed revenue underpinning the final determination price limits by £45m (4%) from the draft determination. The revenue requirement for the PC10 period is £91 million less than the company's Business Plan submitted in June 2009 and also allows the company to invest £38 million in additional outputs which were not included in its Business Plan.

1.4.3. The key changes between draft and final determination are summarised below.

Additional expenditure identified by NI Water

1.4.4. In its representations on the draft determination NI Water identified additional expenditure over the PC10 period which was not included in its Business Plan submission. The total estimated increase was £14m (pre-efficiency) of capital expenditure over three years (mainly as a result of increased projected costs of water mains) and £5m [1]of operating costs (mainly as a result of projected increases in power costs and rates). We have taken account of these changes for the final determination and included additional costs in our assessment of the extent the company has been able to justify the additional cost.

Disallowed additional operating costs

1.4.5. In our draft determination we considered the additional operating expenditure proposed by NI Water from the 2007-08 base year to establish a baseline operating cost for PC10. We allowed additional costs which were both new and outwith management control. NI Water and other respondents challenged the extent of the additional operating costs identified by the company which we disallowed. NI Water also commented that errors in our assessment of its Business Plan figures had contributed to a stepped change in OPEX. Many respondents commented on the marked difference between NI Water's projected costs in 2009-10 and our determination for 2010-11 which implied an unachievable efficiency adjustment in the first year.

1.4.6. In view of the strength of the representations on the draft determination we asked NI Water to provide further information on its projected 2009/10 operating costs. This showed that NI Water had continued to identify further cost savings in 2009/10 since submitting its representations on the Business Plan which had allowed it to reduce its operating cost forecast for 2009-10. We were pleased to note that the revised OPEX estimate for 2009-10 was below our estimated baseline for PC10, ensuring that the efficiencies proposed for the first year in PC10 are reasonable

1.4.7. We have reviewed the disallowed OPEX for the final determination. NI Water has now provided supporting information for expenditure on continuing business improvement in PC10 which we excluded from our draft determination. Following

[1] The additional costs identified by the company in the consultation response totalled £14m above that in the Business Plan. The £5m stated is the net effect after proper account is taken for the treatment of Kinnegar costs (-£9m).

clarification from NI Water of the scope of proposed adjustments we have included additional costs for power and chemicals.

Extent and rate of the operational efficiency challenge

1.4.8. The current operational efficiency gap between NI Water and the industry benchmark is 49%. This final determination supports NI Water's aspiration to close this gap to between 25%-35% by the end of the PC10 period.

1.4.9. We recognise that reductions in NI Water's workforce may be required to meet the additional efficiency challenge in our final determination. The final determination includes additional costs to fund voluntary early retirement or voluntary severance to support this.

Regional price adjustment (RPA)

1.4.10. In our draft determination we applied a regional price adjustment in our assessment of capital efficiencies to reflect differences in prices in Northern Ireland and average prices incurred by water and sewerage companies in England and Wales which forms the basis of our comparative efficiency analysis. A number of respondents commented on the scale of this adjustment. We have reviewed our assessment to rely, where possible, on nationally published data and concluded that an RPA of -12.2% is appropriate for locally procured goods and services.

1.4.11. The regional price adjustment is applied to only a proportion of the capital programme to reflect goods and services procured in national markets at national prices. Taking account of this, we estimate that NI Water should be able to procure its capital programme at costs which are 6% lower than the average for water and sewerage companies in England & Wales.

1.4.12. In the draft determination we applied the RPA to all expenditure in our assessment of capital maintenance. For the final determination we have reviewed this approach and applied the RPA to the proportion of goods and services which NI Water can procure in local markets.

Unit cost rates for water mains

1.4.13. NI Water and other respondents to the draft determination questioned our challenge to water main unit rates which was based on our analysis of historical activity and costs provided by NI Water as part of its regular information submissions. NI Water provided revised information on historical water mains costs and activity which demonstrated that its historical unit costs were higher than the previous data indicated. NI Water also noted that it wished to increase activity in urban areas compared to the SBP period. NI Water also corrected an error in its allocation of capitalised salaries and on-costs and proposed a further increase in unit rates for water mains which contributed to the additional £14m of capital investment described above.

1.4.14. We have increased the unit rates for water mains to reflect the additional information on historical costs provided by NI Water and included a proportion of the increase proposed by NI Water to allow it to increase the proportion of work it carried out in urban areas.

Capital maintenance

1.4.15. NI Water and other respondents commented on the level of capital maintenance proposed in our draft determination which was lower than that proposed by NI Water. The revision to the RPA and the revision to unit rates for water mains described above have both resulted in an increase in the level of capital maintenance included in the final determination.

Regulatory capital value (RCV)

1.4.16. In the draft determination we allowed additional revenue, equivalent to an increase in the regulatory capital value (RCV), to maintain adequate financial ratios for the company. These financial ratios provide a measure of the financial sustainability of the company. Both DRD and CCNI questioned the need for this change, given the impact on revenue, subsidy and price limits. Our final determination includes an increase in allowed revenue. We have satisfied ourselves that this additional revenue secures the financial sustainability of the company and it is no longer necessary to adjust the RCV for PC10.

1.5. The Price Control Process

1.5.1. We are committed to the principles of better regulation: transparency, accountability, proportionality, targeting and, consistency. We have sought to apply these principles when developing our final determination taking account of the representations received.

Basis of the Price Control 2010

1.5.2. The Price Control process is carried out under Condition B of the Instrument of Appointment for NI Water (the Licence) which requires the company to provide the Utility Regulator with such information as is reasonably required to carry out a review for the purpose of determining the adjustment factor in respect of charges from the 1st April 2010.

1.5.3. The Licence envisaged that the initial price control period would cover a period of five years. At an early stage of the process, stakeholders reviewed this and concluded that a five year price control period carried risks to all parties. The availability and quality of NI Water's data and the difficulty in defining a robust set of outputs for a five year period in a short time scale increased the risk that NI Water would not be adequately funded and the probability that the PC10 Price Control would have to be revised through interim determinations. Following consultation with stakeholders, a three year initial price control period was agreed and NI Water's Licence amended accordingly. The three year

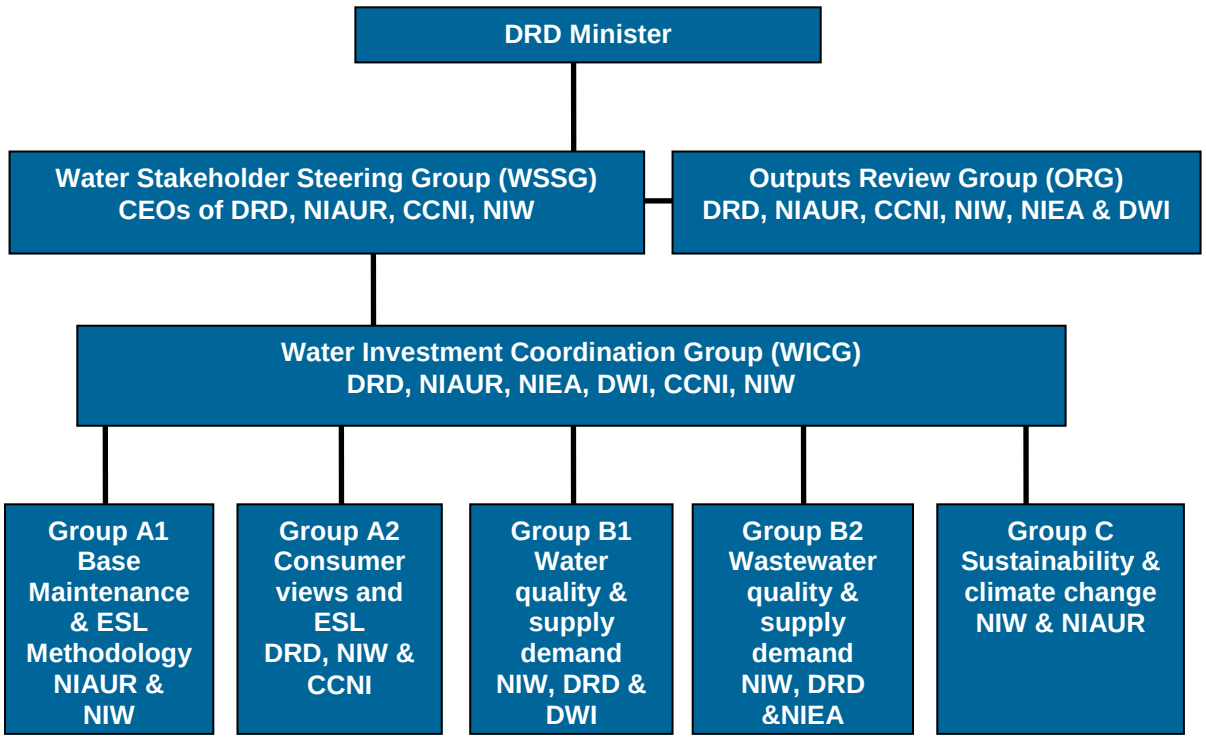
price control affords NI Water the opportunity to improve its data systems and undertake key areas of work to inform a five year price control for the period 2013-18.

Identifying the outputs to be delivered by the Price Control

1.5.4. Working groups were established to develop the outputs for PC10 (see Figure 1.1 below). These working groups included representatives from NI Water (NIW), the Department for Regional Development (DRD), the Consumer Council for Northern Ireland (CCNI), the Drinking Water Inspectorate (DWI), the Northern Ireland Environment Agency (NIEA) and the Utility Regulator. Stakeholders worked together to develop detailed lists of outputs which were endorsed through the main co-ordination working groups.

1.5.5. A key contribution to the development of outputs for PC10 was the work undertaken by CCNI in conjunction with NI Water to survey consumer views. CCNI published the conclusions of this work in 'Tapping into Consumer Views on Water'. Based on the views expressed by consumers and the outcome of the PC10 working groups, the Department for Regional Development prepared Social and Environmental Guidance setting out priorities and outputs for PC10. The guidance which was initially issued for consultation, will be laid before the Assembly for approval. The guidance is primarily directed at the Utility Regulator and we have had regard to it in undertaking the Price Control. Other stakeholders and NI Water have taken account of the guidance when providing input to the PC10 process and developing the Business Plan.

Figure 1.1 - PC10 Working group structure



1.5.6. We have challenged the outputs included in NI Water's Business Plan submission and liaised with the key stakeholders to ensure that they are necessary and remain consistent with consumer views, the Social and Environmental Guidance and the requirements of the quality regulators.

1.5.7. The nominated outputs for the final determination remain unchanged from the draft determination. In some cases we have amended the service level outputs to take account of further information and representations from NI Water. NI Water continues to develop its understanding of its assets and the quality of the current and historical data available to allow it to manage the services it delivers. It was apparent that this process continued to expose weaknesses in some of the targets previously proposed by the company including the projection of targets included in the Strategic Business Plan. We do not believe that it is appropriate to continue with targets, based on poor quality information, which the company is unlikely to deliver. Therefore we have revised selected output targets to levels which we believe are both challenging and realistic based on current information.

1.5.8. We remain concerned that the company's ability to provide clear links between outputs and investment is limited by the quality of asset and performance data available to it. Our final determination includes funding for asset data improvements over PC10. We expect this to lead to more robust output measures in PC13 and continuing improvement into the future.

Obtaining the necessary information for the Price Control

1.5.9. NI Water's Business Plan submission was based on a structured set of reporting requirements which we issued to the company. The company was asked to provide detailed and summary information with a commentary on a range of key issues including:

- The Post 2010 environment;
- Improving efficiency;
- Maintaining service and serviceability to customers;
- Quality enhancements;
- Maintaining the supply demand balance;
- Service strategy and service enhancements;
- Financial projections; and
- Customer bills and tariffs.

1.5.10. In its response to our draft determination, the company has provided additional information which provided further clarification of its submission or provided amended data based on latest estimates. We met with the company to clarify issues arising from the draft determination and to review additional information submitted by the company. NI Water's Board presented its views on the draft determination to the Board of the Utility Regulator.

Scrutiny of NI Water's proposals for PC10

1.5.11. We reviewed NI Water's assessment of its first operating period as a government owned company covering 2007-10 (generally referred to as the Strategic Business Plan or SBP period). The company's forward projections for 2007-10 suggest that it will not deliver all the improvements funded in the SBP. In some cases outputs for the SBP period have been delayed to the PC10 period and funding reallocated to deliver additional outputs within the SBP. In view of this experience we have worked to ensure that the PC10 funding proposals are based on a clear understanding of the outputs which consumers can expect to receive for their investment in water and sewerage services. We have recognised that some of the outputs proposed in the SBP may not be deliverable and we have reviewed these targets based on latest best information to set targets for PC10 which are challenging but realistic.

1.5.12. While we are clear that consumers should not pay twice for the same output, we recognise that the major investment programme delivered by NI Water will be subject to some variation. Based on the experience of the SBP, we will introduce a change control process for PC10 to manage changes to the investment programme which arise from any changes in priorities, objectives or delay to the delivery of outputs.

1.5.13. Where possible, we challenged NI Water's estimate of the cost of delivery against costs incurred by NI Water in the past. The company's expenditure plans were scrutinised by the Independent Reporter who also reviewed key changes in data submitted by the company since the draft determination. We have taken account of his observations in arriving at our assessment of reasonable expenditure for the PC10 period.

1.5.14. We challenged the efficiency of operational expenditure and the costs of the capital programme. We assessed an efficient level of investment by comparing NI Water's cost base with the costs incurred by water and sewerage companies in England and Wales for operating expenditure. The company was given the opportunity to identify special factors and atypical costs, which take account of its particular circumstances and explain differences between the costs it will incur and costs of comparator companies. We have scrutinised these special factors and atypical costs and have made an appropriate allowance in our assessment for the reasonable costs that the company would expect to incur in PC10, alongside its efficiency challenge.

1.5.15. For capital maintenance investment, we have concluded that the company's data and systems are not robust enough to support a bottom up assessment of future costs. In the absence of robust data and systems we have based our assessment of capital maintenance on an econometric analysis of capital maintenance expenditure by water and sewerage companies in England and Wales subject to specific adjustments which reflect the longer lengths of water mains owned by NI Water

1.5.16. We expect the company to improve its asset data and asset management systems over the PC10 period and our final determination makes provision for this. While we recognise that robust asset data and systems will take time to develop, we expect the company to make significant improvements during PC10. Our approach to assessing capital maintenance investment in PC13 will be dependent on such progress being made by the company.

1.5.17. NI Water's analysis of its operational efficiency position shows that it has further to go to catch up with more efficient companies in England, Wales and Scotland. We recognise that it takes time to deliver efficiency improvements. We have therefore set a scope and rate of catch-up over the PC10 period which we believe an effective management can deliver and outperform while ensuring current levels of service are maintained and improved.

1.5.18. We scrutinised NI Water's proposals to finance its activities and the impact this has on its future financial sustainability. We have tested the company's financial position through PC10 against financial ratios commonly used by other regulators, the investment community and rating agencies. Should NI Water meet the challenges set in the final determination it would place itself in a sound financial position.

Continuity into PC13

1.5.19. While our primary objective was to set price limits for the PC10 period we have considered price limits and the overall financial sustainability and efficiency of NI Water in the longer term. We have smoothed the K factors for non-domestic consumers to ensure stability for those consumers who pay direct charges.

1.5.20. We have signalled the scope for on-going efficiency beyond PC10. We expect NI Water to take account of this information and to consider the scope for further efficiencies in its medium term plans. We do not expect the timeframe of the price control period to act as a constraint on NI Water's continuous improvement.

1.5.21. Efficient capital investment in the water industry is dependent on continuity of investment. Working within the timeframe of a price control period could compromise efficiency of capital delivery. NI Water has confirmed that its plan made provision for project development and design during PC10 which will ensure continuity of project delivery at the start of PC13. The effective use of this investment is dependent on stakeholders prioritising the outputs to be delivered in the first year of the PC13 period by the end of 2011-12.

1.6. Delivery of Outputs and Benefits

1.6.1. The investment set out in our final determination will allow NI Water to maintain existing assets and levels of service; improve service to customers; improve compliance with standards for drinking water quality and discharge of treated effluent; and meet needs for development and growth. A summary of the key benefits which will be delivered by the PC10 is set out in Table 1.2. More detailed information on outputs and targets is given in Section 3.0.

1.6.2. As a result of our challenge to the level of capital efficiency in the company's Business Plan, we have been able to make provision for £38m of additional outputs to be delivered in PC10.

Table 1.2: PC10 - Summary of key benefits

Base maintenance	• Investment in the existing assets will maintain levels of service to existing consumers.
Enhance consumers service	• Investment in trunk mains and water treatment works will improve security of supply in areas at risk during drought. • Investment in trunk mains and water distribution mains will target reductions in interruptions to supply and reduce the number of properties supplied at low pressure. • Investment in the sewerage network will address the risk of internal flooding at 200 domestic properties. Further work will be carried out to develop a robust flooding risk register, ensuring continuity of delivery into PC13. • Investment in systems and management will improve NI Water's response to consumer queries and complaints. Additional interim consumer service measures will be introduced and work will be undertaken with CCNI to develop more meaningful consumer measures for PC13. • Completion of a Water Resource Strategy in PC10 will inform future investment in PC13 to secure water supply.
Improve water quality compliance	• Completion of two water treatment upgrades will improve the quality of drinking water. • The completion of drinking water safety plans will identify residual risks to water quality and form the basis of further investment in PC13. • Continued investment in water distribution mains will improve the water quality at the tap as part of a programme to rehabilitate a further 900 km of mains. • Work in PC10 will assess the extent of mains which impact on water quality to support investment in PC13.
Improve environmental compliance	• 43 wastewater treatment schemes to improve the quality of discharge from works >250 pe. • 116 unsatisfactory intermittent discharges will be upgraded to meet quality standards.
Growth and supply demand balance	• The company will be able to continue to connect new properties to the water and sewerage network. • Investment at sewage treatment works will address development constraints due to lack of capacity.
Improve sustainability	• Improvements to existing assets, levels of service and quality enhancements will contribute to a sustainable service. • Further reductions in leakage will reduce water lost to below the short run economic level of leakage (ELL). • The company will determine a sustainable long run ELL which will inform leakage targets for PC13. • The company will continue to increase the proportion of renewable energy used and consider opportunities for renewable power generation. • Carbon accounting will be introduced for significant investments in PC13. • Trials will be carried out on sustainable methods of catchment management and wastewater treatment.
Additional outputs	• £30m of investment in additional outputs focused on addressing development constraints and consent compliance at wastewater treatment works. • £8m to advance expenditure at Killylane WTW subject to the conclusion of further investigations.

1.7. Summary of Future Expenditure

1.7.1. Since our draft determination, NI Water has identified some additional expenditure which increased its overall assessment of expenditure in PC10. Taking account of these adjustments, we estimate that the total capital expenditure proposed by NI Water for PC10 (post efficiency) was £599m of capital expenditure and £634m of operational expenditure over three years (post efficiency, excluding non-appointed business).

1.7.2. We have considered the representations received from NI Water and other stakeholders since the draft determination. We have concluded that the PC10 outputs and the additional benefits set out in this final determination can be delivered for a total capital expenditure of £564m and total operational expenditure of £569m over three years over 2010-13.

1.7.3. We have summarised the future capital and operational expenditure included in our final determination below. For capital expenditure we have summarised expenditure by four 'purpose' categories which are defined as follows:

Table 1.3 - Purpose category definitions

Purpose Category	Description
Base (capital maintenance)	Investment to replace existing assets which have reached the end of their useful life thus maintaining the existing asset base and levels of service delivered to consumers.
Enhanced service improvements	Additional investment to improve the level of service to existing customers. For example: by reducing the risk of sewer flooding or increasing the pressure of water supply.
Growth (supply demand balance)	Additional investment to address the balance of supply and demand. This includes the development of additional water resources, new water mains and sewers to connect new developments and treatment capacity to cater for growth.
Quality enhancements	Additional investment to deliver compliance with new statutory requirements including compliance with EU obligations.

Future capital investment

1.7.4. A comparison of the capital investment in NI Water's Business Plan and the assessment which underpins our final determination is set out in Table 1.4.

Table 1.4: Capital expenditure summary

		Gross expenditure 2010-13 (£m)		
		NI Water Business Plan	Utility Regulator Final Determination	Difference
WATER SERVICE				
Q	Quality	£38m	£27m	(£11m)
B	Base maintenance	£118m	£121m	£3m
E	Enhanced service	£20m	£17m	(£3m)
G	Growth and development	£91m	£61m	(£30m)
Total water service		£267m	£226m	(£41m)
SEWERAGE SERVICE				
Q	Quality	£129m	£138m	£9m
B	Base maintenance	£140m	£130m	(£10m)
E	Enhanced service	£28m	£25m	(£3m)
G	Growth and development	£36m	£46m	(£10m)
Total sewerage service		£332m	£338m	£6m
TOTAL CAPITAL INVESTMENT				
Q	Quality	£167m	£165m	(£2m)
B	Base maintenance	£258m	£251m	(£8m)
E	Enhanced service	£47m	£41m	(£6m)
G	Growth and development	£126m	£107m	(£20m)
Total capital investment		£599m	£564m	(£35m)

Note 1: NI Water costs restated to take account of additional expenditure identified by the company since its PC10 Business Plan submission.

Note 2 Expenditure is in 2007-08 prices before deduction of capital grants and contributions..

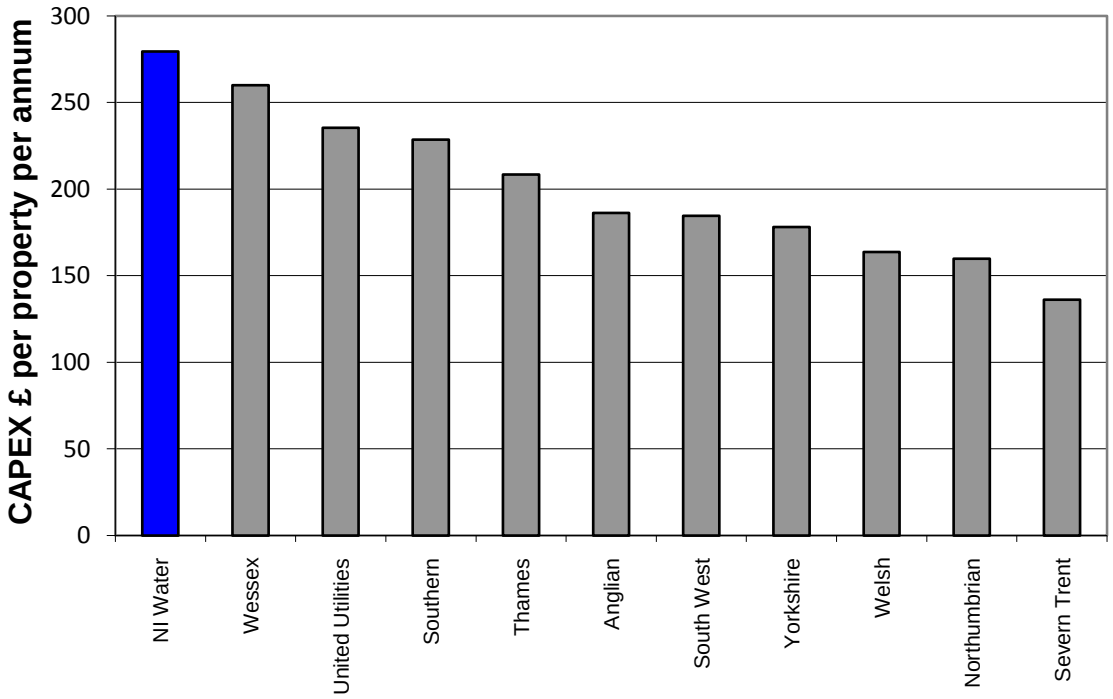
Note 2: Expenditure is post efficiency

Note 3: Final determination includes £38 m for additional outputs

1.7.5. Figure 1.2 shows the capital expenditure for NI Water in PC10 (per annum per property supplied) relative to the capital expenditure included in Ofwat's recent final determinations for water and sewerage companies in England and Wales for 2010-15. The proposed level of future capital investment is £279 per annum per property supplied.

This is 47% greater than the average cost per property supplied included in the recent Ofwat determinations which covers the five year period 2010-15 but close to the upper range of expenditure per property proposed for England and Wales.

Figure 1.2 – Capital expenditure per property in PC10 (2007-08 prices)



1.7.6. The relatively high level of investment by NI Water reflects the need to improve quality compliance, levels of service and management systems towards those achieved by the comparative companies. However, if these higher levels of investment continue into the future it will result in higher levels of subsidy and charges in the longer term.

Future operational expenditure

1.7.7. A comparison between the operational expenditure in NI Water's Business Plan and the assessment which underpins our final determination is set out in

1.7.8. Table 1.5.

Table 1.5: Operational expenditure summary

Operational expenditure 2010-13 (£m)	NI Water Business Plan	Utility Regulator Final Determination	Variance (%)
Total operating expenditure (post efficiency)	£634m	£569m	-10.26%
Annual efficiencies	3.56%	6.48%	

Note 1: NI Water expenditure restated to include additional expenditure identified since the Business Plan submission.

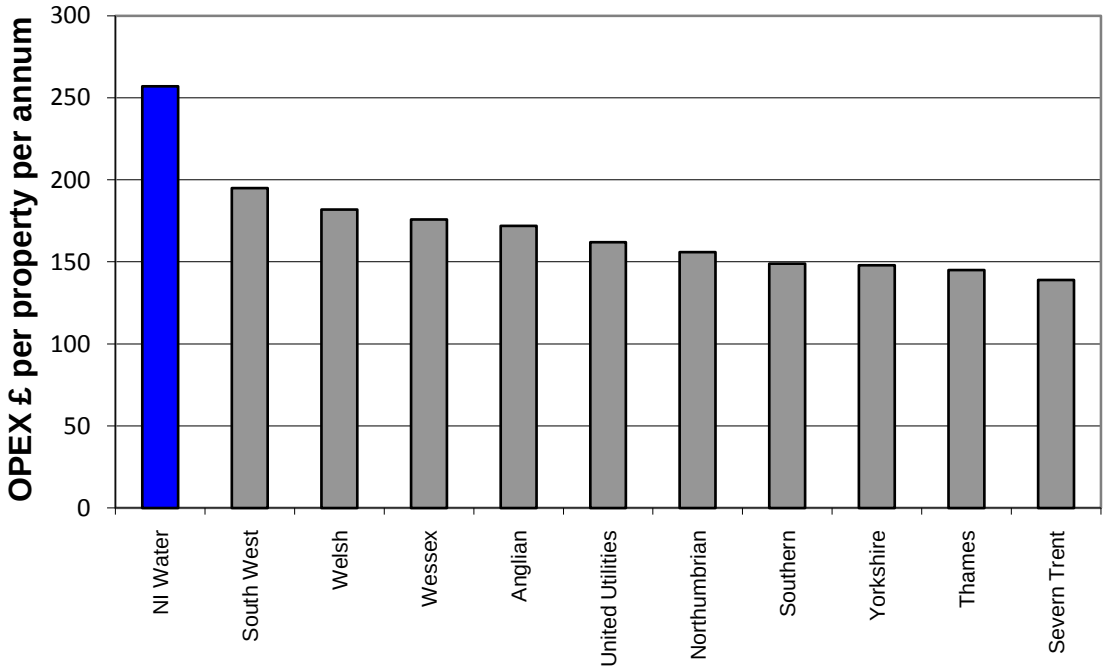
Note 2. Expenditure in 2007-08 prices

Note 3: Expenditure is the total over the three years 2010-11 to 2012-13 including the PPP unitary charge but excluding operating costs of non-appointed business.

1.7.9.

1.7.10. Figure 1.3 shows the operational expenditure for NI Water in PC10 (per annum per property supplied) relative to the operational expenditure included in Ofwat's recent final determinations for water and sewerage companies in England and Wales for 2010-15. To provide a reasonable comparison, NI Water's costs exclude the PPP capital charges which are accounted for as operating costs by NI Water. The proposed level of future operational expenditure for NI Water is £257per annum per property. This is 66% greater than the average cost per connected property included in the recent Ofwat determinations for England and Wales. If the PPP capital charges were included, NI Water's operating expenditure per property is £283 per annum.

Figure 1.3 - Operational expenditure per property in PC10 (2007-08 prices)



1.7.11. The relatively high level of operational expenditure confirms our assessment and NI Water's own assessment that its operational activities are relatively inefficient taking into account the company's local circumstances. We have signalled the need for continuing operational efficiency improvements into PC13.

1.8. Funding Future Investment

The draft Social and Environmental Guidance set out an initial view of the levels of revenue and debt which would be affordable in the PC10 period. These indicative figures are set out in Table 1.6 and

1.8.1. Table 1.7 where they are compared with the levels of revenue and debt proposed in NI Water's Business Plan and in our final determination. We understand however that the actual new debt (borrowing) available in each year of PC10 maybe set by reference to the capital enhancement expenditure required in each year of PC10. This is reflected in our draft determination and shown in Table 1.6.

Table 1.6 - NI Water revenue requirement for PC10 (nominal) (£m)

	2010-11	2011-12	2012-13	PC10
DRD draft Social and Environmental Guidance	£390m	£415m	£440m	£1,245m
NI Water Business Plan	£374m	£397m	£419m	£1,190m
Utility Regulator final determination	£358m	£367m	£374m	£1,099m

Table 1.7 - NI Water borrowing requirement for PC10 (nominal) (£m)

	2010-11	2011-12	2012-13	PC10
DRD draft Social and Environmental Guidance	£130m	£120m	£90m	£340m
NI Water Business Plan	£140m	£140m	£100m	£380m
Utility Regulator final determination	£107m	£99m	£104m	£310m

1.8.2. Our financial model allows us to forecast the required revenue from each customer group. We have assumed for the basis of this draft determination that the current structure of charges will continue for the PC10 period. Based on the current structure of charges and where relevant the associated subsidy allocation, we have derived indicative forecast subsidy levels for the PC10 period.

1.8.3. Table 1.8 shows the indicative level of revenue from each customer group together with the subsidy allocation for each group based on the current structure of charges.

Table 1.8 - Revenue groups for PC10 with subsidy allocation (nominal) (£m)

Revenue Group	Forecast Revenue over PC10 (£m)	Subsidy allocation
Domestic unmeasured water	354	Subsidy and contribution through rates
Domestic unmeasured sewerage	401	Subsidy and contribution through rates
Non-domestic measured water	135	domestic allowance subsidy
Non-domestic measured sewerage	96	domestic allowance subsidy
Non-domestic unmeasured water	7	50% subsidy
Non- domestic unmeasured sewerage	9	50% subsidy
Trade effluent (includes Roads Drainage costs of approximately £60m)	68	0% subsidy
Non tariff basket revenue (includes large users)	28	0% subsidy
Total Required Revenue	1,099	
Note 1. Figures may not add due to rounding.		

1.8.4. On average approximately 73% of the revenue requirement over PC10 i.e. £805m is forecast to be paid through subsidy. The NI Water Business Plan (restated) forecast a subsidy level of £873m over the PC10 period. This draft determination therefore provides a saving of £68m on the level of subsidy over the PC10 period.

1.8.5. Table 1.9 shows the sources of revenue over the PC10 period including revenue from subsidy, Road Drainage re-charge and revenue from charges (non-domestic).

Table 1.9 - Annual subsidy requirement in PC10 (nominal) (£m)

	2010-11	2011-12	2012-13	Overall Total
Subsidy Requirement	262	269	274	805
Roads Drainage Recharge	20	20	20	60
Revenue from charges	76	78	80	234
Total Revenue	358	367	374	1,099

1.9. Content of this Report

1.9.1. We have provided more detailed information on the final determination in the following sections:

Chapter 2: Strategic Business Plan 2007-10.

Chapter 3: Maintaining and improving water and sewerage services in PC10.

Chapter 4: Investing in services.

Chapter 5: Improving capital efficiency.

Chapter 6: Improving operating efficiency.

Chapter 7: Financing investment.

Chapter 8: Sources of revenue.

Chapter 9: Dealing with uncertainty.

Chapter 10: Monitoring delivery.

Detailed information and methodologies are included as annexes.

1.10. Next Steps

1.10.1. NI Water will now consider our final determination for the PC10 period and reach a decision on whether it will accept our determination in its entirety. Under its operating licence, the company must make this decision within two months of the publication of the determination.

1.10.2. If the company decides not to accept our final determination it can ask us to refer the determination to the Competition Commission. The Competition Commission's conclusions would be binding, subject to judicial review by the Courts. Until the Competition Commission makes its decision, the price limits set out in this final determination would stand. In practice, this means that a referral to the Competition Commission could not impact on customer charges in 2010-11.

1.10.3. If NI Water decides to accept this final determination, it will prepare a Monitoring Plan to set the interim milestones in performance that it will deliver in line with the outputs which form part of the final determination. Our monitoring will be against those milestones and against the final outputs required of NI Water in this final determination

2.0 Strategic Business Plan 2007-10

2.1. Introduction

2.1.1. NI Water is reaching the end of is first period of operation from 2007-10.

2.1.2. The company was established on the 1 April 2007 when it took on the responsibilities for the delivery of water sewerage services from NI Water Service, an Agency within the Department for Regional Development.

2.1.3. The company prepared a Strategic Business Plan (SBP) setting out its vision and strategy for the period 2007-10. The strategy also described in outline terms developments for the period 2010-11 to 2013-14. A copy of the Strategic Business Plan for 2007-10 can be found on NI Water's internet site at:

http://www.niwater.com/siteFiles/resources/HTMLFiles/Information_Management/Business_Plan_2007_2010_Full_version.pdf

2.1.4. In addition to setting out the vision and strategy of the new organisation, the SBP described the improvements which would be delivered by NI Water, including:

- improvements in services to customers;
- investment in the future, with a focus on improved water and wastewater quality compliance;
- transformation of the business, including the introduction of a new business operating model, a focus on the development of the organisation and the introduction of new information management and systems.

2.1.5. These improvements were summarised into 28 key performance indicators. Targets were set for the majority of these with other KPIs to be developed over the SBP period. These KPIs were structured around: customers, cash, people and compliance.

2.1.6. Finally, the SBP set out an annual profile of capital investment and detailed financial statement projections for the company to 2013-14.

2.2. Delivering the SBP Targets.

2.2.1. The company's projections for 2009-10 for twelve of these targets, which it published in its Public Summary of the PC10 Business Plan, are summarised in Table 2.1 below. We have also included the 2006-07 out-turn for the last year of NI Water Service.

Table 2.1 – Performance against selected SBP targets by 2009-10

KPI	Description	2006/07 actual	2009/10 company estimate	2009/10 SBP target	Units
1	Supply interruptions – number of properties experiencing unplanned and unwarned interruptions to supply in excess of:				
	6 hours		0.90	1.00	% connected properties
	12 hours	0.30	0.23	0.15	
	24 hours		0.01	0.01	
2	Written complaints – number of written complaints answered within 10 working days.	90	98	98	% total written complaints
3	Customer billing – number of billing contacts dealt with within 5 working days.	#	98	98	% of billing contacts.
4	Billing to metered customers – number of bills based on metered readings.	#	95	95	% of total metered accounts.
11	Leakage (Note 1)	169	182	135.5	Mld
23	Mean zonal compliance – water quality at tap	99.34	99.65	99.77	% MZC
24	Operational Performance Indicator (MZC for turbiudity, iron and manganese)	98.87	99.10	99.00	% MZC
25	Wastewater quality: wastewater treatment works serving greater than 250 population equivalent achieving compliance with NI Water Order Consents expressed as:				
	(a) percentage of works	84	87.0	91.0	
	(b) percentage of population equivalent	77.0	93.5	94.0	
26	Wastewater Treatment Works passing Urban Waste Water Treatment Directive numeric consent	76.3	91.9	92.4	Percentage of works

Note 1. NI Water undertook a major reappraisal of leakage during 2008-09. Improvements in methodology and data resulted higher reported level of leakage in the past (see Chapter 3 for further detail).

2.2.2. Looking back, NI Water has delivered significant improvements in wastewater compliance and water quality during a time when the business was working through a major transformation process.

2.2.3. However, the company's initial estimates indicate that it will not reach the target levels of performance for the SBP in key areas of:

- Supply interruptions unplanned and unwarned in excess of 12 hours.
- Leakage.
- Mean zonal compliance.
- Wastewater quality compliance against water order consents.

2.2.4. These projections are based on estimates at June 2009. The company has time over the remainder of the SBP to improve performance but it is possible that some KPI targets will not be met. In the absence of good data and a robust link between activity, expenditure and targets for the SBP, it is difficult to determine whether this was due to delay, change of circumstances or unrealistic targets. We will continue to monitor the company and assess the reasons for any underperformance against its targets. A key lesson learnt for PC10 is the need for a clear baseline against which to monitor performance and a clear understanding of the links between this baseline and proposed expenditure. The outcome of our review of PC10 outputs is set out in Section 3.0.

2.3. Delivering Investment

2.3.1. The capital investment for 2007-10 was set out in the Strategic Business Plan in nominal costs post efficiency. The estimated total expenditure in nominal prices was £812m before the deduction of capital grants and contributions.

2.3.2. In our Cost and Performance Report we noted that NI Water had under-spent its capital budget in the first year of the SBP. The company drew attention to delayed start to some capital schemes as it sought to develop and optimise solutions to deliver efficiency. The company has exceeded its planned expenditure in 2008-09 and appears to be on track to deliver the overall level of capital investment programmed over the SBP period. The company has demonstrated its capacity to deliver the level of capital expenditure in the SBP, which exceeds that planned for PC10.

2.3.3. Through the quarterly Capital Investment Monitoring Returns we receive detailed information on the progress of the capital programme, including projections of expenditure to the end of the SBP period. In reviewing the projected out-turn of the SBP we noted that:

- NI Water expects to complete the Belfast Sewer Project within the SBP period, including major tunnelling work in poor ground conditions in an urban environment. Schemes of this nature are technically challenging and difficult to manage. Success in delivering this project will be a noteworthy achievement for the company.
- Some projects have been delayed or are no longer required and some projects have been delivered under budget. The company has been able to accelerate

other areas of the capital programme in agreement with stakeholders. For example, the company has accelerated its water mains programme and brought forward the construction of a trunk main funded partly by delay or cancellation of wastewater projects.

2.3.4. We have reviewed the overall investment in the SBP period (including projected investment to the end of 2009/10). On balance we concluded that it was not appropriate to apply a process of logging-up and logging-down of expenditure for the SBP period to account for changes to the capital programme.

2.3.5. We will introduce logging up and logging down for PC10 and expect the company to report and manage changes to outputs against a clear baseline through a change control process.

2.4. Data Quality

2.4.1. The SBP period has exposed weakness in NI Water's data and systems. This came to public attention through the reappointment of revenue and changes made to bills.

2.4.2. These are a reflection of wider data issues which the company is addressing through the introduction of new information system and by on-going process to cleanse and update existing data and collect and process additional data. The company has provided us with a legally binding undertaking in respect of data improvement and reports to us on a regular basis on progress against the undertaking.

2.4.3. The lack of robust data to support future plans is a common theme of our determination. The absence of robust data to support the Business Plan limits the confidence which we can place in the company's proposals. In these circumstances we have considered external comparative benchmarks to determine an appropriate level of expenditure. . We also required NI Water to re-submit customer data because we were concerned that the company had not, as part of its submission assessed the impact of its revised assumptions on the allocation of revenue between customer groups, which is required in order to set 'K' factors that comply with Condition E of the licence.

2.4.4. Our draft determination allows for continued investment in data improvement which should allow NI Water to improve its on-going operations. It will also allow the company to improve the quality of future Business Plan submissions which will support continued investment to improve water and sewerage services.

3.0 Maintaining and Improving Water and Sewerage Services in PC10

3.1. Introduction

3.1.1. This final determination sets out the basis for funding NI Water in the PC10 period 2010-13. It is based on our assessment of the lowest reasonable costs the company should incur in maintaining and improving the water and sewerage services it delivers to consumers.

3.1.2. The determination includes the delivery (both timing and extent) of activities and outputs which formed the basis of our assessment of costs and price limits. Price limits and outputs cannot be considered separately: the final determination is a package of both price limits and outputs which the company will consider and either accept or ask us to refer to the Competition Commission.

3.1.3. PC10 outputs are based on the Social and Environmental Guidance issued by the Department for Regional Development. This guidance draws on the research into consumer views which was commissioned by NI Water and carried out independently by the CCNI to identify consumers' priorities for investment in water and sewerage services.

3.1.4. The detailed outputs for PC10 were developed by the key PC10 stakeholders (CCNI, DRD, DWI and NIEA and the Utility Regulator) through the PC10 Working Groups previously outlined in Figure 1.1. For the draft determination we reviewed the activities and outputs proposed in the company's Business Plan with the key stakeholders. There was agreement that the balance of the plan was a reasonable reflection of consumers' priorities, the objectives set out in the Social and Environmental Guidance and the outcome of the PC10 Working Groups.

3.1.5. Since the draft determination we have reviewed the outputs with NI Water and the quality regulators and received further information to clarify the links between current performance, the proposed programme of work and the PC10 outputs. Based on this detailed work we have made some changes to both the scope and the quantum of key outputs to better reflect the impact of the investment programme and the quality of current information. We believe that the revised targets set out in and the background information provides a robust set of outputs against which the successful delivery of PC10 can be monitored.

3.1.6. The outputs included in our draft determination can be divided into three types:

- **Service level outputs:** service level outputs measure the impact of investment on the level of service experienced by consumers. For example the number and duration of interruptions to supply or the overall compliance with water quality parameters. This type of output is preferred as it maximises the freedom of the company to determine the best way to deliver the required level of service at minimum cost. It encourages innovation and cost savings which benefit consumers in the longer term.

- **Nominated outputs:** these are specific items, often those identified by quality regulators such as the improvement to a discharge standard to meet mandatory legislative requirements. We have also included a number of specific improvements identified by the company in its plan as nominated outputs such as trunk main schemes or the provision of additional storage capacity.
- **General activities:** we included activities (such as the rate of replacement of water mains or the replacement of sewerage) as outputs where it was not possible to establish a clear link between activity and service level outputs in the short term. This ensures that the company will put forward robust plans for each Price Control period against which it can be monitored. Activity rates can be reviewed at subsequent Business Plans and increased or reduced to reflect experience and future levels of service required by consumers.

3.1.7. The PC10 outputs included in this draft determination are summarised in

3.1.8. Table 3.1. More detailed information of our assessment of reasonable outputs is given below under the following headings:

- **Consumer service outputs:** these cover the key impacts on consumers of water supply pressure, interruptions to supply, and flooding of properties by sewage.
- **Consumer response outputs:** we have included output measures for the consumer contact response times commonly used in the water industry including: response to billing queries; response to written complaints; bills issued based on meter reads; and telephone response times. Consumer's have identified that NI Water may not be measuring the right things to show that satisfactory outcomes have been achieved for consumers. We will work with other stakeholders to develop more meaningful consumer response measures for PC13. For PC10 we will ask the company to report against additional response measures which will add to our understanding of the quality of response to consumers.
- **Water resource outputs:** the key water resource outputs of security of supply and leakage.
- **Water treatment and supply outputs:** the water treatment and distribution outputs for PC10 include gradual improvements to water quality in line with current and proposed investment. We have also included water mains activity as an output reflecting the need to develop the link between this work and the impact it has on consumer service.
- **Sewerage outputs:** the sewerage outputs for PC10 include: sewerage maintenance activity rates and improvements to nominated unsatisfactory intermittent discharges. We have also included an output measure for pollution incidents although this will be delivered through improvements to all NI Water's assets.
- **Sewage treatment quality outputs:** the main sewage quality outputs are nominated outputs relating to improvements to discharge standards required by NIEA. We have also included a service measure for compliance of wastewater discharges.
- **Asset serviceability outputs:** we expect NI Water to maintain the serviceability of its assets over PC10. This will be assessed by a range of output parameters. We recognise that lack of robust historical data and NI Water's work to improve data quality could result in significant changes to some data which does not relate to the condition or performance of the assets. In Chapter 10.0 we have set proposals for monitoring serviceability which will be developed in PC10 and implemented for PC13.
- **Overall Performance Assessment:** we have adopted the OPA methodology, currently used in Scotland, England and Wales, subject to some amendments to definitions to reflect local circumstances. This combines a basket of outputs in a single score which allows NI Water's overall improvement to be tracked against its targets for PC10.

Table 3.1 – PC10 output summary

Consumer Service	2009-10	2010-11	2011-12	2012-13
Properties confirmed at risk of receiving pressure below reference level (DG2) alleviated by company action (Note 1).	665	220	300	280
Interruptions to supply – composite score (DG3)	1.27	1.24	1.20	1.16
Interruptions to supply >12 hrs (% of properties) (DG3)	0.230	0.222	0.214	0.205
Properties at risk of flooding – number removed from the risk register by company action (DG5).	-	-	-	200
Consumer Response				
Billing contacts dealt with within 5 working days (% billing contacts) (DG6).	98.0	99.9	99.9	99.9
Written complaints answered within 10 working days (% written complaints) (DG7)	98.0	98.5	98.5	98.5
Bills based on meter readings (% of total metered accounts) (DG8).	95.0	95.0	97.5	98.5
Call handling satisfaction score (1-5)	4.60	4.65	4.70	4.70
Percentage of calls not abandoned (DG9)	99.0	99.0	99.0	99.0
Percentage of calls not all lines busy (DG9)	99.9	99.9	99.9	99.9
Water Resources				
Security of supply index (maximum 100)	44	77	78	79
Leakage (Mld)	177	173	169	166
Nominated outputs for trunk main schemes (4nr) including schemes carried over from SBP and carrying into PC13. One new abstraction. Completion of reservoir inspection engineer's recommendations. Completion of the Water Resource Management Plan.				
Water Treatment and Distribution				
Mean zonal compliance water quality at tap (%)	99.65%	99.70%	99.70%	99.70%
Operational performance indicator (MZC turbidity, iron and manganese) (%)	99.10%	99.10%	99.10%	99.10%
Nominated outputs for water treatment works upgrades completed (2nr), study to determine the upgrade for water treatment works (1nr), trunk mains completion and starts (4nr) and completion and work to increase capacity at 13 service reservoirs or clear water tanks.				
Activity output of 900km of new, replaced or relined mains over PC10, excluding the trunk mains programme.				

Sewerage				
Length of critical sewer renewed or relined over PC10	63 km over PC10			
Length of non-critical sewer renewed	9 km over PC10			
Nominated outputs for improvements to 117 UIDs.				
Number of high and medium pollution incidents attributed to NI Water	56	54	51	48
Sewage Quality Outputs (Note 2)				
% of WwTWs compliant (Water Order) numeric consents		85.0%	87.7%	90.8%
% WwTWs compliant (UWWTD consents)		89.8%	92.4%	96.2%
% of WwTW treatment works discharges complying with numeric consents		84.6%	87.4%	90.9%
% of total pe served by WwTWs complying with Water Order consent (LUT)		94.87%	95.98%	98.53%
% of total pe served by WwTWs complying with UWWTD consent (LUT)		95.73%	96.73%	99.11%
Nominated outputs for improvements delivered by 43 sewage treatment works schemes.				
Asset Serviceability				
All asset areas	Stable	Stable	Stable	Stable
Overall Performance Assessment				
OPA score based on 11 service areas included in 2007-08 assessment	135	142	168	201

Note 1. To provide flexibility in the capital programme, the key target will be the delivery of the total number of outputs over the PC10 period. NI Water will be asked to explain any shortfall from the cumulative target to date in its annual reporting to demonstrate that it remains on track to deliver the total output over the PC10 period.

Note 2. An increase in the number of small works with numeric consents in 2010 results in a nominal reduction in performance from 2009/10.

3.1.9. We have developed a schedule of nominated outputs and activities for PC10 in conjunction with the company and the quality regulators which underpins the final determination.

3.1.10. In addition to the outputs tabulated above, the company shall deliver the general requirements set out in the Social and Environmental Guidance including planning for the future and supporting government agencies in the development of policy.

The investment plan allows for investment of £38m in additional water and wastewater quality outputs to reduce pollution and support development. As these additional outputs

are prioritised we will amend the targets proposed for PC10 to take account of the improvements they will deliver.

3.2. Understanding and Addressing Consumer Views

Introduction

3.2.1. The PC10 A2 working group, comprising: NI Water, CCNI and the Utility Regulator was established to understand what consumers want from their water and sewerage services.

3.2.2. In June 2008 NI Water commissioned CCNI to undertake independent research into consumer views to find out what the people of Northern Ireland think about the current delivery of water and sewerage services, and discover the areas of service that consumers want to prioritise and improve.

3.2.3. The results of the consumer research is set out in ***'Tapping into Consumer Views on Water'*** which is available through the Consumer Council's web site, http://www.consumercouncil.org.uk/.

3.2.4. The consumer research, carried out through the autumn of 2008, was split into two phases. Phase 1 developed and tested a survey methodology and included:

- Sessions with the Consumer Council's consumer panels;
- Eight focus groups;;
- Sixteen in depth interviews with non-domestic customers; and
- Pilot surveys of 301 households.

3.2.5. Phase 2 consisted of quantitative surveys of 1000 households using a survey questionnaire based on the findings of Phase 1.

3.2.6. The quantitative survey work was based around four main service areas:

- Sewerage services;
- Water services;
- Environmental services; and
- Customer services.

3.2.7. During Phase 1 of the survey a series of features were developed for each service area and tested through the pilot studies (see Table 3.2).

Table 3.2- Consumer Survey Service Features

Sewerage Services	Water Services
• Flooding inside properties • Flooding of outside areas which lots of people see • Flooding of outside areas which few people see • Odour nuisance	• Safety of tap water • Taste, smell and appearance of tap water • Leakage from mains • Supply interruptions with no waning • Low water pressure • Water supply restrictions
Environmental Services	**Customer Services**
• Pollution form sewage discharges to inland waters (rivers and loughs) • Pollution from sewage discharges to coastal waters • Carbon emissions	• Dealing with customer complaints • Ease of telephone contact • Response time • Noise

3.2.8. During the quantitative survey work consumers were provided with information relating to current levels of service and information on the impact of service failure including descriptions and images. The interviewees were then asked to rank the features by priority within each service area. This ranking forms the basis of the priorities for the individual service areas shown in Figure 3.1,Figure 3.2, Figure 3.3 and Figure 3.4. The prioritisation scores can only be compared within the same group of service measures, the scores should not be compared for features from different service areas.

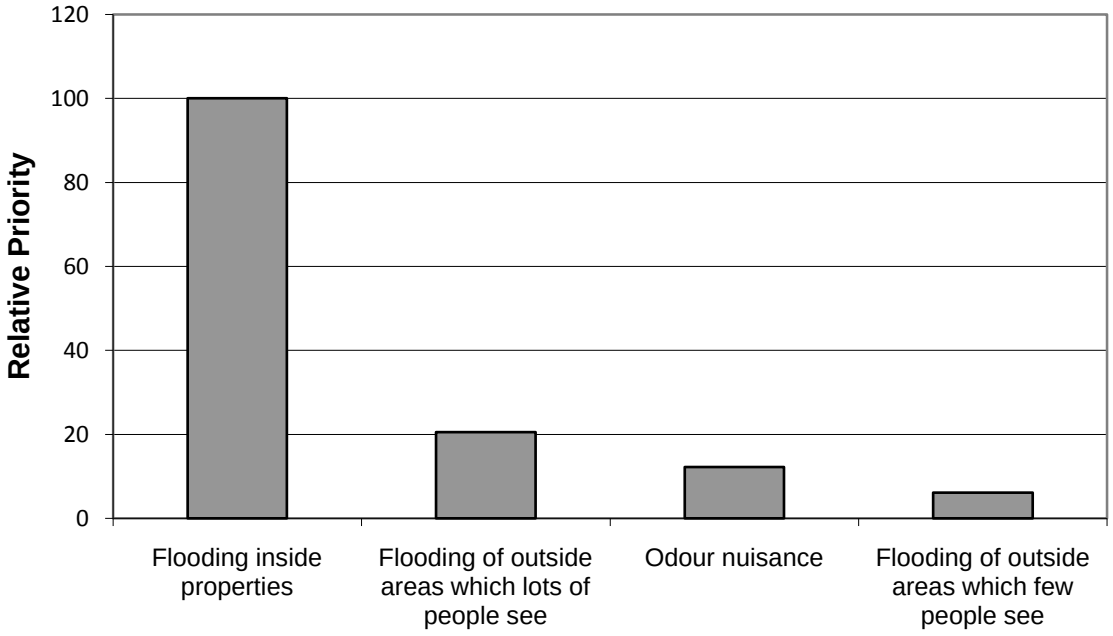
3.2.9. In the following sections we summarise some of the content of the report on consumer views and priorities and provide an overview of how PC10 will address them.

3.3. Relating PC10 Outputs to Consumer Priorities

Sewerage Services

3.3.1. Consumer priorities for the sewerage service are summarised in Figure 3.1

Figure 3.1 - Consumer priorities for the sewerage service



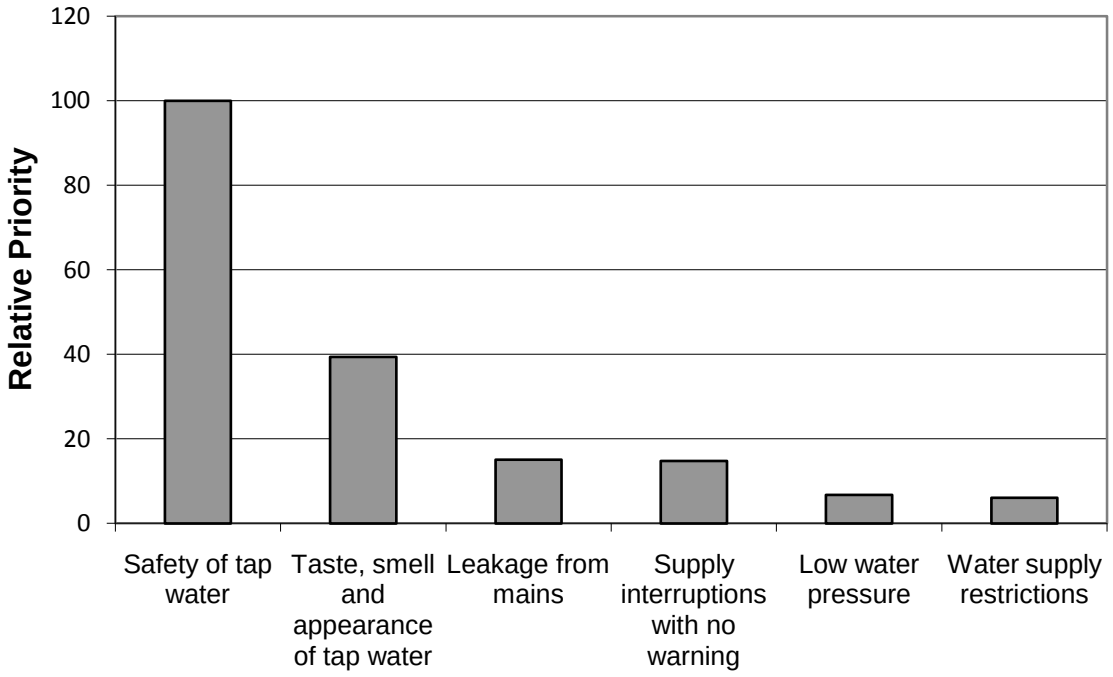
3.3.2. At present, NI Water does not have robust records of historic flooding. It is developing the data and analysis necessary to allow it to identify properties at risk of flooding and assess the extent of the problem to prioritise and deliver solutions.

3.3.3. During PC10 NI Water will deliver solutions which reduce the risk of internal flooding to 200 properties at risk of flooding due to lack of hydraulic capacity. This and other work on the sewerage system will reduce the risk of external flooding although this is not a specific target.

3.3.4. The company will also improve its flooding records to identify properties at risk of flooding from sewers to plan its programme of work for PC13, ensuring continuity of delivery of solutions to flooding problems into PC13.

Water Services

Figure 3.2 - Consumer priorities for water services



3.3.5. Consumers' main priority was the safety of tap water. Consumers were also concerned by the taste, smell and appearance of tap water and linked this to safety of the water supplied.

3.3.6. Because of the high priorities given to the safety of tap water and the taste; smell and appearance of tap water; and other supply issues (leakage, supply interruptions and low pressure) had relatively low priorities. However, consumers remained concerned about these issues. For example leakage was a high priority in the focus groups where the loss of water in supply was linked to supply pressure, security of supply and waste and inefficiency.

3.3.7. During PC10, NI Water will continue to invest in improvements to water treatment works to meet EU standards for drinking water into supply. Continued work on the trunk mains programme will also allow treatment works which do not meet current standards at all times to be taken out of supply. Investigations will allow the company to identify further treatment improvements. Drinking water safety plans will be developed to provide a risk based approach for target asset maintenance and identify any future quality improvements to be delivered in PC13.

3.3.8. Once NI Water has upgraded its treatment capacity to comply with current standards, further improvements to water quality, including taste, smell and appearance, will depend largely on the rehabilitation of water mains. In PC10, NI Water will continue

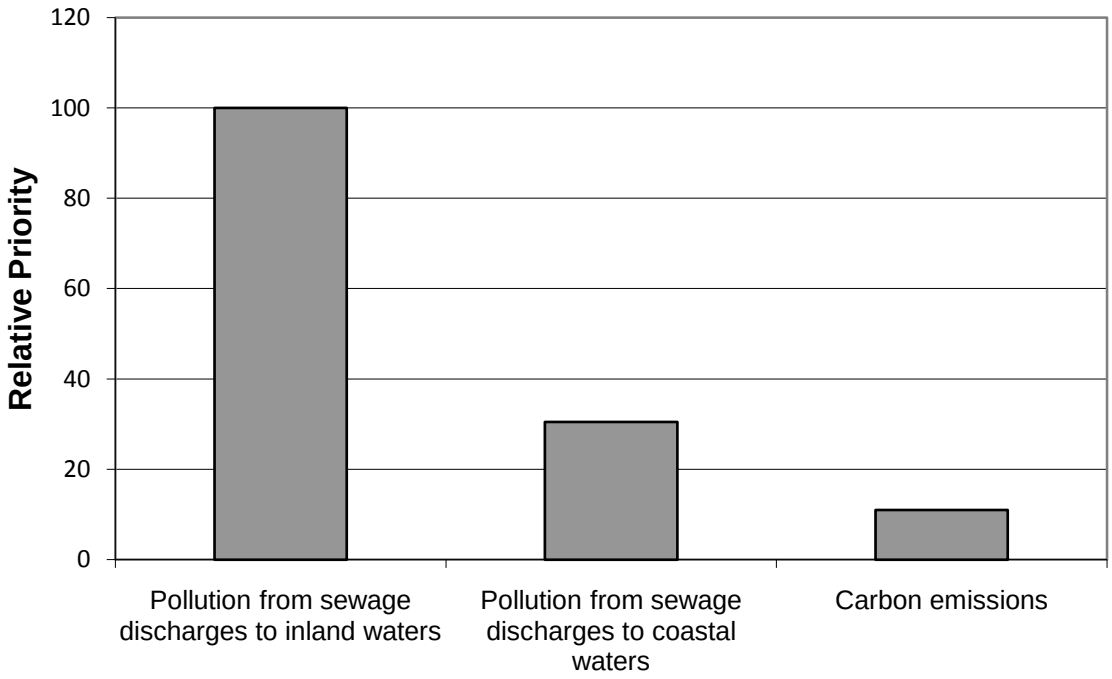
with its mains rehabilitation programme which has maintained and improved levels of service in respect of low pressure and the quality of water.

3.3.9. At present, the company is not able to separate out the benefits of future mains replacement and it has not quantified the extent of water quality compliance problems and the level of investment required to address this issue. Over PC10, we expect the company to address this in conjunction with DWI to allow a planned programme of water quality improvements to be developed for PC13 which will identify the extent of the problem and allow an affordable programme of distribution mains quality improvements to be developed.

3.3.10. Water supply restrictions are the lowest priority water service issue for consumers. Most consumers struggled to remember the last restriction and were concerned that restrictions should not be put in place when high levels of leakage still exist. However water resource plans prepared by NI Water have identified risk to security of water supply in the long term. The company implemented a programme of work to increase water treatment capacity and provide additional trunk mains which will address these issues. Much of this work has been completed or included in the Alpha PPP concession. In PC10 the company will increase abstraction and treatment capacity in one water resource zone to improve security of supply. Continuing work on trunk mains will also improve the resilience of the water distribution network.

Environmental Services

Figure 3.3 - Consumer priorities for environmental services



3.3.11. Consumers expressed a clear priority for improvement to pollution from sewage discharges to inland waters (rivers and loughs) over pollution of coastal waters. They recognised the impact of discharging to small inland waters where there is less dilution. The impact of pollution on wildlife and tourism was a concern. Some consumers spoke of the impact of developments in areas where infrastructure could not cope.

3.3.12. During PC10 NI Water will deliver improvements to wastewater treatment works to meet consent conditions set by NIEA, continuing a major programme of investment begun in the SBP. Much of the programme is focused on discharges to inland waters.

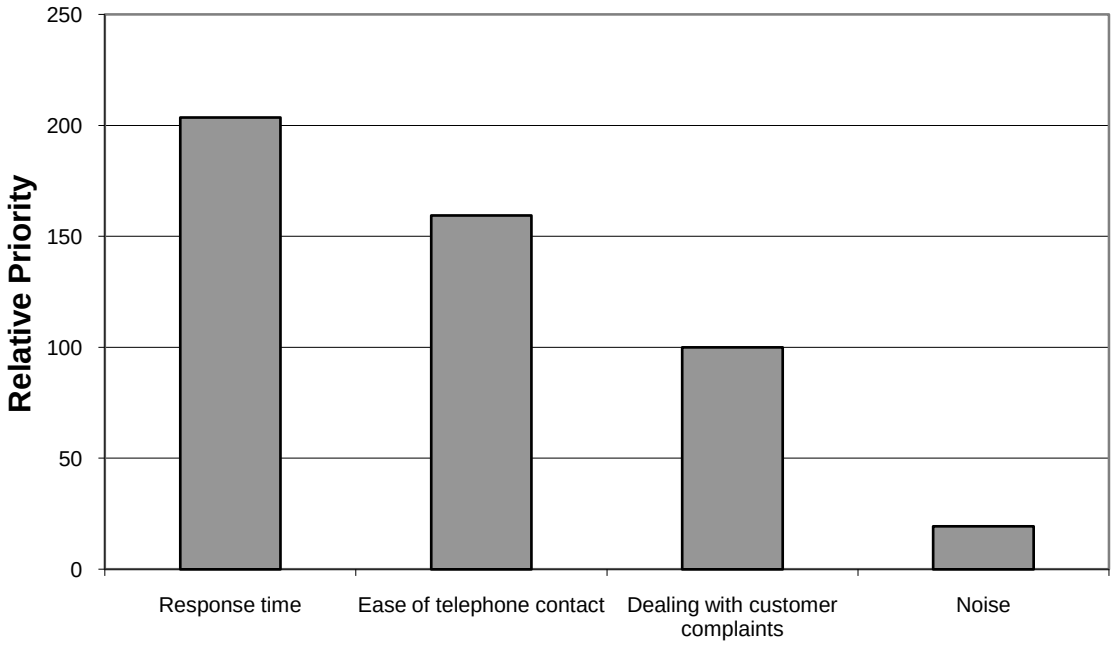
3.3.13. In the SBP, investment to improve unsatisfactory intermittent sewage discharges focused on the Belfast Sewer Project which will soon be commissioned and will deliver major improvements to the River Lagan. In PC10, the company will begin a prioritised programme to improve other unsatisfactory intermittent discharges.

3.3.14. The programme of work described above will also deliver improvements to bathing waters at Newcastle and Ballyholme.

3.3.15. Further progress will be made to reduce high and medium pollution incidents. While the major asset investment in PC10 will contribute to this, much of the improvement will come from smaller scale investment in monitoring systems, asset data and improvements in operational practice which will come with better information.

Customer Services

Figure 3.4 – Consumer priorities for consumer services



3.3.16. Response time is the most important consumer service factor. The speed of response is important to consumers but it is getting the problem fixed which is the key priority.

3.3.17. Historically the consumer response targets used in the water industry have measured the speed of response and consumer satisfaction with the way their initial contact with the company was handled, rather than the company's ability to resolve the underlying issue satisfactorily. Consumers have identified that NI Water may not be measuring the right things to show that satisfactory outcomes have been achieved for consumers.

3.3.18. During PC10 we will continue with the historical measures for consumer contact: speed of response to billing queries (DG6); speed of response to written complaints (DG7); bills based on meter readings; and speed and ease of telephone contact and call handling satisfaction (DG9). NI Water expects to deliver levels of service approaching 100% for most of these measures by the end of PC10. It current and proposed level of service compares well with water and sewerage companies in England and Wales (see Table 3.6)

3.3.19. During PC10, the company will invest in new systems to improve customer contact and in its new operational control centre to improve its response to consumers from point of contact to resolution of the underlying problem.

3.3.20. We will work with CCNI, the company and other stakeholders to develop more meaningful consumer response measures which will allow NI Water to target improvements and demonstrate that it is striving to make things better for consumers.

3.4. Social and Environmental Guidance

3.4.1. The PC10 outputs are based on Social and Environmental Guidance issued by the Department for Regional Development (DRD). The guidance is directed at the Utility Regulator and provides guidance on the key environmental and social polices the Minister expects the Utility Regulator to contribute to in carrying out its role as the independent economic regulator for the water industry.

3.4.2. The Department for Regional Development published its draft Social and Environmental Guidance was initially issued for consultation in March 2009. Following consultation we have been provided with a draft of the Principal Social and Environmental Guidance.

3.4.3. NI Water's Business Plan was based on the draft Social and Environmental Guidance issued for consultation. From our review of the company's Business Plan we have concluded that it also addresses the requirements of the revised guidance

3.4.4. The Social and Environmental Guidance set out the following key strategic investment priorities for PC10:

- **affordability** – provide affordable cost effective services to customers;
- **EU Compliance** – meet our European legal obligations in relation to drinking;
- **service delivery and improvement** – maintain current customer service levels and work towards improvements that provide customer benefits in areas such as sewer flooding and interruptions to water supply;
- **sustainability** – improve out infrastructure to reduce leakage, cut unsatisfactory sewerage discharges, lower energy consumptions and allow for future growth.

3.4.5. Following main chapters providing guidance on these issues the guidance summaries the key investment priorities for 2010-13 under six headings of:

- Priority 1 – Mandatory EU obligations;
- Priority 2 – Improving service levels;
- Priority 3 – Water leakage and pressure;
- Priority 4 – Surface flooding;
- Priority 5 – Longer term EU requirements; and
- Priority 6 – Sustainability and climate change.

3.4.6. The detailed priorities of the Principal Social and Environmental Guidance are included in Appendix 3.

3.4.7. The detail of the outputs for PC10 was developed by the key PC10 stakeholders through the PC10 Working Groups outlined previously at Figure 1.1. We have reviewed the activities and outputs proposed in the company's Business Plan with the key stakeholders. There was agreement that the balance of the plan reflected consumers' priorities; the key objectives and specific priorities set out in the Social and Environmental Guidance; and the outcome of the PC10 Working Groups.

3.4.8. In the following sections we review the outputs and targets for PC10 for:

- Consumer service;
- Consumer contact;
- Water resources;
- Water treatment and supply;
- Sewerage;
- Sewage treatment quality;
- Asset serviceability; and
- Overall Performance Assessment.

3.5. Customer Service Outputs

Introduction

3.5.1. Consumer service outputs will measure company performance against three potential service failures:

- Water supply pressure (number of properties at risk of receiving pressure below reference level – DG2);
- Interruptions to supply (DG3); and,
- Flooding from the sewerage system (DG5).

Water Supply Pressure (DG2)

3.5.2. The reference service level for water supply is 10m pressure at the consumer tap when the rate of flow is 9 l/s. An alternative surrogate level of 15m is used to avoid the complexity of making this assessment. NI Water has based its assessment on this surrogate measure.

3.5.3. NI Water estimated that the number of properties at risk of receiving pressure below the reference level was 5783 at the end of 2008-09. Its Business Plan provided an estimate of the reduction in the number of properties at risk of receiving low pressure over the PC10 period. In our draft determination we asked the company to review its current estimates and proposed targets for PC10. In particular, we asked the company to take account of information emerging from the detailed pressure logging surveys it was

undertaking at the time. These surveys suggested that better information would result in a material reduction in the company's initial estimates of the number of properties at risk. We also asked the company if it was possible to provide a better link between the investment proposed in its Business Plan and the number of properties at risk.

3.5.4. The company has provided us with the further information requested. We have presented revised targets for PC10 in Table 3.3 based on this information.

3.5.5. Given the continued uncertainty over number of properties which will be removed from the at risk category by better information we have, changed the key delivery target for PC10 to the number of properties confirmed at risk which are alleviated by company action.

3.5.6. We have also prepared an estimate of the number of properties which remain at risk which is included in the Overall Performance Assessment (OPA) score. However, given the continued uncertainty in this projection we concluded that this estimate of properties at risk of receiving low pressure should not itself be a target for PC10. We expect the company to improve its assessment of the number of properties at risk when it completes its current pressure logging work with further improvements over the PC10 period. We expect this to allow targets to be set in PC13 for both the number of properties at risk which are addressed by company action and the number of properties remaining on the register.

3.5.7. Over the remainder of the SBP and through PC10 NI Water will continue to improve supply pressure. The company projects that the number of properties at risk of receiving low water pressure will reduce to 1400 at the end of PC10, see Table 3.3.

Table 3.3 – Proposed improvements to low pressure

	07-08	08-09	09-10	11-10	11-12	12-13
Properties confirmed at risk of receiving pressure below reference level (DG2) addressed by company action in the year.			665	220	300	280
Properties at risk of receiving low pressure (DG2)	10321	5783	2200	1980	1680	1400

3.5.8. To provide flexibility in the capital programme, the key target will be the delivery of the total number of properties addressed by the company over the PC10 period (800). NI Water will be asked to explain any shortfall from the cumulative target to date in its annual reporting to demonstrate that it remains on track to deliver the total output over the PC10 period.

3.5.9. The company reports properties removed from the at risk register after a period of assessment following completion of the project which can take up to one year. The targets set out above take account of this one year lag. In assessing the company's performance over PC10 we will expect the company to demonstrate that the number of properties alleviated by works in 2012-13 which it expects to confirm in 2013-14 is in line with its PC10 estimates.

Unplanned Interruptions to Supply (DG3)

3.5.10. For PC10 NI Water plans to make a gradual improvement to the level of unplanned interruptions to water supply as measured by a DG3 overall performance score and the proportion of properties affected by unplanned interruptions to supply greater than 12 hours.

3.5.11. From our review of the company's proposals in its Business Plan we concluded that:

- The link between improvements and investment was weak. We would expect the company to improve its understanding of interruptions to supply to develop a more robust plan for PC13.
- The company proposed gradual reductions in unplanned interruptions >12 hrs which is a key area of concern for consumers. We expect NI Water to undertake root cause analysis of interruptions greater than 12 hours to inform improvements in operational practice which might reduce response times.

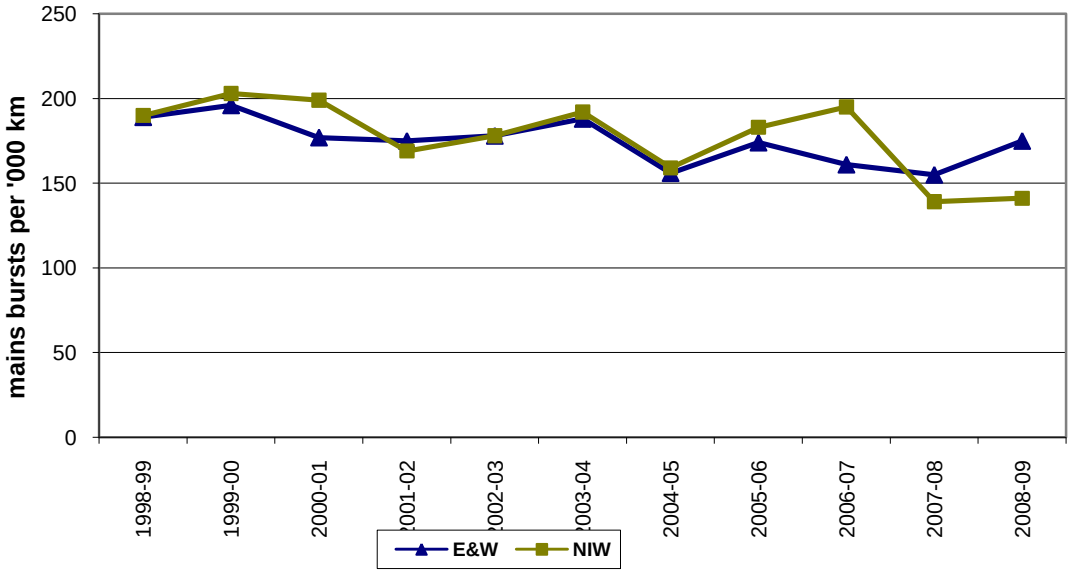
3.5.12. NI Water reports a high level of unplanned interruptions to supply relative to water companies in England, Wales and Scotland. For example, in 2007-08, NI Water reported that 7.6% of properties served by NI Water were affected by an unplanned interruption to supply with duration greater than 3 hours. This compares to a range of 0.8% to 3.77% for water and sewerage companies in Scotland, England and Wales[2].

3.5.13. The high level of unplanned interruptions to supply does not appear to be related to frequency of pipe bursts which are similar to those reported by companies in England and Wales (see

3.5.14. Figure 3.5 below).

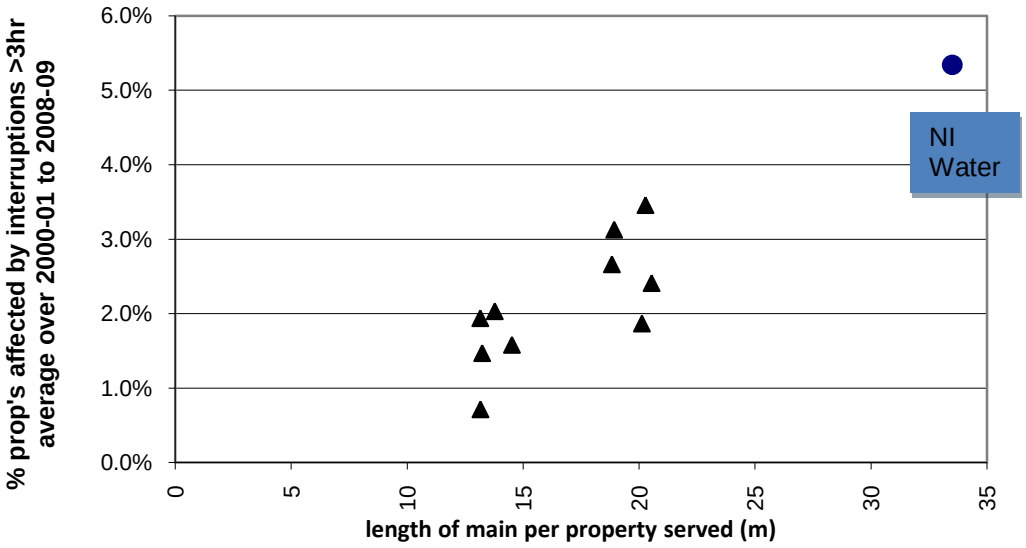
[2] Excluding the impact of flooding of a WTW at Severn Trent Water in 2007.

Figure 3.5 – Frequency of pipe bursts



3.5.15. A defining characteristic of NI Water's water distribution system is the high length of main per property served which is 32m per property compared with a range of 9 to 20m per property in England and Wales. Intuitively the longer length of main per property would result in a high frequency of interruption for similar burst rates. This is supported by the data plotted in Figure 3.6.

Figure 3.6 - Interruptions to supply compared to length of main per property



3.5.16. The data shows that different companies provide different levels of service which correlates with the length of main per property. The correlation confirms that the high frequency of interruptions to supply is likely to be related to the length of main per property and the overall condition and performance of water mains. As a result, it may

not be possible to make significant reductions in interruptions to supply without reducing the frequency of mains bursts well below levels experienced in Scotland, England and Wales.

3.5.17. NI Water will develop its asset management techniques in preparation for PC13. We expect the company to consider the interaction between length of main per property, burst rate and interruption to supply before increasing the rate of mains replacement.

3.5.18. Consumer research noted that the duration of a supply interruption goes a long way to determining the inconvenience caused. Consumers thought that no household should be without water for more than 12 hours. In 2007-08, NI Water reported 2,086 properties affected by interruptions to supply greater than 12 hours with 96% of these a result of unplanned interruptions. However, the frequency of interruptions to supply >12 hours is greater for NI Water consumers than in Scotland, England and Wales. High proportions of interruptions >12 hours will occur in other areas in single years but the high frequency for NI Water occurs on a regular basis.

3.5.19. In its Business Plan the company commented on the impact the rural nature of the area it serves has on locating bursts and mobilising resources to make repairs. We recognise these issues and understand that they will impact on the company's performance. However, at this stage the company has not quantified the impact or proposed specific measures which would reduce unplanned interruptions to supply >12 hours. We expect the company to carry out root cause analysis of interruptions to supply which exceed 12 hours which would allow it to improve this key service measure and, if necessary support additional investment for PC13.

3.5.20. Since the draft determination the company proposed revised targets in light of its most recent performance and its concern over whether the rate of improvement achieved in the past could be sustained in the future. We have reviewed the company's revised proposals and concluded the following:

- The company proposed increasing the component for interruptions to supplies greater than 24 hours in light of an increase in the number of events affecting significant numbers of properties in the last two years. On the basis of the evidence to date, we do not believe it to be appropriate to adjust this component of the overall performance score. The company will make every effort to minimise such events. If they occur, we expect the company to provide us with a report which sets out the scale and cause of the event and describes the company's response and lessons learnt for the future.
- The company proposed reducing the rate of improvement in unplanned interruptions to supply greater than 12 hours. At the draft determination we accepted that the company should rebase its target on current performance. We believe that there is scope for further improvement in this key target and we have not amended the target rate of improvement for the final determination.
- The company proposed rebasing its targets to reflect 2008-09 performance. It also proposed to reduce the rate of improvement (which was initially based on achieving average standards in England and Wales). We have considered this and concluded that it is reasonable. The company has made major reductions in the number of >6hr interruptions to supply in recent years. Once an

interruption to supply has exceeded 3 hours, the likelihood of it exceeding 6 hrs is now similar to the average for England and Wales. The high interruptions score appears to be driven largely by the length of main per property which is an inherent characteristic of the distribution network.

- The DG3 overall performance score has been recalculated to take account of NI Water's latest projections of property numbers.

3.5.21. We accept that extreme events, such as the 2009-10 winter conditions, will mean that NI Water might not be able to achieve the target from time to time. However, we do not believe that it is appropriate to take account of these extreme conditions when setting targets. We expect NI Water to draw extremes of conditions which impact on performance to our attention in its annual reports, assessing the impact and identifying lessons learnt which will inform future investment.

Our revised DG3 targets for PC10 are set out in

3.5.22. Table 3.4.

Table 3.4 - Proposed improvements to interruptions to supply

	07-08	08-09	09-10	11-10	11-12	12-13
Revised DG3 OPS[3] target	1.43	1.41	1.27	1.24	1.20	1.16
Unplanned interruptions to supply >12 hrs	1839	2010	1800	1750	1700	1650
Note 1. 07/08 and 08/09 are actuals reported by NI Water.						

Flooding of Properties and External Areas from Sewers

3.5.23. Sewage flooding can occur when:

- the volume of water entering the sewer during a storm exceeds the capacity of the sewerage system (hydraulic overload); and
- an asset fails, including sewer collapse, blockage and failure of pumping stations (other causes).

3.5.24. NI Water does not have a comprehensive record of sewer flooding which would allow it to assess the risk of sewer flooding and prioritise investment to reduce the impact on consumers. The lack of robust historical data makes it impractical to project forward a service level target. As a result the outputs for PC10 will be:

- To develop and maintain a flooding register and a register of properties at risk from internal sewer flooding (DG5 Register).
- To collect and categorise annual flooding events to continue to populate the flooding register and provide the basis for future service targets.
- To address the risk of internal flooding at 200 properties currently at risk of flooding.
- To ensure that the prioritisation and development of flood alleviation schemes is sufficiently well advanced to ensure continuity of investment and delivery of improvements into PC13.

3.6. Consumer Contact Outputs

Introduction

3.6.1. We have included outputs for the consumer contact response times commonly used in the water industry including:

[3] The overall performance score for interruptions to supply combines unplanned interruptions greater than 6 hours, 12 hours and 24 hours, weighting higher duration events.

- Response to billing queries;
- Response to written complaints;
- Bills issued based on meter reads; and,
- Telephone response times.

3.6.2. Consumers have identified that NI Water may not be measuring the right things to show that satisfactory outcomes have been achieved for consumers. We will work with other stakeholders to develop more meaningful consumer response measures for PC13. For PC10 we will ask the company to report against additional response measures which will add to our understanding of the quality of response to consumers. These are:

- Number and frequency of repeat complaints.
- Number and frequency of holding responses issued by the company.
- Number and frequency of sewer blockage clearance which exceeds 24 hours.

Current Consumer Contact Measures

3.6.3. For PC10 we will continue to measure the company's performance on speed of response to consumer contact based on measures established for the regulation of the water industry in England and Wales and adopted in Scotland.

3.6.4. These measures consider the speed of response to a contact only. They do not necessarily measure the time taken to address the underlying problem and restore an adequate level of consumer service.

3.6.5. For PC10 NI Water intends to make continued improvement by reducing the time taken to respond to consumer contact and by the end of PC10 plans to achieve almost 100% compliance with the target response times for each response measure.

The targets set in the draft determination were based on NI Water's projections. Since the draft determination NI Water asked for minor changes to be made to its projections to reflect work underway to introduce new systems and improve data quality. These resulted in a one year delay to the delivery of two targets. The revised PC10 targets for responing to consumer contact are set out in

3.6.6. Table 3.5.

Table 3.5 - Responding to consumer contact in PC10

Consumer Contact Measure	07-08	08-09	09-10	11-10	11-12	12-13
Billing contacts dealt with within 5 days (DG6)	95.0%	99.9%	98.0%	99.9%	99.9%	99.9%
Written complaints dealt with within 10 days (DG7)	90.5%	99.9%	98.0%	98.5%	98.5%	98.5%
Metered customers receiving bill based on a meter read (DG8)	95.1%	92.5%	95.0%	95.0%	97.5%	98.5%
Call handling satisfaction score	4.6	4.65	4.7	4.7	4.7	4.7
Telephone calls receiving an engaged tone (DG9)		0.1%	0.1%	0.1%	0.1%	0.1%
Telephone calls abandoned (DG9)	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%

3.6.7. NI Water's targets for responding to consumer contact by the end of PC10 are comparable to the performance of companies in England Wales and Scotland, see Table 3.6. In particular, it performs well in speed of response to billing contacts and telephone calls.

Table 3.6 – Response to consumer contact in England and Wales

Consumer Contact Measure	Range for E&W 2007-08	NI Water Target 2012-13
Billing contacts dealt with within 5 days (DG6)	90.7% - 100.0%	99.9%
Written complaints dealt with within 10 days (DG7)	99.0% - 100.0%	98.5%
Metered customers receiving bill based on a meter read (DG8)	99.5% - 100.0%	98.5%
Call handling satisfaction score	4.3 - 4.7	4.7
Telephone calls receiving an engaged tone (DG9)	0.0% - 6.3%	0.1%
Telephone calls abandoned (DG9)	1.1% - 11.5%	1.0%
Note 1. Range for DG7 and DG9 exclude data for Southern Water which was addressing a major failure in the management of consumer contact.		

3.6.8. NI Water does not handle the same level of consumer contacts as the water and sewerage companies in GB because it does not bill domestic customers. If domestic billing was introduced we would review the consumer contact targets to take account of the increased call volume which might occur, particularly for a transitional period.

Additional Consumer Response Measures for PC10

3.6.9. In addition to the outputs set out above we will expect the company to report on the following additional measures of customer service pending development of the more meaningful measures. We expect the latter to be based on consumer views determined through work undertaken by CCNI in conjunction with other stakeholders:

- Number and frequency of repeat complaints.
- Number and frequency of holding responses issued by the company.
- Number and frequency of sewer blockage clearance which exceeds 24 hours.

3.6.10. We do not propose to set targets for these outputs but we expect the company to publish its performance. This will allow NI Water to demonstrate improvement over PC10 and could provide the basis for targets in PC13.

3.7. Water Resource Outputs

3.7.1. The key water resource outputs relate to security of supply and leakage. We have also included nominated outputs for trunk mains, an abstraction project and work on impounding reservoirs.

Security of Supply Index

3.7.2. Security of supply reflects the ability of the company to meet water demand without restriction during extreme dry conditions. It is measured by an index with a maximum score of 100.

3.7.3. NI Water's current and projected security of supply index (SoSI) is set out in Table 3.7. The score of less than 100 reflects the fragmented nature of water resource zones which the company has been addressing by its trunk main programme and increasing water treatment capacity. We have accepted the company's estimate for improvement in PC10. However, we recognise that completion of a new Water Resource Strategy will result in a reappraisal of both demand and the reliable yield from existing sources which could result in a fundamental revision of SoSI during PC10.

Table 3.7 – Security of supply index

Consumer Contact Measure	07-08	08-09	09-10	11-10	11-12	12-13
Security of supply index	-26	42	44	77	78	79

Leakage Targets

3.7.4. Some level of leakage is inherent in the operation of a pressurised water distribution network. NI Water aims to achieve an 'economic level of leakage' which

balances the costs of the production of water with the costs of controlling the level of leakage by finding and fixing leaks.

3.7.5. The economic level of leakage can consider financial costs or broader economic costs such as the cost of carbon and environmental costs. NI Water's current assessment of economic levels of leakage is based on financial costs only. For PC13, the company will develop a sustainable level of leakage taking account of wider economic costs including the cost of carbon and environmental impacts.

3.7.6. The economic level of leakage can be considered in either the short run or the long run:

- The **short run economic level of leakage (SRELL)** balances the cost of leakage control against the marginal operating costs of water production (typically power and water).
- The **long run economic level of leakage (LRELL)** balances the cost of leakage control with the full costs of water production including the cost of the assets.

3.7.7. Over the SBP period the company's target was to achieve an LRELL of 135.5 Mld by the end of 2009-10. The company's leakage targets and performance over the SBP period are set out in Table 3.8.

3.7.8. For PC10 NI Water has based its leakage targets on a recently revised SRELL of 175.7 Mld following a fundamental reassessment of its water balance and the data and assumptions used in its assessment of leakage. The revised leakage target of 166 Mld by 2012-13 just exceeds SRELL. The company has further work to do to assess a revised sustainable LRELL which will be completed to determine targets for PC13.

3.7.9. As a result of its reassessment of leakage the company concluded that its previous estimate of the economic level of leakage was too low and that the levels of leakage reported in the past were also too low. Presentations by the company suggest that the difference in the level of leakage reported by the company using the alternative methods is of the order of 25Mld.

Table 3.8 - NI Water leakage targets and performance.

	07-08	08-09	09-10	10-11	11-12	12-13
SBP leakage target (based on LRELL)	157	146	135.5	135.5	135.5	135.5
SBP leakage performance based on consistent methodology	156	155				
Revised leakage targets (new methodology)		181	177	173	169	166

3.7.10. The company was expected to deliver a reduction in leakage of 21Mld in the last two years of the SBP. We believe that the company will achieve less than half this

reduction in leakage, measured on a like for like basis. In view of the quality of information available to the company to set targets and manage leakage through the SBP period, it is possible that the SBP targets were not robust and may have been overly ambitious. The targets for PC10 are based on improved data and relate to a level of funding which provides a more realistic challenge for the company.

3.7.11. The company and its predecessor DRD Water Service have delivered significant reductions in leakage in recent years. NI Water's current level of leakage per length of water main is comparable to the mid range of companies with effective leakage management in Scotland, England and Wales. As NI Water develops its long-term water resource management plans it will have to consider opportunities for further reducing leakage, reducing carbon emissions, and minimising the impact of abstractions on the environment. The current economic level of leakage compares the costs of controlling leakage with the cost of water production (limited to operational costs only). For PC13, the company will develop a sustainable long-term level of leakage, taking account of capital replacement costs and wider economic costs, including the cost of carbon and environmental impacts.

Nominated Outputs for Water Resources

3.7.12. Nominated outputs for water resources are:

- Completion of increased abstraction from the Strule to Derg WTW which underpins the improvement in the security of supply index in PC10.
- Completion of the reservoir inspection engineer's recommendations for impounding reservoirs.
- Four trunk mains schemes included in the company's Business Plan:
  a. the Castor Bay to Dungannon trunk main;
  b. the Cross Town Main;
  c. Phase 1 of the Castor Bay to Newry trunk main; and,
  d. Start of Phase 2 of the Castor Bay to Belfast trunk main.
- Completion of a Water Resource Strategy which will inform future investment for PC13.

3.8. Water Treatment and Supply Outputs

Introduction

3.8.1. Water treatment and supply outputs for PC10 include gradual improvements to water quality in line with current and proposed investment. We have also included water mains activity as an output due to the lack of clear quantifiable links between the level of activity and associated service level outputs.

Water Quality Compliance

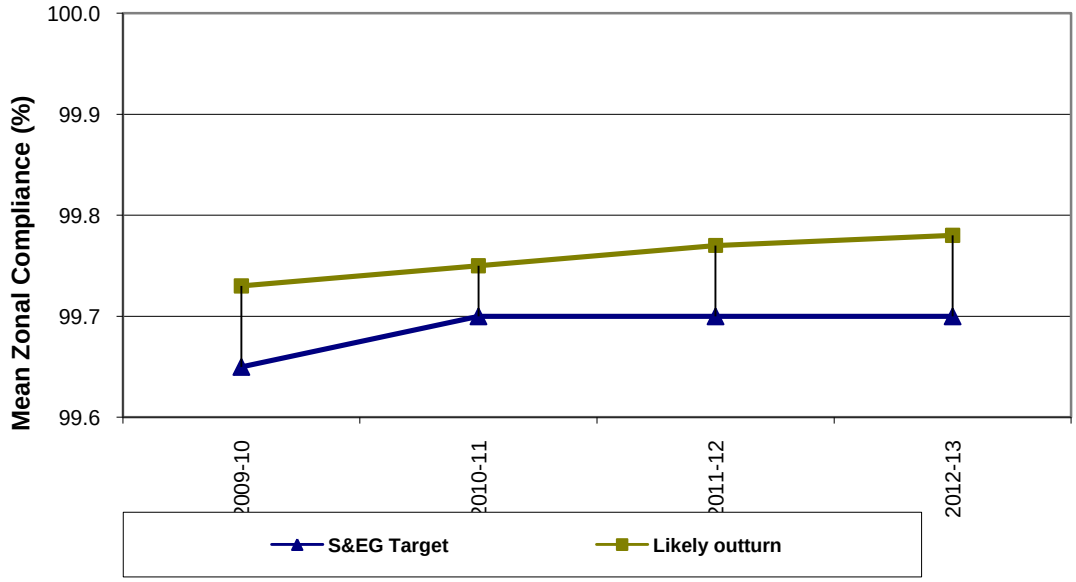
3.8.2. Water quality compliance is monitored through a statutory sampling and testing regime and is regulated by the Drinking Water Inspectorate. Sampling and testing regimes are defined for water leaving treatment works, potable water in service reservoirs and water supplied at tap. The regulations identify the parameters to be tested, prescribed concentration values and the frequency of sampling.

3.8.3. In addition to reporting numbers of samples and number of sample failures a 'mean zonal compliance' (MZC) is reported for the results of statutory water quality samples at tap. MZC is reported for individual parameters and a combined MZC reported as the average over 40 parameters. In its PC10 Business Plan the company provided estimates of projected compliance with a range of key parameters. Since the draft determination we have reviewed the projection of individual parameter compliance with NI Water based on recent experience and the impact of investment to be delivered in PC10. The company's forward projections indicate either stable or gradual improvement in individual water quality compliance in PC10

3.8.4. The outcome for individual parameters will be subject to some variation year on year as a result of sampling effects as well as underlying changes in water quality. As a result, the key output target will be the combined MZC for 40 parameters.

3.8.5. The combined MZC of 99.70% proposed by the company for 2012-13 is the Ministerial target for PC10 set out in the Social and Environmental Guidance. It is lower than the SBP target of 99.77% for 2009-10. Based on the analysis of data for 2008 and initial data for 2009 we have concluded that the company is likely to exceed the 2012-13 target in 2009-10. In view of on-going investment, we expect the company to exceed its proposed MZC target for each year of PC10. Based on current performance and the impact of proposed investment we expect that MZC will be in the range indicated in Figure 3.7.

Figure 3.7 – PC10 Expected range for MZC



Nominated Outputs for Water Treatment and Supply

3.8.6. Nominated outputs for water treatment and supply are:

- Completion of two water treatment works upgrades to meet drinking water quality standards;
- Completion of a study for one WTW to determine future quality improvements;
- New, replacement or rehabilitation of 900 km of water mains (excluding the trunk main schemes) which will contribute to improvements in water quality as well as maintaining and improving DG2 and DG3 customer service measures and providing for growth;
- Provision of increased capacity at 13 service reservoirs and clear water tanks including, in some cases start of construction in PC10 with the output delivered in PC13;
- Continuation of the service reservoir rehabilitation programme, prioritised in conjunction with DWI; and
- Completion of drinking water safety plans.

3.8.7. The proposed capital and operational expenditure allows NI Water to continue to address lead compliance by orthophosphate dosing. It will continue to replace lead service pipe within its mains replacement programme and when requested to do so by consumers who are replacing their own lead communication pipes. NI Water and DWI will continue to monitor compliance against current standards for lead and the higher standard which will come into force from December 2013. We recognise that this might demonstrate that additional work will be required to meet the higher standard required by December 2013.

3.9. Sewerage Outputs

Introduction

3.9.1. We have considered three sewerage outputs for PC10:

- Sewerage activity rates to demonstrate that the company delivers the investment in sewerage infrastructure;
- Nominated outputs for the improvement of unsatisfactory UIDs; and
- An improving service level in respect of high and medium pollution incidents.

Sewerage Activity Rates

3.9.2. We have not included service level outputs for the sewerage service. Typically, we would consider service level measures for the sewerage service including sewer blockage, sewer collapse and flooding. However, because of concerns about the quality

of sewerage service data, we are not convinced that it is possible to set robust targets for PC10. We will monitor performance against these measures in PC10 as part of our serviceability assessment. We expect that work currently being undertaken by NI Water to improve the quality of its data will allow robust service targets to be set for PC13.

3.9.3. In the absence of robust service level measures, we have included the sewerage activity rates as an output measure for sewerage capital maintenance. Since the draft determination we have reviewed the targets with the company to reflect proposed levels of investment and historical unit rates.

Table 3.9 – Sewerage activity rates for PC10

Activity	Km in PC10
Length of critical sewer renovated or renewed	63
Length of non-critical sewer renovated or renewed	9

Unsatisfactory Intermittent Discharges (UIDs)

3.9.4. During PC10 the company will invest to reduce the impact of unsatisfactory intermittent discharges on receiving water quality.

3.9.5. The outputs for PC10 are the improvements to 117 UIDs identified by the company in its Business Plan. The list of outputs was developed by the company from the results of its on-going Drainage Area Study programme which are shared with NIEA. The list of outputs has been broadly endorsed by NIEA based on its understanding of the DAS programme.

3.9.6. The outputs proposed by NI Water do not include all the unsatisfactory UIDs in each catchment where improvements are proposed. The improvements proposed by NI Water must be delivered without detriment to the discharges from UIDs in the same catchment which are not included in the PC10 plan.

3.9.7. Further detailed analysis may result in changes to the detailed outputs to be delivered for the UIDs included in the plan. This will be addressed by the PC10 change control process.

Pollution Incidents

3.9.8. NI Water has proposed a target for high/medium pollution incidents attributed to NI Water of:

Table 3.10 – Target for pollution incidents attributable to NI Water

	08-09	09-10	11-10	11-12	12-13
High and medium pollution incidents (number)	56	56	54	51	48

3.9.9. The company projects a moderate reduction in pollution incidents. There is no clear link between this reduction and the proposed investment programme. Much of the improvement may be delivered by increased asset monitoring allowing the company to react more quickly to stop pollution incidents developing.

Sewage Treatment Quality Outputs

3.9.10. On the 1st of April 2007 a wastewater treatment works consenting regime was introduced under the Water and Sewerage Services (Northern Ireland) Order 2006. At the same time, NI Water lost the crown immunity which afforded protection to its predecessor NI Water Service. NI Water is now open to prosecution if it does not comply with statutory consent conditions.

3.9.11. New consents were introduced which took account of the existing registered discharge standards and current works performance, but also considered environmental needs standards to meet mandatory EU discharge standards or receiving water standards. In some cases the new consents included time limits for the delivery of improvements to meet environmental needs standards which the current treatment works could not achieve.

3.9.12. The programme of work for the SBP 2007-10 considered investment over the period up to 2013-14. A schedule of work was drawn up for continuity of improvements to wastewater treatment works into PC10 allowing some projects to begin in the SBP period with investment continuing to deliver an output in PC10.

3.9.13. The quality outputs for the PC10 period are named improvements to treatment works greater than 250 PE which have been agreed as priority projects by the PC10 B2 Quality Working Group. The nominated outputs will be as follows:

- completion of SBP projects which do not form part of the agreed carry over programme;
- completion of 30 named schemes which carry over from the SBP to the defined standards and timescales as set out by NIEA; and
- completion of 13 named schemes which are new starts in the PC10 period to the defined standards and timescales set out by NIEA..

3.9.14. On the basis of our assessment of the company's Business Plan, key stakeholders have agreed to investment of a further £30m in wastewater treatment improvements which address priority compliance and development constraint. These additional outputs will be prioritised with NIEA and endorsed through the Outputs Review Group.

3.9.15. NI Water operates 804 small wastewater treatment works (with a population equivalent less than 250). These works generally have descriptive consents which define the level of treatment as opposed to numeric consent standards which define the quality of the effluent. The PC10 investment programme includes funding to make improvements to small wastewater treatment works with the work prioritised between NIEA and NI Water on an annual basis.

3.9.16. In addition to the nominated quality outputs agreed with key stakeholders, we have included general compliance outputs for wastewater. Five measures have been developed based on compliance with numeric consents under the Water Order and the EU urban wastewater treatment directive (UWWTD), reflecting compliance by number of works and by population equivalent. These measures provide the opportunity to assess the overall success of the PC10 investment programme including capital maintenance. Legal compliance of the works will be monitored by Northern Ireland Environment Agency. Key issues to be considered in relation to these output measures are:

1. A detailed reassessment of population equivalent resulted in a significant number of works crossing the 250PE threshold where a numeric consent will be applied under the Water Order. As many of these works are likely to fail the new indicative consent there will be an initial deterioration in reported compliance by number of works in 2010-11.

2. The reassessment of population equivalent has also identified three new works which might be required to comply with the UWWTD. As all three works are likely to fail the UWWTD standards until investment is complete. As a result, there will be an initial deterioration in UWWTD compliance and continuing failures throughout PC10.

3. The targets do not take account for the additional £30M of investment in wastewater treatment quality which has not yet been allocated to nominated outputs. Once this programme has been prioritised, we will revised the PC10 targets to reflect the additional outputs. This unallocated programme provides the opportunity to address some of the emerging issues caused by the reassessment of population equivalent, particularly the emerging UWWTD works.

4. During PC10, delivery of the quality compliance for population equivalent will be judged for against look up table compliance and annual average compliance only and exclude upper tier failures. Excluding upper tier failures ensures that the company does not fail to meet its PC10 target due to a single one-off failure at a one of its larger works.

3.9.17. In addition to the improvement delivered through investment in nominated quality schemes the company will continue to invest in the maintenance of its treatment works to maintain compliance.

Based on the improvements proposed in the PC10 period and its understanding of the performance of the remainder of its treatment works, NI Water has proposed consent compliance targets for PC10 which are set out in

3.9.18. Table 3.11. We have reviewed the proposed targets with the company to confirm the link between proposed investment and performance.

Table 3.11 – Sewage compliance outputs for PC10

	2011-10	2011-12	2012-13
% of WwTWs compliant with (Water Order) numeric consents	85.0%	87.7%	90.8%
% WwTWs compliant (UWWTD consents)	89.8%	92.4%	96.2%
% of WwTW discharges complying with numeric consents	84.6%	87.4%	90.9%
% of total pe served by WwTWs complying with Water Order consent (LUT)	94.87%	95.98%	98.53%
% of total pe served by WwTWs in complying with UWWTD consent (LUT)	95.73%	96.73%	99.11%

3.10. Asset Serviceability Outputs

3.10.1. A concept of asset serviceability will be introduced to judge whether the company's capital maintenance investment is sufficient.

3.10.2. Serviceability is the capability of a system of assets to deliver a reference level of service to consumers and to the environment now and in the future.

3.10.3. Maintaining serviceability does not require the company to maintain the condition or performance of individual assets or to replace assets on the basis of age. Instead the company is free to target capital maintenance in the way it considers best to deliver a reference level of service to consumers and the environment, now and in the future.

3.10.4. For PC10 we will use a similar methodology to Ofwat in England and Wales, which has proven successful in maintaining serviceability over time. We will measure serviceability by looking at the trend in the number of actual incidents on companies' networks, such as regulatory compliance failures at water and sewage treatment works for above ground assets, and burst water mains and sewer collapses for underground assets.

3.10.5. We will measure serviceability separately for the company's above-ground assets and underground networks separately and by service. We classify these groups respectively into non-infrastructure and infrastructure in line with the company's accounting methodology. A basket of measures will be considered for each asset category which are itemised in Table 3.15 to Table 3.15.

3.10.6. Serviceability is a relative measure which tracks a company's performance over time. Depending on trends in the serviceability measure it is determined as either improving, stable, marginal or declining. If serviceability declines the company would be expected to take action to recover the situation include committing additional investment as necessary.

3.10.7. Because serviceability is a relative measure, there is no need to use the same serviceability indicators as other companies or regulators. There is an opportunity to amend the indicators, for example, to:

- take account of levels of service which are identified by consumers as important to them; or,
- adopt sub-threshold indicators of service levels which a company uses and has developed as part of its asset management systems.

3.10.8. Over PC10 we will consider alternative serviceability indicators in conjunction with the company as we develop our understanding of consumer views and the company develops its asset data and asset management techniques.

3.10.9. The key to assessing serviceability is reliable data which has been collected over the medium to long term using a consistent methodology. This can reduce the usefulness of new serviceability indicators in the short term. In the case of NI Water, we have general concerns about the quality of historical data. We also recognise that there may be stepped changes in reported data over time as the company reviews its methodologies and systems for collecting and managing data. The lack of poor trended data limits our ability to assess serviceability and our confidence in the results. We have commented on some of the weaknesses in historic data in the tables below.

Table 3.12 – Water infrastructure serviceability indicators

Serviceability Indicator	Commentary
Number of mains bursts	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator.
% properties at risk of receiving low pressure (DG2)	Historical information is insufficient. Further movement might be expected due to better information. Significant improvement is targeted for PC10. Monitor for PC10 and consider serviceability trends for PC13.
% properties affected by interruptions >12 hrs	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator.
% mean zonal non-compliance - iron	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator.
Overall performance indicator TIM	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator.

Table 3.13 – Water non-infrastructure serviceability indicators

Serviceability Indicator	Commentary
% WTW with coliforms in supply (ex works)	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator. An improvement in performance from 2006 indicates a new level of serviceability has been reached.
% service reservoirs with coliform samples >5%	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator.
% WTW with turbidity samples 95 percentile >0.5NTU	Historical information is insufficient. Significant improvement is targeted for PC10. Monitor for PC10 and consider serviceability trends for PC13.
DWI enforcement action for coliforms at WTW	The low probability of future enforcement action linked to inadequate capital maintenance limits the usefulness of this indicator.
Unplanned reactive maintenance	No historical data to allow a serviceability indicator to be developed. The indicator can be defined by the company. NI Water to consider developing one or more indicators for PC13 and consider serviceability trends for PC13.

Table 3.14 – Water non-infrastructure serviceability indicators

Serviceability Indicator	Commentary
Number of sewer collapses	Sewer collapse data is very erratic. Review consistency of reporting. Monitor for PC10 and consider serviceability trends for PC13.
Number of pollution incidents from sewer network (CSOs, rising mains and foul sewers)	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator.
Number of sewer blockages	Data has only been reported for three years. Reported data fluctuates, reducing confidence in any projected trend. Review consistency of reporting. Monitor for PC10 and consider serviceability trends for PC13.
Number of properties flooded due to other causes	Flooding records are inadequate to develop serviceability trends. Monitor for PC10 and consider serviceability trends for PC13.
Number of properties flooded due to hydraulic overload	Flooding records are inadequate to develop serviceability trends. Monitor for PC10 and consider serviceability trends for PC13.
Number of equipment failures (sewage pumping stations)	There is insufficient data to establish trend. Monitor for PC10 and consider serviceability trends for PC13.

Table 3.15 – Sewerage non-infrastructure serviceability indicators

Serviceability Indicator	Commentary
% sewage treatment works failing Water Order consents	The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator. There has been continuous improvement in the past and further improvement will come from quality investment in PC10. The range and stability of the data suggests it is sufficiently robust to use as a serviceability indicator around an improving trend.
% population equivalent non-compliant sewage treatment works LUT Water Order and UWWTD consents	As above.
Number of pollution incidents from non-infrastructure assets	The range and stability of the data suggests it is sufficiently robust to use as a serviceability

Serviceability Indicator	Commentary
	indicator. However, in the past, the company has expressed concerns about the consistency of reporting which we will consider before established a trend.
Unplanned reactive maintenance.	No historical data to allow a serviceability indicator to be developed. The indicator can be defined by the company. NI Water to consider developing one or more indicators for PC13 and consider serviceability trends for PC13.

3.10.10. Based on the available data we have concluded that NI Water's serviceability is stable in all areas. We recognise that this conclusion is based on limited data and we have limited confidence in the current assessment.

3.10.11. We have provided for investment to maintain stable serviceability over PC10. As we will track serviceability over PC10 we will take account of any material movement in data arising from work by the company to improve its data quality. We will work with NI Water to establish serviceability and develop appropriate indicators which can be carried forward into PC13. During PC10 we expect the company to have developed robust data systems for each serviceability indicator, ensuring that data is collected consistently to a common definition each year and that data is accurate. This will provide the basis for robust serviceability targets for PC13.

3.11. Overall Performance Assessment (OPA)

3.11.1. We have adopted the Overall Performance Assessment (OPA) developed by Ofwat and will continue to assess the company's progress against this measure in PC10. A detailed description of the OPA and our use of it is set out in Annex A.

3.11.2. The OPA is a composite score of 17 individual service measures. We are unable to use six of these due to data quality issues and we have based our OPA for NI Water on the remaining 11 measures[4]. NI Water's OPA for 2007-08 and 2008-09 is set out in Table 3.16 where it is compared with scores from England and Wales for 2007-08 for the same 11 measures.

Table 3.16 – NI Water OPA score compared with England and Wales

Reporting Year	MAX OPA Score	E&W Max Collated	E&W Max Co.	E&W Average Co.	E&W Min Co.	E&W Min Collated	NI Water
2007/08	304	301	298	275	240	188	98
2008/09	304	303	300	288	250	229	103

[4] See Annex A for full list of performance assessment measures.

Note 1. The 2008/09 NI Water score is based on indicative analysis, calculations and data which as yet, have not been quality assured by the Utility Regulator. Figures are therefore subject to possible change before publication of our Cost and Performance Report.

3.11.3. The OPA is a relative measure which is assessed within upper and lower boundaries set for companies in England and Wales reflecting past performance. NI Water's performance is at the lower end of these bands for many measures. As a result, there is an opportunity for NI Water to increase its OPA score rapidly as performance increases.

3.11.4. NI Water's PC10 Business Plan included forecast levels of performance on certain measures of the OPA for the final year of the SBP period, and for each year of PC10. We have calculated OPA scores for each year of PC10 based on NI Water's forecast levels of performance. The calculated OPA scores to 2012-13 are shown in Table 3.17. The improvement in performance is considerable and we believe the company is capable of more.

Table 3.17 – NI Water OPA score projected to 2012-13

Reporting Year	2009/10	2010/11	2011/12	2012/13
NI Water predicted score	135	142	168	201

3.11.5. The company continues to improve its data and we have received undertakings from NI Water in respect of improving their systems, data and information management systems. However, there remain issues around some of the data which informs the OPA. For PC10, we will focus on monitoring NI Water against the OPA measures included in the 2007/08 OPA where current data appears to be reasonable. We will also add new measures year on year as NI Water's information set improves to inform the development of OPA leading up to PC13.

3.11.6. We have asked NI Water to provide additional information in advance of the final determination to demonstrate that the targets included in its PC10 Business Plan for properties at risk of receiving low pressure, leakage and wastewater treatment compliance.

3.12. Management and General Outputs

3.12.1. The final determination supports a significant investment in 'Management and General' to maintain and improve the facilities and systems required by the company to manage the delivery of services. Much of this investment is based around data quality and management.

3.12.2. Elements of the management and general investment can be defined as specific outputs: for example, investment in wind power. Where it is possible we will ask the company to demonstrate that these outputs have been delivered. Much of the investment will contribute to the service level outputs described above our will improve the ability of the company to target investment in the future. We will ask the company to report on this investment and the benefits it delivers to provide a basis for improved definition of investment in future Business Plans.

4.0 Investing in Services

4.1. Introduction

4.1.1. In the PC10 Business Plan, NI Water provided its assessment of the capital investment required in the PC10 period to maintain its assets; provide for new development and growth; enhance levels of service to consumers; improve the quality of water supplied and sewage discharged; and provide the general facilities required to support its business activities.

4.1.2. NI Water prepared its estimates based on current costs which were then adjusted to reflect its view of the future efficiencies which could be achieved in PC10. The total capital programme proposed by NI Water was £622m based on current costs, reduced to £586m to reflect its view of future efficiency.

4.1.3. In its representations on our draft determination, NI Water revised a number of the capital cost estimates in its Business Plan submission. As a result the estimated cost of the capital programme proposed for PC10 rose to £636m based on current costs. We estimate that this equates to £599m after adjusting for the efficiencies proposed by NI Water.

4.1.4. We have considered and challenged the activities, costs and outputs of the capital investment programme proposed by NI Water in its Business Plan.

4.1.5. We challenged the outputs the company proposed to deliver in PC10 liaising with the key stakeholders in the PC10 process to confirm that the outputs are necessary; are supported by consumer views; address the priorities of the Social and Environmental Guidance and meet the requirements of the quality regulators.

4.1.6. We challenged the cost of delivery set out in the Business Plan against costs incurred by NI Water in the past. We also considered high level unit costs of delivery reported by water and sewerage companies in Scotland, England and Wales to form a view on overall costs of programmes of work. The company's expenditure plans were scrutinised by the Independent Reporter, who also commented on adjustments proposed by NI Water since its Business Plan submission, and we have taken account of his observations in arriving at our assessment of a reasonable level of expenditure for the PC10 period.

4.1.7. Overall, we concluded that NI Water had delivered a considered capital investment plan and have only found it necessary to make limited adjustments to the level of investment proposed before adjusting for future efficiencies. Our challenge of the investment plan has resulted in the following types of adjustments to the proposed investment:

1. Reallocation of expenditure between the purpose categories which are described in Section 4.2.

2. Alterations to the activities proposed by the company based on our review of outputs and discussions with key stakeholders.

3. Alterations to the scope of work proposed by the company based on our assessment of the work necessary to deliver the agreed outputs.

4. Alterations to unit costs based on NI Water historic expenditure, comparison with benchmark costs for other companies or the observations of the Independent Reporter.

4.1.8. We have concerns about the quality of the data and analysis which was used to support the company's assessment of the capital maintenance expenditure required to maintain the existing assets and current levels of service. In light of these concerns we considered three approaches for assessing capital maintenance expenditure. We have set out the detail of this assessment in Annex B and summarised the conclusions in Section 4.6 below. Our determination is based on econometric analysis of capital maintenance expenditure by water and sewerage companies in England and Wales, subject to specific adjustments to reflect the longer lengths of water mains operated by NI Water and the impact of the Alpha and Omega PPP concessions.

4.1.9. Our assessment of the scope for future efficiencies is set out in Chapter 5. We used a standard Cost Base approach to compare NI Water's capital efficiency position with that of similar companies in England and Wales. We have also taken account of local conditions which affect the reasonable levels of costs incurred by NI Water which are outside the control of the company.

4.1.10. The impact of our challenge to the capital programme is to reduce capital investment from the £599m proposed by the company to £527m post efficiency, a reduction of £72m (12.1%), see Table 4.1.

Table 4.1: Overall adjustment to the proposed capital investment

	NI Water Business Plan	UR Final Determination	Variance	
Total capital expenditure (pre-efficiency)	£636m	£542m	£52m	8.2%
Total capital expenditure adjusted for efficiency	£599m	£527m	£72m	12.1%
Overall scope for efficiency	5.8%	9.9%		
Scope for additional outputs		£38m		
Total investment		£564m		

Note 1 Figures may not add due to rounding

Note 2 The adjustment of proposed expenditure pre-efficiency includes £8m of leakage expenditure reallocated from Capex to Opex.

4.1.11. As a result of our challenge to the capital programme we have included an additional £38m in the draft determination to be invested in additional urgent outputs to be agreed with key stakeholders. This provides the opportunity to:

- accelerate work on one water treatment works, subject to the successful completion of study work to determine a sustainable treatment solution; and
- deliver additional wastewater treatment works improvements to reduce the risk of infraction and support development.

4.1.12. The following sections of this chapter:

- Summarises the key changes made for the final determination.
- Summarises our approach to contingencies in the final determination.
- Defines the purpose categories used in our analysis of capital investment and summarise investment by purpose category;
- Summarises the results of our challenge to the capital programme before we adjust expenditure for efficiency;
- Summarises our approach to assessing capital maintenance and the outcome of our analysis, with more detailed information in Annex B and
- Sets out our view on investment in renewable energy by NI Water.

4.1.13. All capital expenditure in this section is presented in 2007-08 prices using the Construction Output Prices Index (COPI) as the inflation index. The costs are gross expenditure before the deduction of capital income.

4.2. Summary of Key Changes for the Final Determination

4.2.1. We have carefully considered the representations made by NI Water and other stakeholders to our draft determination. As a result we have increased our allowed capital expenditure by £44m from the draft determination.

4.2.2. Table 4.2 explains the reasons for the uplift in capital

Table 4.2 - Utility Regulator allowed uplift in capital investment in the final determination

Reason for uplift	Base maintenance	Enhancement	Total uplift
Increased unit rate for historical water mains laying rates evidenced by NI Water	£4.0m	£3.8m	£7.8m
Increased rate for water mains in response to additional information submitted by NI Water evidencing enhanced focus on urban mains laying	£5.0m	£5.2m	£10.2m
Revision to efficiency targets applied to the capital enhancement programme including a revised RPA	£1.0m	£7.9m	£8.9m
RPA efficiency challenge limited to a proportion of the capital maintenance programme to reflect work procured in national markets	£13.0m		£13.0m
Revision to the RPA applied to the capital maintenance efficiency challenge	£3.4m		£3.4m
Other changes		£0.7m	£0.7m
Total	£26.5m	£17.6m	£44.1m

4.3. Assessment of Contingencies across the Programme

4.3.1. NI Water applied an estimate of contingency across its capital cost estimates to reflect the risk of cost escalation from estimate to outturn. We believe this is a reasonable approach which reflects a range of risks which might materialise as a project develops as well as the inherent uncertainty in any cost estimate.

4.3.2. In the draft determination we reduced the level of contingency applied to selected Business Plan estimates based on the comments of the Independent Reporter. In broad terms, the Reporter noted that 10% contingency had been added to all projects and stated the opinion that it would be more reasonable and pragmatic to add 5%. The company and other stakeholders have challenged these adjustments in responses to the draft determination.

4.3.3. In light of these representations on the level of contingency, the Reporter undertook further work to assess the level of contingency applied based on additional information provided by the company. This work:

- Reviewed the level of variance which NI Water allocated to external change in project requirements. For example a change in discharge consent or additional capital maintenance work.
- Considered the historical level of estimate to outturn variance of projects including the trend over time as improved project assessment and procurement techniques have been developed.

- Considered the impact of inflation on tender to out-turn variance.
- Considered the level of contingency already included in the estimating techniques adopted by NI Water.

4.3.4. In light of this work the Reporter concluded that the reasonable level of contingency for the Business Plan estimates were those set out in Table 4.3. The table also includes the contingency allowance we included in the final determination.

Table 4.3 – Level of contingency applied to capital estimates

Area of investment	Contingency	Comments
Water infrastructure	1.0%	Not used in the final determination
Trunk mains	5.0 to 7.0%	Mid range figure of 6% used in the final determination
Water non-infrastructure	4.3%	5% used in the final determination
Wastewater infrastructure	5.7%	Not used in the final determination
UID schemes	5.0%	5% used in the final determination
Wastewater non-infrastructure	9.0%	9% used in the final determination

4.4. Allocation of Capex by Purpose

4.4.1. When assessing the capital programme we consider investment in four main purpose categories, which are described below:

Table 4.4: Purpose category definition

PURPOSE CATEGORY	Description
Base (capital maintenance)	Investment to replace existing assets which have reached the end of their useful life to maintain the existing asset base and levels of service delivered to consumers.
Enhanced service levels	Additional investment to improve the level of service to existing customers. For example: by reducing the risk of sewer flooding or increasing the pressure of water supply.
Growth (supply demand balance)	Additional investment to address the balance of supply and demand. This includes additional water resources, new water mains and sewers to connect new developments and treatment capacity to cater for growth.
Quality enhancements	Additional investment to deliver compliance with new statutory requirements including compliance with EU obligations.

4.4.2. A comparison of the post efficiency expenditure proposed by NI Water and that included in this draft determination by purpose category is presented in Table 4.5.

Table 4.5 - Summary of investment by purpose category (£m) (2007/08 prices)

Purpose category	Water		Sewerage		Total		
	NIW	UR	NIW	UR	NIW	UR	
Quality	38	27	129	138	167	165	29%
Base	118	121	140	130	258	251	44%
Enhanced service	20	17	28	25	47	41	7%
Growth	91	61	36	46	126	107	19%
Total	267	226	332	338	599	564	
Allocation		40%		60%			

Note 1 The determination includes £38m for additional outputs not included in the NI Water Plan.

4.4.3. 44% of the investment included in the determination is directed at maintaining existing assets and serviceability while 56% is directed at enhancing assets, improving levels of service and addressing development and growth.

4.5. Summary of the Pre-Efficiency Capex Challenge by Sub-Programme

4.5.1. In the following sub-sections we provide more detailed information on our challenge to individual areas of the capital investment programme (pre-efficiency).

4.5.2. We allocated the capital programme information submitted in Table C5-1 of the Business Plan to 15 broad sub-programmes of work which reflect the categorisation of investment included in the table.

4.5.3. The impact of our challenge to the Business Plan CAPEX is summarised in Table 4.6 setting out the movement from NI Water's Business Plan pre-efficiency to our draft determination. We have not provided an individual sub-programme level assessment of capital maintenance expenditure which has been determined by econometric modelling.

Table 4.6: Capex challenge by sub-programme (2007/08 prices) (£m)

Sub Programme		NI Water Business Plan Pre-efficiency		Draft Determination Pre-efficiency	
		Base	Enhancement	Base	Enhancement
1	Capitalised salaries and on-costs	13.3	20.5		17.9
2	Base maintenance non-infrastructure	89.0	0.0		0.0
3	Water resources	3.6	2.1		2.1
4	Water treatment	2.2	3.5		2.9
5	Trunk mains	1.1	18.4		17.3
6	Service reservoirs	12.2	14.0		13.4
7	Water mains rehabilitation	63.5	72.5		56.2
8	Sewerage	31.9	18. 1		18.1
9	Leakage	0.0	18.5		2.5
10	Flooding programme	0.0	12.3		10.3
11	Unsatisfactory intermittent discharges	0.0	42.5		40.6
12	Wastewater treatment	6.6	101.0		89.2
13	Operational capital	23.3	4.5		4.5
14	Miscellaneous	0.0	3.9		3.9
15	Management and General	29.3	28.4		29.5
	Total pre-efficiency	276.2	360.3		308.3
	Total post efficiency	258.6	340.6	250.9	276.0
	Add additional outputs				37.5
	Totals including additional outputs	258.6	340.6	250.9	313.5
		599.2		564.4	

4.5.4. The key challenges applied to each sub-programme of work are summarised below.

Capitalised Salaries and On-Costs.

4.5.5. We have applied the percentage additions for capitalised salaries and on-costs used by the company to the relevant post efficiency project cost.

4.5.6. We noted that the approach to capitalised salaries and on-costs for PC10 capitalised more costs than the 2007-08 Base Year. We deducted a total of £2.0m from the PC10 Opex to account for this reallocation.

Base Maintenance Non-Infrastructure

4.5.7. The base maintenance expenditure programmes covering general non-infrastructure maintenance have not been considered separately. We have determined capital maintenance expenditure through econometric modelling.

Water Resources

4.5.8. Based on the observations of the Independent Reporter, we have included an additional £0.7m (pre-efficiency) in PC10 to undertake work on impounding reservoirs recommended by the Reservoir Panel Engineer in 2005. We expect the company to have completed all necessary work by the end of PC10.

Water Treatment

4.5.9. We have considered the level of contingency applied to these schemes and reduced the estimates by 5%.

4.5.10. We have not applied any efficiency adjustment to this work as the majority is committed in the SBP period as planned.

Trunk Mains

4.5.11. We have considered the level of contingency applied to be high and have reduced the estimates by 6%.

Service Reservoirs and Clear Water Tanks

4.5.12. This strand of work includes: the provision of new or additional capacity at service reservoirs and clear water storage tanks (located at water treatment works); and, service reservoir rehabilitation.

4.5.13. We consider the level of contingency applied to be high and have reduced the estimates by 5%.

Water Mains Rehabilitation

4.5.14. NI Water proposed to increase water mains activity from 903km included in the SBP (2007-2010) to 1067km in PC10. At the draft determination we concluded that recent rates of activity had maintained the condition of water mains and delivered improvements in water quality and a reduction to the number of properties at risk of receiving low pressure.

4.5.15. We discussed this issue in some detail with NI Water following its response to the draft determination. While the company provided useful additional information, it was not able to demonstrate that an increased activity rate was necessary. We have therefore maintained our draft determination position of 900km of mains replacement over the three year PC10 period.

4.5.16. During PC10 we expect NI Water to develop its plans for water mains rehabilitation to clearly demonstrate the benefits of any proposed increase in mains activity. In particular, we expect the extent of the water mains quality programme to be assessed in conjunction with the DWI and for the company to consider a more targeted approach for addressing properties at risk of low water pressure.

4.5.17. In its representations on the draft determination the company asked that we review the unit rates for water mains to take account of three issues:

1. The company submitted revised information on expenditure and activity which demonstrated that the unit cost of water mains in the SBP period was higher than previously submitted data indicated. We took account of this and revised our assessment of historical unit costs for water mains activity.

2. The company indicated that it would increase the proportion of water mains replacement carried out in urban areas in PC10. It was apparent from information submitted by the company that water mains activity in the SBP period had focused on rural areas. We are concerned that if this continued it would result in a legacy of more expensive problems to be addressed in the future. The company was not able to commit to a specific programme of work to support the increase in unit rates it proposed. In the absence of specific information we allowed two-thirds of the proposed uplift.

3. The company confirmed that it had not applied capitalised salaries and on-costs to the water main programme in its Business Plan submission. We took account of this for the final determination.

4.5.18. We have increased the water infrastructure capital maintenance allowance in the final determination, over and above the outcome of the econometric analysis, to ensure that the company is able to fund both the rate of activity on water mains assumed in the draft determination and other activities.

Leakage

4.5.19. NI Water included £18.5m (pre-efficiency) under the capital enhancement growth categorisation for maintaining and improving levels of leakage. This covers work

to find and fix leaks, replace existing capital assets and create new capital assets. We do not agree that all this expenditure should be accounted for as capital enhancement. The Independent Reporter has confirmed that he does not consider the allocation of costs between capital expenditure and operational expenditure to be appropriate, or the allocation of costs between growth and base capital expenditure to be appropriate.

4.5.20. For the draft determination we have reallocated leakage expenditure as follows: £8.5m to Opex, £7.6m to Capex base and £2.5m to Capex growth.

4.5.21. The reallocation to operational expenditure, which was not included in the 2007-08 Base Year was added to the operational expenditure determined for PC10.

Sewerage

4.5.22. A major element of this programme is capital maintenance which we have determined using econometric modelling. The determination supports an increase in expenditure on sewerage maintenance over historical levels of expenditure.

4.5.23. We have not adjusted the enhancement element of the programme which supports growth and development.

Flooding Programme

4.5.24. NI Water proposed investment of £15m (pre-efficiency) to address the risk of flooding due to hydraulic overload at 200 properties, an average rate of £75k per property.

4.5.25. Our analysis of expenditure in Scotland, England and Wales suggests that these early improvements can be achieved at a rate of £60k per property. We have based the determination on £65k per property.

4.5.26. We have not applied an efficiency adjustment to this expenditure as the determination is based on average out-turn cost for similar companies.

4.5.27. NI Water estimated that 18% of their investment would be required to counter an increase in the number of properties at risk due to growth and deterioration of the sewerage network. We have allocated this proportion of the draft determination investment equally between growth and base maintenance.

Unsatisfactory Intermittent Discharges

4.5.28. NI Water proposed investment to improve unsatisfactory intermittent discharges (UIDs) to standards identified through its drainage area study programme. The proposed improvements have been broadly endorsed by NIEA although further work will be necessary to prioritise the work and finalise discharge requirements.

4.5.29. We reviewed the average unit rate per UID in the company's Business Plan against similar rates for work by water and sewerage companies in Scotland, England and Wales and concluded that the company's unit rates are broadly reasonable.

4.5.30. Based on discussions with the Independent Reporter, we have reduced the contingency applied to UID schemes, reducing the estimates by 5%.

4.5.31. A key element of the UID programme is improvement to discharges to the Connswater. This is a major scheme remains in development at the time the company updated its submission for the final determination. There continues to be major uncertainty on the final cost of the necessary improvements which the company has estimated costs in the range £20M to £40M. In view of this uncertainty we have included investment of £20 M pre-efficiency in the final determination for this scheme. We expect the company to continue to develop the scheme and report the estimated costs to the Outputs Review Group representing key stakeholders. We expect the final technical solution and cost estimates to be subject to challenge by the Independent Reporter. If further investment is required over that included in the final determination, it may be necessary to phase the scheme to complete in PC13. If the necessary UID improvements can be delivered for less than the allowance included in the final determination, it may be possible to deliver additional outputs in PC10.

Wastewater Treatment

4.5.32. The wastewater treatment works programme includes carry over projects which began in the SBP period and will be completed in PC10, as well as projects which will start in the SBP period.

4.5.33. For the carry over programme, we have reviewed the projects against initial planned expenditure. On balance we have concluded that it would not be appropriate to make any adjustment to the proposed carry over expenditure.

4.5.34. Based on the recommendations of the Reporter, we have adjusted the lvel of contingency on the wastewater carry over projects and new start projects to 9%.

4.5.35. We have accepted the company's estimates for the carry over projects which are generally based on current estimates of work in progress or detailed estimates for planned work. We have not applied any efficiency adjustment to this work which was originally planned to be committed in the SBP.

4.5.36. For some new start projects, NI Water's solution proposes transferring treatment to new sites and abandoning the existing treatment plant. NI Water has however not allowed for the asset maintenance benefit of abandoning the existing works. We have therefore allocated 20% of the cost of the transfer projects to capital maintenance to reflect this benefit. The estimates for these projects are at an early stage of development. We reduced the cost estimates for the PC10 new start projects by 15% to account for the opportunities to value manage these projects as the detailed scope is developed.

Operational Capital Programmes

4.5.37. NI Water has identified a separate operational capital programme which accounts for capital schemes undertaken by the Operations Directorate.

4.5.38. Much of this work consists of small capital maintenance schemes. We have determined capital maintenance requirements through econometric modelling.

4.5.39. The operational capital programme also included a small element of expenditure to cater for development and growth. We have not made any pre-efficiency adjustment to this expenditure.

Miscellaneous

4.5.40. We have grouped together some smaller programmes of work, including those relating to water meters. We have not made any pre-efficiency adjustment to this work.

Management and General

4.5.41. NI Water's Business Plan submission set out proposals for investment in management and general, which covers the general systems and facilities required to support the business. Half of this investment is to maintain existing facilities and half is to enhance the level of service provided by improving response to consumers, reducing the frequency of breakdown or increasing the sustainability of service delivery. In part, the additional investment would allow the company to introduce systems and facilities already employed by companies in Scotland, England and Wales to improve operational efficiency and reduce costs.

4.5.42. The company provided outline Business Cases to support the proposed level of investment. We reviewed these and concluded that they generally set out a reasonable scope for investment but did not provide sufficient detail to form a view of the financial justification of individual business cases.

4.5.43. We considered the overall level of investment proposed by the company against historical investment in management and general by water and sewerage companies in England and Wales. We also considered the proposed investment against predicted expenditure. Both these approaches confirmed that the level of investment proposed by the company was broadly reasonable. Based on a sample audit, the Independent Reporter concluded that the work had been costed reasonably, often based on current or historical prices or quotations. Therefore we have accepted the company's costing subject to an adjustment for efficiency.

4.5.44. The draft determination includes investment proposed by the company to install a wind turbine at one of its wastewater treatment works as part of its regulated business. This approach is materially different from that adopted by other regulators and reflects the particular structure of NI Water. We have summarised our reasoning for this in Section 4.7 below.

4.5.45. We have excluded one element of work proposed by NI Water which does not relate to the regulated business. We believe that NI Water should fund this work through other charges or grants and the cost should not be funded through the regulated business.

4.6. Capital Maintenance Investment

Introduction

4.6.1. We have concerns about the quality of the data and analysis which was used to support the company's assessment of the capital maintenance expenditure required to maintain the existing assets and current levels of service. In light of these concerns we considered three approaches for assessing capital maintenance expenditure.

4.6.2. Our final determination is based on the econometric analysis of capital maintenance expenditure by water and sewerage companies in England and Wales. We have made specific adjustments to reflect the longer lengths of water mains operated by NI Water and the impact of the Alpha and Omega PPP concessions.

4.6.3. In the following sub-sections we provide some background information on capital maintenance and describe our assessment of the investment necessary to maintain levels of service.

4.6.4. Supporting information is provided in Annex B which describes the comparative analysis we carried out to determine a reasonable level of capital spend.

4.6.5. NI Water's Business Plan included capital maintenance investment of £252m post efficiency. We have reviewed the company's cost allocation and concluded that an additional £14.4m of proposed investment (post efficiency) should be categorised as base maintenance. Since the Business Plan was submitted, NI Water has proposed additional base maintenance expenditure of £6.1. With these adjustments, the total capital maintenance expenditure proposed by the company was £272.9m. Based on our comparative analysis we have concluded that company should be able to maintain its assets over PC10 for £250.9m.

Background

4.6.6. Capital maintenance investment is divided between:

- Capital maintenance (Base purpose category); and
- Capital enhancement (Quality, Growth and Enhanced Service Level purpose categories).

4.6.7. Capital maintenance is the work required to maintain existing levels of service and secure improvements paid for in the past by replacing plant and equipment which has reached the end of its useful life. It is an on-going commitment which is of immediate benefit to current consumers and is generally paid for directly from current revenues.

4.6.8. The assets used in the water industry vary from short life assets, such as vehicles and IT systems with asset lives of around 5 years, to sewers and impounding reservoirs with asset lives greater than 100 years. Typical asset lives for treatment works and pumping stations are of the order of 20 years for the mechanical plant and 60 years for the structures. Because the current asset stock was developed over a long period and

includes a mix of different assets, capital maintenance investment in the water industry should be relatively stable over the short to medium term and historic expenditure can provide a reasonable indication of short term investment needs.

4.6.9. However, base maintenance investment requirements can change over time to reflect changes in the assets used and the timing of historic investment. For example:

- In recent years the water industry has invested in more advanced treatment processes with improved automation and control. This has increased reliance on short to medium life assets which reach the end of their useful life more quickly and must be replaced more frequently.
- Groups of similar assets were often introduced over short time periods in the past, for example: particular types of pipe material. As a result, groups of assets which have provided broadly stable performance for many years can reach the end of their useful life and require replacement over a short time period.
- Recent investment in water treatment, wastewater treatment and sludge treatment to comply with EU directives, can improve the asset base resulting in a short term reduction in base maintenance requirements in that area.

4.6.10. To understand and plan for these changes requires a forward looking risk based assessment of asset maintenance needs. This approach must be based on a sound understanding of the asset stock, the probability of failure and the direct and consequential costs of asset failure. In England and Wales a Capital Maintenance Common Framework approach has been adopted by water and sewerage companies to provide this forward looking assessment.

4.6.11. NI Water has much work to do to develop the data and systems required to deliver this type of assessment. Provision is made in the draft determination to fund improvements to asset data and asset management systems which will allow NI Water to improve its ability to manage its asset maintenance in the long term.

4.6.12. In the PC10 Business Plan submission, NI Water based its proposals for capital maintenance expenditure on projections of historic expenditure. For non-infrastructure assets the company relied on an assessment of capital maintenance expenditure from 2000-01 to 2007-08 and trends in serviceability indicators to determine whether asset performance had improved, declined or remained stable in the same period. We believe that this is a reasonable approach which will form part of our monitoring of the company going forward. However, we have the following concerns about the quality of the historic data used by the company in its analysis:

- Some of the serviceability indicators used by the company to trend performance have been subject to stepped changes which indicate that they are not robust. The lack of confidence in some data has been confirmed by work undertaken by the company to improve data quality.
- Some serviceability indicators have improved as a result of investment to enhance the assets. It can be difficult to separate the impact of asset maintenance investment from other improvements and therefore to judge whether historic levels of asset maintenance have been adequate.

- The historic purpose category allocation used to identify base maintenance might not be robust.
- Changes in investment policy in the run up to the PPP contracts have affected short term investment trends.
- The historical expenditure data for individual asset types is highly variable and it is not clear that the forward projections are statistically robust.

4.6.13. In view of these concerns we applied three alternative approaches to the assessment of capital maintenance. Our conclusions are summarised below.

NI Water's Proposed Investment in Capital Maintenance

4.6.14. NI Water proposed capital maintenance expenditure of £252.3m in its Business Plan submission. We have reviewed the company's cost allocation and concluded that an additional £14.4m of proposed investment (post efficiency) should be categorised as capital maintenance. Since the Business Plan was submitted, NI Water has proposed additional base maintenance expenditure of £6.1. With these adjustments, the total capital maintenance expenditure proposed by the company was £272.9m.

4.6.15. NI Water set out proposals for capital maintenance investment for the four main service areas as follows:

Table 4.7 – NI Water proposed capital maintenance for PC10 (2007/08 Prices)

Service Area	Base maintenance (£m) total for 3 years	
	Pre-efficiency	Post-efficiency
Water infrastructure	72.1	67.8
Water non-infrastructure	62.2	58.6
Sewerage infrastructure	41.7	39.2
Sewerage non-infrastructure	113.9	107.2
Total	289.9	272.9

Note 1 Base maintenance expenditure restated to UR reallocations and additional expenditure proposed by NI Water since the Business Plan was submitted.

4.6.16. NI Water concluded that it does not have the data and systems required to develop a forward looking risk based assessment of asset maintenance. The company has based its assessment of asset maintenance expenditure on the projections of asset maintenance expenditure over the period 2000-01 to 2007-08.

Utility Regulator Assessment

4.6.17. We agree with the company's assessment that its current data and systems are not robust enough to support a forward looking risk based assessment of future capital maintenance needs.

4.6.18. For reasons outlined above, we do not have confidence in the company's historic cost allocations and serviceability data which underpin its projections of capital maintenance into PC10.

4.6.19. We recognised these weaknesses in our early assessment of the approach to PC10. Through the A1 working group we discussed our methodology for determining

capital maintenance expenditure. This methodology considered three independent approaches allowing us to draw robust conclusions based on a wide range of data:

Table 4.8 – PC10 Capital maintenance methodologies

METHODOLOGY	DESCRIPTION
Econometric Analysis	The econometric approach is based on an econometric analysis of capital maintenance expenditure of water and sewerage companies in England and Wales using physical explanatory factors such as length of main or number of connected properties. The methodology was developed by Ofwat and has formed the basis of Ofwat's past assessment of capital maintenance for England and Wales. The same methodology was applied by WICS to predict asset maintenance investment in Scotland for 2006-10 and 2010-14 where there were similar concerns about the quality of historic information and the robustness of asset management systems.
Unit Cost Comparisons	A more simplistic comparative analysis based on simple unit rates for capital maintenance (for example expenditure on sewerage infrastructure per unit length of sewer).
Cost Base Analysis	Analysis of historic costs reported by NI Water subject to Cost Base efficiency adjustments. This approach replicates the analysis undertaken by NI Water and is subject to the same reservations relating to historic data quality.

4.6.20. The outcome of each analysis was subject to efficiency adjustment which took account of the source of the data used, the method of analysis and regional price difference for NI Water relative to the water industry in England, Wales and Scotland. The basis of the efficiency adjustments applied are set out below:

Table 4.9 – PC10 capital maintenance efficiency adjustment

METHODOLOGY	ADJUSTMENT FOR EFFICIENCY
Econometric Analysis	The cost data in the econometric analysis represents the average efficiency position in England and Wales over the period 2003-04 to 2007-08. The Cost Base shows NI Water is at the median efficiency position compared to England and Wales. Analysis of regional price adjustment shows that NI Water's cost base should be 12.2% lower than the median position in England and Wales. We have applied an efficiency adjustment of 12.2% phased over three years to reflect regional price difference and an annual frontier shift of 0.4% per annum. This represents the average efficiency position for NI Water. The RPA applies to locally procured goods and services. We have applied it to 50% of non-infrastructure investment and 75% of infrastructure investment.
Unit Cost Comparisons	The unit cost analysis is based on the average costs in England and Wales over the period 2000 to 2007 and reflects the average efficiency over that period. This approach gave the lowest out-turn and we have not considered it further in our analysis. For comparison purposes we have applied the average efficiency adjustment from the econometric analysis to the unit cost analysis.
Cost Base Analysis	This analysis is based on NI Water's pre-efficient costs subject to the cost base capital efficiency adjustments described in Annex B.

Base Maintenance Adjustment for Alpha and Omega PPP

4.6.21. We adjusted the analyses based on comparative data from England and Wales in respect of the Alpha and Omega PPP concessions. We recognise that the PPP assets are new and their short term capital maintenance investment should be low. Our analysis is not intended to model these short term values. Instead our aim is to determine a reasonable value for the average long term capital maintenance of a similar portfolio of assets within the econometric models.

4.6.22. The unit cost analysis and econometric analysis use explanatory variables which consider the whole service area and consider expenditure over a wide range of assets. We concluded that it was not possible to make robust adjustments to either the cost models or the explanatory variables to take account of the small sub-set of large assets included in the PPP concessions. Therefore we considered two approaches to determine a reasonable allowance for the maintenance of PPP plant included in the econometric models:

- We assumed that the average maintenance cost will be broadly equivalent to the straight line depreciation of the assets. We assumed an average asset life of 35 years.
- We applied the average ratio of non-infrastructure maintenance to non-infrastructure gross asset value for water and sewerage companies in England and Wales in 2007-08.

4.6.23. The detail of the analysis is included in Annex B. We have concluded that £5.876m per annum is a reasonable adjustment to make to the econometric models in respect of the PPP concessions.

4.6.24. The outcome of our analysis is summarised in Table 4.10

Table 4.10 – Capital maintenance analysis outcome (2007-08 prices)

BASE MAINTENANCE METHODOLOGY	Pre-Efficiency estimate (£m)	Post-Efficiency estimate (£m)	PPP Adjustment (£m)	Final Value (£m)
NI Water	289.9	272.9	included	272.9
Econometric modelling	264.5	251.0	-17.6	233.4
Unit cost analysis	186.4	176.4	-17.6	158.8
Cost Base analysis	267.9	248.1	included	248.1
Note 1 NI Water base maintenance expenditure restated to UR reallocations and additional expenditure proposed by NI Water since the Business Plan was submitted.				

4.6.25. We have concluded that the econometric analysis provides a reasonable basis for our draft determination. It is the best established of the three methodologies used and provides an answer in the mid range of those considered.

Adjustment for Infrastructure Renewals

4.6.26. We considered the differences between the bottom up analysis used in NI Water's Business Plan and our econometric analysis at a service level. The comparison is set out in Table 4.11.

Table 4.11 - Capital maintenance by service (post efficiency)

SERVICE	NI Water (£m)	Econometric Analysis (£m)
Water infrastructure	67.8	39.5
Water non-infrastructure	58.6	64.0
Sewerage infrastructure	39.2	31.1
Sewerage non-infrastructure	107.2	98.7
Total	272.9	233.4

Note 1 NI Water base maintenance expenditure restated to UR reallocations and additional expenditure proposed by NI Water since the Business Plan was submitted.

Note 2 All costs are in £m post efficiency at 2007-08 prices

Note 3 Costs presented post PPP adjustment

4.6.27. While the econometric analysis provides a lower level of funding than the company's analysis, we noted that the movement in water infrastructure is proportionally greater than in other areas of investment. Unlike other areas of the company's capital maintenance expenditure, the water infrastructure element is well defined as activities, which we expect the company to deliver as part of the outputs of its plan. In view of this we have reviewed our bottom up assessment of water infrastructure to identify the areas of investment proposed in the Business Plan and ensure that they are adequately funded.

Table 4.12 – Infrastructure investment (post efficiency) from Utility Regulator's bottom up analysis (2007-08 prices).

Item	Value £m	Commentary
Water resources	4.0	Maintenance of impounding reservoirs based on panel engineers recommendations.
Water trunk mains	1.0	Proportional allocation from the trunk main schemes.
Water mains rehabilitation	47.3	Based on an allocation from the water mains programme allowing for 900 km of mains replacement with 44% allocated to base maintenance based on historic allocations. Costs have been rebased to an efficient cost
Leakage	2.3	Allocation of leakage budget.
Operational capital (water)	3.1	General operational capital budget for small scale works and reactive maintenance based on historic run rates of expenditure.
Total	57.7	

4.6.28. Material elements of the water infrastructure programme are based on defined activities and outputs (the water mains rehabilitation programme and the water resources programme). We recognise that these programmes of work cannot be delivered unless the base element of the work is adequately funded. In view of this we have included an additional £17.5m in the determination to ensure adequate funding of the water mains programme pending a robust bottom up assessment of need and cost allocation for PC13.

Conclusion on Capital Maintenance

4.6.29. We have concerns about the data and methodologies adopted by NI Water to develop its assessment of capital maintenance expenditure.

4.6.30. We considered three alternative analyses and concluded that the econometric analysis based on comparative data in England and Wales provided a reasonable assessment of capital maintenance expenditure for PC10. We have adjusted the outcome of the analysis for the Alpha and Omega PPP plant. For water infrastructure we added an additional £17.5m to ensure that the specific activities which will form PC10 outputs are adequately funded.

4.6.31. Our determination is based on total capital maintenance expenditure of £250.9m over PC10.

4.7. Our Approach to Renewable Energy

4.7.1. NI Water has proposed investment for a wind turbine at one of its wastewater treatment works which it has included in its management and general programme.

4.7.2. NI Water is a regulated business operating under licence. Our draft determination relates to the company's regulated activities which we define as those which are integral to its business as a water company. The company is funded to provide services which by their nature are not easily subject to competition. The company should not expand its functions into areas where a competitive market exists for the services concerned.

4.7.3. We do expect NI Water to consider investment in renewable energy in cases where the generation of power is a natural consequence of the processes and technologies required to deliver its appointed business and where it does not make sense to separate energy generation from the core business. The most common examples of this in the water industry are power generation from sludge treatment by products and hydropower generation at impounding reservoirs.

4.7.4. If investment in renewable energy meets the criteria above we would then expect the company to demonstrate that:

- the main function of the investment remains the delivery of the core business;

- the incremental cost of renewable energy generation is cost beneficial taking account of the economic or financial benefit of carbon reduction; and
- the appointed business benefits from any income streams associated with power generation.

4.7.5. We do not expect NI Water to develop and operate wind farms. There is a competitive market for the large scale development of renewable energy and there are opportunities for a market to develop with multiple suppliers serving multiple users efficiently. We see no wider economic advantage of NI Water entering a market which is outside the scope of its core appointed business.

4.7.6. Where opportunities arise, we would expect NI Water to lease land or provide access to its assets to unregulated companies for renewable power generation and then purchase power at market rates. This has the benefits of promoting efficiency through the use of experienced service providers operating in a competitive market.

4.7.7. The company has put forward a proposal which lies between the two points of principle outlined above. A single wind turbine is proposed which will be 'close coupled' to a treatment plant. It provides the opportunity for minimising costs of transmission and thereby delivering renewable energy at a lower cost than could be supplied from a remote central generation facility. We would expect any other business operating in a competitive market to investigate and take advantage of this type of opportunity.

4.7.8. In the case of privatised water companies in England and Wales, Ofwat has concluded that wind turbines are not an integral part of a treatment plant and that they should not be classified as part of the appointed business. This decision has been taken in context where the parent companies of the regulated businesses have the necessary corporate structure and access to external sources of capital funding which allow them to develop local wind power generation and sell the power to the regulated business. Ofwat has noted the need for careful consideration of the allocation of costs between the regulated and non-regulated businesses in these circumstances.

4.7.9. In NI Water's particular circumstances, we recognise that the company's structure and public sector funding does not provide the same access to alternative sources of capital. We do not believe that this should be a barrier to opportunities for the local generation of renewable energy using wind turbines, provided that:

- The main purpose of power generation is to provide power for the appointed business of NI Water;
- The scale of power generation is proportionate to NI Water's local demand;
- NI Water actively considers and encourages alternative procurement arrangements which promote competition and reduce the risk to the company (including planning risk) of owning and operating the asset. These might include on-site lease agreements backed by an arrangement that NI Water will have first refusal on the use of power generated at an agreed price; and
- The arrangement is cost beneficial compared with the purchase of power from the grid.

4.7.10. For the final determination, the company provided supporting information to demonstrate that its proposed investment in renewable energy would meet the tests oset out above. In view of this, we have included the proposed investment in the final determination. We expect the company to provide further information as it develops its proposals to demonstrate that the scheme it intends to implement continues to meet the tests set out above.

5.0 Improving Capital Efficiencies

5.1. Introduction

5.1.1. This chapter summarises the approach taken by the Utility Regulator in setting capital enhancement efficiency targets for NI Water. There are various approaches available when undertaking such analysis and this section explains the rationale behind our chosen methodology.

5.1.2. Our analysis of the cost base which underpins our view on capital enhancement efficiencies is equally robust when informing a view on capital maintenance and we have used same within Chapter 4: Investing in Services.

5.1.3. The various sections are ordered as follows:

1. In sub-section 5.2 we present our approach at high level
2. In sub-section 5.3 we detail the steps involved in deriving our cost base view of the efficiency savings necessary for NI Water to deliver upper quartile industry performance
3. In sub-section 5.4 we detail the available options and sensitivities and our preferred assumptions applied to our cost base analysis:
    - regional price adjustment;
    - choice of benchmark;
    - rate and length of catch-up;
    - asymmetric or symmetrical adjustment;
    - any special factors; and
    - continuing efficiency or 'frontier' shift.
4. In sub-section 5.5 we present our conclusions

5.1.4. In summary the main conclusions we reach under this chapter include the following:

1. A preferred RPA of 0.878 is adopted based on additional research into local cost differentials likely to apply to NI Water;
2. For capital enhancement we expect 75% catch-up to the upper quartile performing company within a single year (new capital efficiencies are easier to deliver than, for example, those applying to base maintenance);

3. In adopting a symmetrical approach to modelling efficiencies, we have allowed NI Water scope to use their better efficiencies to net off against their inefficiencies;

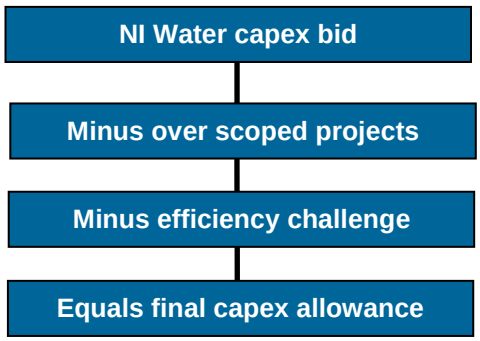
4. No special factors have been submitted by the company so the Regulator has not made any such adjustments;

5. Our continuing efficiency or frontier shift assumption is 0.4% pa;

6. We expect 12.87% capital enhancement efficiency savings in the first year of PC10 (2010/11), rising to a cumulative 13.57% saving by close of PC10.

5.2. Approach

5.2.1. The basic approach follows the generic process undertaken by other economic regulators. This includes the following steps:



5.2.2. At a high level, network engineers have looked at the scale of the overall capital programme. This analysis probed into both the need for particular projects and whether the estimated costs were considered reasonable. As a result of this scoping exercise the Utility Regulator has made various adjustments to the proposed capital enhancement spend.

5.2.3. From the remaining budget an efficiency challenge has been placed upon the company. This challenge was determined from the findings of the 'cost base', a standardised list of unit costs for various aspects of work. An exception was allowed for SBP overhang costs where contracts have already been agreed so that additional efficiencies would be unreasonable. As a result of this process a final allowance was determined.

5.2.4. Within the development of the various stages there are numerous different approaches that can be implemented when applying the cost base efficiency challenge. Different assumptions make material differences to the final outcome and it is to these important differences in approach that we now turn.

5.3. Cost Base

5.3.1. For the most part, the general process mirrors the established Ofwat methodology as detailed in their Feedback Reports. The entire process consists of 3 steps:-

1. Establish the scope for efficiency;
2. Calculate weights attributable to each standard cost using company forecasts; and,
3. Apply the weights to the scope for efficiency in order to generate targets.

Step 1 – Establishing the Scope for Efficiency

5.3.2. It is the intention of the Regulator to follow the established Ofwat process in terms of estimating the efficiency scope across each standard cost. This process is shown in the hypothetical example in the table below:

Table 5.1 - Calculating the adjustment for each standard cost

A	B	C	D	E	F	G
Standard Cost Submitted (Grassland Mains 100mm)	Chosen Benchmark	Gap (A – B) / B	Catch-up Rate	Catch-up Expected (A – B) x D	New Revised Cost (A – E)	Efficiency Scope (E / A) x 100
£50/m	£42/m	19%	80%	£6.4/m	£43.6/m	12.8%
Note 1 Catch-up rate has been used as an indicative value and may not be the actual rate used.						

Step 2 – Establishing the Weighting Adjustment

5.3.3. When the scope for efficiency of each standard cost has been arrived at, the percentages are weighted to reflect the anticipated expenditure within the price control period. This is an important step in the procedure since NI Water's level of efficiency depends on activity and this needs to be reflected in our assessment of scope for efficiency.

5.3.4. To calculate weighting adjustments we intend following the Ofwat approach.[5] The percentage of investment attributable to each standard cost will be determined by three factors:

1. Proportion of stock

[5] This process is detailed in the Ofwat capital unit cost Feedback Report, May2003.

2. Forecast investment by project type and location

3. Expenditure in sub-category as a percentage of total category (i.e. water infrastructure, sewerage non-infrastructure etc)

5.3.5. Taking 100mm mains laying in a grassland location (excluding directional drilling) as a hypothetical example, the formula reads:

Proportion of stock (%) x Forecast investment (%) x Sub category investment (%)

25% x 10% x 90% = 2.25%

5.3.6. The figures indicate that 25% of a company's potable mains relate to a nominal bore of 100mm. NI Water anticipates 10% of its forecast potable main expenditure to be in a grassland location, while 90% of its water infrastructure expenditure is allocated to potable mains (the remaining 10% being distributed between communication pipes and meters). The overall result is an allocation of 2.25% weighting to this standard cost.

5.3.7. With the draft determination the Regulator assumed an even split of stock proportions in the absence of better data. During the consultation phase the company provided additional information on mains and sewer classifications which allowed for better allocation of stock proportions. Ofwat would, as a rule, use asset inventory information to give more robust estimates of these splits. This is not an option for the Utility Regulator since a complete NI Water asset inventory does not exist at the present time. The updated information does however provide a better weighting for the standard costs than was available at draft determination.

Step 3 – Generating Efficiency Targets

5.3.8. The final step simply calculates the weighted efficiency adjustments and sums the total in order to establish the efficiency target for each category. This is demonstrated below:

Table 5.2 - Calculating efficiency percentages

	A	B	C
Standard Cost	**Efficiency Scope (as a percentage of original cost)**	**% of investment attributed to each standard cost**	**Weighted efficiency adjustment for each standard cost (A * B)**
Grassland Mains (100mm)	12.8%	2.25%	0.29%
Standard cost 2	10%	1.5%	0.15%
Standard cost 3	5%	6%	0.3%
Etc			
Total		**100%**	**6.5%**

5.3.9. The weighted adjustment is established by multiplying the scope for efficiency by the relevant weight attributed to that standard cost. The sum of the weighted adjustments then generates an efficiency target for that category e.g. water infrastructure. The process is then repeated for the other areas of expenditure.

5.4. Options and Sensitivities

5.4.1. The three steps outlined above illustrate a defined and well established methodology. However, there are a number of different assumptions we might make which will materially affect the scope for efficiency calculations.

5.4.2. The primary purpose of this section is to highlight these areas, demonstrate the available options and indicate our preferred approach for this determination.

5.4.3. The relevant areas of contention include:

- Regional Price Adjustment (RPA);
- Choice of benchmark;
- Rate and length of catch-up;

- Asymmetric / symmetric adjustment;
- Special factors; and,
- Continuing efficiency or 'frontier' shift.

Regional Price Adjustment (RPA)

5.4.4. It has long been recognised that regional differences, largely outside of company control, affect standardised costs i.e. material differences in standard costs reflect both differences in relative inefficiencies and atypical or company specific factors. Whilst the former are under management control the latter are not. In previous price reviews Ofwat required individual companies to submit special factor claims in order to make allowance for company specific impacts. In its latest review Ofwat recognise some companies will always appear more efficient than others simply by virtue of their location. To account for this, Ofwat decided to apply the RPA in both a positive and negative fashion to a proportion of standard costs which they consider to be affected by regional variations[6].

5.4.5. The revised methodology applied by Ofwat raises a number of policy options for how we allow for attributable differences in regional costs:-

1. ***No Allowance*** - unless a special factor claim is submitted. This was the general practice in previous Ofwat price reviews.

2. ***Ofwat's PR09 approach*** - this involves accepting the estimates of the BCIS (Building Cost Information Service) regional factor for Northern Ireland. Standard costs are adjusted to a UK average, but only for a proportion of the goods which are considered to be purchased locally. The proportion of costs which are affected by regional prices have been determined for the various standard cost areas by Ofwat[7].

3. ***NERA alternative –*** on advice from our consultants and upon further investigation it appears the BCIS figures represent the final difference in tender prices by region, for the same project. Variances in final tender prices suggest both locally and nationally procured goods have already been included in their calculation. Therefore the second step of the Ofwat calculation (splitting by local and national) would not be required and would thereby increase the scope for efficiency.

4. ***Preferred alternative –*** the Utility Regulator considers that the BCIS regional factor (currently sitting at 0.67 for N Ireland, or in other words, construction cost locally are 67% of the national average) seems excessive and is indicative of the 'outlier' status rather a general 33% relativity in costs compared to the UK average[8]. Although there is general recognition that

[6] At PR04 the approach to the RPA was asymmetric, in favour of companies with higher than national average costs as measured under the BCIS.
[7] The full list of national and regional price split percentages is included in the Ofwat final determination. These percentages have been reduced since the publication of the Ofwat Cost Base Feedback report.
[8] The majority of BCIS points are within 0.95 to 1.10 range.

construction costs are lower in N Ireland, we consider it prudent to investigate alternative options which may prove more appropriate. Other regional indices are available such as the difference in full and part-time median wages (0.89), full-time median wages (0.87) or construction sector wages (0.78), both published by the Annual Survey of Hours and Earnings (ASHE). The Utility Regulator has also considered a location report completed by Mott McDonald (0.865), the adjustment used at NIAMP2 (0.85) and the figure recommended by NI Water in its PC10 Business Plan (0.934)

5.4.6. Our approach in the final determination is to adopt an RPA of 0.878 (12.2% lower than GB). The figure represents a shift from 0.83 in the draft determination. This decision was based on adoption of ASHE figures for both blue collar and white collar workers where there was some difference between the views of the Regulator and NI Water. The Regulator considers that this approach takes full account of concerns raised by the company but still relies on independent information provided by Mott McDonald.

5.4.7. The Regulator has not adopted the company analysis as it has some remaining concerns about their approach. These include:

- The sample size of projects is relatively small and only accounts for two contractors who operate in Northern Ireland and Scotland;
- The Regulator believes that a bottom-up approach may not be entirely suitable for establishing an RPA. Although costs reflect the real difference those contractors are experiencing, they are unlikely to be indicative of the actual gap that exists across regions. For instance, one of the contractors analysed had no plant hire cost differences when operating in Scotland or Northern Ireland as that company owned a large proportion of its plant. In this case the bottom-up approach failed to recognise the real difference that exists between the two regions in this area. This may also be true for other factors such as employment rates etc.

As a consequence of these problems, the Regulator preferred to adopt an approach which drew upon differences at the average, as provided by Motts and ASHE data.

5.4.8. During the consultation phase some responses queried the level of difference between construction costs in Northern Ireland and the UK. It is worth noting that adoption of 0.878 (12.2%) does not mean that total construction costs are 12.2% lower in Northern Ireland. This regional adjustment only applies to an element of costs which are specifically incurred locally and can be relatively small (e.g. only applied to 33.5% of enhancement non-infrastructure costs). Given the proportion of costs to which the Regulator has applied the RPA, it is estimated that total construction costs are approximately 6% lower according to our analysis.

Choice of Benchmark

5.4.9. When estimating the scope for efficiency based on standard costs we must decide the appropriate comparator to use as a benchmark.

5.4.10. As of PR09 Ofwat revised their choice of benchmark and have adopted the median. This has certain appreciable benefits in that the figure is transparent, easy to calculate and as a measure of average costs it is considerably less open to outlier bias when compared to the mean. Their choice is also linked to the 'menu' regulation process, now referred to by Ofwat as the Capital Expenditure Incentive Scheme, where more emphasis for incentives is now focused on a company's own reflections upon delivery of efficiencies rather than any out-performance of relative efficiency targets.

5.4.11. Such a fundamental change of approach by Ofwat raises very important questions for us in choosing a suitable benchmark for NI Water. Various options are available:

1. ***Median*** – mimics the present Ofwat approach. While transparent, it is unlikely to provide an appropriate level of challenge for NI Water given we are not considering the use of 'menu' regulation for PC10. The Utility Regulator has therefore opted not to adopt the Ofwat PR09 approach.

2. ***Lowest reasonable cost*** – this was the approach adopted in Ofwat's last price review. Benchmark standard costs were chosen on the basis that their company met three criteria:

    a. The company had to be big enough to have 3% of market revenue;

    b. The standard cost had to be consistently applied in relation to the guidance; and,

    c. The data underpinning each standard cost had to have a minimum confidence grade.

    At this stage, we are unable to apply the 3rd criteria. Neither would any analysis based around the other criteria provide a robust means of identifying the lowest standard cost, hence we have chosen to discount this approach.

3. ***Upper quartile*** – going back to Ofwat's PR99 their use of the upper quartile as benchmark represents a robust measure similar to their present use of the median, whilst offering some of the advantages of the **lowest reasonable cost** in terms of incentivising the company to move toward the industry frontier. The upper quartile represents a reasonable number of companies that exhibit standard costs toward the lower end of the spectrum. By avoiding the frontier of standard costs, this methodology was also considered to be less likely to suffer from mis-specification issues i.e. issues around the degree of consistency of standard costs between companies. In the absence of the **lowest reasonable cost**, this does not appear an unreasonable methodology.

4. ***Celtic fringe*** – The Utility Regulator may also contrast NI Water's standard costs to companies already identified as being close comparators (e.g. the mean of Wessex, Welsh Water and South West). Our fundamental concern in adopting such an approach would be the fact that these companies might not represent efficient levels of expenditure and therefore would not offer suitable benchmarks.

5.4.12. At this final determination, the Utility Regulator is of the opinion that the upper quartile would represent an acceptable challenge. In the absence of confidence grade data for England and Wales companies, or a suitably selected frontier by Ofwat, it is considered that the upper quartile would provide a robust estimation of efficient costs.

5.4.13. Further evidence in support of our preferred benchmark was obtained by comparison of results between the upper quartile and celtic fringe. Adoption of the celtic fringe made no material difference to catch-up percentages so that we are reasonably confident that in modelling NI Water at the upper quartile avoids taking the company to an efficient place any more tougher than those of its self-professed comparator peers[9].

Rate and Length of Catch-Up

5.4.14. As part of their recent price review processes, Ofwat changed their assumptions for the rate and length of capital efficiency catch-up. Rate of catch-up was traditionally set at narrowing 50% of the gap for capital maintenance and 75% for capital enhancement. In their latest price review Ofwat now expect 100% of the variance to be closed, although companies are only expected to move towards the median rather than a chosen benchmark. In addition, any variances above and below the median are treated symmetrically.

5.4.15. By way of contrast, WICS in its Strategic Review of Charges 2002-06 set an 80% catch-up target for all capital expenditure (taking Scottish Water towards the benchmark via an asymmetrical approach) over a four year regulatory cycle.

5.4.16. In terms of the length of catch-up, Ofwat originally required the entire efficiency target to be met within the first year of the price control period. Following their 1999 determination an appeal to the Competition Commission resulted in capital maintenance efficiency targets becoming phased over a three year period. This was the subsequent process adopted at the start of the PR04 determinations. Capital enhancement was however still subject to immediate targets as the savings associated with the procurement of new plant, buildings or materials was felt to be readily realisable in the first year of each price control.

5.4.17. For PC10, there does not appear to be any justification for moving away from the one year approach for enhancement expenditure. The main issue relates to the rate of catch-up rather than length of catch-up.

5.4.18. Since the Utility Regulator has assumed catch-up to upper quartile England and Wales industry performance, our adopted approach merely reflects the Ofwat process in previous price reviews. A catch-up rate of 75% is therefore expected in the first year for capital enhancement.

[9] NI Water has previously, especially at the time of SBP, made particular reference and argument in favour of comparison to what was described the ‘celtic fringe’.

Asymmetric / Symmetric Adjustment

5.4.19. In previous years Ofwat made no allowance when standard costs were below benchmark. It was simply assumed such efficient procurement required no subsequent adjustment. In its latest review Ofwat stated they will make a symmetrical adjustment where this applies, thereby reducing the overall efficiency challenge facing relatively more efficient companies. We see no reason why symmetrical adjustments for NI Water should not be made since they will undoubtedly promote further improvement towards identification of more robust efficiency targets.

Special Factors

5.4.20. In its draft Cost Base submission, NI Water made no application for any special factor treatment of standard costs. No further issues have been raised in the consultation response so no adjustments have been made for special factors.

Continuing Efficiency

5.4.21. Prior to every determination Ofwat commission a report in relation to the expected industry frontier shift. A proportion of the industry shift is then added to the catch-up target to comprise a final efficiency target. Ofwat at PR09 employed Reckon who reported their findings in October 2008.

5.4.22. Based on these conclusions the Utility Regulator had been minded to adopt frontier shift assumptions of 0.25% per annum as anticipated by Reckon. Subsequent to Ofwat's draft and final determinations we have revised our expectation in line with Ofwat's own consideration such that we shall assume 0.4% p.a. frontier shift.

5.4.23. In summary, the current approach to the cost base is as follows:

Table 5.3 - Approach to capital enhancement efficiencies

Cost Base Issue	Current Approach
Regional Price Adjustment	0.878
National/Regional Adjustment	Yes
Choice of Benchmark	Upper Quartile
Rate of Catch-up	75%
Length of Catch-up	1 year
Symmetric Adjustments	Yes
Special Factors	None submitted
Continuing Efficiency	0.4% pa

5.5. Conclusions

5.5.1. Applying the various approaches to the cost base efficiency model gives the following results:

Table 5.4 - Cost base efficiency targets

Service Area	PC10 Efficiency Challenge
Water – Infrastructure	14.49%
Water - Non-Infrastructure	11.18%
Sewerage – Infrastructure	12.86%
Sewerage - Non-Infrastructure	11.37%
Weighted Average	12.52%
Note 1 Efficiency gap based on Upper Quartile benchmark, RPA = 0.878 and 75% catch-up	

5.5.2. The total scope for catch-up is assessed to be 16.70%. This is reduced to 12.52% when a 75% catch-up rate is applied. When the continuing efficiency assumption is added this gives a cumulative efficiency profile for PC10 as follows:

Table 5.5 - Capital enhancement overall efficiency targets

	2010/11	2011/12	2012/13
Catch-up year on year	12.52	0.00	0.00
Frontier shift	0.40	0.40	0.40
Overall compounded improvement profile	12.87%	13.22%	13.57%

5.5.3. These figures represent the overall efficiency challenge applied to the capital enhancement programme by the Utility Regulator at final determination.

6.0 Improving Operational Efficiencies

6.1. Introduction

6.1.1. This chapter outlines how we have set efficiency targets for NI Water, the options we considered along with sensitivity analyses of results and our comparison with the company's own view as to its ability to meet a higher efficiency challenge.

6.1.2. The various steps we take to determine NI Water's efficiency challenge include the following:

- Step 1 – establishing NI Water's baseline opex. This enables us to identify the underlying level of operating costs that NI Water incurs. We have used 2007/08 as the base year for this final determination. This is the cost of maintaining services at existing levels
- Step 2 – adjust for additions to baseline opex. We detail NI Water's claimed additions to baseline opex and our decisions
- Step 3 – determine Voluntary Early Retirement/Voluntary Severance (VER/VS) and Business Improvement Programme (BIP) additions to opex. We outline our treatment of NI Water's other claimed additions to opex including VER/VS and BIP
- Step 4 – determine prior modelling adjustment of opex for special factors and atypical expenditure. We examine our communications with NI Water prior to commencement of the PC10 programme, our treatment of the company claim for special factors and atypical expenditure and our response to the company's further representation *inter alia* the Water Distribution Model and negative Regional Wage Scope Adjustment special factor
- Step 5 – triangulation of efficiency models. We detail various options for setting opex efficiency targets (catch-up rates, discounts, exclusion of Business Activities), precedents for setting high efficiency targets and finally our *triangulation* of three available ranges for setting an opex efficiency target within our central range
- Step 6 - treatment of PPPs. We detail our approach to NI Water's claim for a full allowance of PPP costs, the regulatory principles we apply, our expectations for PC13 onwards and the reasons for our expectations for reasonable efficiency challenge at PC10
- Step 7 – examine company view. We present the company's own view on efficiencies according to their PC10 Business Plan outlining their view on deliverability
- Step 8 – our conclusions. We present our conclusions and reflect on both the scale of challenge for NI Water, their responses to our draft determination and the deliverability of our final determination

6.1.3. In summary the main conclusions we reach under this chapter include the following[10]:

1. Baseline opex is £171m net of atypicals
2. NI Water is, according to the Ofwat efficiency bandings a band E company with an efficiency challenge of almost 49%
3. We allow special factor and atypical expenditure of £17m compared to £41m claimed by NI Water
4. We allow £57m additions to baseline operating expenditure across PC10, equivalent to just over a half NI Water's claim for £112m
5. BIP costs of £10m across PC10 are allowed, NI Water having responded to our key regulatory tests
6. VER/VS costs of £28m across PC10 have been allowed to enable NI Water to meet its efficiency challenge
7. A new continuing efficiency is applied to the PPPs of 0.125% pa
8. Total efficiency challenge of 7.18% per annum applied to (base and enhancement) operating expenditure over the PC10 years
9. NI Water to save £26m additional cumulative efficiencies by end of PC10
10. Annualised delivery of efficiencies of 6.5% per annum (prior year opex excluding PPP capital charges) compared to 3.6% per annum in the PC10 Business Plan
11. NI Water can expect to close the relative efficiency gap by close of PC10 if it meets our efficiency challenge

6.2. Step 1 - Establishing NI Water's Baseline Opex

Introduction

6.2.1. This section outlines the process by which we have established the baseline level for operating expenditure for NI Water and the assumptions that underpin it. This should minimise uncertainty when measuring progress towards the level of performance that is required by the determination of charges.

[10] Unless otherwise stated our operational expenditure analyses are 2007/08 prices and exclude non-appointed expenditure.

6.2.2. The baseline level of operating costs is the expenditure incurred in the base year i.e. 2007-08 for this final determination. We assess the scope for efficiency savings, and monitor performance against the baseline.

6.2.3. Baseline operating costs reflect the specific level of service that was delivered in the base year. The baseline needs to reflect the actual underlying level of operating costs for the core business. We therefore have to make adjustments to take account of exceptional or atypical costs incurred in the base year. We also check that the reported operating costs in the base year do not include non-core operating costs. Any non-core costs must be deducted from the baseline. We have also adjusted the baseline to include any unavoidable costs that we consider NI Water may face during the 2010-13 regulatory control period. We asked NI Water to identify such costs in its PC10 Business Plan.

Establishing the Base Year

6.2.4. For each regulatory control period we need to identify one base year. We then monitor performance in each year of the regulatory control period against the level of service delivered in that base year. It is preferable, therefore, that the base year is one that is relatively stable.

6.2.5. The baseline for operating expenditure is likely to be more transparent if adjustments can be kept to a minimum. If NI Water did not apply its capitalisation policy consistently, or if its policy was different from that which the companies in England, Wales and Scotland use, it would also have been necessary to make an adjustment to the amount of cost capitalised[11].

6.2.6. We have decided to use 2007/08 as the base year for this final determination. We believe that this should make our monitoring more transparent. It also provides a baseline which better reflects NI Water's current operating environment and uses up-to-date comparable operating costs.

6.2.7. Our annual reporting of NI Water's progress or otherwise in improving its relative efficiency to the industry benchmark may require us to make adjustments to ensure that our comparisons are on a like with like basis. Any such adjustments will not impact the baseline for operating expenditure that we have established for the 2010-13 regulatory control period.

Establishing Baseline Operating Expenditure for PC10

6.2.8. We have used information from NI Water's regulatory accounts for 2007/08 and the Annual Information Return for 2007/08 to calculate the level of baseline operating costs. Total reported operating expenditure (including Infrastructure Renewals Charge and depreciation) for water services was £151.69m. Total reported operating expenditure for wastewater services was £126.55m (including PPP costs of £2.872m).

[11]We discovered during our examination of the PC10 Business Plan two inconsistencies in NI Water's capitalisation policies and going forward we have adjusted for a revised approach to capitalised salaries and on-costs and have reallocated part of the company's capitalised leakage (detect and repair) costs. This adjustment is undertaken prior to applying our efficiency challenge to operating expenditure.

6.2.9. To establish the level of baseline operating costs for 2007/08 we:

- take reported regulated costs;
- adjust for atypical costs (or savings); and
- ensure that cost allocation practices are consistent with those in England, Wales and Scotland.

Adjusting for Atypical Costs (or Savings)

6.2.10. We also take account of the impact that any atypical costs have on the baseline level of operating cost. These are costs (or savings) that are one-off in nature, but which are not classed as 'exceptional' under accounting standards. Examples of atypical costs would include VER/VS costs[12]. Such atypical costs (or savings) increase (or reduce) the normal ongoing operating costs of an organisation. If we are to ensure that our performance monitoring reflects genuine like-for-like comparisons it is important that we do not include any atypical costs (or savings) in the baseline level of operating cost. This is fully consistent with the approach that both Ofwat and WICS take. It excludes atypical costs (and savings) incurred by the water and wastewater companies in England, Wales and Scotland. The water and wastewater companies are required to identify any such atypical costs (or savings) in their annual information submissions. In its Annual Information Return 2008 (AIR08) NI Water reported exceptional costs of £4.56m for VER related costs and £8.12m for BIP.

Calculating the Baseline from the Base Year Costs

6.2.11. The baseline expenditure submitted by NI Water was checked against its statutory accounts which are independently audited. We were able to vouch NI Water's baseline expenditure, through the calculation illustrated below.

Table 6.1 - Calculation of base operating expenditure 2007-08

Statutory Accounts Total Operating Expenditure		£233.831m
Less	Depreciation	£48.027m
	Non-appointed activities	£2.378m
	Loss on disposal of asset	£0.031m
Add	Government Grant	£0.353m
Subtotal		£183.748m

[12] VER/VS expenditure is not truly atypical as the cost reflects a management decision. It is however being treated as such in the efficiency modelling by the Regulator in PC10. This is in recognition that the company will have to incur significant levels of expenditure which it might not ordinarily face. It is likely that such treatment will end post PC10 as any cost within management control is normally subject to efficiency challenge in England and Wales.

Less Atypicals	VER/VS	£4.564m
	BIP	8.115m
Base operating expenditure		£171.069m[13]

6.2.12. This adjusted total operating expenditure forms the baseline for this final determination.

Conclusion

6.2.13. We have adjusted reported operating expenditure in the base year to take account of non-core operating costs, exceptional costs and atypical costs. This has enabled us to identify the underlying level of operating costs that NI Water incurs. We have used 2007/08 as the base year for this final determination. This is the cost of maintaining services at existing levels.

6.2.14. Having determined the company's baseline starting point for opex we can now turn to NI Water's claims for additional opex.

6.3. Step 2 – Adjust for Additions to Baseline Opex

6.3.1. In this section we examine NI Water's claimed additions to baseline operational expenditure in detail and the reasons for our acceptance or rejection. We deal with our treatment of atypicals in the following section. The striking issue with regard to NI Water's operational expenditure claim is the level of 'special opex adjustments' which represents some 22% increase in PC10 on average, relative to their base year opex level. Such an increase is highly significant and whilst Ofwat has contended with a similar set of circumstances at PR09 the claimed increase in base opex in England and Wales over the price control period was 13%, with Ofwat allowing only a 7%[14] increase within their modelling assumptions.

Key Regulatory Tests for Additional Opex

6.3.2. The over-arching regulatory principles we use to decide whether to fund NI Water's claim for additional opex (which the company erroneously terms 'special operating expenditures') is based upon the following criteria:

1. 'Newness' – is the expenditure related to any new obligation or specified improvement in service levels? These could include, for example, metering trials, new compliance with NIEA abstraction licensing etc; and,

2. 'Exogeneity' – does NI Water face an exogenous increase in costs in relation to current activities, e.g. energy, pensions, bad debt or new charges such as

[13] Any reference to opex, unless otherwise stated, will not include un-appointed costs.
[14] Source: Future Water and Sewerage Charges 2010-15: Final Determinations, p97

abstraction charges or new taxes, for example? In other words, are these cost increases reasonably beyond prudent management control?

6.3.3. Where we have rejected NI Water's claims for additional operating expenditure the company has failed to meet our regulatory tests. Many of these opex costs are presented as 'new' when they are updated versions of what has gone before; many are new replacements for old such as, for example, software licences with more up to date versions.

6.3.4. During the SBP period various additional opex was accrued for special GoCo expenditure to enable the transformation of NI Water Service into its present organisational format. In addition, a large BIP budget was agreed between NI Water and the DRD Shareholder requiring full ministerial sign-off; delivery of such VER/VS and BIP projects was anticipated to have been largely completed by close of the SBP period.

6.3.5. Our considered view is that much of the claimed additional opex rejected is a replication of funding already funded within NI Water's baseline and therefore it is not in the best interests of consumers (taxpayers) to fund. We are firm in sticking to our regulatory principle of ensuring consumers (taxpayers) are not required to fund the same sorts of expenditure twice.

Allowed Additions to Baseline Opex

6.3.6. In this final determination we have allowed some £57m across the PC10 period, or just over a half of NI Water's £112m claim for additions to baseline operation expenditure (see Table 6.3 below) compared to just over a third at draft determination.

Power Costs

6.3.7. For power we engaged NERA to investigate NI Water's claims and to advise with respect to the various forms of regulatory treatment and precedent available to this determination. Our considered view is that the price NI Water included within its Business Plan was about right at time of draft determination and that their subsequent revised forecast is reasonable.

6.3.8. At draft determination, we had concerns over NI Water's forecast increase in power consumption. However, having challenged the company through a PC10 Business Plan query, and having subsequently received a satisfactory response, we are broadly content to allow the increase. We have also listened to the company's argument concerning the 2% per annum energy efficiency assumption in the draft determination and this condition has now been removed from the final determination[15].

6.3.9. We verified the company's calculations around both power, quantity and price assumptions and derived our own estimate and forecast of power costs using consistent deflators to enable reporting in 2007/08 prices.

[15] At draft determination we had applied a cumulative 2% per annum reduction to the year-on-year or incremental rise in consumption.

6.3.10. Mindful of the risks the company faces through volatile energy markets we propose to investigate further in 2010 the possibility of limited pass-through of energy cost increases/decreases (but not volumes) based on an index.

2009/10 Opex

6.3.11. Our reduction to NI Water's claimed additions to opex for PC10 also has implications for the period just prior to 2010/11 where similar increases in base operating expenditure have been assumed by NI Water. Whilst we are content to let 2008/09 opex assumptions apply on the basis that NI Water's estimate of baseline opex accord with its statutory accounts, this is not clear for 2009/10. NI Water's Business Plan indicated £225m (including all PPP costs), in contrast to our projected costs of £214m in the final determination. Our £214m was arrived at by applying a bottom up approach to opex from 2008-09 and applying the regulatory principles of exogeneity and newness to the special additional operating costs sought.

6.3.12. Following our query process and discussions with NI Water, the company confirmed their updated projections for 2009-10 as £210m based on 2007-08 prices. NI Water claim that some £8m to £9m of this lower outturn for 2009-10 arises from one-off savings. However given that NI Water are operating at almost twice the cost base of other benchmarked companies, we perceive that further such opportunities will present themselves and that the transformation investment over the previous three years will enable the company to generate additional savings.

6.3.13. This is important, since accepting an NI Water claim for opex spend of £225m in 2009/10 would amplify the apparent efficiency challenge they might face from our draft determination proposal for allowed revenues 2010/11 onward. We discuss the implications further in section 6.9.16.

Table 6.2 - NI Water's claimed and allowed additional Opex

Additional opex claimed by NI Water (nominal prices unless otherwise stated)	PC10-Total (£000)	Criteria Met?	Comment	Allowed opex PC10 - Total (£000)
Power (2007/08 prices)				
Energy prices and volumes	37,166	Partially	The increase in NI Water's BP bid for power (£9.7m increase from £27.5m at draft to £37.2m at final determination reflects rising network charges and a higher forecast power price across 2011/12 and 2012/13) is accepted in full as exogenous and new. The forecast increase in the company's price of electricity is reasonable and we have increased the power allowance based on a detailed understanding of post-draft determination information. We have listened to company representations with respect to our draft determination 2% per annum energy efficiency and removed this item from our allowance calculations. The small reduction to NI Water's claim is a result of applying consistent deflators to obtain 2007/08 prices. That said, having allowed virtually all of NI Water's bid, we recognise the consequent transfer of both price and volume risks will now otherwise lie with the company for the duration of PC10. We adopt a conservative approach to power at this final determination since the proportion of energy costs to turnover for NI Water is of the order of 8% which means that the RPI will not fully compensate for any increase in costs. Without access to cash reserves and given the potential scale of future oil and gas price increases, we view it as important that the management of this risk should be facilitated within the final determination.	34,582

			We intend developing a methodology for indexing the price element of the energy component of the end-user price (excluding volumes). This recognises that whilst circa 40% of end-user prices comprise relatively stable network charges, the remainder are influenced by relatively large shifts in energy prices. While we intend to de-risk the company through an indexation mechanism we also intend leaving consumption risk entirely with NI Water so that incentives to optimise its energy consumption and profiles remain	
Sub-total (2007-08 prices)	37,166			34,582
Environmental Compliance and Regulation				
Abstraction Licences (1) PPC Fees (2) Cryptosporidium Filters (3)	3,035	Y	These are new/exogenous charges. WICS allowed SEPA charges As above New and exogenous environmental quality standards from 2008/09 onward	3,035
Sludge Transportation	12,000	N	As part of the queries & clinics process the company demonstrated to the Regulator that the majority of additional sludge transportation costs were already reflected within PPP savings. Consequently, it would be inconsistent to disallow the claim for additional operating expenditure yet accept the level of PPP savings proposed. In terms of the additional costs claimed, the company has adequately demonstrated the reason behind the cost rise in 2008/09. However, this should not be reflected in the PC10 period as these costs include the transport and disposal of sludge to GB, a practice which will not continue when a new PPP incinerator becomes operational. In other words, 2008/09 costs were an aberration.	0

			Furthermore, associated costs in the PC10 period are estimated by the company to fall from £5.9m in baseline 2007/08 to £2.5m across the PC10 years. Therefore the Regulator is disallowing additional sludge transportation costs as they are largely borne by the PPP operators in PC10.	
Electrical Inspection Testing	900	Y	New/exogenous cost required by the Institute of Electrical Engineers	900
Moleseye Charge	3,870	N	These charges might have been considered new/exogenous had the relevant legislation commenced, however upon investigation, these charges are predicated upon incoming Streetworks Amendment Order legislation that is now delayed until at least late PC10. Such charges lack the materiality for consideration as a Notified Item and the Regulator has decided to apply regulatory principles to ensure customers (taxpayers) do not pay up front for costs which may not materialise.	0
Regulator/Reporter costs	3,600	Y	A new obligation. WICS allowed Reporter/Regulation charges at SR06	3,600
Reporter PC13 Costs	400	Y	Probability of increased Reporter input where costs are outside NI Water control	400
CCNI Costs	-75	Y	Reduction of CCNI costs from 2007-08 baseline	-75
PC13 Support	3,213	N	The Regulator considers NI Water is already adequately funded within its 2007/08 baseline operational expenditure since (i) reporting costs would already have been included within 2007/08 and (ii) the 2007/08 operational expenditure is already virtually twice that required of a benchmark industry comparator	0
Sub-total	26,943			7,860
Sub-total (2007-08 prices)	26,649			7,626

Information and Communications Technology				
Strategic expenditure / ICT and other systems	12,696	N	The Regulator considers NI Water is already adequately funded within its 2007/08 baseline operational expenditure since (i) ICT related costs would already have been included within 2007/08 and (ii) the 2007/08 operational expenditure is already virtually twice that required of a benchmark industry comparator. A great deal of post-draft determination representation from NI Water was evident, including additional responses to our queries and clinic sessions. However the information set remained weak in a number of areas such as identification of opportunities for synergy with BIP and other data management workstreams. The company argued that its new Mobile Work Management (MWM) licences (£5.4m) were entirely dependent upon the Regulator funding and that continued refusal to fund would create a 'stranded asset' with consequent loss of benefits from the MWM project. On further investigation it was confirmed that MWM licences had previously been paid for under BIP operational spend. Ongoing costs ought to be more than offset by the claimed savings from BIP related projects. The Regulator considers the £210m forecast out-turn for 2009/10, including BIP spends, is adequate funding for NI Water and the total quantum of approved operation expenditure for PC10 provides NI Water with sufficient discretion to fund its own decisions around such activity.	0
Sub-total	12,696			0
Sub-total (2007-08 prices)	12,558			0

Corporate				
Governance	849	N	NI Water proposed expenditure was partly derived from their proposed leveling up the number of Non-Executive Directors within the NI Water Board (as per recent Combined Code guidance) costing £0.4m. Whether to level upwards or downwards is entirely a matter at NI Water management discretion and so fails the exogeneity test. An additional £0.45m was sought for external campaigns, already funded under NI Water's existing baseline operational spend. The Regulator considers the £210m forecast out-turn for 2009/10 is adequate funding for NI Water and the total quantum of approved operation expenditure for PC10 provides NI Water with sufficient discretion to fund its own decisions around such activity	0
Financial	2,152	N	A great deal of post-draft determination representation from NI Water was evident, including additional responses to our queries and clinic sessions. However the information set remained weak in a number of areas such as identification of opportunities for synergy with BIP and other data management workstreams. Whilst there was some substance to the various 'new' business needs herein documented, any decision to fund such activity as additional rather than as replacement of 'old' activities by new is entirely at NI Water management discretion. The Regulator considers that the £210m forecast out-turn for 2009/10 is adequate funding for NI Water and the total quantum of approved operation expenditure for PC10 provides NI Water with sufficient discretion to fund its own decisions around such activity.	0

Accommodation	3,773	N	New HQ accommodation is a management choice based upon efficiencies and business needs versus additional cost. Since NI Water is already funded for accommodation the Regulator considers the total quantum of approved operation expenditure for PC10 provides NI Water with sufficient discretion to fund its own decisions around such activity	0
Legal	453	N	The Regulator considers that the £210m forecast out-turn for 2009/10 is adequate funding for NI Water and the total quantum of approved operation expenditure for PC10 provides NI Water with sufficient discretion to fund its own decisions around such activity	0
Bad debt	7,108		During the query process the company demonstrated their allocation was in fact based on 2% rather than the 2.5% stated in the Business Plan. The Regulator deems the application of 2% to all non-domestic revenue as flawed. Such a projection fails to account for the significant proportion of revenue not subject to 'bad debt' risk given its source as subsidy. Any provision should therefore only apply to revenue from charging which amounts to £197.7m (2007-08 prices) over the PC10 years and this is why the Regulator has fixed the allowance at 2% (excluding subsidy element) or £5.8m (including an adjustment for a negative provision in the base year). Allowing additional operating expenditure effectively reduces the risk of bad debt to the company and whilst we accept there will be a cost associated with chasing debt, the Regulator is keen to stress that this is a risk which effective management can and should reduce over the PC10 period and into PC13. The Regulator will review this allocation going forward on the assumed increased capability of reducing bad debt	5,758
Sub-total	14,335			5,758
Sub-total (2007-08 prices)	14,179			5,586

New Organisational Functions				
Asset management	2,970	N	A great deal of post-draft determination representation from NI Water was evident, including additional responses to our queries and clinic sessions. Despite this the information set remained weak in a number of areas such as identification of opportunities for synergy with BIP and other data management workstreams. Whilst there was some substance to the various 'new' business needs herein documented, any decision to fund such activity as additional rather than as replacement of 'old' activities is entirely at NI Water management discretion. The Regulator considers that the £210m forecast out-turn for 2009/10 is adequate funding for NI Water and the total quantum of approved operation expenditure for PC10 provides NI Water with sufficient discretion to fund its own decisions around such activity	0
Commercial	2,922	N	As above	0
Finance and Regulation	4,338	N	As above	0
Customer Services Team	414	N	As above	0
Sub-total	10,644			0
Sub-total(2007-08 prices)	10,528			0

Chemicals				
NIEA / Environmental requirements	1,860	Y	Accepted as new & exogenous costs	1,860
Price increases	2,730	Y	Accepted as a new & exogenous cost, occurring after the company submitted its PC10 Business Plan. No further real price increases were forecast during the PC10 period and given the likely business environment NI Water will face during PC10 including increased global demand for key chemicals, improved strength of Euro against pound (many of the chemicals are sourced in the Euro zone) and likely longer term increase in oil costs on back of 2nd and 3rd World development we have accepted their forecast price increase as (i) reasonable and (ii) of limited materiality. Going forward it is anticipated that the price risk will remain with the company	2,730
Opex from capex	2,470	Y	New chemicals resulting from capex expenditure. Fully accepted	2,470
Sub-total	7,060			7,060
Sub-total (2007-08 prices)	6,983			6,850

Rates				
Rates (2007-08 prices)	4,340	Y	Our query process discovered most of cost increases were additional to 2007/08 baseline, although the increase in rates consequent the proposed HQ accommodation move has been disallowed. Post-draft determination the company submitted evidence in favour of an increased allowance from the current rates assessment by Land & Property Services. We have chosen to partially allow this from 2011/12 onwards as the outcome of the assessment is uncertain	2,640
Sub-total (2007-08 prices)	4,340			2,640
Total (2007/08 prices)	112,403			57,284

Adjustments for Cost Allocation Practices

6.3.14. We have adjusted upwards NI Water's opex for leakage by £2.8m per annum from 2010/11 onwards to reflect our downward adjustment of their capex claim, based on the following regulatory principles for 'detect and repair costs':

1. Necessary to maintain the current level of leakage = opex expenditure
2. Required to move leakage toward ELL = capital base maintenance expenditure
3. Movement of leakage beyond ELL to meet supply deficit = capital enhancement expenditure

6.3.15. On the basis of the natural rate of rise of leakage and proposed levels of improvement, we have reallocated 90% of related and capitalised detect and repair costs to opex with remainder staying within capex.

6.3.16. Furthermore, we have reduced opex by £2.1m per annum for M&G salaries and wages which had already been capitalised and included within the company's capital submission.

6.3.17. We have uplifted operational spend by £2.3m net for PC10 to allow for the correct allocation of costs in relation to leakage (+£8.5m) and salaries and wages costs (-£6.2m).

Subsequent Treatment of Allowed Additions to Opex from Draft to Final Determination

6.3.18. Having sought further assurances and analyses from NI Water to substantiate their claimed additions to baseline opex at draft determination we were able to substantiate virtually all their original claimed amounts. The one exception was some £3.8m across PC10 for new Moleseye Charges starting 2010/11. Further investigation found it is uncertain when or even if such charges will occur during PC10. In adopting the principle that customers (taxpayers) should not pay up front for uncertain costs the Regulator has disallowed this particular addition to opex at final determination.

6.4. Step 3 – Determine VER/VS and BIP Additions to Opex

6.4.1. Whilst we were content to allow for modelling purposes a company claim in relation to VER/VS of £4.56m and Business Improvement Programme (BIP) of £8.1m, NI Water has also carried such atypical expenditure across the entire duration of PC10 and beyond. Effectively, NI Water is seeking a similar treatment for £18m across PC10 for VER/VS and £12m across PC10 for BIP.

6.4.2. The largest impact from such a claim is to reduce the net effect of their operational efficiencies as offered up within the PC10 Business Plan. Such treatment of in-year atypicals across two regulatory periods (SBP and PC10) is without precedent and

we prefer to examine the case for VER/VS and BIP on the basis of their respective merits, or otherwise.

Key Regulatory Tests

6.4.3. We stated within our initial determination issued to the company in April 2009 that any carry across of allowed atypicals into PC10 would be subject to certain key regulatory tests:

> ***'This provision may fall dramatically depending on the nature of information submitted in relation to BIP and VER spend. For the purposes of excluding these costs the Regulator requires evidence of the expected outputs, performance-to-date both in terms of non-monetary and monetary targets upon submission of the PC10 Business Plan on 1st June 2009. Upon satisfactory provision, NIAUR may then be minded to allocate all BIP and VER expenditure as atypical for the purposes of efficiency modelling.***
>
> ***Whether the Regulator at PC10 determines these costs as an allowed expenditure not subject to efficiency savings depends on whether NI Water can offer convincing argument that such costs remain designed to improve their overall efficiency and are:-***
>
> - ***ring fenced for the remainder of their duration i.e., they will expire during the PC10 period;***
> - ***their continuation into the PC10 period has been entirely due to unavoidable delay(s) outside the control of management; and,***
> - ***such costs are material.'***

Application of Key Regulatory Tests

6.4.4. Whist we initially chose not to allow carry across of BIP into PC10 we recognised at draft determination the requirement for NI Water to have available sufficient flexibility to deliver efficiencies from a VER/VS programme and signalled our openness to further and additional representation on both. We continue to recognise both VER and BIP as important means by which NI Water may deliver up additional efficiencies going forward.

6.4.5. NI Water does not have the same flexibility with regard to funding such savings from within their business as would be the case with an England and Wales water and wastewater company. Were it to do so NI Water would likely face the same regulatory stance as adopted by Ofwat where they leave it up to company management to decide the *where* and *when* of any self-financed efficiency programmes and projects.

6.4.6. We are now satisfied that the costed VER/VS programme included within the PC10 Business Plan should enable the company to deliver on its expected reductions to headcount. We are now able to use the further information set delivered post-draft determination to support an additional £10m funding for VER/VS across PC10 in recognition of the additional efficiencies the Regulator believes are reasonable. We will

seek to have transparency of expenditure for the allowed VER/VS over the course of the price control.

6.4.7. Cumulative additional efficiencies (above NI Water's) at close of PC10 are just under £26m and the Regulator has used the quantum of difference between this final determination and NI Water's PC10 Business Plan as the basis for calculating reasonable and additional funding of VER/VS for PC10. This will facilitate additional headcount release under existing VER/VS arrangements to support additional funding of £10m should the company require it.

6.4.8. Over the last year to date the Utility Regulator has made repeated efforts to establish what has already been funded and delivered with respect to VER and BIP schemes, and what is outstanding.

6.4.9. Further information was available post-draft determination with respect to the BIP and we are assured that planned PC10 BIP operational expenditure is almost all new and additional to that which was delivered during the SBP period. The Utility Regulator was especially concerned to protect customers (and taxpayers) from paying more than once for the same outputs. We remain concerned that insufficient attention has been paid to the potential synergies between BIP and other data management related activities. In addition, recent One Programme retrospective benefits tracking of the SBP BIP has identified BIP benefits from the SBP period including on average 15% as "avoided costs" rather than "direct savings" (85%) with only the latter as representing value for money.

6.4.10. Whilst the above concerns remain, the Regulator recognises the requirement for NI Water to undertake continued BIP related invest to save & transformational activities and has determined to fund a proportion of BIP, just under £10m of the £12.4m claimed at PC10.

6.4.11. Finally, VER/VS and BIP funded activities at PC10 will remain ring fenced for the duration; the Regulator does not expect to be asked to fund either programmes at PC13 onwards as NI Water should by then have sufficient internal revenues to fund its own efficiency programmes. Nor would such expenditure likely be exempt from the efficiency challenge or calculation of the efficiency gap post PC10, as the costs do not represent true atypical expenditure.

6.4.12. Mindful of the fact that NI Water is still making the transition to becoming a fully fledged company, we have not applied an efficiency adjustment to BIP costs considered necessary to enable that transition.

Step 4 – Determine Adjustment for Special Factors and Atypicals

Background

6.4.13. We informed NI Water of our likely approach to setting operational efficiency targets as far back as April 2009 (see Annexes C1 and C2, 'NIAUR Approach to Operational Efficiency Targets'). We also wrote to the company around the same time to inform it of our views in respect of its claims for special factors and atypical expenditure (see Annex D1, 'Special Factors and Atypical Cost Allowance') which would otherwise

ameliorate the effects of any of our relative efficiency modelling and resulting efficiency targets.

6.4.14. The following sections describe our adopted modelling assumptions at this determination, among other things our response to various company representations, including the company's PC10 Business Plan and subsequent letter of response to our initial determination on its special factors and atypical expenditure claim.

Special Factors and Atypical Expenditure Claims[16]

6.4.15. The company was unable to include the results of our initial determination on special factors and atypical cost allowances within its Business Plan, despite having delivered this during April 2009, preferring instead to assume 100% of its claims were allowed. We had allowed NI Water 18% of its special factor claim alongside a further allowance for atypical expenditure at 2007/08 equating to 79% of claim as shown below:

Table 6.3 - Special factors (2007/08 prices)

Special Factor	Value Claimed (£m)	Proposed Allowance (£m)
Water Distribution Econometric model	£22m	£7.22m
Power Costs	£3.9m	£2.67m
Travel Costs for Wastewater Treatment operations	£0.3m	£0m
Meter Penetration Scope Adjustment	-£1.7m	Not Required
Regional Wage Scope Adjustment	No Claim	-£5.6m
TOTAL	**£24.5m**	**£4.29m**

Table 6.4 - Atypical expenditure (2007-08 prices)

Atypical	Amount Claimed	Amount Allowed
Increase in River Strule provision	£2.3m	£0m
Increase in Carmoney provision	£0.25m	£0m
Increase in Ballinacor provision	£0.8m	£0m
Increase in flooding provision	£0.17m	£0.17m
Business Improvement Programme (BIP)	£8.1m	£8.1m
Voluntary Early Retirement (VER)	£4.56m	£4.56m
TOTAL	**£16.18m**	**£12.83m**

[16] Atypical expenditure claims along with special factors allows prior modelling adjustment of opex to ensure relative efficiencies and targets are calculated on a 'like-for-like' basis.

6.4.16. Our treatment of the various elements of NI Water's claim can be found in more detail at Annexes D2 and D3. As part of the process by which we arrived at the initial determination above, we set out our early view of the necessary timeline to facilitate substantive in-depth analysis, followed by a further company response before submission of its PC10 Business Plan, to inform this determination. We also afforded the company a second opportunity to submit its special factor claim around the Water Distribution Model since Ofwat and ourselves decided to move to a slightly altered specification in January 2009.

6.4.17. At the beginning of July 2009, post submission of NI Water's PC10 Business Plan we received a further communication from the company in response to our April initial determination. The company addresses two issues; our use of a negative special factor ('Regional Wage Scope Adjustment') and the Water Distribution Model Special Factor.

6.4.18. Nothing in the company's latest communication materially alters our decisions or judgement concerning our initial determination and we have included our decisions within this determination. What follows is our response at this final determination to the company's July 2009 and post-draft determination representations.

Regional Wage Scope Adjustment

6.4.19. NI Water's advancement of an argument that it has an *average* cost per employee 'slightly higher than the England and Wales average' as derived from 2007/08 Annual Accounts ignores the undoubted compositional effects of NI Water's workforce relative to its peers and the wider industry. Averages hide the distribution of earnings, especially across Standard Occupational Classification (SOC) groupings.[17] Indeed, we highlighted the same issue in our April initial determination when we recognised that water industry wages (associate professional and technical staff) were largely comparable with the rest of the UK. We had already adjusted downwards our view on NI Water's undoubted location advantage for these reasons, inviting the company to make further representation around its precise knowledge of its own workforce compared to its peers.

6.4.20. We were minded to acknowledge any further company representation on this issue at final determination and we will in future re-calculate any regional wage scope adjustment around the better NI Water dataset. We have not done so at this final determination since the effect is not material to our final efficiency challenge calculation. We shall in our forthcoming Costs and Performance Report 2008/09 revise our negative regional wage scope adjustment accordingly however we have not done so at this final determination since the effect is not material to our final efficiency challenge calculation.

6.4.21. If the Regulator were to do so, there would be a consequent requirement to re-examine NI Water's efficiency gap using *all* the additions to operational expenditure from 2007/08 that have been accepted. On re-modelling of the efficiency gap around a 'typical

[17] We had hoped NI Water would present analysis comparing salaries & wages across the different SOC groupings employed within the company to the national dataset, so to extract a weighted percentage differential. The inclusion by NI Water of data on public versus private median weekly earnings and advancement that their average wage costs are higher than the national average does not help in this regard.

expenditure adjustment' the Regulator would observe a higher efficiency gap above 49%. Rather than do so, the Regulator has reasonably chosen to ensure the cumulative or compounded efficiency challenge by close of PC10 remains the same as at draft determination.

Water Distribution Model

6.4.22. We adjusted NI Water's Water Distribution Model by establishing our own estimate of their special factor from having the largest km length of mains per connected property amongst the industry. We drew on industry data and established that NI Water would operate with 15,000km fewer mains if it was at the industry average. We did this to offset NI Water's outlier status and adjust our modelled efficiency challenge accordingly. This reduction in explanatory factor value underpins our own estimate of NI Water's special factor and is in fact some £2.5m above that which would have been estimated by alternative methods, including cost per population and cost per connected property.

6.4.23. In the company response they incorrectly state we are providing 'no funding for 15,000km of NI Water's mains'. This is not the case. We are reducing our operational efficiency targets, specifically the company's relative inefficiency by a special factor which excludes 15,000km as above the normal or average mains length; an outlier adjustment. On its own this analysis supported a special factor adjustment to NI Water's advantage of £7.22m.

6.4.24. The adjustment may be better explained by use of unit cost rates in the following table. Costs per connected property for NI Water are affected by the outlying length of main to the extent that the predicted cost per property in the model is lower than any other company and almost 45% below the England and Wales average. This demonstrates that a special factor exists. Our approach, rather than excluding 15,000 Km of mains equivalent of funding, adjusts for the outlier effect by awarding the company a £19.60 cost per connected property, which at 4% above the England and Wales average is a more reasonable allowance. This therefore illustrates the logic behind the determination.

Table 6.5 - NI Water's predicted costs (2007/08 Prices)

		Cost per connected property (£/prop)	Connected properties	Predicted Costs (£m)
Unadjusted Ofwat model	1	10.56	800,018	8.45
England and Wales average	2	18.87	800,018	15.10
Utility Regulator adjusted model	3	19.60	800,018	15.68
Special factor allowance (3 minus 1)				**7.22**

6.4.25. We welcome the company's continuing offer to work collaboratively with the Regulator to develop the various issues surrounding the Water Distribution Model going forward. Our own analysis conducted on our behalf by NERA with Professor Gordon Hughes, University of Edinburgh (see Annex E, 18 March 2009, 'NI Water Comparative Efficiency: An Econometric Analysis Using Panel Data: a report for the Northern Ireland Authority of Utility Regulation) has established that there is no U-shaped relationship between density and costs. We are firmly of the opinion that however we model water distribution costs, whether using Stochastic Frontier Analysis (SFA) and/or panel data techniques, the result will be a positive relationship with density. Professor Hughes perhaps states it better when he says at page 19:

> ***'the claim by NI Water for a special factor adjustment for water distribution opex on the grounds that it has a particularly high value for length of mains per person is clearly not consistent with [our and Ofwat's] models. Indeed, including ln(pipe length/resident population) is associated with a lower cost per person.'***

6.4.26. We shared our understanding of cost drivers for water distribution functional expenditure with the company post-draft determination, including Professor Hughes' report at Annex E. We remain convinced that we have been reasonable in allowing a third of NI Water's special factor claim for Water Distribution.

6.5. Step 5 – Triangulation of Efficiency Models

6.5.1. Of all the various available assumptions surrounding our view on operational efficiencies, by far the most material is whether we adopt a pure Ofwat approach or we include Cubbin discounts to our modelling with COLS (corrected ordinary least squares). Ofwat use 10% and 20% discounts on residuals for water and sewerage models compared to Professor Cubbin's 58% and 50% respectively.

6.5.2. Also important, but less so than discounts, is whether to exclude the business activities models (given the deferral of domestic charging). Inclusion of business activities models would artificially *reduce* NI Water's relative inefficiency since reported expenditure is less than would otherwise occur if NI Water had introduced domestic charging on a par with its comparators in the industry, and was as a consequence having to resource, for example, a greater debt recovery effort.

Options

6.5.3. As a result of applying the COLS element of our operational efficiency methodology with AIR08 data (2007/08) the Utility Regulator has formed an opinion on the efficiency gap that exists within NI Water. These gaps have been formulated by use

of a pure Ofwat approach or Cubbin alternative[18] and the two options are presented below.

6.5.4. Both options involve the application across either the entire suite of efficiency models or a sub-set, having excluded the business activities model. We examined whether to exclude this model as it is not tailored to the Northern Ireland situation given continued deferral of domestic charging:

- ***Ofwat Discounts,*** calculate the gap from actual expenditure (less specials and atypicals) against what an average company and the benchmark would spend. In this case the Ofwat discounts (10% for water, 20% for sewerage) have been applied in order to allow for errors in the data and our statistical processes.
- ***Cubbin Discounts,*** are the same as the first approach with the exception that Cubbin discounts have been applied. These discounts are drawn from the conclusions of Professor John Cubbin in his paper for Water UK in 2004.[19] Ofwat consider that 90% and 80% respectively of the water and sewerage residuals can be attributed to efficiency / inefficiency. Cubbin on the other hand estimated that the difference between actual and predicted costs was due to various reasons including efficiency, sampling bias, measurement error and the omitted variable problem. As a consequence it is his opinion that only 42% of the residual for water and 50% for sewerage can be attributed to efficiency reasons with confidence. Hence the applications of 58% and 50% discounts depending on the model[20].

6.5.5. Establishing the efficiency gap is not the final stage of the process. The compositional effects in altering assumptions are exacerbated by adoption of different rates of catch-up to the industry benchmark. Ideally the company in question would converge on the benchmark performer, but this is likely to take some time. The Utility Regulator is mindful of the requirement to incentivise the company to both deliver and outperform targets by setting achievable targets. This will not be accomplished if the company is required to drive out all inefficiencies in the first price control. Indeed, it would be highly unlikely that such change would be able to manifest itself in such a short period; neither would it afford the company any incentive to out-perform.

6.5.6. To counter this problem, the accepted regulatory approach is to set targets which are representative of some proportion of the efficiency gap. The general Ofwat approach is to require a 60% catch-up over a five year period, plus an additional efficiency for advancement of the industry as a whole i.e. technological and productivity improvement over time. As an example of precedent, WICS has sought Scottish Water to close 80% of the gap in four years, given that very high levels of inefficiency existed.

[18] Cubbin's alternative approach was commissioned by WaterUK at the time of PR04 but never subsequently adopted by Ofwat

[19] Assessing Ofwat's Efficiency Econometrics, March 2004, Professor Cubbin, City University for WaterUK (industry organisation including NI Water as member)

[20] Slightly smaller discounts are possible given the 'adding-back' issue described within our, 'Operational Efficiencies; a methodological note' (Apr-09). 55% and 47% for water and sewerage models respectively.

Arguably the WICS approach would be most suited to the first NI Water price control as the analysis has shown a significant efficiency gap exists for NI Water[21].

6.5.7. Since PC10 will only cover a three year period, the Utility Regulator has developed three different rates of catch-up and has conducted sensitivity analysis using the following sub-options:-

- ***Low catch-up rate 36%*** (pro rata Ofwat's 60% in five years)
- ***Medium catch-up rate 50%*** (mid-way between low and high)
- ***High catch-up rate 60%*** (pro rata WICS 80% over four years)

6.5.8. We examined NI Water's relative inefficiency to the industry using both pure Ofwat and Cubbin discounts, allied with low, medium and high catch-up rates.

Relative Efficiencies and Efficiency Bandings

6.5.9. For ease of comparison the various relative efficiency scores which can be used are presented below, including an assessment of the efficiency gap in percentage terms.

6.5.10. The relative efficiency scores are calculated from the actual monetary sum of the econometric models and rebased to the England and Wales average. This technique is demonstrated in the example below.[22]

6.5.11. For NI Water, the relative efficiency scores are highlighted in the table below depending on which approach has been utilised.

[21] For PC13 we intend examining the viability and appropriateness of introducing a rolling incentive allowance, whereby any outperformance in the latter part of a regulatory period is equally advantageous to NI Water as outperformance in the first year. This would operate upon any opex outperformance during PC13 which might then roll forward within limits to PC18.

[22] For the Water Resource & Treatment Econometric Model (only one part of the water service calculation):
NI Water Actual Cost = £22.07m
Predicted Cost (Based on England and Wales average performance) = £13.46m
Benchmark Cost = £10.62m

In order to replicate these values into index scores based on the England and Wales average, each value is divided by £12.9m and multiplied by 100 so that:
NI Water = (£22.07m / £13.46m)x100 = 164.0
Average Company = (£13.46m / £13.46m)x100 = 100
Benchmark Company = (£10.62m / £13.46m)x100 = 78.9

Required reductions can then be calculated from either the actual values or the index scores. For example in this model NI Water would have to reduce its score by either 85.1 points or £11.45m to get to the averagely efficient company so that:
→ (85.1/164.0)x100 = 51.9% cost reduction required
→(11.45/22.07)x100 = 51.9% cost reduction required

Table 6.6 - NI Water's efficiency banding[23]

Methodology	Ofwat all models approach	Ofwat (excluding business activities)	Cubbin all models approach	Cubbin (excluding business activities)
NI Water average score	155.6	174.1	123.2	128.6
Average score	100	100	100	100
Benchmark	84.6	89.3	91	93.8
Efficiency gap (reduction required in NI Water costs to achieve benchmark)	45.6%	48.7%	26.1%	27.0%
Percentage above benchmark	84.0%	95.0%	35.3%	37.1%
Equivalent Ofwat efficiency banding	E	E	E	E

6.5.12. The table indicates that excluding the business activity models toughens the efficiency challenge, while applying the Cubbin adjustments significantly reduces the scope to achieve efficiency.

Sensitivity to Catch-up Rate

6.5.13. Determining which catch-up rate to use makes a significant and material difference to any efficiency challenge and we might expect a reduction in real base operational costs of at least 9% across PC10 (Cubbin discounts plus low catch-up) rising to nearly 30% across PC10 (pure Ofwat discounts plus high catch-up) at the upper end of the scale.

Ofwat versus Cubbin Modelling Approach

6.5.14. Using the pure Ofwat approach (i.e. with Ofwat discounts rather than Cubbin's) allows the Utility Regulator a consistent methodology for measuring the company's relative efficiency to that established within its first annual Cost and Performance Report (2007/08).

6.5.15. Adopting the pure Ofwat approaches also supports the Utility Regulator determining efficiency targets that would *ceteris paribus* (all other things being equal) allow its last reported performance in the Cost and Performance Report of 2007/08, to improve towards that of the wider industry.

6.5.16. The Regulator accepts that the Cubbin methodology has validity in that other factors over and above efficiency will be influential on residual gaps. Such factors include

[23] When describing any company's efficiency banding the comparison relative to benchmark costs is used. This ensures bandings compliment Ofwat's so that NI Water's relative banding might be assessed in comparison to the wider industry.

measurement error, omitted variable bias and specification issues. However, the Regulator believes it has taken proper account of such risks by virtue of a number of mitigating techniques. These include:

- Ofwat residual adjustments
- Allowance for special factors and atypical expenditure
- Pre-modelling adjustments (where required) to ensure comparability
- Application of a reasonable catch-up rate
- Triangulation of efficiency approaches i.e. using other techniques to assess efficiency levels[24]

Annualised Targets

6.5.17. We apply a constant savings profile across PC10 by employing geometric means to derive our efficiency targets. Our bottom-up methodology indicates potential efficiency targets ranging from 3.2% to 10.9% per annum. Given the size of the assessed efficiency gap in NI Water, it would not be unreasonable to ask for improvements at the higher end of the scale.

6.5.18. In recognition of the requirement that targets must be realistic in terms of their scope we now turn in the following section to empirical evidence garnered from other regulated companies.

Top-Down Analysis

6.5.19. The top-down efficiency analysis consists of an assessment of the targets and performance of other regulated industries and companies. By judging the expectations and achievements of others, it is possible to prescribe what might reasonably be expected of NI Water in forthcoming reviews. In their report to the Regulator[25], LECG highlighted the efficiency assumptions made by Ofwat, WICS and other regulators in previous price controls.

[24] For further information on the Cubbin discounts see Annex O – Calculation of the Efficiency Gap
[25] See Annex F, 'Top-down analysis of efficiency assumptions in the UK Regulated Sector', January 2008, LECG

Table 6.7 - Top-down Opex efficiency precedents

The Top-Down Average and Range of Efficiency Assumptions			
Company	**Low**	**Average**	**Top**
Average of regulators (other industry)	1.4%	3.0%	7.0%
Ofwat WaSC's (water only)	1.4%	2.2%	4.4%
Ofwat WaSC's (sewerage only)	1.4%	3.0%	4.0%
Ofwat Water Only Companies	1.4%	2.5%	4.4%
WICS – annual average over four years (excluding merger savings)	7.6%	7.6%	7.6%
WICS – annual average over two years (excluding merger savings)	12.2%	12.2%	12.2%

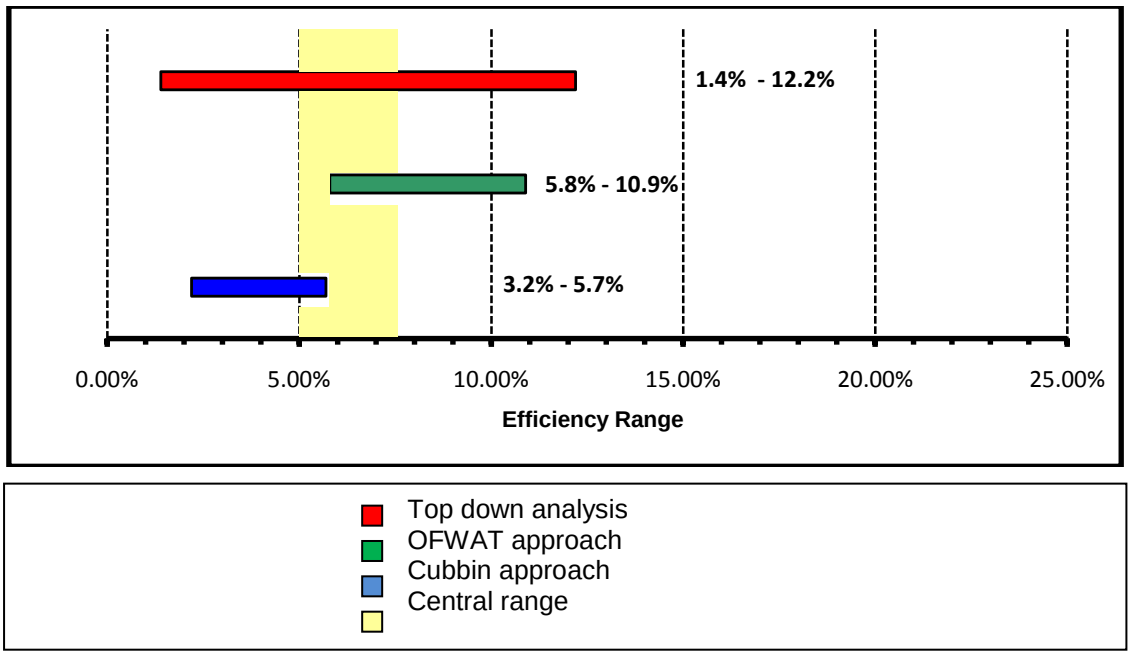
6.5.20. LECG concluded that a 5% - 7.5% p.a. target would be the most reasonable, whilst recognising a higher range of 12% taken from WICS targets for Scottish Water for the first two years of their price control might be possible at the top end. The WICS example in particular illustrates the expectations that were placed on Scottish Water, whose situation then was very similar to that of NI Water at present.

6.5.21. It should also be remembered that the percentages are only reflective of set efficiency targets. In reality most companies were able to outperform targets, suggesting that higher values might be more appropriate.

Triangulation

6.5.22. The comparative range of potential efficiency targets is presented below.

Figure 6.1 - Central range efficiency target using triangulation



6.5.23. There are significant differences in results depending on the approach used.

6.5.24. Cubbin's approach has not been adopted by other regulators. This is unsurprising since Cubbin's findings were largely based upon a subjective examination of each of the Ofwat models. Cubbin was unapologetic when stating that his calculations, whilst subject to their own judgemental error, were 'generally of the correct order of magnitude'.

6.5.25. Our COLS analysis indicates potential efficiency targets ranging from 3.2% per annum (*low* catch-up Cubbin approach) to 10.9% per annum (*high* catch-up pure Ofwat). Given the size of the assessed efficiency gap in NI Water, it would appear reasonable to seek improvement at the upper end of the scale.

6.5.26. We must also recognise the need for targets to be realistic in terms of their scope. LECG previously advised that a 5% - 7.5% per annum target was reasonable, although they also included the high range of 12% resulting from the WICS targets for Scottish Water (net of merger savings) for the first two years of their price control. NERA reviewed LECG's advice to the Utility Regulator and saw no reason to re-configure LECG's analysis.

NI Water Delivery to Date

6.5.27. Regulatory experience over the SBP period is largely informed by the Utility Regulator's analysis underpinning advice to the DRD Minister in respect of raising operational efficiency targets in 2008/09 to 5.0% from the SBP's 3.1% and in 2009/10 to 9.1% from the SBP's 5.2% (2006/07 prices). NI Water has maintained their position of consistent efficiency delivery, stating they have attained each year's efficiency target, based upon continued operations costing below budget.

6.5.28. Whilst we imposed our own retrospective views on our modelling for efficiencies in 2008/09 and 2009/10 we have listened to company representations on the matter and are content to adjust upwards from the draft determination. By 2009/10 there is virtually no difference between us and NI Water with respect to additional cumulative efficiencies; differences are now limited to the new regulatory PC10 period.

IWRP Views on Efficiencies

6.5.29. Prior to the DRD Minister setting further additional challenging efficiency targets for NI Water upon presentation of our advice, we led the development of the IWRP's view that an efficiency target of some 40% by 2009/10 was warranted.

6.5.30. The IWRP responded to criticism of such a target's deliverability under its Strand 2 - Management, Governance and Delivery Report by stating that such a target:

- covered a 7yr period to 2009/10 (the first four years delivered 12.5% opex efficiencies), 'leaving a balance of 27.5% to be gained over the three years to March 2010'

- was 'no more demanding than what was achieved after re-structuring in England and Wales and Scotland'
- mirrored the UBS 'Financial and Strategic Review' of 2005 who indentified, 'scope for annual opex efficiencies of between 3% and 7% by 2009/10 – a range of 20% to 40% cumulative'
- was supported by both the DRD which identified an opex efficiency target over '2003/04 to 2009/10 of 35%' and by a 'detailed relative efficiency analysis by ERNEST(DRD) using the Ofwat methodology,…conclude[ing] that water and sewerage opex efficiency improvements over 5 years should be at least 37% to 42% with room for more'
- had also been achieved by Scottish Water over a shorter four year period, '39% and [with] improved service quality over the same period'.

6.5.31. The above is important as the recent rise in opex post-incorporation has left the efficiency challenge that NI Water faces largely intact. The efficiency target we are setting is no more challenging than the IWRP's or its forebears.

6.5.32. An undeniable fact is that the organisation is now better placed to deliver efficiencies with nearly three full years of post-NI Water Service life behind it, adding credence to the view that within a short space of time efficiency delivery can be ramped upwards from whatever has been delivered during the SBP period.

Rejection of Cubbin Discounts

6.5.33. The Utility Regulator introduced a Cubbin discount derived range of operational efficiency targets at the time of advising the Minister on the 2008/09 target. This was largely predicated on what NI Water described as an 'unregulated' Annual Information Return (AIR); subsequent AIRs having improved both in respect of robustness of data and confidence gradings. Although this has translated into some poorer confidence gradings for certain lines of data, the inputs to the efficiency modelling are as good, if not better than those Ofwat use[26]. On this basis alone, the requirement to continue imposing Cubbin discounts is removed.

Conclusion

6.5.34. Our interpretation of the available operational efficiency ranges is that a very conservative minimum would be a 5% per annum efficiency target. Ignoring the Cubbin approach, there is support for annual targets starting at 6.22% low catch-up to 10.88% high catch-up, perhaps as high as 12% for a short space of time. Whilst these ranges are supported by our preferred bottom-up analyses and top-down precedents, our central range remains between 5% and 7.5% per annum.

6.5.35. These targets are for catch-up only and exclude our continuing efficiency assumption which we outline in section 6.7.10.

[26] See also, Table 5 and 6, page 20 of our Operational Efficiencies: a methodological note (Annex A to our letter to NI Water dated 24th April 2009).

6.6. Step 6 - Treatment of PPPs

Background

6.6.1. Commissioning of PPPs has occurred too late to inform our relative efficiency analysis for PC10 (based on analysis of England and Wales industry and company data from JR08/AIR08 respectively). We have already indicated to NI Water our intentions through future AIR requirements to begin relative efficiency analysis of PPPs and residual NI Water activities from AIR10 onwards, including examination of PPP activities relative to industry benchmarks and intra-company comparison of PPP activities relative to the rest of NI Water activities.[27]

Licence Considerations and Statement of Regulatory Principles and Intent

6.6.2. At the time of concluding the Alpha and Omega PPP contracts, the working assumption was that the cost variations associated with the contracts would be fully recoverable from funders. During the SBP transition period, Licence Condition B stipulated that the Utility Regulator would allow PPP cost pass-through so long as 'unacceptably inefficient costs' were avoided. Whilst for PC10 onwards this particular Licence provision disappears, we remain committed towards ensuring any future pass through of PPP costs are efficiency dependent.

6.6.3. As previously stated in our Statement of Regulatory Principles and Intent issued shortly after incorporation:

> ***'NIAUR will include the costs of the PPP contracts in the regulated cost base of NIW for the purposes of determining the funding from consumer prices after 2010, provided that NIW is managing these contracts efficiently in the pursuance of continuous improvement.'***

GainShare Expectations

6.6.4. Our PC10 Business Plan requirements sought an explicit projection from NI Water of any in-period PPP GainShare. Whilst NI Water's PC10 Business Plan should have represented either the company's view on whether further PPP efficiencies might prove possible or the PPP contractor's own views on whether further efficiency savings during the short term are possible or a mixture of both, neither was forthcoming. The PC10 Business Plan projects nil or zero GainShare across PC10 and PC13 periods stating, *'such efficiencies cannot be accurately predicted'*. Subject to any further PPP

[27] AIR09 marks the first submission of PPP activity and cost data by NI Water which will begin to reflect to a very limited extent, some but not all of the activities of the new Alpha and Omega contracts. Most PPP is due to commence 2009/10 such that AIR10, due for submission 2010/11, will properly reflect Alpha and Omega costs. Upon review of AIR09 and associated Reporter's Report, we may choose to revise our AIR10 PPP data requirements. AIR09 requires that PPP unitary charges are split for capital maintenance expenditure and payback of initial capital investment.

efficiencies materialising the company also states that these, *'should be ultimately passed through to customers in the course of subsequent price reviews'*.

6.6.5. Three important points emerge from the above:-

1. NI Water propose to immediately keep all outperformance from GainShare until subsequent reviews, despite NI Water only ever being able to keep 50% of any GainShare (the 50% GainShare for the PPP contractor is kept for the duration of contract up to 25 years);

2. NI Water remain convinced that their PPP legacy contracts are unlikely to offer up additional efficiencies for the foreseeable future; and,

3. NI Water offer up only limited evidence for the PPPs' operational value for money by re-asserting that Alpha and Omega were '15%pa and 6%pa respectively against the associated benchmark costs' as set out in the PPP final business cases.

6.6.6. All of the above points are unlikely to act in the customer interest; if such efficiencies accrue within PC10 consumers would not benefit until PC13 and if a party believes there was little chance of additional efficiencies they are less minded towards pursuing same. On the face of the contracts there are real incentives for both contractors and NI Water to pursue additional efficiencies but this is no guarantee that continuous improvement efficiencies will be optimised.

PC10 Business Plan Query

6.6.7. We raised appropriate PC10 Business Plan queries with the company as to why a nil GainShare had been included within their Business Plan and subsequent responses have been examined.

6.6.8. It is evident that NI Water are at the present time utilising the full panoply of contractual instruments at their disposal to ensure efficient management of the PPPs (much of the opex element of the unitary charges depends upon loads and volumes). NI Water has pressed both sets of contractors for the appropriate submission of Continuous Improvement Reports (CIR) whereby the contractor expresses their view as to additional efficiency opportunities. GainShare occurs where a Contractor Notice of Change transpires such that savings in estimated project costs are shared once an 'additional efficiency measure' is implemented (these can occur either on an *ad hoc* basis or as instructed by NI Water as 'Authority' on the back of a CIR).

6.6.9. It is clear the process is at its earliest stages and also that NI Water are presently reviewing Alpha PPP's 2009 CIR and awaiting submission of same from Omega PPP contractor.

Potential for Continuing Efficiencies

6.6.10. The PR09 process within the wider industry has offered up some illuminating facts from Ofwat's analysis of efficiencies, especially for band A companies at the frontier of the industry. First, their analysis of continuing efficiency undertaken by Reckon highlighted the absence of a continuation in the privatisation effect of the 1990s. Reckon stated:

> *'the cost reductions relative to the RPI in the 1990s were brought about by privatisation and the development of incentive regulation, and that there will not be corresponding opportunities in the period from 2010 to 2015.'*

6.6.11. Despite the above, Ofwat have at PR09 decided upon a 0.25% per annum continuing efficiency assumption for the industry, apparently ignoring Reckon's advice to set this at 0%. The reason appears largely based upon the view that even during PR04 the more efficient companies within band A were not complacent as regards delivery of new additional efficiencies. Both the most efficient and least efficient companies within the industry have improved operational efficiencies such that the widely anticipated convergence of England and Wales companies within the upper right hand quadrants of the opex efficiency matrix has failed to materialise at PR09. Instead a greater degree of relative efficiency spread has occurred at PR09 than PR04 as seen by the following table, especially with respect to sewerage opex bandings:

Table 6.8 - De-convergence in Ofwat bandings (PR04 to PR09)

	Water		Sewerage	
	PR04	PR09 (Final Determination)	PR04	PR09 (Final Determination)
Band A	4	3	4	4
Band B	4	6	6	3
Band C	2	1	0	3

PPP Continuing Efficiencies

6.6.12. Given the expectation that even very efficient companies, (those within band A), can be expected to deliver continuing efficiencies, the Utility Regulator is convinced that there is merit in applying such efficiencies to operational expenditure elements of the PPPs' unitary charges for PC10. Accordingly we have included a 0.25%[28] per annum efficiency challenge on the pure opex PPP costs faced by NI Water. Given that NI Water

[28] We have also included a 0.25%per annum assumption for frontier shift to our base opex efficiency targets.

can expect to share 50% of any GainShare we have applied half of our 0.25% pa, or 0.125% pa, to the opex element of the PPP unitary charges accounted for within operating expenditure.

6.6.13. A further review at PC13 enabled by our information requests around future AIR submission may also require the imposition of a catch-up efficiency target to NI Water's PPP costs. We are however reasonably hopeful that NI Water will continue to manage its PPP contracts efficiently so as to maintain the apparent value for money advantages the company has asserted were established upon commencement

6.7. Step 7 – Examine Company View

PC10 Business Plan

NI Water contends that its opex efficiency targets of 4% per annum catch-up for water and 5% per annum catch-up for sewerage will enable it to enter efficiency upper band D by end of PC10.

Table 6.9 - NI Water view on Opex efficiencies[29]

NI Water Top-down Analysis (nominal)	2010/11 (£m)	2011/12 (£m)	2012/13 (£m)
Water opex (4.02% pa)	(3.2)	(3.2)	(3.3)
Sewerage opex (5.00% pa)	(4.0)	(3.9)	(4.0)
Cumulative efficiency	(7.1)	(14.2)	(21.4)

6.7.1. The above expenditure profile of cumulative opex efficiencies is predicated upon a view of total net opex after exclusion of atypical expenditure. Overall baseline opex in NI Water's PC10 Business Plan increases by a factor of a third when various additions to baseline operating expenditure are included such as power, rates, PPP financing costs, regulation costs, bad debt etc. The efficacy of treating such costs as 'excludable' from efficiency analysis is determined by us in section 6.7 of this chapter where we determine allowed additions to baseline opex.

6.7.2. The fact that NI Water exclude such opex from its efficiency challenge ameliorates its headline opex percentages by material amounts; true opex efficiencies offered up by NI Water equate to 6.49% and 5.72% for water and sewerage services respectively (before NI Water strips out additions to opex and atypicals for the lifetime of PC10 and PC13 as 'excluded' from any efficiency challenge). We note NI Water's own COLS analysis is very similar to our own; differences exist in the extent of efficiency challenge we think appropriate for a modern water and sewerage company compared to the company's view resulting primarily from their allowing 100% of their special factor claim.

[29] Source: NI Water Business Plan, Chapter B2, p13, Table B2.5

6.7.3. Although there are grounds to further investigate NI Water's PC10 Business Plan, as we discuss in section 6.3, the centrally important question with regards to opex efficiencies is how fast NI Water might close its very large efficiency gap to the wider industry.

Delivery of Opex Efficiencies

6.7.4. NI Water stresses the delivery of their opex efficiencies is dependent upon the implementation of their procurement strategy and business operating model (BOM). The latter is also then in large part dependent upon a preferred move to a single HQ accommodation block from the present, disparate number of offices located around Belfast.

6.7.5. In discussions with the Reporter, NI Water have indicated that forecast savings are mainly made up of anticipated and future headcount reductions, a new procurement strategy and various other smaller savings. There is no reason to doubt NI Water's ability to secure its own projected savings over PC10, although at the time of meeting the Reporter the company remained unsure where the £6.5m efficiency gap (between their top-down analysis of £21.4m and bottom-up projections of £14m) savings (nominal) might be delivered.

6.7.6. NI Water's Board in contrast believe efficiencies of £20.5m are a more realistic target for themselves, compared to the £21.4m derived from their top-down analysis.

6.8. Step 8 – Our Conclusions

Company Responses to Draft Determination

2007/08 is not a typical stable base year

6.8.1. The Regulator recognises that circumstances have changed since the first full year of operation. Claimed additional opex passing our tests of newness and exogeneity i.e. 'outside the control of management' have been allowed going forward. Our efficiency analysis was based on 2007/08 opex and might have been adjusted to account for a higher cost base. The Utility Regulator chose not to adjust efficiencies upwards since the eventual target was already towards the upper end of the range of available precedent.

Unprecedented level of cost disallowance, many of which are retrospective

6.8.2. Applying the above tests to claimed additions to opex for 2008/09 and 2009/10 results in a modelled opex very close to actual opex in 2008/09, with a slightly higher modelled opex compared to company projected opex in 2009/10.

6.8.3. The Regulator has disallowed opex at a reasonable level compared to other regulators, allowing 51% of the company's £112m claim. By contrast the WICS draft determination[30] allowed only 29% of Scottish Water's £94.4m comparable claim.

The Regulator ignored its own economic advisors

6.8.4. The Regulator has not ignored its own consultants, nor has it assumed that all the assessed inefficiency can be caught up over PC10. Efficiency catch-up follows a standard Ofwat approach counter-balanced against regulatory precedent. Whilst continued support for BIP funding might have argued the case for higher efficiencies, the Regulator remains wedded to allowing additional BIP expenditure free of any efficiency challenge.

6.8.5. Proposed efficiency targets at final determination are towards the upper limit of our central range, having drawn on previous regulatory experience.

Retrospective application of efficiency targets

6.8.6. The Regulator accepts the draft determination proposed efficiencies were in excess of the company's PC10 Business Plan for the years 2008/09 and 2009/10. This has been adjusted so that modelling assumptions are virtually no different by 2009/10. Despite the adjustment the efficiency target remains the same for the five years (2008/09 to 2012/13) so that overall cumulative efficiencies remain unaltered between draft and final determination.

Efficiencies are applied equally to new and base opex

6.8.7. The Regulator has reviewed its treatment of new and base opex and remains of the opinion its approach is reasonable. Regulatory practice elsewhere would support the setting of a higher efficiency on new rather than base opex. In addition, the company treated new and base opex efficiencies equally the same as ourselves in its PC10 Business Plan, whilst stating the converse ought to apply i.e. the scope for new opex efficiency ought to be smaller than for base.

6.8.8. Indeed, recent regulatory precedent from Ofwat suggests the Regulator has been more than reasonable in its approach since the former would expect enhanced scope for efficiencies from any opex associated with new and enhanced assets.

Unprecedented negative special factor adjustment of regional wages

6.8.9. Any company performance at the average efficiency of the industry ignores the fact that the province enjoys considerable regional cost advantages i.e. a cost base equal to the industry average would indicate inefficiency. For this reason alone the Utility Regulator decided upon a regional wage adjustment to reflect the fact that local wage costs should be at least lower that the industry average.

[30] WICS Draft Determination SR10 – Tables 6.3 and 6.4, Staff paper 6 (Allowed for operating costs),

Combined effect of disallowed costs and efficiency targets results in unprecedented challenge

6.8.10. An unprecedented challenge to the company has been avoided by basing our efficiency challenge on a lower level of opex more in-line with actual expenditure for 2009-10. The step-change in draft determination opex for the first year of PC10 has been reduced to a manageable quantum given (i) a significant proportion of BIP expenditure and disallowed additional opex has been re-instated, and (ii) the addition of extra VER/VS.

Required Efficiencies

6.8.11. Our interpretation of the available operational efficiency ranges (see Figure 6.1) is that a very conservative minimum opex efficiency target for NI Water would be 5% per annum. Adopting an Ofwat approach to opex efficiency setting we derived a range of annual targets starting at 6.22%per annum low catch-up to 10.88% per annum high catch-up. Both these targets are supported by our preferred bottom-up analyses and top-down precedents.

6.8.12. We accept we are likely to face renewed criticism from the company in our treatment of their claims for additions to baseline operating expenditure and atypical claims, but we are firm in our intent to apply best regulatory practice in this regard. Recognising the company has already undergone a significant change management process from a government agency to a GoCo and lately as a Non-Departmental Public Body, we are content to set an opex efficiency target taking into account the last two years of the SBP plus our PC10 three year period i.e., set efficiencies across a five year catch-up period akin to that for Ofwat companies.

6.8.13. That said, we determine across five years taking a catch-up rate equivalent to Ofwat precedent (60%) and pro rata to three years, we adopt 36% catch-up over PC10. NI Water faces the full extent of our efficiency challenge of 29.2% cumulative, (over five years). In allowing an increased quantum of additional opex and having listened to company representations post-draft determination, the Regulator remains committed to achieving the 29.2% cumulative efficiency (excluding frontier shift) figure by close of PC10.

6.8.14. Having ensured the removal of any retrospective additional cumulative efficiency by 2009/10 the Regulator has increased the efficiency challenge to 6.95% per annum in the final determination. Allied to frontier shift the total efficiency challenge applied to non-PPP elements of opex amounts to some 7.18% per annum; delivering 30.15% cumulative over the five years (including frontier shift). This represents a near identical cumulative efficiency as applied in the draft determination.

6.8.15. Had we adopted a higher catch-up of 50% or 60% over the three year PC10 period, NI Water would have faced an efficiency challenge of 9% and 11% per annum respectively, well above the 7.5% upper bound of our central efficiency range.

6.8.16. Setting an efficiency challenge towards the top end of our central range (5 to 7.5% per annum) recognises the fact that in accepting some £19.1m per annum of NI

Water's claims for additional operating expenditure a higher efficiency challenge, all other things being equal, is an inevitable consequence for NI Water.

6.8.17. We are confident that our target establishes a trajectory for reasonable improvement by NI Water towards the worst performing companies within the industry and that by the end of PC10 we anticipate, all other things being equal, NI Water closing the relative efficiency gap. Such expectation has to be tempered by the probable improvement in efficiency or frontier shift for the industry as a whole; NI Water like any other regulated water and sewerage company can expect to close in on a target subject to some slight year to year improvement.

6.8.18. Also, the additional opex NI Water incurs up to 2009/10 adds further scope for efficiency catch-up. Whether NI Water are able to meet our efficiency challenge, absorb our reduction to their claimed additions to baseline operating expenditure and overcome any new emergent cost pressures during PC10 remains to be seen. It is for these reasons we are unable to offer any definitive view at this time as to whether the company will attain either band E efficiency, or its aspiration to become a band D by close of PC10. That said, the right approach by NI Water management should see the company able to move beyond our challenging but reasonable target.

6.8.19. The efficiencies put forward by the Regulator are challenging, but are comparable with what has been achieved in other regulated companies; Scottish Water and Network Rail being two of the more recent examples.

Frontier Economics (NI Water's own economic advisors) stated that the Regulator's draft determination efficiency target is 'challenging but possible, given the efficiency savings achieved by regulated water utilities'.

6.8.20. The Regulator also believes that NI Water is more than capable of achieving the efficiency reductions required without having a detrimental effect on any levels of service. This has been the case in Scotland (another relatively young regulatory regime) where Scottish Water has evidenced an increase in efficiency matched with increasing levels of service.

6.8.21. Including our continuing efficiency assumption we determine a 7.18% per annum efficiency challenge for NI Water towards the upper end of our central or 'most likely' range of top-down efficiency targets derived from empirical precedent.

Baseline Opex

6.8.22. At draft determination we were firmly of the view that NI Water did not require opex[31] of £225m in 2009-10 and after adjustment for reasonable additions to baseline we anticipate a revised opex total for 2009/10 of £214m (including efficiency).

6.8.23. As a result of post-draft determination representations from the company and continuing queries from the Regulator, it transpired that at 2nd Quarter Shareholder Report(ing) NI Water was forecasting expenditure of £210m for 2009-10 (2007-08 prices).

[31] The term opex here includes the entire PPP unitary charge and is stated in 2007-08 prices.

As a result the central thrust of the company's representations around opex and efficiencies has been removed[32].

6.8.24. In the first year of PC10 our challenge to NI Water equates to a reduction of £11.3m in total opex to £203m, or a 5.3% real terms reduction. In reality the reduction is actually less, given that the companies projected expenditure for the last year of the SBP is £210m, some £4m less than the Regulator's assumptions.

Conclusions on Efficiencies

6.8.25. By the close of PC10 we determine NI Water will make an additional cumulative opex efficiency savings of £26m. Additionally, we have disallowed £2.5m cumulative BIP expenditure plus just less than half NI Water's additional operating expenditures claim amounting to £55m cumulative across PC10. The difference between NI Water's forecast and the final determination, split by individual components, is illustrated in Table 1.10 below.

Table 6.10 - Reconciliation of PC10 Business Plan to Final Determination

Reduction in NI Water's PC10 Business Plan £m (2007/08 prices)		**-£65m**
Disallowed additional operating expenditure		
Power	-£2.6	
Environmental compliance and regulation	-£19.0	
Information and communications technology	-£12.6	
Corporate	-£8.6	
New organisational functions	-£10.5	
Chemicals	-£0.1	
Rates	-£1.7	
Total disallowed additions to baseline opex		-£55.1
Disallowed BIP expenditure		-£2.5
Additional VER/VS		£10.0
Adjustment for review of cost allocation practices		£2.3
Adjustment to PPP savings		£6.1
Additional cumulative efficiencies		-£25.8

[32] NI Water stated in its, "Response to the Draft Determination – Main Report" (Nov-09) that, "the Utility Regulator is proposing to reduce NI Water opex by 21% or £37m in the first year of the price control period".

Total reduction in PC10 operating Expenditure	-£65.0m

6.8.26. As regards pure efficiency savings, a more appropriate comparison uses NI Water's prior year total operating expenditure (excluding PPP capital charges) so that we expect annualised delivery of efficiencies of 6.48% per annum across PC10 compared to NI Water's offered up 3.6% per annum i.e. nearly twice the company's view. We could, as previously stated, have taken a slightly more aggressive stance on the target percentage and will consider doing so at PC13.

6.8.27. Not all key enablers for efficiencies appear to be in place with, for instance, further intended telemetry investment and a single HQ accommodation block two such bids contained within the PC10 Business Plan. Whilst we recognise there may be some evidence to suggest NI Water has a further distance to travel on the efficiency delivery curve before a quicker pace of change concomitant with higher efficiencies is enabled, we anticipate this further 3yr PC10 period affords a sufficiently long enabling period for same. We shall look for further and additionally challenging rates of catch-up at PC13 should it be warranted.

6.8.28. The required reduction in our assumed opex compared to NI Water's PC10 Business Plan proposals and our additional efficiencies (plus reductions to claimed addition opex) are detailed below:

6.8.29. Figure 6.2 below represents the changes in operational expenditure which have occurred since 2003/04 and the challenge placed on the company to reduce its operating expenditure for this PC10 period.

6.8.30. From the graph we note:

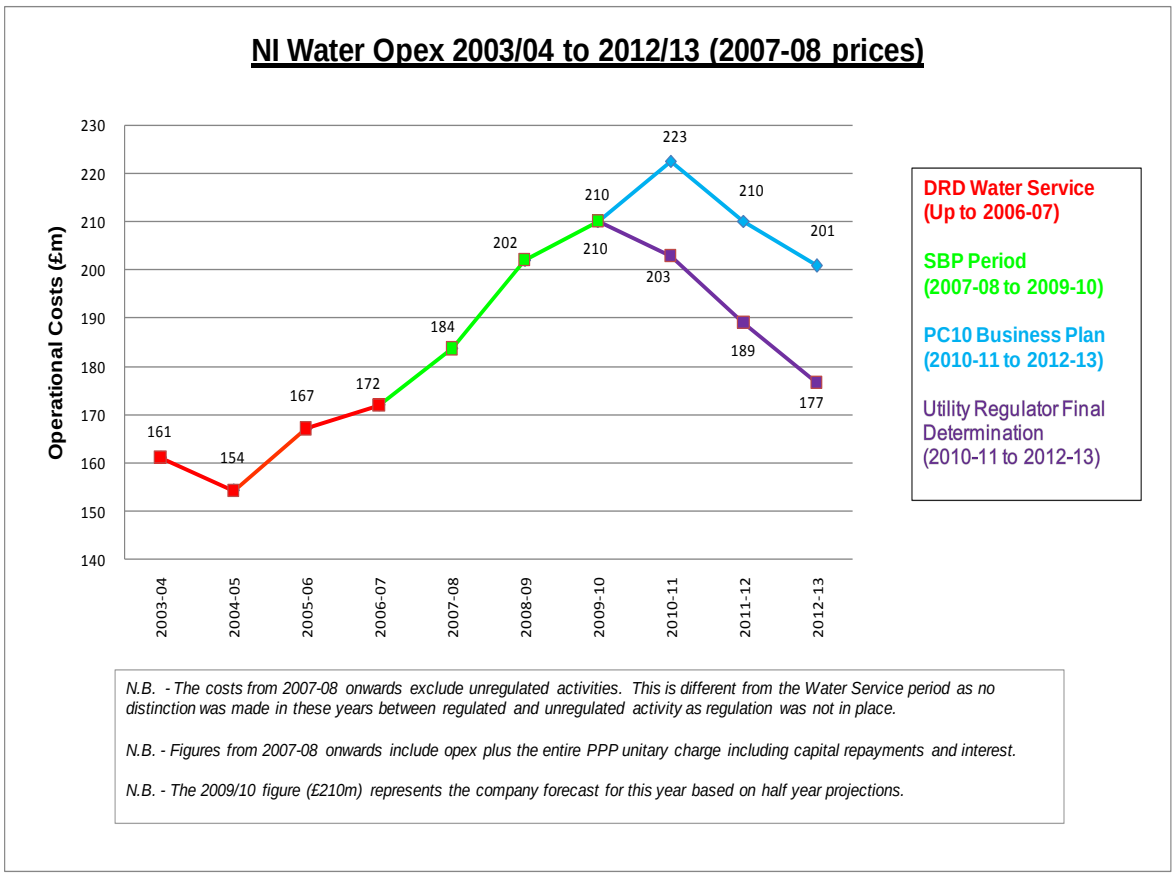
1. From 2009/10 our final determination projects a reduction in opex throughout PC10 similar to the company's own projected decline.

2. By the end of PC10 we return to levels of operating expenditure comparable to the late 2000s. This should be viewed in the context of an additional PPP service charge of £43m per annum and additional operating costs arising from power and chemical costs from advanced water and sewage treatment work solutions.

3. For 2009/10 we accept NI Water's updated projection of £210m, being close to our own using our bottom up approach to opex (including an application of the regulatory principles of exogeneity and newness). By way of contrast, NI Water's PC10 Business Plan indicated £225m at 2009/10, followed by £223m in 2010/11. Our final determination therefore mirrors this turning point in NI Water's opex, equivalent to one single year earlier.

4. There is nevertheless considerable scope for additional efficiency given that the current efficiency gap requires close to a 49% reduction in opex, even after adjustment for local factors, to enable NI Water to be as efficient as its industry benchmarks.

Figure 6.2 - NI Water Opex 2003/04 to 2012/13 (2007/08 prices)



6.8.31. In coming to our final view on operating expenditure we have challenged each component element of NI Water's PC10 operating expenditure. Combined with our review of efficiencies and the setting of an efficiency target which results in additional efficiency savings, we reduced the company's estimate of £634m total operating expenditure to £569m total allowed opex across PC10. We have therefore reduced NI Water's claimed operating expenditure across the PC10 period by a total of £65m and the components of this saving are detailed in Table 6.11:

Table 6.11 - Breakdown of claimed versus allowed PC10 Opex[33]

	2008-09 (£m)	2009-10 (£m)	2010-11 (£m)	2011-12 (£m)	2012-13 (£m)
NI Water claimed opex (incl. all PPP)	211.00	225.49	222.67	210.14	200.91
Disallowed additional opex	-6.39	-8.19	-19.65	-18.21	-17.25
Disallowed BIP costs	0.00	0.00	-1.03	-0.85	-0.60
Additional VER/VS expenditure	0.00	0.00	3.52	3.73	2.75
Change to cost allocation practices	-2.08	-2.08	0.75	0.75	0.75
Adjustment to PPP savings	0.00	-1.32	2.05	2.05	2.05
Total disallowed opex	-8.47	-11.59	-14.36	-12.53	-12.32
NI Water Opex LESS disallowed	202.53	213.91	208.31	197.60	188.59
Additional efficiency (above NI Water)	5.53	0.34	-5.33	-8.53	-11.93
Final Determination for Opex	208.06	214.24	202.98	189.07	176.67

6.8.32. The table illustrates that the majority of the difference between NI Water's revised PC10 Business Plan submission and the Regulator is represented by expenditure which the Utility Regulator does not deem to be required. On a 'cumulative efficiencies' basis, we apply £26m higher efficiencies to NI Water across PC10 (2007/08 based). We have adopted cumulative efficiencies in our analysis, as this is the more appropriate basis of comparison between NI Water's claimed operating expenditure and our final allowance under this determination.

6.8.33. We have reviewed what has been achieved by others and in particular Scottish Water which was considered the most analogous organisation to have gone through a similar transformation. In the table below, our efficiency challenge for NI Water is compared to that of Scottish Water in its early transformation days of 2002 – 2006.

[33] Figures are given in 2007-08 prices and exclude non-appointed activities.

Table 6.12 – PC10 final determination operational expenditure efficiency targets compared to Scottish Water operational efficiency targets 2002-2006[34]

Scottish Water	2002-03	2003-04	2004-05	2005-06
Cumulative Opex Efficiency target before merger savings	£63m	£96.9m	£115.9m	£128.8m
Cumulative Efficiency excluding merger savings % of total Opex	16%	24%	28%	30%
NI Water	2010-11	2011-12	2012-13	
Cumulative Opex Efficiency Target	£11.6m	£21.2m	£31.2m	
Cumulative Efficiency % of prior year Opex baseline (ex PPP capital charge)	5.9%	11.5%	18.2%	

6.8.34. The Scottish Water annualised opex efficiency average equates to 7.6% excluding merger savings which if included, would render an average of approximately 9.2% p.a. The annualised average challenge to NI Water is 6.5%.

6.8.35. While our efficiency challenge is less than that set for Scottish Water it is relatively large in comparison to the other regulators and water companies. We believe that NI Water is in a position to deliver this challenging target for the following reasons:-

- The existing 49% efficiency gap reflects a relatively high level of inefficiency in NI Water thus presenting a large scope for improvement;
- NI Water has the advantage of learning from the regulated companies in England , Wales and Scotland; and
- NI Water has benefited over the last three years of spend to save monies (i.e. Business Improvement projects) and continues to be funded to the order of £10m in the PC10 period.

6.8.36. We note that while Scottish Water failed to deliver the significant 16% saving in 2002-03 by the last year (2005-06) it had caught up and delivered the operational efficiency target. We look forward to reporting a similar success for NI Water.

6.8.37. The Regulator expects that if the efficiency targets are achieved, the company will reduce their relative efficiency gap. However it is likely that the company will still be less averagely efficient by 2012-13. The Regulator does however note the aspiration of NI Water to move to an upper 'D' band company35 by the end of PC10.

[34] Source: LECG Top-down analysis of efficiency assumptions in the UK regulated sector, and WICS Strategic Review of Charges 2002-06, p303.
[35] Upper Band D equates to operating cost reductions of between 25% - 30% to achieve benchmark.

7.0 Financing Investment

7.1. Establishing an Initial 'Notional' RCV and Allowed Return for PC10

Introduction

7.1.1. We believe that the price cap process will be more transparent if we establish an indicative Regulatory Capital Value (RCV) for NI Water. The cash return allowed on this RCV forms an element of the price control approach. This will be consistent with the use of an RCV by other utility regulators in the UK, and with the views of the Competition Commission (formerly the Monopolies and Mergers Commission).

Potential Options for Setting NI Water's initial Notional RCV for PC10

7.1.2. For PC10 we are using a cash-based approach to assess the industry's revenue requirement (by adopting cash- based ratios), as well as adopting an RCV building block approach.

7.1.3. There are a number of approaches that could be used to set NI Water's initial RCV for PC10. The most common approach, which uses the market value of the firm's equity plus the value of debt, cannot be applied since NI Water is not a privatised utility company. The Utility Regulator considers that there are two remaining reasonable approaches to establishing an initial RCV for PC10 which are:

- comparator approaches; and
- discounted cash flow approaches.

7.1.4. The UBS Financial and Strategic Review of Water Service (2005)[36] considered these approaches and concluded that in using the discounted cash flow approach the opening value for NI Water at 1st April 2006 (then DRD Water Service) may be in the range of £950m to £1,050m subject to assumptions on the Weighted Average Cost of Capital.

7.1.5. The higher the discount rate applied (based on the weighted average cost of capital), the lower the initial RCV. As the RCV is a factor in calculating the resources that are required to finance current and future assets, it follows that a lower RCV would require a higher rate of return for the industry to be funded on a sustainable basis. It would be difficult to justify using a different rate of return and discount rate for establishing the RCV, because that would introduce a degree of circularity into the calculation that is not desirable.

[36] UBS report on Financial and Strategic Review of Water Service 2005 (http://www.waterreformni.gov.uk/water_service_final_report.pdf)

7.1.6. Using the comparator approach the UBS Financial and Strategic Review of Water Service (2005) estimated that an opening value for NI Water at 1st April 2006 (then DRD Water Service) may be in the range of £1 billion to £1.1 billion.

The Allowed Rate of Return

What is a Rate of Return?

7.1.7. A simple example of what the rate of return means would be to consider the interest that is earned on savings in a bank account. Say, for example, that we deposited £200 in a bank at the start of the year and that at the end of the year the bank statement stated that there was £210 in the account. We can calculate the rate of return as follows:

$$\text{Rate of return} = \frac{210 - 200}{200} \times 100\%$$

$$= \frac{10}{200} \times 100\%$$

$$= 0.05 \times 100\%$$

$$= \mathbf{5\%}$$

7.1.8. In the above example, calculating the rate of return in the year is a relatively straightforward exercise since we know the values at the start and at the end of the period. The bank sets a rate of return that it believes will allow it to attract funds. The bank will make use of these funds to generate a profit. In a similar way, we need to set a rate of return that will allow NI Water to cover its costs, invest for the future and remain financially sustainable.

What is an Allowed Rate of Return?

7.1.9. The allowed rate of return is the rate of return that we believe NI Water requires in order to meet the priorities set out in the Social and Environmental Guidance. If we set the allowed rate of return at too low a level, there is a risk that NI Water would not have sufficient funds to meet its obligations. This could result in debt increasing to unsustainable levels. This would benefit current customers, but would penalise future customers. Alternatively, it could result in a failure to deliver environmental, public health or customer service benefits. Customers would pay lower charges if the rate of return was set too low, but they would also receive a poorer service. If we set the allowed rate of return at too high a level, customers will pay more than they need to. This could act as a disincentive on management to achieve efficiency targets. This would mean that customers pay more than is necessary in the medium term. Alternatively, the level of outstanding debt could decline significantly relative to the asset value of the company. This would penalise current customers to the benefit of future customers.

7.1.10. Therefore, our objective has to be to ensure that we set an allowed rate of return for NI Water so that it can finance its efficient operation.

What is a Weighted Average Cost of Capital?

7.1.11. The Weighted Average Cost of Capital (WACC) is the overall cost of capital for a company. It takes account of the capital structure of the company (i.e. the market value of its debt and equity) and the rates of return it pays on both its debt and equity. Retained earnings and share issues are examples of equity. Investors normally hold equity because they expect that they will earn dividends or because they expect that the shares will increase in value. A private firm can also borrow, by issuing bonds or commercial paper or by seeking a loan from banks. The firm will have to repay the initial amount of money borrowed at the end of the loan term and meet interest costs as they become due. Investors will seek a higher return if they consider that the investment carries a higher level of risk. By risk, we mean the possibility that the investor will not get back some or all of the money invested. Debt is usually viewed as being less risky than equity. This is because debt normally carries a defined annual rate of interest and in the event of bankruptcy debt holders get paid before shareholders. Equity also pays a less certain amount each year (dividends are at the discretion of the firm). Investors therefore typically require a greater return from the equity of a firm than from its debt.

7.1.12. However, as the amount of debt a firm has increases, so does the risk that a firm will not be able to meet its interest payments or repay all of its debt on time. Firms with high levels of debt may have to provide investors with a higher rate of return for new debt than other similar but less indebted firms. The weighted average cost of capital combines the rate of return from debt and from equity relative to the proportion of each in the market value of the firm. The formula for assessing the weighted average cost of capital is shown in Equation 1.

Equation 1 - Pre-tax weighted average cost of capital

$$WACC = \left\{ r^{D} \times \left[\frac{D}{D+E} \right] \right\} + \left\{ r^{E} \times \left[\frac{E}{D+E} \right] \right\}$$

Where: r = return; D = debt E = equity

Taxation

7.1.13. Debt and equity are treated differently for tax purposes. Interest charges are an allowable expense for the purpose of calculating corporation tax. Interest charges therefore reduce a company's tax bill. Dividends are paid from the profit that a company makes after paying tax.

7.1.14. The corporation tax advantages of debt are recognised in the post-tax weighted average cost of capital calculation. This is shown in Equation 2.

Equation 2 - Post-tax weighted average cost of capital

$$WACC = \left\{ r^{D} \times \left[\frac{D(1-t)}{D+E} \right] \right\} + \left\{ \left[r^{E} \times \frac{E}{D+E} \right] \right\}$$

Where: r = return; D = debt; E = equity; T = corporation tax rate

Inflation

7.1.15. Inflation is the measure of the general rise in the prices of goods and services. Inflation causes the purchasing power of money to be eroded. The investor is therefore concerned with the real rate of return – that is the return after having adjusted for the effect of inflation. The formula for calculating the real rate is shown in Equation 3.

Equation 3 – Real rate of return

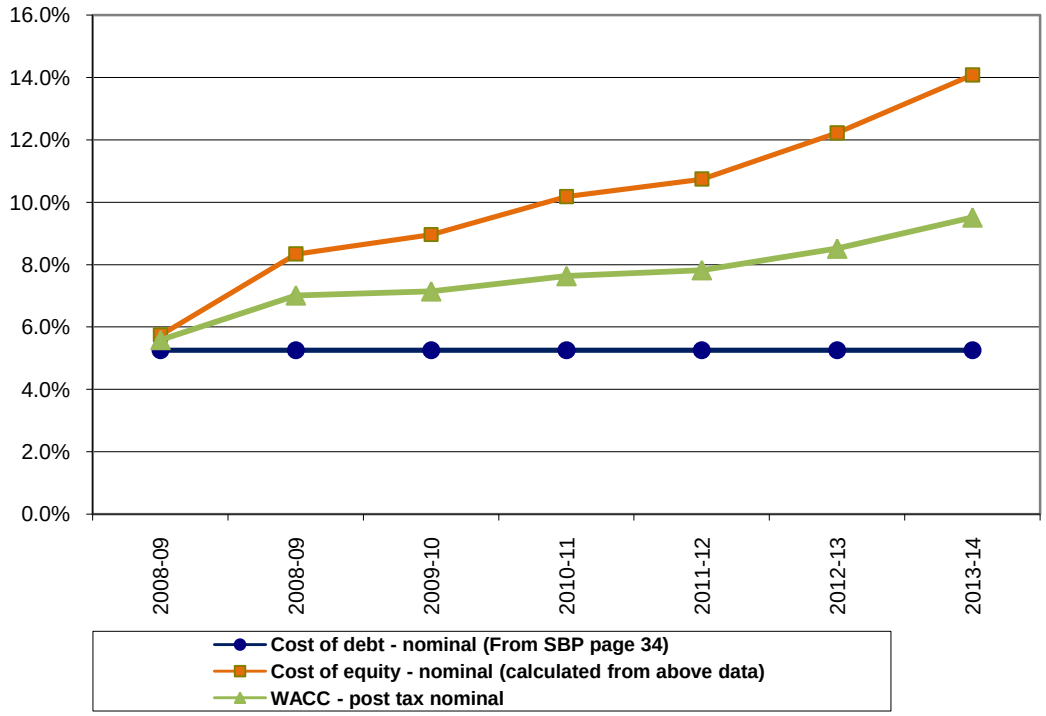
$$\text{Real rate of return} = \left\{ (1 + \text{nominal rate of return}) / (1 + \text{inflation rate}) - 1 \right\}$$

7.1.16. It is important to differentiate between the real rate of return (when inflation has been taken off) and the nominal rate of return (when it has not).

The Allowed Rate of Return and RCV in the Strategic Business Plan

7.1.17. Our starting point for analysing and setting the allowed rate of return for PC10 was to review the NI Water Strategic Business Plan (SBP), the underpinning IFM (Integrated Financial Model) and linked IFM Assumptions and Data Book. The SBP stated that 'projected dividends are based on a return of 5.1% of RCV less net debt' and that 'the actual dividend payments made in any year will be subject to Board approvals.' The opening RCV for NI Water was agreed to be approximately £800m in 2006/07 prices.

Figure 7.1 – Implied weighted average cost of capital and its components as per the SBP



7.1.18. The Utility Regulator has calculated the increased cost of capital figure which was used to derive the 'nominal' cost of equity using the gearing assumption which underpinned the Strategic Business Plan (SBP), assuming that the cost of debt stays fixed at 5.25% nominal until 2013/14. According to the SBP, funding of the capital investment programme carries a cost of debt fixed at 5.25% until 31 March 2010, and, subsequently a fixed interest rate of 0.85% over the reference gilt rate. The weighted average cost of capital and its constituent elements, namely cost of debt and equity, as per the SBP are shown in Figure 7.1 above.

7.1.19. The above analysis demonstrates that to ensure NI Water had an adequate level of revenue to finance its functions the SBP included a financing adjustment that resulted in an unusually high cost of capital e.g. 8% at 2013-14. This analysis is confirmed by NI Water's AIR09 Board Overview commentary which states 'This WACC has been agreed with DRD for the SBP period and is currently used as a discount rate in business case analysis. The return on RCV earned in 2008-09 was 6.67% (real). This is higher than the WACC calculated above (i.e. 5.15%) as it includes an additional 'cash' or 'financeability' element'. For PC10 we have removed this financing adjustment, while setting the goal of strong financial ratios for PC10. NI Water will move towards these financial ratios provided it meets the targets set by us in this final determination. We believe this methodology is more robust over the longer term since it does not then require a financing adjustment or an allowed return on capital outside a sensible range or that set by other regulators.

Conclusion on Setting NI Water's Initial Notional RCV for PC10

7.1.20. We have used the RCV building-blocks approach as well as a cash-based approach to determine price caps, which required us to accept an initial RCV for NI Water for PC10. We are unable to use the market based approach of other regulators because NI Water is in the public sector.

7.1.21. We considered that the UBS Financial and Strategic Review of Water Service report reasonably demonstrated using the comparator and discounted cash flow approach that the opening RCV figure for NI Water should be around £1 billion.

7.1.22. In the draft determination we allowed an increase in the regulatory capital value (RCV) of £114m to maintain adequate financial ratios for the company. Both DRD and CCNI questioned the need for this change given the impact on revenue, subsidy and price limits. For the final determination we have reviewed our approach and are satisfied that it is not necessary to provide additional funding over and above that included in the original RCV to maintain a robust financial position for the company. For PC10 we have therefore maintained the opening RCV at £1,386m (closing 2009-10) which is consistent with the established RCV of around £800m at April 2007.

7.1.23. The Utility Regulator expects to carry out further analysis on the RCV for PC13.

7.2. Allowed Rate of Return for PC10

Introduction

7.2.1. For PC10 we have adopted a cash-based approach allied to a Regulatory Capital Value building-blocks approach. The RCV building-blocks approach includes financing costs which are the cash return on the regulatory capital value. We explained that we would estimate the cash return on the RCV using the formula:

Cash return on the RCV = RCV x Allowed rate of return

7.2.2. We explained how we intended to approve an initial RCV. In the private sector, a regulator sets an allowed rate of return. This is often referred to as the cost of capital. The regulator will set this rate of return to reflect current and expected market conditions. The regulator has a duty to set an appropriate rate of return that allows an efficient company to properly finance its functions. The company is free to choose a mix of debt and equity funding, but its rate of return is capped (unless it outperforms efficiency targets). In the public sector, the regulator is not able to set the rate of return based on observation of the cost of capital in the market. NI Water's cost of debt is set by Government and the Government is also the only shareholder. This section outlines how we have arrived at the appropriate rate of return for PC10. Our supporting paper on the Cost of Capital for NI Water is contained in Annex I.

WACC and Government Owned Companies (GoCo)

7.2.3. There are difficulties in assessing the WACC for a Government Owned Company. This is because the regulator cannot easily observe the costs of equity and, moreover, it is also difficult to estimate the market value of the organisation.

Setting an Allowed Rate of Return for NI Water for PC10

7.2.4. Our aim has been to allow NI Water to earn a return that is sufficient for it to fund its activities in a sustainable way. We have sought a balance between current and future customers by ensuring that the allowed rate of return is only just high enough to cover the costs of the benefits provided to current customers.

7.2.5. We considered four possible approaches to setting an appropriate rate of return for NI Water:

- Adopt the Ofwat allowed cost of capital;
- Use long-term average real borrowing rates;
- Use the discount rate suggested in HM Treasury's Green Book; and
- Use a hybrid approach.

7.2.6. We examine each in turn and summarise the advantages and disadvantages of each approach.

Ofwat's Assessment of the Allowed Cost of Capital

7.2.7. We considered whether it would be appropriate to use Ofwat's allowed rate of return. This could potentially have been justified on the grounds that the companies in England and Wales could be considered as good comparators for NI Water.

7.2.8. We are not however of the view that it would be appropriate to allow NI Water the same rate of return as Ofwat allowed to the companies in England and Wales for the following reasons:

- It is not for the Utility Regulator to question the price at which the Government has chosen to make capital available to NI Water. This would not be consistent with the requirement on us to determine the maximum level of charges consistent with NI Water delivering Ministers' priorities at the lowest reasonable overall cost.
- This approach would not be consistent with the tight budgetary constraint and continuing challenge to improve efficiency that underpins this determination.
- The allowed rate of return in England and Wales has to be sufficient to attract debt and/or equity investment. The water and water and sewerage companies have to compete for capital with many other investment choices that are available to providers of capital. Ofwat has a duty to ensure that an efficient company is able to access the capital markets and attract sufficient capital to finance its functions.

- In contrast, NI Water does not have to compete for capital in the same way. It would therefore not be realistic to set an allowed rate of return at the same level as in England and Wales.
- NI Water's risk profile could also reasonably be considered to be no higher than that in England and Wales. This is because competition is more extensive in England and Wales, where inset appointments, special deals outside the tariff baskets and common carriage are possible. The companies have also improved their operating cost efficiency, thereby reducing the opportunity for significant outperformance of the regulatory settlement.

The Treasury Green Book[37]

7.2.9. We considered using a cost of capital from 'The Green Book'. The Green Book is published by HM Treasury, and is a guide to appraisal and evaluation in the public sector. 'Appraisal' relates to the decision to commit funds to the achievement of objectives and 'evaluation' relates to the assessment of past and present activities. The preface to the 2003 edition of The Green Book states that the guidance 'is relevant to all appraisals and evaluations':

7.2.10. The 2003 edition of The Green Book reduced the Treasury estimate of the discount rate to 3.5% in real terms. The 'discount rate' measures 'the rate of social time preference'. The Green Book defines social time preference as 'the value society attaches to present, as opposed to future, consumption'.

7.2.11. We considered setting the allowed rate of return for NI Water in line with The Green Book discount rate of 3.5% in real terms. We have decided not to use this approach because we felt this rate of return was lower than NI Water currently needs. As such, it would have been inconsistent with our establishing the lowest reasonable overall cost of delivering the priorities of Ministers.

Hybrid Approach

7.2.12. We have decided to apply a modified version of the WACC approach that is used by the regulators of private sector companies. We have combined an observed real cost of debt with an estimate of an appropriate rate of return on the equity portion of NI Water's RCV in order to produce an allowed rate of return.

7.2.13. The future real rate of interest on debt for NI Water was estimated by looking at the current borrowing rate faced by NI Water together with a predicted future rate for PC10. We have collected information on the nominal rates offered by the 2027 government gilts. We have maintained for the final determination assumed RPI inflation of 2.3%. This gives an allowed rate of return for NI Water's debt of 2.88%. We have linked prices and the cost of capital to RPI in order to ensure that NI Water is not exposed to funding risks associated with changes in the RPI.

7.2.14. The allowed rate of return on the equity portion of the RCV is 7.1%.

[37] 'The Green Book' Appraisal and Evaluation in Central Government, HMSO, 2003.

Conclusion on the Allowed Rate of Return for PC10

7.2.15. We have set an allowed rate of return that reflects the current cost of borrowing for NI Water. We have linked this to the retail price index in order to ensure that NI Water is not exposed to financing risks resulting from changes to the RPI.

7.2.16. The rate of return that we have allowed is 2.88% for debt and 7.1% for equity and is shown in table 7.1. This rate of return should be used by NI Water as the discount rate in any business case analysis in the PC10 period.

Table 7.1 - Allowed return for PC10

Components of the Allowed Rate of Return	Value (%)
Cost of Debt	2.88%
Cost of Equity	7.1%
Gearing	55%
WACC (Pre tax cost of debt, post tax cost of equity)	4.8%

7.3. Setting the Required Level of Revenue

Introduction

7.3.1. This final determination sets the maximum revenue that NI Water should require based on the priorities outlined in the Ministerial Social and Environmental Guidance. The Utility Regulator considers that most directly paying customers (currently non-domestic) are concerned primarily about the level and profile of prices they will have to pay. The role of the Utility Regulator, in broad terms, is to set prices that are only as high as they need to be to ensure that the objectives of NI Ministers can be met at the lowest reasonable overall cost.

7.3.2. As well as using a cash-based approach we have employed a regulatory capital value building-blocks approach to price caps in this final determination. We have set price caps in 2012-13 such that NI Water will move towards targeted financial ratios if it were to perform at the level assumed by this final determination.

7.3.3. This chapter provides a brief summary of how we have calculated allowed revenue.

The Calculation of Revenue

7.3.4. The financial model calculates revenue using a building-blocks approach as follows:

Return allowed on the regulatory capital value
+
allowed for operating costs
+
depreciation on non-infrastructure assets
+
the infrastructure renewals charge (IRC)
+
allowed for PPP costs
+
taxation

7.3.5. Our approach to setting price caps involved the following stages:

- We identified the investment that NI Water had to deliver in the 2010-13 regulatory control period.
- We calculated the depreciation and infrastructure renewals charges that were consistent with this investment programme.
- We identified the total allowed level of operating expenditure in each year.
- We identified the allowed costs of Public Private Partnerships.
- We estimated asset disposals and the cash proceeds from disposals.
- We determined an appropriate rate of return.

7.3.6. As discussed in Annex G, the financial model also contained a number of assumptions with regard to working capital, inflation rates and the calculation of tax.

7.3.7. We used the financial model to identify the cash return on the RCV required by NI Water in 2010-13. In determining the rate of return we also took a view on the regulatory capital value that we required in 2010-13 in order to ensure that NI Water would move to the targeted financial ratios if it were to perform at the level assumed by this final determination.

7.3.8. The financial model helped us to calculate the cash required in the revenue requirement deriving from the allowed rate of return on the RCV. The calculation therefore involved a value for the initial RCV for PC10. This value for the initial RCV is consistent with the established initial regulatory capital value of NI Water in April 2007 of £800m.

Monitoring Financial Performance

7.3.9. Our approach simplifies the monitoring of NI Water's financial performance. This performance will be broadly in line with the targeted financial ratios if it complies with

the assumptions contained within the final determination. We can monitor progress by reviewing NI Water's financial indicators during the regulatory control period and comparing them with those predicted by the financial model.

7.3.10. It will, of course, be critical to monitor delivery of the capital programme and the level of service provided to customers closely. NI Water should not seek to ensure compliance with its financial targets by cutting corners on customer service or by delaying the delivery of the investment priorities set out by the Ministerial Guidance.

7.4. Conclusion

7.4.1. As well as using a cash-based approach we have utilised a Regulatory Capital Value building-blocks method of price caps in this final determination. This should improve the transparency of our calculation of the required level of revenue. It will also allow more robust comparisons to be drawn of the financial strength of the industry in Northern Ireland relative to that of the companies in England, Scotland and Wales.

7.4.2. Our approach ensures that if NI Water were to perform at the level assumed in the final determination, then it will broadly comply with the values of the cash-based ratios and gearing set out in our financial model. We have set our gearing target at < 55%.

7.4.3. This will facilitate monitoring as it will be clear (through a comparison with the value of the financial ratios) whether or not NI Water has met the financial terms of the determination. Clearly, NI Water must not cut corners on either the investment delivery or level of service to customers in order to meet its financial targets. Our annual Cost and Performance reports will comment on NI Water's progress in these areas.

7.5. Calculation of Allowed Revenue

Introduction

7.5.1. In the previous section, we described how we set the allowed revenue. This section sets out our calculations. It reviews the information that we entered into the financial model and the calculation of the minimum level of revenue that NI Water would require in 2012-13 in order to be financially sustainable. As explained previously, we have adopted the same ratios as Ofwat in our assessment of financial sustainability, except for gearing.

7.5.2. This section sets out the levels of investment, operating cost, depreciation and PPP costs that we have allowed. It also sets out the regulatory capital value for PC10.

The Investment Programme

7.5.3. In Chapter 4, we set out the investment programme that NI Water will have to deliver during this regulatory control period if it is to meet all of the objectives set by Ministers. The programme is set out in Table 7.2.

Table 7.2 - Required investment programme (nominal prices) (£m)

Investment Category	2010-11	2011-12	2012-13
Infrastructure renewals expenditure	29.4	30.1	30.8
Other investment (including grants and contributions)	164	158.0	165.3
Total Investment	193.4	188.0	196.1
Note: Figures may not add due to rounding.			

Depreciation and Infrastructure Renewals Charges

7.5.4. The depreciation charge can be divided into the depreciation of existing assets and depreciation of new assets. The infrastructure renewals charge has been set equal to actual spending on infrastructure renewals in Table 7.2. The depreciation and infrastructure renewals charges are shown in Table 7.3. Our approach to determining the infrastructure renewals charge and current cost depreciation is described in sections 7.6 and 7.7.

Table 7.3 - Depreciation and infrastructure renewals charges (current cost basis) (nominal prices) (£m)

Depreciation Category	2010-11	2011-12	2012-13
Current Cost depreciation (after Broad Equivalence)	54.3	55.5	56.8
Infrastructure Renewals Charge	29.4	30.1	30.8
Total depreciation and infrastructure charges	83.7	85.6	87.6

Total Allowed for Operating Costs

7.5.5. In Chapter 6, we summarised the maximum level of operating costs that NI Water should incur in meeting the Ministers' objectives and providing an improving level of service to customers.

7.5.6. Total operating costs include the following:

- base operating costs, including any adjustments;
- our estimate of the scope for efficiency;
- our estimate of Retail Price Inflation; and
- new operating costs.

7.5.7. Total allowed for operating costs are set out in Table 7.4.

Table 7.4 - Total allowed for operating costs (nominal prices) (£m)

	2010-11	2011-12	2012-13
Total allowed for operating costs	168.5	158.0	148.2
Note: includes atypical costs e.g. VER /VS			

Allowed Costs of Public Private Partnerships

7.5.8. Table 7.5 shows allowed PPP costs.

Table 7.5 - Allowed for PPP Costs (Nominal Prices) (£m)

	2010-11	2011-12	2012-13
Allowed for PPP costs	45.5	45.9	46.8

Asset Disposals and Cash Proceeds

7.5.9. Asset disposals are not expected to be very material. Our estimates have taken account of the level of asset sales made by NI Water in its Business Plan submission. Our assumptions are outlined in Table 7.6.

Table 7.6 - Asset disposals and cash proceeds (nominal prices) (£m)

	2010-11	2011-12	2012-13
Cash proceeds from asset disposals	4.5	3.5	3.9

Other Inputs to the Financial Model

7.5.10. We set an allowed rate of return of 4.78% real post-tax. We have used a net debt to RCV ratio of 55% in our application of our hybrid WACC. The financial model also uses two separate inflation indices. We use the Retail Price Index to inflate the costs of all operating and PPP costs. The Construction Output Price Index is used to inflate capital expenditure and depreciation charges. Charges have been set relative to RPI in order to remove the financing risk from NI Water.

Tax

7.5.11. We have assumed, in line with the NI Water PC10 business plan submission, that zero tax is payable over the PC10 period.

The Calculation of Revenue

7.5.12. We used the financial model to identify the cash return on the RCV required by NI Water in 2012-13. The constraint was that NI Water should move towards the targeted cash-based financial ratios in 2012-13. We have used these ratios on the basis that the NI Executive will agree that NI Water should be a financially sustainable company. In practice, of course, NI Water will only move towards these financial ratios if it were to perform at least at the level assumed in this final determination.

7.5.13. Table 7.7 sets out the notional RCV in each year of this regulatory control period.

Table 7.7 - Calculation of notional RCV in each year of this regulatory control period (nominal prices) (£m)

	Nominal Prices	2010-11	2011-12	2012-13
	Closing RCV (previous year)	1386	1523	1656
plus	Inflation Adjustment	32	35	38
plus	Adjustments	2	1	0
equals	Opening RCV	1420	1559	1694
plus	New Investment excluding PPP	164	158	165
plus	Infrastructure Renewals Expenditure	29	30	31
less	Grants and contributions	3	4	4
less	Depreciation	51	53	54
less	Infrastructure Renewals Charges	29	30	31
less	Disposal of Assets	7	5	4
equals	Closing RCV	1523	1656	1798
	Year Average	1454	1589	1727
Note: Figures may not add due to rounding.				

7.5.14. The revenue we allow NI Water in each year is set out in Table 7.8. This table also shows the annual increase in revenue in nominal terms assuming inflation at 2.3%

Table 7.8 - Revenue caps 2010-13 (nominal prices) (£m)

	2009-10	2010-11	2011-12	2012-13
Operating Costs	n/a	168.5	158.0	148.2
PPP costs	n/a	45.5	45.9	46.8
Current Cost Depreciation (after Broad Equivalence)	n/a	54.3	55.5	56.8
Infrastructure Renewals Charge	n/a	29.4	30.1	30.8
Cash return on the RCV	n/a	69.5	76.0	82.6
Tax	n/a	0	0	0
Calculated Revenue	n/a	367.2	365.5	365.0
Total Revenue (smoothed)	364.3	357.9	366.5	374.2
Year on Year increase / decrease (nominal)	-	-6.4	+8.6	+7.7
Total Revenue (smoothed) 09-10 prices	364.3	349.8	350.2	349.5
Year on Year increase / decrease (09-10 prices)		-14.5	+0.4	-0.7
Figures may not add due to rounding.				

Financial Performance

7.5.15. In Table 7.9 we set out the value of each targeted ratio. We will monitor NI Water financial performance and sustainability in PC10 using these ratios.

Table 7.9 - Financial performance 2010-13

Financial Ratio	Targeted Value	2010-11	2011-12	2012-13
Cash Interest Cover	Around 3 times	3.2	3.2	3.2
Adjusted Cash Interest Cover	Around 2 times	1.5	1.7	1.8
Funds from operations: debt	Greater than 13%	12.5%	12.7%	13.0%
Retained Cashflow: debt	Greater than 8%	7.2%	9.3%	10.0%
Gearing (adjusted for PPP asset / liability)	Less than 55%	54.5%	55.6%	55.9%

Public Expenditure

7.5.16. The revenue caps set out in Table 7.8 require NI Water to take on considerable new debt during the next three years. In the Social and Environmental Guidance, NI Water was allowed £130m of public expenditure in 2010-11, £120m in 2011-12 and £90m in 2012-13.

7.5.17. The forecast use of public expenditure in PC10 is summarised in table 7.10 using the public expenditure limits shown in the Social and Environmental Guidance. We understand however that the actual new debt available in each year of PC10 may be set by reference to the required capital enhancement expenditure required in each year of PC10 .i.e.

- 2010-11: £106.6m (nominal prices);
- 2011-12: £98.7m (nominal prices); and,
- 2012-13: £104.3m (nominal prices).

Summary Income and Expenditure Account

7.5.18. The summary income and expenditure account is set out in Table 7.11.

Table 7.10 - Summary income and expenditure accounts 2010-13 (current cost basis, nominal prices) (£m)

	2010-11	2011-12	2012-13
Turnover	357.9	366.5	374.2
Operating Costs	-168.5	-158	-148.2
PPP	-26.5	-26.9	-27.7
Infrastructure Renewals Charge	-29.4	-30.1	-30.8
Current Cost Depreciation (before application of broad equivalence)	-92.6	-100	-107.6
Amortisation of PPP	-3.7	-3.7	-3.8
Amortisation of Deferred Income	2.9	3.0	3.1
Current Cost Profit / Loss on disposal of fixed assets	-2.7	-1.0	-0.2
Operating surplus before working capital adjustments	**37.4**	**49.8**	**59.1**
Working Capital adjustments	1.8	1.3	1.2
Operating surplus before interest	**39.1**	**51.1**	**60.3**

Net interest payable	-50.7	-56.7	-61.5
Current Cost financing adjustment	22.3	24.7	27.1
Surplus before taxation	10.7	19.1	25.8
Deferred Taxation	-14.2	-16.1	-17.8
Dividends	-26	-27	-29
Current Cost Surplus (Loss) for financial year	-29.4	-24.0	-21.0
Note: Figures may not add due to rounding			

Summary Balance Sheet

7.5.19. The summary balance sheet is set out in Table 7.12.

Table 7.11 - Summary balance sheets 2010-13 (current cost basis, nominal prices) (£m)

	2010-11	2011-12	2012-13
Tangible assets	7,423.4	7,647.6	7,877.1
PPP assets	105.7	104.4	102.9
Third Party Contributions	-101.1	-104.1	-107.7
Working Capital	-56.4	-50.9	-48.5
Cash (net of overdrafts)	-1.0	1.2	2.0
Infrastructure prepayment (accrual)	-16.9	-16.9	-16.9
Net operating assets	7,353.7	7,581.3	7,808.9
Short term liabilities	-29.5	-30.9	-33.3
Investments	0.1	0.1	0.1
Government Loans	-783.7	-880.8	-968.3
PPP creditor	-97.5	-91.5	-85.4
Other creditors	-3.4	-3.4	-3.4
Total Provisions	-54.4	-68.4	-85.8

Net assets employed	6,385.4	6,506.2	6,632.8
Income and expenditure account	-150.5	-174.5	-195.5
Current cost reserves	5,864.2	6,009.0	6,156.7
Other reserves and share capital	671.7	671.7	671.7
Total Capital and Reserves	6,385.4	6,506.2	6,632.8
Note: Figures may not add due to rounding			

Summary Cashflow Statements

7.5.20. The summary cashflow account is set out in table 7.13.

Table 7.12 - Summary cashflow statements 2010-13 (current cost basis, nominal prices) (£m)

	2010-11	2011-12	2012-13
Current cost operating profit	39.1	51.1	60.3
Total depreciation, amortisation and infrastructure charges	122.8	130.8	139.1
Change in working capital and working capital adjustment	-21.9	-6.7	-3.6
Other non cash profit and loss items	-2.1	-2.0	-0.5
Current cost profit / loss on sale of assets	2.7	1.0	0.2
Net cash flow from operations	**140.6**	**174.1**	**198.4**
Cash changes in non operating debtors / creditors	-10.3	1.4	2.4
Net cashflow from returns on investment and servicing of finance	-50.7	-56.7	-61.5
Net cash outflow from investing activities (including IRE)	-185.8	-180.8	-187.9
Retained earnings paid	-26.0	-27.0	-29.0
Net cash flow before financing	**-132.1**	**-89.0**	**-80.6**
Financing cash flow			
New Government loans	135.5	97.1	87.6
PPP capital repayments	-5.9	-6.0	-6.1

Net cash inflow from financing	**129.6**	**91.1**	**81.4**
Increase (decrease) in cash and cash equivalents	**-2.6**	**2.2**	**0.8**
Note: Figures may not add due to rounding			

Conclusion on the Calculation of the Revenue Cap

7.5.21. This section has explained how we calculated the revenue cap and has shown the information that we included in the financial model. We have also set out the target values of the financial ratios by which we have judged the financial sustainability of NI Water. As is appropriate for a debt funded company, we have targeted those ratios which are cash-based and indicate the affordability of the company's debt. The ratio of net debt to RCV is useful as a general indicator of the financial health of NI Water.

7.5.22. It would, of course, not be in customers' interest for NI Water to cut corners on either the investment delivery or level of service to customers in order to meet its financial targets. Our annual Cost and Performance reports will comment on NI Water's progress.

7.6. Funding Capital Expenditure – Current Cost Depreciation

Introduction

7.6.1. Depreciation is the mechanism by which we recognise that the effectiveness and value of assets decline over time. This is a cost that should be borne by customers as they receive the benefit from use of the assets. Although effective asset management can help to reduce asset replacement costs, depreciation will continue to have a major impact on customers' bills (currently non-domestic properties only) and Government subsidy. From a regulatory point of view, the depreciation policy of the water and wastewater business has to strike a balance between current and future customers. We therefore allow for an appropriate depreciation charge to be recovered from customers' charges.

7.6.2. There are two types of depreciation charge:

- A standard depreciation charge on the non-infrastructure assets (treatment plants, offices, vans, computers etc); and
- An infrastructure renewals charge for infrastructure assets (essentially the water mains and sewers).

7.6.3. In Section 7.7, we explain how we have established the infrastructure renewals charge for this final determination. In this section we explain how we have established the depreciation charge for non-infrastructure assets. We have used the same approach to non-infrastructure depreciation as Ofwat uses for the water and wastewater companies in England and Wales.

7.6.4. The depreciation charge has a direct impact on the prices that non-domestic customers pay and the level of Government subsidy. The higher the charge, the higher the price or subsidy paid by customers or Government; the lower the charge, the lower the price or subsidy paid by customers or Government. The charge should reflect the cost of maintaining the above ground assets in a sustainable and serviceable manner. It is, therefore, important that NI Water's depreciation policy accurately reflects the diminishing value of the assets over time. In this section we first discuss the importance of setting an accurate depreciation charge. We then look at different approaches to establishing the depreciation charge and the resulting range of values for NI Water. Finally we explain our view of the appropriate depreciation charge for NI Water. Depreciation influences NI Water's revenue requirement in two main ways:

- It is deducted from the RCV as it represents the amount by which the value of the assets has fallen. Assuming a constant rate of return, a reduction in the RCV reduces NI Water's revenue requirement.
- The depreciation charge is one component of the revenue requirement. It is added to the cash return on the RCV, IRC, PPP and operating costs to determine the revenue requirement.

Calculating the Depreciation Charge

7.6.5. Establishing the appropriate depreciation charge for an asset involves three critical elements:

- Estimating the asset's useful life;
- The choice of depreciation method; and
- Valuing the asset.

Estimating the Asset's Useful Life

7.6.6. This is the expected number of years that an asset will last. The estimated useful life of an asset in the water industry can range from a few years to several decades. Determining the estimated useful life of an asset is not an exact science and is often based on an engineering judgement. Most organisations are able to draw on benchmarks from within their own industries and this provides a degree of consistency.

The Choice of Depreciation Method

7.6.7. There are a number of different depreciation methods. The two most commonly used are 'straight-line' and 'reducing balance'. The straight-line depreciation method spreads the cost of using the asset evenly throughout its life. The reducing balance depreciation method assumes that the cost of use is higher in the initial years of the asset's life. In many industries, the choice of depreciation profile is important. The water and waste water industry has very many assets, and new assets are being built each year. The range of asset types and ages will tend to smooth out the impact of the choice of depreciation method. This is known as the portfolio effect. Let us assume, for example,

that a service provider has 40 treatment works, each of which is valued at £100m and is expected to have a useful life of 40 years. If one works is built each year, the annual depreciation charge will be the same whether the company chooses to use the straight line depreciation method or the reducing balance depreciation method. As NI Water has around 42 water treatment works and around 1078 wastewater treatment works, the portfolio effect should minimise the risk that the method of depreciation that is chosen for an individual asset might have a significant impact on the total depreciation charge.

Valuing the Asset

7.6.8. There are two principal ways to value a fixed asset – based on its current or historic (purchase) cost. Current cost accounting re-values the asset each year such that its gross (un-depreciated) value should be broadly equivalent to the current price of replacing the asset. The historic cost simply considers the acquisition cost of the asset to be its value throughout its life. The method chosen has a significant impact when assessing depreciation.

7.6.9. Current cost accounting principally involves establishing the current value of the asset to the business. This can be obtained in one of three ways:

- **Modern Equivalent Asset (MEA) Valuation:** Ofwat defines the gross MEA value as representing the cost to replace an old asset with the same service capability, allowing for any difference both in the quality of the output and in operating costs. Net MEA value is the gross value net of accumulated depreciation[38]. MEA valuation is most suited for industries that use long-life assets where the technology behind these assets is steadily evolving. In such industries, using the acquisition cost of the asset could inflate its value as, through time, technology advancements will provide lower cost and higher quality solutions. NI Water does not have a current MEA valuation but is expected to be able to conduct such a valuation exercise for the PC13 price control. This may allow a more accurate and robust valuation of its assets and calculation of its depreciation.
- **Net Realisable Value (NRV):** If the proceeds obtained through disposing of the asset are higher than the MEA value, the NRV should be used to value the asset. The water industry is, however, required to provide a service even where the customers are served at very high cost. The industry does not have the discretion to dispose of many of its assets. An NRV approach to valuation would therefore be misleading.
- **Indexation:** could be used to revalue the asset to its current value. Under an indexation approach, a price index is used to inflate the historic purchase cost to a current value. This approach differs from MEA valuation as it is linked to the historic cost of the asset. There are difficulties in determining an appropriate price index and this approach does not consider the effect of changes in technology. It would be likely to overstate the appropriate level of depreciation.

Ofwat's Approach to Determining a Depreciation Charge

[38] Ofwat RAG 1.03, January 2003

7.6.10. Ofwat calculates depreciation on a current cost basis. It separately considers investment:

- in assets that deliver base levels of service; and
- in assets that enhance levels of service.
- It calculates depreciation separately on each type of investment, namely:
- depreciation on existing assets; and
- depreciation on new capital expenditure.

7.6.11. Ofwat uses the reported depreciation charge from the business plans of the companies in England and Wales but conducts a check on its reasonableness before it is included in the final price determination. Ofwat takes the following factors into account:

7.6.12. **Asset Valuation** - Depreciation is calculated using MEA valuations of assets. This ensures that assets are valued in terms of their replacement value, rather than their actual realisable value if sold.

7.6.13. **Assets' Useful Lives** - The assets in the water industry have wide-ranging useful lives. In order to ensure consistency between companies in the price setting process, assets are classified into five categories. Each category is assigned a 'standard life' which is used in the depreciation calculation:

- very short (assets having a life of up to five years are assigned a standard life of five years);
- short (assets having a life of six to 15 years are assigned a standard life of 10 years);
- medium (assets having a life of 16 to 30 years are assigned a standard life of 20 years);
- medium/long (assets having a life of 31 to 50 years are assigned a standard life of 40 years); and
- long (assets having a life exceeding 50 years are assigned a standard life of 60 years).
- Infinite (assets having an infinite lifetime). These assets are not depreciated.

7.6.14. Asset Apportionment - Ofwat apportions new capital expenditure between the above asset categories according to a series of set proportions. Different apportionments are used depending on whether the capital expenditure is an enhancement or a renewal and whether it is for a water or wastewater asset. The apportionments are used to reduce the effects on the price setting process of the companies' different accounting policies.

7.6.15. **Depreciation Method** - Ofwat calculates depreciation on a straight-line basis. We understand that all water companies in England and Wales are also currently using straight-line depreciation.

7.6.16. **Overall Check on Total Depreciation** – 'Broad Equivalence' - For each company, Ofwat combines reported depreciation on existing assets with depreciation on

new capital expenditure to provide a figure for total depreciation. It applies a check on this total figure to ensure that it is reasonable. This check is called 'broad equivalence'. Where calculated depreciation fails this check, Ofwat will adjust the level of depreciation to ensure that prices are set at an appropriate level.

7.6.17. The rationale behind broad equivalence is relatively simple.[39] To promote efficiency and equity the depreciation charge should reflect current capital consumption, that is, Maintenance Non – Infrastructure (MNI) expenditure. By ensuring the Current Cost Depreciation (CCD) is consistent with Maintenance Non-infrastructure (MNI) customers' charges (and subsidy) approximate to the cost of current service provision, and this promotes efficiency in production and consumption decisions and equitable cost-recovery over time. In applying broad equivalence, Ofwat adjust companies' estimates of CCD downwards where these are more than 5% higher in net present value terms than MNI. The Utility Regulator has applied this principle in determining NI Water's Current Cost Depreciation for PC10.

Alternative Ways to Calculate Depreciation

7.6.18. In a consultation paper which it published in March 2002,[40] Ofwat outlined the following alternative approaches to depreciation:

- The renewals accounting approach;
- The economic depreciation approach; and
- An approach which bases the depreciation charge on the RCV.

7.6.19. We believe that the use of MEA valuation is the most appropriate, given the circumstances of the water industry. NI Water first reported a CCD charge on a basis that is broadly consistent with the companies in England, Wales and Scotland in its 2007-08 regulatory accounts.

Calculating NI Water's Depreciation Charge

7.6.20. We believe our approach to calculate depreciation is:

- Consistent with Ofwat's approach in England and Wales;
- Appropriate for long-life assets; and
- Consistent with Accounting Standard FRS15.

7.6.21. In this final determination, therefore, our approach to calculating depreciation:

- Uses Ofwat's five-step classification of asset life, ranging from very short to long;

[39] Ofwat first set out its rationale in its consultation for the 1999 price review, 'Setting price limits for water and sewerage services. The framework and business planning process for the 1999 Periodic Review' (February 1998).
[40] Ofwat, 'The approach to depreciation for the periodic review 2004 – a consultation paper', (March 2002).

- Establishes the economic value of the asset on the basis of a current cost derived from annual indexation of assets; and
- Assumes straight-line depreciation over the life of the asset.

Depreciation Charge for Existing Assets

7.6.22. To calculate the depreciation on NI Water's existing assets we needed to establish:

- The starting value of the assets; and
- The depreciation charge on these assets, depreciation on Work in Progress existing at this date and any depreciation foregone on these assets because of their disposal.

Starting Values

7.6.23. We have used the expected current cost value of NI Water's assets on 31 March 2008. NI Water reports information on the value of its assets to us as part of its business plan submission. NI Water reported a net current cost value of £6,689.4m for all assets and after deduction of depreciation.

Depreciation Charge for Asset Additions (Post 1st April 2008)

7.6.24. NI Water is tasked with delivering a very large investment programme in the 2010-13 regulatory control period. We need to estimate the appropriate level of depreciation on these new assets. In Chapter 4 we set the maximum likely allowed level of capital expenditure for this regulatory control period. This investment is sufficient to allow the delivery of the Minister's priorities as set out in the Social and Environmental Guidance. We allocate this investment to the asset lives in table 7.14. We have used the investment allocation between infrastructure and non-infrastructure in NI Water's Business Plan.

Table 7.13 - Asset life categories

Category	Assumed Life (years)	Description
Very Short	5	Assets having a life of up to five years, e.g. vehicles and computer equipment.
Short	10	Assets having a life of 6 to 15 years, e.g. telemetry, heavy vehicles and plant.
Medium	20	Generally, mechanical assets having a life of 16 to 30 years, e.g. pumping units and associated electrical plant, process plant, filter bed media, glass coated steel storage tanks.
Medium / Long	40	Generally mechanical assets having a life of 31 to 50 years,

		e.g. filter bed structures, site fencing.
Long	60	Generally operational structures including service reservoirs, treatment works structures, inter-process pipe work and filter bed structures. Such assets will have a life exceeding 50 years.
Infinite	Infinite	Assets with an assumed infinite life, generally land.

7.6.25. NI Water has allocated its non –infrastructure and capital enhancement investment over the following asset lives in the proportions as shown in tables 7.15 and 7.16.

Table 7.14 - Profile of non-infrastructure capital maintenance investment 2010-11 to 2012-13

Capital Investment	2010-11	2011-12	2012-13
Very Short	0%	0%	0%
Short	35%	35%	35%
Medium	26%	26%	26%
Medium/Long	0%	0%	0%
Long	39%	39%	39%
Total	100%	100%	100%

Table 7.15 - Profile of capital enhancement investment 2010-11 to 2012-13

Capital Investment	2010-11	2011-12	2012-13
Very Short	0%	0%	0%
Short	11%	11%	11%
Medium	38%	38%	38%
Medium/Long	0%	0%	0%
Long	48%	48%	48%
Land (Infinite)	2%	2%	2%
Total	100%	100%	100%
Note: May not total to 100 because of rounding.			

7.6.26. The allocation of capital investment to asset lives has not included any additions to very short life and medium/long life assets and the reporter has noted that NI Water has assumed a life of 7 years for short life assets instead of the standard 5 years.

7.6.27. We have assumed that assets are added half-way through the financial year and are depreciated over their full useful life. For instance, if a very short life asset worth £100m is added in year one, then in year one the depreciation charge on that asset would be £10m for that year.

7.6.28. In years 2, 3, 4 and 5, the depreciation charge would be £20m. In year 6, the depreciation charge would be a further £10m. In this way, the full asset value is accounted for over its useful life.

Total Depreciation Charge

7.6.29. The depreciation calculated by NI Water is based on asset values derived from an asset management plan in September 2001. The reporter has noted that depreciation allocations on assets constructed prior to 2007 are not to be considered robust. In its Annual Information Return for 2009 NI Water has estimated a confidence grade of DX for its CCD, which is the lowest level of confidence expressed on reported amounts. For its CCD as a whole NI Water has reported a confidence grade of C4 which indicates that figures have been extrapolated from a limited sample and have a level of accuracy within a range of 10% to 25%.

7.6.30. NI Water has carried out a broad equivalence test as set out above which has resulted in a comparative depreciation profile as set out in table 7.17

Table 7.16 - NI Water claimed depreciation charge (2010-13) (nominal prices) (£m)

Annual Depreciation	2010-11	2011-12	2012-13
Accounting CCD	92.5	101.6	110.1
'Broad Equivalence' CCD	48.9	51.5	53.7

7.6.31. This broad equivalence test has been based on a comparison involving a five year look back and five year look forward examination of maintenance non-infrastructure expenditure and this information has been provided to us. This test however includes 'backlog base' expenditure in the look back period (2005/06 to 2009/10) but is not included in the look forward period. It has therefore not been estimated on a consistent basis.

7.6.32. The robustness of the calculation of NI Water's CCD is also adversely affected by the lack of a current MEA valuation and resulting lack of confidence to be attached to any resulting calculation of depreciation. We have therefore carried out our own estimation of Maintenance Non-infrastructure (MNI) as detailed in Annex B and consequently CCD for the price control period is set out in table 7.18

Table 7.17 - Total depreciation charge 2010-13 (nominal prices) (£m)

	2010-11	2011-12	2012-13
Allowed Current Cost Depreciation	54.3	55.5	56.8

7.6.33. Our process for calculating CCD on non-infrastructure assets is detailed in Annex H.

7.7. Setting an Appropriate Infrastructure Renewals Charge

Infrastructure Renewals Charge (IRC)

7.7.1. Infrastructure assets are generally underground assets with long useful lives. These lives, however, tend to be difficult to assess accurately. The rate of wear will vary with a range of factors such as construction method, choice of material, soil type, climate and usage. This makes assessing the annual cost of use of the infrastructure problematic. The underground network will never be replaced in its entirety. Instead, sections are renewed when their condition and performance deteriorates to the point where it is cost-effective to replace them (reducing repair costs, for example) or it is necessary to replace them in order to maintain customer service levels (to reduce interruptions, for example). It is, therefore, not realistic or meaningful to assess an 'average life' for the infrastructure assets. This makes it difficult to use conventional accounting methods to calculate depreciation for infrastructure assets, as these methods rely on the concept of establishing an average asset life for each component of the asset base. Instead, we treat the whole infrastructure network as a single system. The complete asset will never become obsolete or require replacement at any one time. It is replaced in parts as different elements come to the end of their useful lives. The IRC is intended to allow for this gradual replacement of the infrastructure asset over time. The IRC is included within NI Water's revenue requirement each year. Over this period, the annual IRC should remain broadly unchanged from year to year, ignoring inflation. This is because the requirement for maintenance or renewals expenditure will be spread out over a reasonable period of time. This assumes, however, that the size of the network and the required standards of serviceability remain fairly stable.

Infrastructure Renewals Expenditure (IRE)

7.7.2. In any one year the actual level of investment expended on the infrastructure assets is classed as the IRE. In its proposed investment plan, NI Water provided details of its proposed levels of IRE for each year of the regulatory control period. These are the amounts that NI Water considers necessary to spend on the infrastructure in order to maintain serviceability at existing levels. If the amount that NI Water spends on infrastructure renewals exceeds the IRC, then this additional expenditure will be added to NI Water's regulatory capital value. This is referred to as a prepayment.

7.7.3. If the amount that NI Water spends on infrastructure renewals is less than the amount envisaged in the IRC, then this 'shortfall' would be deducted from the RCV. This is referred to as an accrual. It is added to NI Water's accounts as a liability because NI Water has charged maintenance work to its revenue that it has not yet carried out.

7.7.4. The IRC should tend to remain generally stable from one year to the next. The actual IRE, on the other hand, may vary due to planned and unplanned changes in the network investment requirements from year to year. Unplanned investment requirements can arise from factors such as system failures, extreme weather or the actions of a third party which require NI Water to undertake maintenance. Over the course of the regulatory period, accruals and prepayments should tend to balance each other out and we seek to minimise any discrepancy between the respective figures for IRC and IRE.

7.7.5. The IRC impacts on prices in two ways. First, the charge passes directly into prices as part of NI Water's assessed revenue requirement. Second, as discussed above, any difference between the IRC and the IRE will impact on the value of the RCV. As NI Water is allowed to earn a return on the RCV, the level of IRC and IRE, therefore, will also impact indirectly on prices (and subsidy).

IRC and IRE

7.7.6. In NI Water's Business Plan submission IRC was calculated as an assessment of the medium to long-term infrastructure renewals expenditure (IRE) needs. This was calculated as an average of ten years, through a five year historic look back and five year forecast.

7.7.7. In the Annual Information Return 2009 NI Water has carried out a similar exercise in calculating IRC for year 2008/09. It notes that its historic estimate relies on one year's data from 2001/02 which was audited but not subject to a full reporter review. NI Water recognise that this approach is not robust, stating that the IRC calculation 'has a degree of uncertainty attached to it' and that it has not therefore finalised its view of IRC. The confidence grade attached to IRC information presented in the AIR is C5, indicating that it has been extrapolated from a limited sample and is accurate within a range of 25% to 50%. We have assumed that IRC equals IRE throughout the price control period and have independently estimated IRE. Our estimation of IRE and consequently IRC is detailed in Annex B.

8.0 Sources of Revenue

8.1. Key Customer Base Assumptions

8.1.1. The price limits that the Utility Regulator sets for NI Water must balance the revenue that NI Water requires with the revenue it collects from charges and subsidy. This means that, as well as calculating the level of revenue to allow for, we need to forecast the number, mix and type of customers that NI Water will be providing services to throughout the PC10 period.

8.2. Analysis of NI Water Customer Base Assumptions

8.2.1. Within the draft determination we highlighted our concern over the quality of NI Water's customer data and associated volume information. We identified several inconsistencies with customer number and volume data within NI Water's PC10 business plan submission. NI Water re-submitted some data relevant to customer numbers and volumes e.g. non-domestic unmeasured volumes and domestic unmeasured sewerage customer numbers and these have been taken into consideration.

8.2.2. In its response to the draft determination NI Water submitted revised data on customer data and associated volume information. We received this further information from NI Water on the 10th November 2009 after the deadline for responses to the draft determination i.e. the 3rd November 2009. We were concerned that NI Water had not as part of this submission assessed the impact of its revised assumptions on the allocation of revenue between customer groups which is required in order to set 'K' factors that comply with Condition E of the licence. The key changes within the 10th November 2009 submission were:

- NI Water used its latest available information for 2008-09 i.e. outturn data and the latest 2009-10 forecast position against the original PC10 business plan submission which used budgeted information.
- NI Water forecast a longer time period for recovery from the economic downturn for non-domestic consumption i.e. from 2012-13 to 2013-14.
- An updated forecast on the non-domestic metering programme
- The re-classification of some customers e.g. hospitals and nursing homes from trade effluent customers, to measured sewerage customers.

8.2.3. Given the extent of changes contained within NI Water's submission, the timing of NI Water's submission and our concern that NI Water had not assessed the impact of its revised assumptions on the allocation of revenue between customer groups we required NI Water to re-assess its submission including an analysis of the impact of the its revised key customer data (customer numbers and volumes) had upon revenue allocations.

8.2.4. We received NI Water's revised submission on the 8th January 2010. This submission was also subject to Reporter scrutiny. The key changes within the 8th January 2010 submission were:

- Alternative re-based 2008-09 customer numbers for unmeasured non-domestic customers (water and sewerage). The company also submitted, as requested, numbers based on 2008-09 year-end position, rather than the mid-year position. We consider this to be a reasonable approach as the mid-year data takes account of the 2007-08 year-end position when data were of significantly poor quality.
- The correction of errors contained within the previous 10th November submission.
- The separation of trade effluent 'large users' from other trade effluent customers.
- An assumption of a further 1% decline in non-domestic metered water and sewerage consumption for 2009-10 compared to the 10th November 2009 submission.
- An assessment of the impact of revised customer numbers and volumes has upon revenue allocations and unmeasured K factors.

The Domestic Customer Base

8.2.5. We have utilised billed domestic (equivalents) for customer numbers since this information is required to calculate subsidy (paid by the NI Executive) on behalf of domestic customers.

Growth

8.2.6. In proposing price limits, we make assumptions about the customer base that we expect NI Water to serve. We make separate estimates for domestic and non-domestic customers. In making projections, we take account of historical trend changes in the customer base and NI Water's projections of growth in its investment plan. We also compare NI Water's forecasts with historical data and forecasts in Great Britain. Given the current economic climate, we believe it prudent to make assumptions about growth that are at the lower end of observed trends.

8.2.7. We plan to consult on the extension of an amended version of the current correction factors for non-domestic customers, as outlined in Condition B of the licence into the PC10 period.

8.2.8. These amended correction factors may correct for any variances in PC10 assumptions against out-turn data, such as:-

- Customer numbers (non-domestic, excluding large users);
- Chargeable volumes (non-domestic, excluding large users);
- Trade effluent strengths; and,

- RPI (domestic and non-domestic)

8.2.9. At this time, we propose to roll forward any relevant correction factors from the PC10 period into PC13.

Volumes of Water Consumed and Wastewater Discharged by Customers

8.2.10. We have based the allocation of revenue between the customer groups on NI Water's revised 8th January 2010 submission.

8.2.11. The volume attributable to each customer group generally includes the impact of:

- Customer supply pipe leakage;
- Meter under-registration (for all customer groups, including domestic unmeasured consumption which is based on per capita consumption meters); and,
- An apportionment of leakage, by way of industry standard Maximum Likelihood Estimation (MLE).

8.2.12. However, for PC10 we have taken the decision to exclude the apportionment of leakage (MLE) from the allocation calculations for the following reasons:-

- The determination and application of MLE is based on judgement and may well change over the next few years (which could impact on tariffs during the PC10 period); and,
- MLE is not intended for tariff-setting purposes.

8.2.13. We have allowed for the inclusion of customer supply pipe and meter under-registration in the water volumes attributable to customers because:-

- They are based on actual measurements, particularly meter under-registration;
- They reflect the actual volume of water supplied to customers and therefore should be reflected in tariff calculations.

Projections of Domestic Premises

8.2.14. Since NI Water does not have direct billing records for domestic customers, information on customer numbers is derived from secondary data sources, which limits confidence in these data. However NI Water should still be capable of improving domestic data. Table 8.1 shows NI Water's revised 8th January PC10 Business Plan submission on domestic equivalents that we have assumed for domestic water and domestic wastewater revenue purposes.

Table 8.1 - NI Water PC10 revised business plan data – projection of domestic (equivalents)

Year	Water		Wastewater	
	Number of Billed Domestic equivalents	Percentage change in Billed Domestic equivalents	Number of Billed Domestic equivalents	Percentage change in Billed Domestic equivalents
2007-08	634,990	-	533,506	-
2008-09	646,099	1.7%	564,052	5.7%
2009-10	650,879	0.7%	567,774	0.7%
2010-11	655,879	0.8%	571,912	0.7%
2011-12	661,879	0.9%	576,878	0.9%
2012-13	668,879	1.1%	582,671	1.0%

8.2.15. NI Water's forecast for new domestic connections for the PC10 period was based on forecasts of new builds for Northern Ireland as provided by the Construction Employers Federation (CEF). NI Water did not provide this report with its PC10 business plan submission.

8.2.16. We note that the growth in customer numbers of domestic households as contained within NI Water's 8th January 2010 submission now corresponds to the CEF projections for the PC10 period.

8.2.17. We regard the use of independent forecasts as reasonable. NI Water's stated projections for PC10 are consistent with the time series data for England and Wales companies (0.8% per annum.) and the forecast for Scottish Water accepted by the Scottish Water Regulator, WICS (0.7% per annum.).

8.2.18. Taken over the period 2007-08 to 2012-13 as a whole for water, NI Water's actual submitted data is reasonable as the growth rate averaged over this period is 1.0%. Taken over the period 2008-09 to 2012-13 as whole for wastewater, NI Water's actual submitted data is reasonable as the growth rate averaged over this period is 0.8%. We have not taken account of the percentage growth on the 2007-08 figure for wastewater as this figure was re-based in 2008-09 to take account of concerns raised by the Reporter at the AIR08 regarding the choice of percentage used for the number of sewerage connections to be 84% of properties connected to water service.

8.2.19. We note that NI Water's choice of percentage used for the number of sewerage connections to be approx 87% of properties connected to water service for the PC10 period is consistent with the choice of percentage for 2009-10.

8.2.20. We note NI Water's key assumption for domestic revenue is that revenue will be based on capital values which will prevail for the period under analysis with no

significant revaluation of domestic property taking place. In the absence of domestic charging, the revenue will be subsidised by the NI Executive.

Projections of Non-Domestic Premises

8.2.21. The non-domestic customer base is impacted by changes in the overall number of customers, as well as changes in the mix and type of services received by these customers.

8.2.22. NI Water's historic information is of poor quality and given the variable uses that businesses have for water, there may not be a useful external information source. NI Water projected in its PC10 business plan submission that there would be six main impacts on its non-domestic customer base after 2010. These are:

- Non-domestic customers are expected to grow by approximately 2-2.5% between 2009 and 2012;
- New customers are expected to be small businesses with very low water consumption;
- No openings or closures of high-demand businesses;
- Water demand projections are based on a 'most likely scenario,' where after a period of lower consumption in 2009 and 2010, non-domestic consumption is expected to regain average 2008 consumption levels in late 2012 or early 2013;
- Progressive metering is expected to reduce the proportion of customers with shared supplies on a phased basis over the business plan period; and,
- Trade effluent discharge volumes and strengths are expected to decline due to efficiencies expected to be implemented by discharging companies.

8.2.23. The Utility Regulator understands that NI Water has based its expectations on forecasts of changes in the economy and how these impact on water consumption. In broad terms, we consider that NI Water has made reasonable assumptions in this regard and have adopted these assumptions in proposing price limits.

8.2.24. We note that NI Water has updated its non-domestic growth forecasts as part of its response to the Utility Regulator's draft determination. These projections are summarised in Table 8.2. Our conclusions on these forecasts are shown below.

Non-Domestic Water

8.2.25. NI Water's forecast of number of connected premises is based on assumptions including:

- New connections of non-domestic properties with installed meters at approximately 2.25% increase between 2009 and 2012, and;
- Installation of meters at properties previously without a meter, at a rate of 1000 per year in the PC10 period.

8.2.26. We consider that NI Water's assumptions on new connections are broadly reasonable when compared to historic growth figures in non-domestic numbers in England, Wales and Scotland.

8.2.27. We consider that NI Water's assumptions on volumes are broadly reasonable, given the current economic climate.

Non- Domestic Foul Sewerage

8.2.28. NI Water's forecast of a 27% increase in the number of connected premises from 2008-09 to 2012-13 is based on the following assumptions:

- A number of shared supplies to be separated and metered during PC10;
- Test meters which have been identified as being chargeable; and,
- New connections of non-domestic properties at approx 2.25% between 2009 and 2012.

8.2.29. We consider that NI Water's assumptions on new connections are broadly reasonable when compared to historic growth figures in non-domestic numbers in England, Wales and Scotland.

8.2.30. In addition, we consider that NI Water's assumptions on volumes are broadly reasonable, given the current economic climate.

Road Drainage

8.2.31. We consider that NI Water's assumptions on Roads Drainage, annual run off volume of 64.2 million m^3 is broadly reasonable. The key factors that influence this assumption are:

- Total surface area of roads, footpaths and car parks; and
- Total volume of rain falling on these surfaces and hence the run-off from roads, footpaths and car parks discharged to NI Water sewers and storm drains.

8.2.32. However, during the PC10 period, we shall be reviewing the methodology supporting NI Water's determination of foul sewerage, surface water and roads drainage volumes which are reported in its regulatory submissions.

Trade Effluent Volumes

8.2.33. Whilst NI Water has not provided any supporting evidence to support their forecasts on trade effluent volumes, NI Water's high level assumptions contained within the 8th January 2010 re-submission appear reasonable as compared to projections in Great Britain. NI Water forecast a reduction in volume of approx. 21% over the PC10 period, or approx. 7% per annum. This is a greater decline than that in the Business Plan, which assumed approx. -1% p.a. over the PC10. NI Water's high level assumptions

appear reasonable as compared to forecasts in Great Britain, where many companies have experienced reductions in trade effluent volumes over the last 10 years.

8.2.34. NI Water expects a reduction in chargeable volume over PC10 for the following reasons:

- There is a significant drop in volumes between 2009-10 and 2010-11 (16.6%) because of a change in charging policy i.e. the transfer of charging of hospitals and nursery homes from trade effluent charges to measured sewerage charges. as well as an increase in the allowance for water not returned to the sewer;
- An overall reduction in volumes, consistent with NI Water's 'most likely' scenario set out for non-domestic unmetered and metered water demand. The revised data submission of 8th January 2010 includes an additional reduction to reflect the consequences of the economic downturn, which NI Water considers more severe than previously assumed;
- An assumption of falling volumes due to companies introducing water efficiency measures e.g. recycling of water and opting for on-site treatment;
- An assumption that new customers will mainly be low-volume users.

8.2.35. The Utility Regulator notes that trade effluent volumes forecast for PC10 have been affected by changes in charging policy and NI Water data-cleansing. We note that the Reporter has assigned a confidence grade of C4, i.e. +15%, on NI Water's forecast of trade effluent volumes for the PC10 period.

Trade Effluent Consents

8.2.36. Within their business plan submission, NI Water predicted that the net movement in the number of trade effluent customers will be minimal, with an additional 10 customers added each year. NI Water retained this assumption within the 8th January 2010 re-submission.

8.2.37. Within their business plan submission NI Water anticipated a one-off increase in trade effluent customers in 2009-10, of 239. The revised 8th January 2010 submission shows an increase of only 126 customers in 2009-10, followed by the loss of 225 trade effluent customers in the following year. As a consequence, the total number of trade effluent customers declines to 329 (for 2010-11) in the 8th January 2010 submission, compared to 677 in the business plan submission.

Table 8.2 - Projections of non-domestic customer base

Year	2009-10	2010-11	2011-12	2012-13
	Water			
Number of connected premises (metered)	69,047	70,565	72,087	74,665

Volume (Ml)	36,848	36,730	36,982	37,407
Number of connected premises (unmeasured)	13,945	12,945	11,945	10,945
Foul Sewerage				
Number of connected premises (metered)	22,116	23,282	24,449	25,956
Volume (Ml)	17,010	17,023	17,206	17,442
Number of connected premises (unmeasured)	11,520	10,520	9,520	8,520
Roads Drainage				
Road Drainage Volume (million cubic metres per annum)	64.20	64.20	64.20	64.20
Trade Effluent				
Number of connected premises (excluding large users)	554	329	339	349
Volume (Ml) (excluding large user volume)	3,597	2,998	2,920	2,841

Conclusions on Key Customer Base Assumptions

8.2.38. We expect some movement in customer numbers and volumes to continue into the future (including the PC10 period), as NI Water continues to test and cleanse its data and receives more direct feedback from customers and operational activities.

8.2.39. The Utility Regulator has made prudent assumptions in assessing NI Water's customer base, given the current economic climate and our concerns on NI Water data. These assumptions on changes to NI Water's customer base are included in the proposed price limits.

8.2.40. Our work confirmed that mid-year data for 2008-09 had a significant impact upon K-factors for 2010-2011 for unmeasured customers. For this reason, we requested that NI Water submit end of year figures for this year only, for non-domestic unmeasured water and sewerage customers. We considered that the most accurate customer data should be employed in calculating K-factors for 2010-2011, to ensure that the impact was as fair as possible to all customer groups.

8.3. Level of Subsidy in PC10

Introduction

8.3.1. Our financial model allows us to forecast the required revenue from each customer group. We have assumed for the basis of this final determination that the current structure of charges will continue for the PC10 period. Based on the current structure of charges, and, where relevant the associated subsidy allocation, we have derived indicative forecast subsidy levels for the PC10 period.

The Structure of Charges in Northern Ireland

8.3.2. Charges (where applicable) to individual customers will vary according to the type of customer and the service they are receiving.

8.3.3. Customers are classified as:

- Water or wastewater;
- Domestic (household) or non-domestic (non-household businesses, charities or public sector organisations);
- Measured (metered), un-measured (un-metered); and,
- Trade effluent.

Domestic Unmeasured Water (Notional)

8.3.4. The unmeasured domestic (household) notional charge is based on the Capital Value of each household property. This notional charge does not depend on consumption. Currently the unmeasured domestic (household) charge is paid via subsidy and through a contribution in the annual domestic rates.

Domestic Unmeasured Wastewater (Notional)

8.3.5. The unmeasured domestic (household) notional charge for wastewater is also based on the Capital Value of each household property. This notional charge includes the cost of treating surface water run-off from properties, but excludes drainage from public roads and footways etc. Currently, the unmeasured domestic (household) charge is paid via subsidy and through a contribution in annual domestic rates.

Domestic Measured Water (Notional)

8.3.6. Currently no domestic customers pay for water services charges based on usage.

Domestic Measured Wastewater (Notional)

8.3.7. Currently no domestic customers pay for wastewater services charges based on usage.

Non-Domestic Unmeasured Water

8.3.8. Unmetered non-domestic customers are currently charged relative to the rateable value of their property. These customers pay two fixed charges, neither of which reflects their consumption of water: a minimum charge for access to the network and an additional charge that is a proportion of their rateable value. Currently, there is a 50% subsidy in place for non-domestic unmeasured water charges.

Non-Domestic Unmeasured Wastewater

8.3.9. Charges for unmeasured non-domestic wastewater are also a function of the connected property's rateable value. Customers pay two separate fixed charges: a minimum charge for accessing the network and a charge that is in proportion to their rateable value. Currently, there is a 50% subsidy in place for non-domestic unmeasured wastewater charges.

Non-Domestic Measured Water

8.3.10. Measured non-domestic customers pay a standing charge, which depends on the size of their meter connection, and a volumetric charge based on how much water they consume. Currently, there is a domestic allowance subsidy in place for non-domestic measured water charges.

Non-Domestic Measured Wastewater

8.3.11. Non-domestic wastewater customers pay a fixed charge based on the size of their water meter connection and a volumetric rate based on an assumption that 95% of their water consumption is returned to sewer. If a customer can demonstrate that less than 95% of water returns to sewer (for example, a company that uses water in its production processes) then they can apply to have the assumption of 95% reduced. Currently, there is a domestic allowance subsidy in place for non-domestic measured wastewater charges.

8.3.12. There are no discounts for customers who discharge large volumes of wastewater.

8.3.13. The cost of receiving and treating property surface water drainage for non-domestic measured wastewater is included in the tariff for measured wastewater.

Trade Effluent

8.3.14. Charges for trade effluent are based on the Mogden formula. This formula assesses a charge for the treatment of a particular strength and volume of effluent, based on the costs of treating this wastewater.

8.3.15. Trade effluent customers pay a variable rate based on the actual volume and strength of the effluent discharged.

8.3.16. The Mogden formula is: C = R + V + (Ot/Os)B + (St/Ss)S

Where:

C	is the unit charge in pence per cubic metre for the trade effluent discharge.
R	is the unit cost in pence per cubic metre of reception and conveyance of sewage.
V	is the unit cost in pence per cubic metre of the volumetric and primary treatment of sewage treated and disposed of in sewage treatment works.
O_t	is the chemical oxygen demand in mg/l of the trade effluent after 1 hour quiescent settlement.
O_s	is the chemical oxygen demand in mg/l of the settled sewage standard strength.
B	is the unit cost in pence per cubic metre of the biological oxidation treatment of settled sewage.
S_t	is the total suspended solids in mg/l of the trade effluent at pH 7.
S_s	is the total suspended solids in mg/l of crude sewage – standard strength.
S	is the unit cost in pence per cubic metre of treatment and disposal of primary sludge.

Roads Drainage

8.3.17. In Great Britain customers pay a proportion of their sewerage charges for the collection and treatment of surface water drainage (rainwater that falls onto properties, driveways and is channeled to the sewerage network) and highway drainage (run-off from roads and pavements). The cost of dealing with rainwater is complicated by the fact that some surface water in rural areas would be collected by separate drainage network and would be discharged directly to water-courses, whilst a proportion of urban drainage (within cities and towns) would normally be collected by the sewerage network and discharged to a sewage treatment works.

8.3.18. The cost of providing these facilities in Great Britain is paid for by sewerage customers. This is due to the fact that legislation in Great Britain does not permit any alternative method of cost recovery. In Northern Ireland, however, such legislation does not exist and, following the accepted recommendation of the Independent Water Review Panel, the costs of collecting and treating drainage from roads is to be recharged to DRD Roads Service and is financed through general taxation. This reduces the amount of revenue to be raised directly from NI Water's customers.

8.3.19. The cost of dealing with surface water is allocated across the sewerage customer groups (with the exception of trade effluent customers), in the same proportion as the relative volumes of wastewater produced. We have provided below in table 8.3 an 'indicative' forecast amount for Roads Drainage that may be recharged to DRD Roads Service in the PC10 period. The Utility Regulator intends to review NI Water's underlying

assumptions used in the calculation of sewerage surface water drainage, roads drainage and trade effluent volumes during the PC10 period.

Table 8.3 - Indicative roads drainage recharge over PC10 (nominal prices)

	2010-11	2011-12	2012-13
Forecast Roads Drainage Recharge (£m)	£19.87	£20.07	£20.27

Domestic Allowance for non-domestic customers (measured)

8.3.20. We have assumed for the purposes of PC10 final determination that the domestic allowance for non-domestic (measured water and sewerage) will continue into PC10. The domestic allowance compensates non-domestic customers for domestic consumption, given that subsidy is being paid on behalf of domestic customers by the NI Executive.

Disposal of Tankered Waste

8.3.21. NI Water currently provides a discretionary service for the disposal of tankered waste. Each domestic customer was entitled to one free tank empty in the 2009/10 year. Subsequent requests for collection and treatment of sewage of a domestic nature (e.g. septic tanks, domestic treatment plants and cesspools), were subject to a charge. We understand that the current regime covering disposal of tankered waste will continue in the PC10 period.

Level of Subsidy over PC10 (per Revenue Group)

8.3.22. Table 8.4 shows the indicative level of revenue from each revenue group together with the subsidy allocation for each group based on the current structure of charges.

Table 8.4 - Revenue groups for PC10 inclusive of subsidy allocation (nominal) (£m)

Revenue Group	Forecast Revenue over PC10 (£m)	Subsidy allocation
Domestic unmeasured water	354	Subsidy and contribution through rates
Domestic unmeasured sewerage	401	Subsidy and contribution through rates
Non-domestic measured water	135	domestic allowance subsidy
Non-domestic measured sewerage	96	domestic allowance subsidy

Non-domestic unmeasured water	7	50% subsidy
Non- domestic unmeasured sewerage	9	50% subsidy
Trade effluent (includes Roads Drainage costs of approximately £60m)	68	0% subsidy
Non tariff basket revenue (includes large users)	28	0% subsidy
Total Required Revenue	1,099	
Note: Figures may not add due to rounding.		

8.3.23. On average approximately 73% of the Revenue requirement over PC10, i.e. £805m is forecast to be paid through subsidy. The NI Water business plan (restated) forecast a subsidy level of £873m over the PC10 period. This final determination therefore provides a saving of £68m on the level of subsidy over the PC10 period.

8.3.24. Table 8.5 shows the sources of revenue over the PC10 period including revenue from subsidy, Roads Drainage re-charge to DRD Roads Service and revenue from charges (non-domestic).

Table 8.5 - Annual subsidy requirement in PC10 (nominal) (£m)

	2010-11	2011-12	2012-13	Overall Total
Subsidy Requirement	262	269	274	805
Roads Drainage Recharge	20	20	20	60
Revenue from charges	76	78	80	234
Total Revenue	358	367	374	1099

Conclusions on Level of Subsidy in PC10

8.3.25. We have used our financial model to provide an indicative forecast of the level of subsidy required over the PC10 period, based on the current structure of charges. This final determination provides a saving of £68m on the level of subsidy over the PC10 period.

8.4. Charge Limits for PC10

Introduction

8.4.1. We have a legal duty to set the 'adjustment factor' for each year, generally referred to as the price limit or the K factor, to be applied over the Price Control period. The K factor is the percentage increase or decrease above or below inflation by which tariff basket price limits are allowed to rise or fall on an annual basis during the Price Control period.

8.4.2. We utilise price limits within the various tariff baskets to ensure that the correct revenue is raised from each customer group and also to assure ourselves that there is no cross-subsidy between the customer groups. In setting the price limits, we have been mindful of the Social and Environmental Guidance, and sought to balance affordability with compliance and customer priorities.

'K' Factors for PC10

8.4.3. We are committed to improving the transparency of the regulatory regime. As part of this commitment, we believe that it is vital that non-domestic customers can more readily understand the likely impact of the Price Control on their bills (or level of subsidy).

8.4.4. Tariff baskets are defined in Condition B of the licence to cover the regulated (core) services provided by NI Water. The use of tariff baskets helps to ensure that the process of unwinding any cross subsidies is as transparent as possible. In addition, we consider that tariff baskets allow (directly-paying) customers to see more clearly the likely impact of the Price Control 2010 on their bills. The use of 'tariff baskets' mirrors the price-setting process of other utility regulators in the UK, such as Ofgem, Ofwat and WICS.

8.4.5. In our view it has become clear that the existing arrangements (in the SBP period) for establishing charges and communicating changes to customers have a number of limitations. In particular:-

- The link between the revenue cap and non-domestic customers' bills is not clear;
- Information on tariffs is not available until around two months before they take effect;
- There is only limited scope for flexibility in the approval process for the annual scheme of charges.

8.4.6. A Price Limit regime establishes a clearer link between the Price Control and any direct bills that customers pay (currently non-domestic customers). We believe that setting price limits will allow non-domestic customers to understand the likely impact of any tariff changes on their bill for the relevant period.

8.4.7. The K factor is the percentage increase above inflation by which Tariff Basket price limits are allowed to rise on an annual basis during the Price Control period. For the purposes of this final determination we have assumed an inflation figure of 2.3% for each year of PC10. The final determination K factors are shown in table 8.6.

Table 8.6 - K factors for each tariff basket

Tariff Basket	2010-11	2011-12	2012-13
Unmeasured Water Supply	-2.7%	-3.3%	-4.7%
Unmeasured Sewerage Service	1.9%	1.4%	1.0%
Measured Water supply	-1.8%	-1.8%	-1.8%
Measured Sewerage Service	4.3%	4.3%	4.3%
Trade Effluent	-1.3%	-1.3%	-1.3%
Overall Weighted Average K-Factor	-0.2%	-0.6%	-1.2%

PC10 Weighted Average Charge Increase (WACI)

8.4.8. NI Water is allowed to increase the weighted average charge for each of its tariff baskets by up to the K-factor plus inflation. This is the weighted average charge increase, or WACI. The WACI is therefore equal to the K-factor plus the reported Retail Price Index (RPI). The RPI figure is published by the Office for National Statistics on a monthly basis. The figure for the 12 months to November in the year prior to the year in question is used as the RPI figure for the WACI.

8.4.9. Individual tariffs may increase by more than K, but the WACI for each tariff basket must be equal to or below the figure determined for that tariff basket. If NI Water intends to increase one or more tariffs by greater than the relevant K-factor, we may ask for justification for such an increase.

WACI (Weighted Average Charge Increase) = K factor plus inflation (RPI)

8.4.10. For the purpose of this final determination we have assumed an inflation figure of 2.3% for each year of PC10.

8.4.11. Taking account of this inflation figure the weighted average charge increase for each year of PC10 is shown in Table 8.7.

Table 8.7 - PC10 Weighted average charge increase (WACI)

	2010-11	2011-12	2012-13
Weighted Average Charge Increase (WACI)	+2.1%	+1.7%	+1.1%

Condition C: Infrastructure Charges

8.4.12. Under Condition C of the licence we are required to set infrastructure charges for the PC10 period for both water and sewerage services. We have determined these charges to be £269 for 2010-11. In the following years in PC10 these charges will increase in line with inflation. These charges are lower than equivalent infrastructure charges in Great Britain.

8.5. Conclusion

8.5.1. We are mindful of the current economic situation for business customers and have based our assessment of charges on a smoothed revenue profile in the PC10 period to provide stability for non-domestic consumers.

9.0 Dealing with Uncertainty

9.1. Interim Determinations

9.1.1. An interim determination allows price limits to be adjusted between price controls. The formal mechanism is set out in Condition B of NI Water's licence. An interim determination can only be triggered by relevant items whose value, in aggregate, exceeds 10% of the company's turnover attributable to the Appointed Business. Relevant items are classified as either notified items or Relevant Changes of Circumstance (RCC). Either the company or the regulator may initiate an interim determination. An interim determination is not a mini Price Control.

9.1.2. At price controls, we record notified items specifically as not being allowed for, either in part or at all. RCC cover areas such as new or changed legal requirements and the company's failure to deliver an output included in price limits.

9.1.3. According to the licence (Condition B) an RCC is any of the following:

- The application to NI Water of any new legal requirement and any changes to legal requirement that applies to the company;
- The difference in proceeds of land disposals from that assumed in the last time the prices were set;
- Failure to achieve some output, funding for which was provided at the last price setting; and / or;
- Where the notified index of national construction costs as determined by the Utility Regulator is under/over the amount previously determined resulting in the capital expenditure incurred by the company being under/over the previously determined amount.

9.1.4. It is important to differentiate between cost problems which arise and would have been 'avoided by prudent management action' and those that are genuinely outside the control of management. The regulatory framework needs to be able to respond in an effective and timely way to unexpected costs that could not have been avoided by prudent management action. We have set out our view of the major uncertainties by publishing a list of proposed notified items with this draft determination.

9.1.5. It is, however, for the NI Executive to decide on an appropriate course of action if NI Water does not perform at the level assumed in the determination of charges as a result of factors that are within its control.

9.1.6. Our view is that customers (or government) should not be asked to pay twice for the same outputs.

9.1.7. The NI Water licence sets the same threshold for an interim determination as that which is set by Ofwat for the companies in England and Wales. If the threshold is

reached, either NI Water or the Utility Regulator could initiate the interim determination process.

9.1.8. In the event that an interim determination is not triggered, any variances in costs that are outside the control of management would be taken into account at the next Price Control through a process called ‘logging-up’ or ‘logging-down’.

9.2. Notified Items

9.2.1. During the SBP period the following notified items were agreed by DRD and NI Water.

- Changes up or down in the number of meter optants;
- Additional costs incurred as a result of the Streetworks (Amendment NI) Order 2007;
- Payments under the Guaranteed Service Standards;
- Expenditure on new and replacement mains or sewers in support of new developments;
- Increase in legacy pension deficit funding contribution; and,
- Loss of abstraction licence as a consequence of Water Framework Directive.

9.2.2. We do not propose to roll forward any of the notified items relevant to the SBP period into PC10. The Utility Regulator has consulted with the relevant authorities in order to understand any potential impact of any additional costs NI Water could incur as a result of new regulations under the Streetworks (Amendment NI) Order 2007 and determined that it is now likely to be late 2011 at the earliest before this legislation is introduced. NI Water would therefore not incur any material costs under the Streetworks (Amendment NI) Order 2007 until 2012-13 at the earliest. Interim determinations are not normally considered in the year immediately prior to the next Price Control (in this case PC13). At the time of writing it is unclear what financial impact the introduction of regulations under the Street Works (Amendment NI) Order 2007 may have on NI Water, though we would expect that costs associated with the any permit scheme under the proposed regulations to be broadly in line with the costs proposed in Great Britain. As a result, we have not increased the operating expenditure allowed in price limits for these costs.

9.2.3. We required NI Water (within their PC10 Business Plan submission) to provide a list of proposed notified items together with underlying rationale, quantum and justification for the PC10 period. We only put notified items in place where we see firm and convincing evidence that they are required.

9.2.4. NI Water in its Business Plan proposed the following notified items:

- Pension cost volatility;
- Ministerial Policy Directives;
- Security and Emergency Directive;

- Changes affecting NI Water that emerge subsequent to the Assembly consultation on the findings of the Independent Water Review Panel;
- First time drinking water connections;
- Climate Change and the Carbon Reduction Charge;
- IFRS implementation;
- Opening Tax balance with Her Majesty's Revenue and Customs (HMRC) and Changes in the Tax regime;
- Current Rates Assessments (Proposed Changes to Rates Assessments);
- Energy, fuel and raw material costs;
- Disputed terrorism; and,
- Non-domestic customer volumes.

9.2.5. In coming to a decision of what to allow for as notified item for PC10 we have reviewed regulatory precedence for the water industry in England and Wales and Scotland. In our view a three year price control period reduces risk for NI Water. In Scotland the price control period has been over a four year period while in England and Wales the price control period covers a five year period. Our view on the cost of capital for NI Water has also taken account of the potential risks faced by NI Water. Changes in some of the costs faced by NI Water are also partly mitigated through RPI indexation. The other mechanisms we use to mitigate risk are:

- Interim determinations (including notified items and relevant changes of circumstances)
- The 'substantial effect clause';
- Logging up and logging down;
- The 'change protocol'; and
- Revenue correction mechanism.

9.2.6. We have set out below our view of each of the items proposed by the company to be included in the list of notified items.

Pensions Cost Volatility

9.2.7. NI Water stated in its Annual Report (2008-09) that there was a surplus of £5.9m (2007-08 £5.6m) relating to the pension scheme asset. We understand that the next full valuation is scheduled to take place at 31 March 2011 with a completion date and a potential revised employer contribution rate from 30 June 2012.

9.2.8. The Utility Regulator maintains its view that any change in contribution rate that might apply may only be for the last 9 months of PC10 period, therefore due to the time limited effect of any increased contributions within the PC10 period we do not consider this to warrant its inclusion as a notified item. Interim determinations are not normally considered in the year immediately prior to the next Price Control (in this case PC13). The

Utility Regulator may, if applicable, examine the case for funding any increased pension contributions arising from any realised pension deficit at PC13.

Ministerial Policy Direction

9.2.9. NI Water within its PC10 Business Plan proposed including any additional operating or capital expenditure incurred as a result of adhering to new Ministerial Policy Directions in the PC10 period as a notified item.

9.2.10. Under this heading, NI Water has included the following items as potential Ministerial Policy Directions:

1. Security and Emergency Measures Direction;

2. Changes affecting NI Water that emerge subsequent to the Assembly consultation on the findings of the Independent Water Review Panel (IWRP);

3. First time drinking water connections.

9.2.11. Our view of these proposed items is set out below:

1. **Security and Emergency Measures Direction**. The Security and Emergency Measures Direction 1998 (SEMD) has no legal status in Northern Ireland, nor as far as we are aware has the Department for Regional Development requested NI Water to implement this Direction which covers national security and civil emergencies within England and Wales. We consider that such directives have to be dealt with through new legislation e.g. under Articles 294 or 295 of the NI Water Order and as such will be covered by RCC1 in the licence.

2. **Changes affecting NI Water that emerge subsequent to the Assembly consultation on the findings of the Independent Water Review Panel**. If any recommendation or policy directives are to be implemented as a result of recommendations made by the IWRP, then NI Water proposes that these to be included as a notified item. The company has reasoned that, if NI Water was required by the Assembly to implement Policy Directions in this area in PC10, there would be a requirement for additional funding. The Utility Regulator does not agree that such policy directions should be a notified item as, for example, any potential implementation of domestic billing may be an extension of an existing obligation previously funded in the SBP period as agreed between NI Water and the Department for Regional Development. The SBP and associated funding was based on an assumption of implementation of domestic billing. Additionally, we consider that such changes in structure and funding required through Policy Directions would be implemented through change in legislation, which would be covered by a Relevant Change of Circumstance.

3. **First time drinking water connections.** We consider that 'first time drinking water connections' is covered by section 2.9 in Social and Environmental Guidance and as such we do not agree that this should be a notified item. The

Social and Environmental Guidance states that 'NI Water is not responsible for private water supplies. Therefore, funding to assist properties not served by a water main (should they require a water main extension) will need to be provided outside the current price control settlement.'

Climate Change and the Carbon Reduction Charge

9.2.12. NI Water stated within its Business Plan that it is impossible to fully mitigate against climate change, however they have implemented several approaches to understand and mitigate the risk. The company also stated in its Business Plan that it will be subject to the Carbon Reduction Commitment from April 2010, where Carbon Reduction Targets will be set and the company may face financial penalties, dependant upon its final league table position.

9.2.13. For the draft determination the Utility Regulator stated that it had considered NI Water's argument carefully and was of the view that the climate change risk faced by the company is same as that faced by any other water company, and, consequently the Utility Regulator did not agree this should be a notified item. For the draft determination we also stated that there was no precedent for impact of climate change or any Carbon Reduction Charge being accepted as a notified item. In addition, NI Water has not demonstrated that the risk is material within the PC10 period.

9.2.14. The Utility Regulator recognises that Ofwat's final determination includes a notified item for 'increased costs necessary to balance water supply and demand, based on companies' application of UKCP09 data and appropriate analytical tools and processes'. However, this is not a general notified item for climate change. It is related to water supply/demand balance and is limited to material changes. In England and Wales, some companies have material schemes relating to 'sustainability' reductions. Under these schemes, the Environment Agency will reassess abstraction licences to take account of minimum river flows to maintain Habitats Directive and comply with water quality requirements of the Water Framework Directive. Changes in water availability as a result of changes in climate change scenarios can have a major impact on these schemes and may result in substantial changes, including the need to consider alternatives.

9.2.15. However the situation is not the same in Northern Ireland for two reasons:

1. PC10 does not include major schemes related to sustainability reductions which are placed at risk by revised climate change scenarios. The company is developing its water resource strategy later than companies in England and Wales. This strategy should now consider the latest climate projections. For NI Water, a credible example would be a review of the storage capacity required in the Mournes as a result of predictions of reduced precipitation. Such a scenario would require significant investment to rectify and would be subject to significant planning considerations. The necessary work could not be implemented until PC13. This limits the need for a notified item in PC10.

2. The PC10 water resource schemes proposed by the company in PC10 are trunk main schemes to increase abstraction from Lough Neagh and one

scheme to increase abstraction from the Strule due to be constructed in 2010/11 (total value £2.8m). The trunk main schemes are new abstraction schemes from Lough Neagh – there do not appear to be any considerable resource alternatives. If there was to be a limitation on resource abstraction from the Lough, then there are wider issues to consider which would not be resolved in time to promote a new scheme in PC10, which would exceed the current expenditure over three years. Any change could be managed by a change control process over PC10 and implemented in PC13.

9.2.16. Consequently, the Utility Regulator maintains its view as set out in the draft determination that a notified item for climate change is not required for PC10.

9.2.17. The Utility Regulator maintains its view as set out in the draft determination that a notified item for the Carbon Reduction Commitment is not required. The Utility Regulator considers that in principle, economic regulation should not shield the company from the incentives of the Carbon Reduction Commitment, particularly given that NI Water is reported to be the largest consumer of power in Northern Ireland.

IFRS Implementation

9.2.18. Currently NI Water prepares its annual accounts using UK GAAP and the company has argued that if they are required to move towards IFRS then it might have a negative impact upon them. NI Water stated in its submission that the adoption of IFRS will have a negative impact on the cash tax paid by them because infrastructure renewals accounting is not permitted under IFRS. NI Water also states that there may be other costs of converting accounts to IFRS that cannot be quantified at present. We note that two Water and Sewerage companies in Great Britain have adopted international accounting standards since Ofwat's 2004 price review. Neither of these companies requested Ofwat to carry out an interim determination as a result of this change.

9.2.19. The Utility Regulator has reviewed the precedence set by other regulators with regards to this item, while considering NI Water's circumstances. Based on this review, the Utility Regulator has determined that a notified item for the implementation of IFRS is not required for PC10. Since we published our draft determination, the Accounting Standards Board has published more information about the likely timing of this change for consultation. Although the proposed date for changes is now 2012 (that is, it would first occur for water companies in 2012-13 accounts), this is not yet final. We have not made any assumption in our final determination for this change. Nor have we included it as a notified item. Although it is possible that additional tax may arise because of changes to accounting standards, this will be heavily influenced by NI Water's choice of accounting policies. NI Water can therefore take steps to manage the tax implications of such a change. In addition, the tax impact of the accounting changes may not be wholly adverse. Expenditure for which NI Water does not currently receive any tax relief may attract a deduction for tax purposes under the new accounting rules. Within its PC10 Business Plan submission, NI Water forecast zero cash tax payable in the PC10 period.

Opening Tax Balance with HMRC and Changes in the Tax Regime

9.2.20. NI Water proposes that the Utility Regulator should allow for any potential adverse affect of DRD not being able to agree the opening capital allowances position for NI Water with HMRC as a notified item.

9.2.21. The Utility Regulator maintains its view that a notified item is not required for any potential adverse effect of the opening capital allowances position for NI Water. We note that NI Water state that the worst case scenario for any adverse ruling on the opening tax position would be £250k cash tax payable in 2012-13. We consider that £250k is unlikely to be above the triviality threshold for an interim determination and, as noted previously, interim determinations are not normally considered in the year before a Price Control (in this case PC13).

9.2.22. NI Water also proposes that any changes to the current tax regime should be a notified item. We have considered this issue and it is not clear to us whether any changes would be made, or how they might be implemented, within this price control period. Furthermore, such changes affect all sectors. We consider this to be part of normal business risk and we have not made any allowance for this in our final determination or included it as a notified item.

Current Rates Assessment

9.2.23. NI Water proposes that any material impact from the revaluation of rates in so far as it affects NI Water, should be a notified item. NI Water has stated that its rates are assessed differently depending on the service provided e.g.

1. Clean water: properties receipts and expenditure method – cumulo valuation.

2. Wastewater: specialist assessment – estimated replacement cost.

3. Mobile phone masts: rental value.

9.2.24. Within their PC10 Business Plan submission, the company states that the revaluation itself will not increase the total amount of rates payable in Northern Ireland as a whole, but NI Water may be materially impacted and that the relevant authorities may be likely to adopt a more commercial approach to the next valuation, which is likely to be in 2010.

9.2.25. The Utility Regulator has consulted with the relevant rates authorities to determine the possible effect of rates valuation on NI Water and we have concluded that NI Water in the period 2011-13 will face a significant uplift on its current rates liability when revaluation is implemented in April 2011.

9.2.26. Consequently, the base operating expenditure figure we will take forward from 2007-08 into price limits for PC10, (specifically for 2011-12 and 2012-13), takes account of rates payable at a level we consider appropriate. The Utility Regulator has therefore determined that a notified item is not required for non-domestic rates, since we have allowed for an additional rates liability in the 2011-12 and 2012-13 periods.

Energy, Fuel and Raw Material Costs

9.2.27. NI Water has proposed that energy, fuel and raw material costs to be included as notified items. The company states in its Business Plan that there has been volatility in the prices of chemicals due to increased global demand, the increased cost of fuel and adverse currency movement between the Euro and the Great British Pound.

9.2.28. The Utility Regulator considers that fuel costs can be efficiently managed by the company. Firstly, changes in fuel prices are a risk that is partly mitigated through RPI indexation. Secondly, the base operating expenditure figure we will take forward from 2007-08 into price limits already takes account of fuel costs at a level we consider appropriate. Our view is that NI Water can manage any remaining fuel cost-related risks through effective usage and price management, including hedging. These costs are faced by all other water companies in the UK and neither WICS, nor Ofwat, have ever allowed these costs as notified items. The Utility Regulator has therefore not allowed fuel costs as a notified item. In addition, the Utility Regulator notes that DRD did not accept these items as notified items in the SBP period.

9.2.29. The Utility Regulator accepts that power and chemical costs may be the most volatile operational costs for NI Water to manage. The Utility Regulator has allowed the additional power and chemical costs or £34.6m and £6.9m (in 2007-08 prices), respectively across the PC10 period, as sought in NI Water's response to the draft determination. The Utility Regulator has assured itself in so far as possible, that the additional costs sought by NI Water are reasonable.

9.2.30. We have indicated in Chapter 6 of the final determination our intention to develop a methodology for indexation of the price element of the energy component of the end user price (excluding volumes). This recognises that 40% of the end-user prices is comprised of relatively stable network charges and that the remainder is attributable to energy costs fluctuations. While we intend to reduce the risks faced by the company through an indexation mechanism, we intend leaving consumption risk with NI Water so that incentives to optimise its energy consumption remain.

9.2.31. The Utility Regulator will monitor NI Water's actual expenditure of power over the PC10 period. Given our approach on power and chemical costs we do not consider that a notified item is required for the PC10 period.

Disputed Terrorism

9.2.32. Within their PC10 Business Plan submission NI Water described that disputed terrorism may occur where NI Water suspects an act of terrorism, however, it is not accepted by the Chief Constable, and therefore, potentially invalidates the company's insurance. NI Water has proposed to include this item in the notified items list.

9.2.33. The Utility Regulator maintains its view that a notified item is not required for disputed terrorism as this risk for NI Water is the same as that for other water companies and there is no regulatory precedence for this to be included as a notified item.

Correction Factor

9.2.34. NI Water states in its Business Plan that 22% of its total revenue comes from non-domestic customers with the vast majority coming from volumetric charges. NI Water state that in 2008-09, that, as a result of continuing economic uncertainty, it experienced significant demand reductions. Currently time-limited correction factors in Condition B of the licence allow NI Water to mitigate this risk to April 2010.

9.2.35. The Utility Regulator considers that this correction factor is not a specific proposal for a notified item and intends to correspond with NI Water on this issue outside the final determination.

Notified Items for PC10

For the final determination, the Utility Regulator has concluded that notified items are unnecessary for PC10, including those proposed by NI Water. We have provided our rationale for not allowing each of the notified items proposed by NI Water in this chapter. In general, we have not allowed notified items because we:

- Have already taken account of the relevant factor in determining price limits;
- have concluded that a three year price control reduces risk for NI Water;
- have judged the risks to be either covered by indexation, or to be part of normal business risk, which is reflected in the cost of capital; and
- expect NI Water management to mitigate these risks.

10.0 Monitoring Delivery

Introduction

10.1.1. Monitoring the company's delivery of the final determination is an important part of our role. Monitoring needs to be detailed enough to provide assurance that the company will meet targets for the period as a whole, but not so onerous that regulatory reporting adds a significant burden to NI Water. By monitoring delivery we both ensure that the outputs of the final determination are delivered and that we obtain the data and develop the understanding of NI Water's business necessary to carry out our role.

10.1.2. Monitoring the company's delivery of the final determination will help us discharge our duties under the Water and Sewerage Services (Northern Ireland) Order 2006 to secure that the functions of a water and sewerage undertaker are properly carried out.

10.1.3. We will monitor progress with the outputs shown in Chapter 3.0. We aspire to 'output' regulation, but the lack of robust of data in some areas means that we must continue to monitor a mix of outputs and activities. We will also monitor the delivery of nominated schemes which are either:

- Specific quality outputs required by the quality regulators or other stakeholders and included in the determination; or
- Specific schemes nominated by the company in its PC10 Business Plan which are directed at delivering a specific service improvement.

10.1.4. The key components of our plan to monitor delivery are:

- The Monitoring Plan;
- The Scheme of Charges;
- The Annual Information Return and Service Target Report;
- The Regulatory Accounts;
- Quarterly Capital Investment Monitoring returns;
- Serviceability assessments;
- Output monitoring; and,
- An Annual Cost and Performance Report

10.1.5. Where necessary we will introduce more frequent monitoring where there is a risk that the company will fail to deliver a target.

Monitoring Plan

10.1.6. Once we conclude the final determination we will ask the company to summarise the outputs it will deliver in PC10 in a Monitoring Plan. This will provide a public facing summary which will be a ready source of information to allow other stakeholders to monitor the company's progress in delivering PC10.

10.1.7. Taking on board the company's comments on the draft determination we will aim to work with NI, through bi-lateral meetings, to finalise the requirements of the monitoring plan prior to the implementation of the price control.

Scheme of Charges

10.1.8. The provision and approval of an annual scheme of charges is a condition of the Licence. We review and approve the Scheme of Charges to ensure that the company remains within the price limits of the determination and that its charges do not discriminate between different customer groups.

Annual Information Return and Service Target Report

10.1.9. Each year the company will submit an Annual Information Return and Service Target Report providing information on its performance in the year including: key outputs; customer service measures; financial and billing information; the water balance and leakage; asset information; explanatory factors and expenditure reports.

10.1.10. We will review the content of the Annual Information Return for PC10 to ensure that the information provided aligns with the outputs of PC10 and allows us to collect data which will build our understanding of the company's operations and its environment in preparation for PC13.

10.1.11. Through AIRs, and other information returns, we will monitor the quality of data submitted by the company to check that it is consistent and robust.

Regulatory Accounting Information

10.1.12. We will continue to collect regulatory accounting information allowing us to monitor the financial performance of the regulated business against the financial projections of the final determination.

Quarterly Capital Investment Monitoring Returns

10.1.13. We have found the quarterly Capital Investment Monitoring (CIM) returns useful in monitoring delivery of the SBP and acquiring data which has informed our work on the draft determination for PC10. We will continue to monitor capital investment quarterly. Based on our experience of the SBP we will seek to improve on the CIM return including the quality of output reporting.

10.1.14. The quarterly CIM returns will be based on the detailed capital programme submission in the Business Plan. However, since we consider that the information

provided in the Business Plan was not of sufficient detail to allow effective monitoring we will expect the company to provide a baseline programme for monitoring subsequent to the final determination. We will work with the company to ensure that, where possible, the content and structure of our requirements align with the more extensive management data the company will collect through its internal reporting systems.

Serviceability Assessments

10.1.15. We will prepare an annual serviceability assessment throughout PC10. This will provide an assessment of the successful delivery of the determination and provide the basis for developing a more robust serviceability assessment for PC13.

Output Monitoring

10.1.16. We will work with the Output Review Group to monitor key outputs. Where possible, we will liaise with the quality regulators to receive compliance reports and sign-off of outputs.

Annual Cost and Performance Report

10.1.17. We will publish a Cost and Performance Report annually setting out the progress the company has made in delivering PC10.

Appendix 1 - Glossary of Terms

Appointed water company	The term used to describe the regulated water only and water and sewerage companies who supply water and sewerage services to consumers. Also known as a 'regulated company' or 'undertaker'.
Asset life	The time from the date of installation (when new) of an asset (or part) until the asset (or part) has to be replaced. The remaining asset life is recorded from the present. Asset lives for the current asset base are estimated and only known exactly after the asset has been replaced.
Base expenditure	This is the expenditure needed to continue delivering current levels of service, before taking account of planned or required improvements. It comprises operating and capital maintenance expenditure.
Base service outputs	NI Water must maintain the service standards and the ability of its assets to continue to provide service into the future.
Benchmark company	This is the company which is used as the relative efficiency reference point. To set the benchmark, a company (or group of companies): • must represent a reasonable proportion of industry turnover (historically 2.5% to 3%); • must have no special characteristics outside management control that significantly reduce its costs; • we must have no concerns about the consistency of the benchmark company's data; and • for a capital maintenance benchmark a company must have stable or improving serviceability.
Business plan	NI Water's business plan sets out: • its overall strategy and the implications for price limits and average bills; • its strategic objectives in terms of service performance, quality, • environmental and other outputs; • the activities necessary in the period to meet these objectives; and • the scope for improvements in efficiency.
Capital efficiency	The efficiency of using capital expenditure to deliver outputs.
Capital expenditure (capex):	Appointed water companies' spending on new, replacement or refurbished capital assets, such as construction and buying machinery.
Capital maintenance	Planned work by appointed water companies to replace and renovate water and sewerage assets to provide continuing services to consumers.
Capital maintenance econometric return (CMER)	A standardized data set provided by each appointed water company from which econometric models for assessing relative capital efficiency are developed.
Change protocol	Principles and outline procedures for confirmed changes funded improvement programmes during an asset management programme period.

Charging year	The period for which NI Water bills customers starting on 1 April each year.
Competition Commission (CC)	Considers merger references. It is also the body to which companies can appeal if they disagree with our decisions on price limits, licence amendments or accounting guidelines.
Construction output price index (COPI)	Published by the Building Cost Information Service (BCIS), COPI measures changes to construction prices which can move in a different way from the Retail Price Index. We use COPI to compare how much companies have actually spent on capital investment compared with what we allowed for in price limits.
Consumers	Consumers refers to individuals or households that purchase and use goods and services generated within the economy. In this case we are referring to those who use water and sewerage services.
Cost base	A defined set of standardised capital work items and projects.
Cost benefit analysis	This measures all the costs and benefits of a project in a common currency (preferably £s). It is used to assess the balance between the costs and benefits of a proposed project.
Cost of capital	The minimum return that providers of capital require to prompt them to invest in or lend to the appointed water companies given their risk.
Current cost depreciation (CCD)	The depreciation charge on tangible fixed (above-ground) assets based on the current values of those assets, less amortisation of deferred credits relating to grants and third party contributions. This depreciation is generally only applied to above-ground assets as an infrastructure renewal charge is applied to underground assets.
Depreciation	A measure of the consumption, use or wearing out of an asset over the period of its useful economic life.
Determinations	Some of our decisions are known as determinations, the biggest of which is the outcome of a price control setting out appointed water company's price limits that will operate for a period and the specific outputs that they will have to deliver.
Econometrics	A process that finds a link between expenditure in an area (for example, capital maintenance for water distribution) and a number of measurable explanatory variables (for example, length of distribution mains). If proved, the correlation can be used to derive predicted expenditure for an appointed water company.
Enhanced service levels	Permanent, identifiable and measurable improvements in service levels that are in addition to achieving the most recent established appointed water company-wide base levels of service. They are in addition to improvements resulting from expenditure in other purpose categories.

Enhancement	A level of service delivered better than previously defined. Examples of enhancements include: • fewer supply interruptions for consumers; • fewer disruptions for the public in general; and • less pollution for the environment.
Financeability	Our duty to ensure that NI Water can finance the proper carrying out of their functions is interpreted to mean not only that they should receive a return on investment at least equal to the cost of capital.
Gearing	A company's net debt expressed as a percentage of its regulated capital value.
Indexation	A technique to adjust income payments by means of a price index.
Infrastructure assets	Mainly underground assets, such as water mains and sewers, also dams and reservoirs that last a long time. A distinction is drawn between the infrastructure and non-infrastructure assets because of the way in which they are managed, operated and maintained by appointed water companies.
Infrastructure charges	Developers pay infrastructure charges to NI Water when a new property is connected to either a public water supply or a public sewer. The infrastructure charge provides a contribution to the investment required as a result of the demand that new developments generally place on the local distribution or sewerage network.
Infrastructure renewals charge (IRC)	An annual accounting provision for the medium- to long-term maintenance needs of the infrastructure assets network (underground pipes) charged to the profit and loss account.
Infrastructure renewal expenditure (IRE)	The actual expenditure incurred in the financial year in maintaining the operating capability of infrastructure assets through renewal or renovation of those assets.
Interim determination	An interim determination may allow NI Water, or us, to seek revised price limits if specified outputs required of a company change such that the total impact on the company, in net present value (NPV) terms, amounts to 10% of company turnover. The specific items that can be considered are detailed in NI Water's Licence (as relevant changes of circumstances) or defined at a price control as notified items.
International financial reporting standards (IFRS)	These are standards and interpretations adopted by the International Accounting Standards Board.
K factors (price limits):	The annual increase in charges that NI Water can make. The amount by which a company can increase (or must decrease) its charges is controlled by the price limit formula RPI ± K + U. K is a number determined by us at a price control, for each year, to reflect what it needs above inflation, in order to finance the provision of services to consumers. It may be changed at an interim adjustment between price controls. RPI is expressed as the percentage increase in the Retail Price Index in the year to the November before the charging year and U is the amount of unused K not taken up in previous years.

Logging up and logging down	The process at price controls enabling appointed water companies to set aside variations in costs, which are taken into account when we next set price limits.
Maintenance non-infrastructure	All actual or historic expenditure charged to capital maintenance non-infrastructure.
Modern equivalent asset	A structure similar to an existing structure and having the equivalent productive capacity, which could be built using modern materials, techniques, and design. Replacement cost is the basis used to estimate the cost of constructing a modern equivalent asset.
Monopoly	A monopoly is defined as a persistent market situation where there is only one provider of a product or service, in other words a company that has no competitors in its industry.
Net present value (NPV)	The economic value of a project, at today's prices, calculated by netting off its discounted cash flow from revenues and costs over its full life.
Non-infrastructure assets	Mainly surface assets, such as water and sewerage treatment works, pumping stations, company laboratories, depots and workshops.
Non-regulated activity	Non-core business, not associated with the delivery of water and sewerage services.
Notified items	• Any item notified by us to NI Water as not having been allowed for (either in full or in part) in the determination at the most recent price control.
Operating expenditure (Opex)	NI Water's day-to-day spending on running the services, for examples, staff costs and power.
Outperformance	Achieving planned outputs for less expenditure than that assumed in price limits.
Output	Whatever is produced by a project.
Overall performance assessment (OPA)	A measure of performance which reflects the broad range of service provided to customers. The key areas within the OPA are: • water supply (pressure, interruptions, restrictions and drinking water • quality); • sewerage service (flooding incidents and risk of flooding); • customer service (quantitative and qualitative aspects of service); and • environmental impact (compliance with statutory environmental legislation). We use the OPA within the price setting process.
Per capita consumption (PCC)	The measure of average use per person in an appointed water company's area. Companies are required to report estimates for both metered and non-metered consumers.

Quality enhancements	A generic term for work programmes implemented by the companies to improve the quality of drinking water or the environment typically by treating wastewater discharges to a higher standard. These enhancements are required to fulfil new legislation or national initiatives approved by Ministers.
Quality regulators	A collective term for the Drinking Water Inspectorate and the Northern Ireland Environment Agency.
Regulatory capital value (RCV)	The capital base used in setting price limits. The capital value is calculated using our methodology (for example, after current cost depreciation and infrastructure renewals accrual). Also known as the 'regulatory asset base' and the 'regulatory asset value'.
Reporters	These are professional independent consultants who act as commentators on the wide range of regulatory information that the appointed water companies submit to us. This information needs to be well founded and provide a consistent base of industry-wide comparative information for regulatory decision making. We therefore require NI Water to appoint a reporter to examine, test and give their opinion on this information, in line with our guidance. Each reporter's appointment is subject to our approval. Each owes a duty of care to us and also owes a duty of care to NI Water.
Retail price index (RPI)	An index of changes in retail prices. Charges are controlled by the formula RPI ± K. RPI is expressed as the percentage increase in the Retail Price Index in the year to the November before the charging year.
Return on capital	Return on capital, also known as return on invested capital, is a financial measure that quantifies how well a company generates cash flow relative to the capital it has invested in its business.
Revenue base	This is the amount received by NI Water from their customers.
Revenue requirement	The amount of money that NI Water must receive from its customers to cover its costs, operating expenses, taxes, interest paid on debts owed to investors and, if applicable, a reasonable return (profit).
Security of supply index (SoSI)	Assesses each appointed water company's ability to supply customers in dry years without imposing demand restrictions such as hosepipe bans. Companies with higher index score bands have better security of supply.
Serviceability	The capability of a system of assets to deliver a reference (ie, expected) level of service to consumers and to the environment now and into the future.
Substantial effect clause	This allows companies, or us, to seek a change in price limits if circumstances beyond the companies' control change such that the total impact on the company amounts in NPV terms to 20% of company turnover.
Supply/demand balance	The balance between the amount of an appointed water company's available water resources and the demand for water by customers. Any imbalance between supply and demand can be met through resource enhancement or demand management strategies.

Tariff basket	The basket of charges to which the annual price limits apply, comprising charges for: • unmetered water supply; • metered supply; • unmetered sewerage services; • metered sewerage services; and • reception, treatment and disposal of trade effluent. Within the overall price limit, basket items may increase or decrease by different amounts and percentages. However, the average change in the basket of charges must not exceed the price limit.
Unit cost modelling	Simple modelling based on unit costs, for example per connected property, which can be used to assess relative efficiency.
Water only Company	An appointed water only company. WoCs provide water but not sewerage services.
WaSC	Appointed water and sewerage company provides water and sewerage services.
Water Framework Directive (WFD)	A European Directive to provide a coordinated approach to water management with the European Union (EU) by bringing together strands of EU water policy under one piece of framework legislation. Member States must produce plans for river basin management districts that set out a programme of measures aimed at protecting bodies of surface and groundwater. Each plan must include economic analyses of water use and move towards full cost recovery in water pricing. For more information, see the WFD website at www.fwr.org.
Water resource zone (WRZ)	The largest possible zone in which all water resources, excluding external transfers, can be shared. Hence, it is the zone in which all consumers experience the same risk of supply failure from a resource shortfall.
Weighted average cost of capital (WACC)	For an appointed water company, the average costs of its debts and cost of equity capital, weighted according to the balance of debt and equity which finances the company's assets.

Appendix 2 – Abbreviations

AIR	Annual Information Return
BIP	Business Improvement Programme
BP	Business Plan
CAPEX	Capital Expenditure
CCD	Current Cost Depreciation
CCNI	Consumer Council Northern Ireland
COPI	Construction Output Price Index
DD	Draft Determination
DFP	Department of Finance and Personnel
DG's	Performance Indicators (originally set by OFWAT Director General)
DRD	Department for Regional Development
DWI	Drinking Water Inspectorate
E&W	England and Wales
ELL	Economic Level of Leakage
FD	Final Determination
GB	Great Britain
GoCo	Government Company
IRC	Infrastructure Renewals Charge
IRE	Infrastructure Renewals Expenditure
IWRP	Independent Water Review Panel
K-factor	The adjustment to price caps excluding RPI
KPI	Key Performance Indicators
M and G	Management and General
MEAV	Modern Equivalent Asset Value
MNI	Maintenance non-infrastructure
NDPB	Non Departmental Public Body
NIAUR/UR	Northern Ireland Authority for Utility Regulation ' The Utility Regulator'
NIEA	Northern Ireland Environment Agency
NIW	Northern Ireland Water

OFWAT	Office of Water Regulation (England and Wales)
OPA	Overall Performance Assessment
OPEX	Operating Expenditure
ORG	Output Review Group
PC10	Price Control 2010 – 2013
PC13	Price Control 2013 – 2018
PPP	Public Private Partnership
Price Control	The process by which limits on charges are determined
RCV	Regulatory Capital Value
RD	Roads Drainage
RPA	Regional Price Adjustment
RPI	Retail Price Index
RPI-X	A form of price control where charges are linked to RPI
SBP	The Strategic Business Plan 2007-2010
STW	Sewage Treatment Works
VER	Voluntary Early Retirement
VS	Voluntary Severance
WACC	Weighted Average Cost of Capital
WACI	Weighted Average Charge Increase
WICS	Water Industry Commission for Scotland
WTW	Water Treatment Works
WwTW	Wastewater Treatment Works

Appendix 3 – Priorities from the Principal Social and Environmental Guidance

Mandatory EU Obligations (Priority 1)	
1A	Complete treatment and capacity upgrades at waste water treatment works necessary for ensuring compliance (with UWWTD, BWD, SWD) and addressing immediate development pressures. This includes providing appropriate treatment at small waste water treatment works .
1B	Implement those drainage area plans identified (by NIEA) as the highest priority and develop programmes to address specific sewerage issues such as internal sewer flooding, unsatisfactory discharges and spills from sewer overflows.
1C	Implement site specific WFD sewerage measures detailed in the draft RBMPs. These may include reducing the number of sewerage spills or providing enhanced treatment in certain catchments.
1D	Complete water infrastructure and treatment upgrades necessary to address authorised departures and other statutory obligations from the Water Supply (Water Quality) Regulations (Northern Ireland) 2007.
1E	Complete water infrastructure and treatment upgrades necessary to sustain current overall drinking water quality standards in line with the recommendations of the Independent Water Review Panel.
1F	Introduce wider catchment risk assessments and new raw water monitoring programmes in line with the proposed Water Supply (Water Quality) (Amendment) Regulations (Northern Ireland) 2009.
1G	Contribute to the completion of Preliminary Flood Risk Assessments (by Dec 2011), Flood Risk and Hazard Maps (by Dec 2013) and Flood Risk Management Plans (by Dec 2015) in line with the Floods Directive.
Customer service – information (Priority 2)	
2A	Continue improvements in customer service quality and effectiveness through the development of better data and information systems.
2B	Improve the accuracy, reliability, security, and consistency of information - customer, financial, management, and asset information.
2C	Adopt any new 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.
Customer service - water service (Priority 2)	
2D	Implement the proposed Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 to prevent the waste and contamination of public water supplies and protect against the use of defective water fittings.

2E	Complete the risk assessments required to inform Water Safety Plans (WSPs) for public water supply systems during the period in line with the proposed amendments to the Water Supply (Water Quality) Regulations (Northern Ireland) 2007.
2F	Reduce regional variations in drinking water quality and improve security of supply through the decommissioning of abstraction points susceptible to contamination and installing additional water mains as necessary.
2G	Continue to reduce the number of properties that experience unplanned and unwarned interruptions to drinking water supply in excess of 6/12/24 hrs (DG3 Register).
Customer service - sewerage system (Priority 2)	
2H	Collect accurate and reliable information on sewerage infrastructure to inform the development of a future programme of drainage area plan work for the price control period and beyond.
2I	Develop a priority long-term drainage area plan programme (in conjunction with NIEA) for the price control period and beyond, focussed on addressing EU environmental quality drivers and reducing the risk of surface flooding.
2J	Following completion of urgent drainage area plan (DAP) work identified in Priority 1, commence long-term DAP programme.
2K	Develop and maintain a register of properties at risk from internal sewer flooding (DG5 Register).
2L	Implement a programme of projects to reduce the number of properties on the DG5 Register over the PC10 period and beyond.
2M	Reduce the number of pollution incidents through efficient and effective monitoring and control of the water and sewerage assets.
Water Leakage and Pressure (Priority 3)	
3A	Continue to focus on leakage detection and reduction with the aim of achieving and maintaining the Economic Level of Leakage .
3B	Target areas of low pressure through the mains rehabilitation programme to ensure all customers benefit from at least the minimum levels of supply.
3C	Maintain a register of properties at risk of receiving low pressure (DG2 Register) and agree the number of properties to be removed from the register over the period.
Surface Flooding (Priority 4)	
4A	Assist Rivers Agency in a review to clarify controls and responsibilities for the management of surface water drainage (required under the Government Response to the flood management policy review ' Living with Rivers and the Sea'.)
4B	Continue to address ongoing surface flooding problems attributed to the NIW sewerage network.
4C	Ensure effective co-operation in the management of flood risk with other Government Agencies to provide a comprehensive service with a minimum of duplication of effort.
4D	Put the necessary resources in place to provide an effective emergency response during flooding incidents, in partnership with the other relevant agencies.

4E	Ensure co-operation with Rivers Agency in the development and delivery of appropriate regulation of reservoir safety in NI
4A	Assist Rivers Agency in a review to clarify controls and responsibilities for the management of surface water drainage (required under the Government Response to the flood management policy review ' Living with Rivers and the Sea'.)
Longer-term EU Requirements (Priority 5)	
5A	Identify and program any further waste water treatment, collection or capacity upgrades necessary for ensuring future compliance with UWWTD, revised BWD and SWD including continued improvements of small treatment works.
5B	Take account of the potential impact of emerging EU policies and developments during the period (e.g. UWWTD requirements for collection systems and CSOs).
5C	Put in place effective arrangements to monitor future compliance with UWWTD and discharge consents .
5D	Address any further RBMP water and sewerage measures identified through WFD monitoring.
5E	Address flood risk management in water and sewerage measures identified through implementation of the EU Floods Directive.
Sustainability and Climate Change (Priority 6)	
6A	Ensure that planned development and growth is factored into any proposed water or sewerage upgrades during the period.
6B.0	Improve resource efficiency.
6B.1	Improve resource efficiency by: Setting targets and developing and implementing action plans to deliver operational/energy efficiencies,
6B.2	Improve resource efficiency by: planning infrastructure development that balances the requirements of future development, the needs of people, and protection of the environment - both pollution prevention and mitigation of climate change, and
6B.3	Improve resource efficiency by: developing a Sustainable Economic Level of Leakage to include carbon costs and determine future capital investment needs for achievement in PC13.
6C	Improve resource efficiency by: agree appropriate targets to plan and deliver a contribution to the Programme for Government greenhouse gas emissions reduction target (e.g. through increased use of green energy).
6D	Improve resource efficiency by: promote the recycling and reuse of sewage sludge in an environmentally friendly manner where this is economically viable - for example through sustainable application to forestry and agriculture.
6E	Improve resource efficiency by: NIW should continue to invest in education campaigns to promote efficient water usage (water bus).
6F	Improve resource efficiency by: Investigate the options for adopting Sustainable Drainage Systems (SuDS) to help reduce pressure on the sewerage systems during periods of heavy rain.

6G	Improve resource efficiency by: establish an appropriately indexed carbon cost to be included in the assessment of all significant capital projects from PC13 onwards.
6H	Improve resource efficiency by: commence and complete work on Water Resource Management Plans (WRMPs) to identify the long-term water resource management and security of supply investment needs (for PC13 and beyond).
6I	Improve resource efficiency by: NIW and NIAUR should explore the opportunities with NIEA for adopting a more sustainable, holistic, catchment-based approach to waste water collection and treatment.
6J	Improve resource efficiency by: during the period, NIW, DWI and NIAUR should explore the opportunities of adopting a more sustainable approach to drinking water treatment through innovative catchment management solutions such as SCaMP.
6K	Improve resource efficiency by: in carrying out is functions and managing its estate, NIW should take account of protected areas , the need to enhance biodiversity and also consider the provision of amenities for interest groups where appropriate.