

Water and Sewerage Revenue and Charges Price Control 2010-2013

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1.0 Introduction

1.1. Background

1.1.1. 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.

1.1.2. 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.

1.1.3. 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 will set limits on NI Water's price caps 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.

1.1.4. We have published a summary of our draft determination for PC10 in 'Water and Sewerage Service – Price Control 2010-13 – Draft Determination Summary Report'. In this supporting publication and its annexes we provide more detail of the methodologies adopted to assess NI Water's PC10 Business Plan. We also outline 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 and respond to our draft determination and to inform other stakeholders and consumers so that they too can provide us with feedback.

1.1.5. NI Water obtains its revenue from a combination of direct charges to nondomestic 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 draft determination does not pre-judge decisions the NI Executive will make in due course. The draft determination is based on the current structure and sources of funding of NI Water.

1.1.6. NI Water's PC10 Business Plan recognises 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 has set out plans to close this gap in 2010-13. However, it recognises 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.

1.1.7. In the development of PC10 we set out a rigorous methodology for reviewing operational efficiency. We have followed this methodology to determine the potential for improving efficiency in 2010-13. We used the same approach when advising the IWRP and more recently the DRD Minister on the extent of the efficiency gap between NI Water and comparative companies. The fact that the efficiency gap faced by NI Water remains largely intact would not alter the IWRP's view that the scale of challenge is no more demanding than what was achieved after re-structuring in England and Wales, and latterly Scotland. We conclude that the company can improve further and faster than its current Business Plan allows and that it is capable of delivering additional efficiencies in PC10 while ensuring that current levels of service are maintained and improved. Again, our view concurs with that of the IWRP who cited Scottish precedent for improving levels of service alongside reductions in operational spend. This is an important precedent since Scottish Water, like NI Water, operates within the public sector.

1.1.8. We have concluded that the capital investment programme proposed by NI Water in its Business Plan was broadly reasonable. We consulted with the Department for Regional Development (DRD), the Consumer Council (CCNI), the Drinking Water Inspectorate (DWI) and the Northern Ireland Environment Agency (NIEA) to confirm that the outputs which will be delivered by the company:

- meet the priorities set out in the Social and Environmental Guidance;
- align with consumer views; and,
- deliver necessary statutory obligations.

1.1.9. 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.

1.1.10. 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.

The draft determination is a significant step in a process which will lead to the announcement of our final determination for PC10 on the 18th December 2009. In the intervening period we will provide further briefing to stakeholders on our work and receive representations from NI Water on the draft determination. We would also encourage consumers and stakeholders to provide feedback on the draft determination, which we will consider for our final determination.

1.2. Acknowledgements

1.2.1. We wish to acknowledge the efforts of the many stakeholders who contributed to the development of NI Water's Business Plan and this draft determination over the period 2008 to 2009.

1.2.2. 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.

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

1.3. The Price Control Process

1.3.1. 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 draft determination and continue to seek to obtain your views as we work towards our final determination.

Basis of the Price Control 2010

1.3.2. 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.

1.3.3. 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

1.3.4. 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.

1.3.5. A key contribution to the development of outputs for PC10 was the work undertaken by the 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 was initially issued for consultation and is currently 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

1.3.6. 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.

Obtaining the Necessary Information for the Price Control

1.3.7. NI Water's Business Plan submission is based on a structured set of reporting requirements which we issued to the company. The company was asked to provide detailed and summary information alongside 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.

1.3.8. A detailed breakdown of the capital programme was provided by NI Water to support the capital programme submission.

1.3.9. We prepared a detailed financial model to assess the revenue requirements and price caps for PC10. The company completed a version of our financial model and submitted an updated version of the annual tariff model setting out its assessment of future revenue and sources of revenue.

Scrutiny of NI Water's PC10 Business Plan Submission.

1.3.10. NI Water submitted its PC10 Business Plan to the Utility Regulator on the 15th June 2009. We have scrutinised the Business Plan submission carefully to reach the conclusions which underpin the draft determination and made judgements about what an efficient company would require to finance and deliver its functions properly.

1.3.11. Our detailed scrutiny of the Business Plan has exposed inaccuracies in some key data such as the projection of customer numbers and volumes and the reconciliation of summary and detailed capital cost information which had to be resolved through a subsequent query process. Similar data issues have been a cause of concern in the past and the company has provided us with an undertaking to address the quality of data submissions. While we recognise that the company continues to make progress in this area, the Business Plan submission confirms that there is further work to be done to ensure that the quality of data in regulatory submissions is robust and internally consistent.

1.3.12. 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. We believe that this supports the need 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. 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.

1.3.13. Where possible, we challenged the costs of delivery set out in the Business Plan against costs incurred by NI Water in the past and have found the detailed information in the company's quarterly Capital Investment Monitoring Return of great benefit in this respect. The company's expenditure plans were also scrutinised by the Independent Reporter and we have taken account of his observations in arriving at our assessment of reasonable expenditure for the PC10 period.

1.3.14. 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 provided 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 made an appropriate allowance in our assessment for the reasonable costs that the company would expect to incur in PC10, alongside its efficiency challenge.

1.3.15. 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. We expect the company to improve its asset data and asset management systems over the PC10 period and our draft 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 made by the company.

1.3.16. 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.

1.3.17. We scrutinised NI Water's proposals to finance its activities and the impact this has on its future financial sustainability.

Continuity into PC13

1.3.18. 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 based our assessment of charges on a smoothed revenue in the PC10 period to ensure stability for the non-domestic consumers who pay direct charges.

1.3.19. We have signalled the scope for on-going efficiency beyond PC10; specifically further and additionally challenging targets at PC13. 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.

1.3.20. 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.

1.4. Delivery of Outputs and Benefits

1.4.1. The investment set out in our draft 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 1.1. More detailed information on outputs and targets is given in Section 3.0.

1.4.2. 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.

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	Completion of water treatment upgrades will improve the quality of
compliance	 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.

Table 1.1: PC10 - Summary of Key Benefits

1.5. Summary of Future Expenditure

1.5.1. The company's Business Plan included total capital expenditure of £622m over 2010-13 and total operational expenditure of £629m over three years.

1.5.2. From our assessment of the company's plan we have concluded that the benefits set out therein and the additional benefits set out in this draft determination can be delivered for a total capital expenditure of £520m over 2010-13 and total operational expenditure of £531m over three years.

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

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.

Table 1.2 - Purpose Category Definitions

Future Capital Investment

1.5.4. A comparison of the capital investment in NI Water's Business Plan and the assessment which underpins our draft determination is set out in Table 1.3.

	Gross expenditure 2010-13			0-13 (£m)	
		NI Water	Utility Regulator	Difference	
WATER SI	ERVICE				
Q	Quality	35	29	(6)	
В	Base maintenance	112	105	(7)	
E	Enhanced service	19	15	(4)	
G	Growth and development	87	54	(33)	
Total water	service	253	204	(49)	
SEWERAG	GE SERVICE				
Q	Quality	129	128	(1)	
В	Base maintenance	140	119	(21)	
E	Enhanced service	28	24	(4)	
G	Growth and development	36	45	9	
Total sewe	rage service	332	316	(16)	
TOTAL CA	PITAL INVESTMENT				
Q	Quality	164	157	(7)	
В	Base maintenance	252	224	(28)	
E	Enhanced service	47	40	(7)	
G	Growth and development	123	99	(24)	
Total sewerage service		586	520	(66)	
Note 1: Note 2: Note 3:	Note 1:Expenditure is in 2007-08 prices before deduction of capital income.Note 2:Expenditure is post adjustments for efficiencyNote 3:Draft determination includes £38 m for additional outputs				

Table 1.3: Capital Expenditure Summary

1.5.5. 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 draft determinations for water and sewerage companies in England and Wales for 2010-15 The proposed level of future capital investment is £259 per annum per property supplied. This is 44% greater than the average cost per property supplied included in the recent Ofwat determinations which cover 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

1.5.6. 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

1.5.7. A comparison between the operational expenditure in NI Water's Business Plan and the assessment which underpins our draft determination is set out in Table 1.4.

Table 1.4: Operational Expenditure Summary

Operational ex	xpenditure 2010-13 (£m)	NI Water	Utility Regulator Draft Determination	Difference
Total		629	531	-15.50%
Note 1:Expenditure is in 2007-08 pricesNote 2:Expenditure is post efficiencyNote 3Expenditure is the total over three years 2010-11 to 2012-13.				

1.5.8. 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 draft determinations for water and sewerage companies in England and Wales for 2010-15. The proposed level of future operational expenditure for NI Water is £267per annum per property. This is 78% greater than the average cost per connected property included in the recent Ofwat determinations for England and Wales.



Figure 1.3 - Operational Expenditure per Property in PC10

1.5.9. 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.

1.6. Funding Future Investment

1.6.1. 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 1.5 and Table 1.6 where they are compared with the levels of revenue and debt proposed in NI Water's Business Plan and in our draft determination. We understand however that the actual new debt (borrowing) available in each year of PC10 may set by reference to the required capital enhancement expenditure required in each year of PC10. This is reflected in our draft determination and shown in table 1.6.

Required revenue in £m	2010-11	2011-12	2012-13	PC10
DRD draft Social and Environmental Guidance	390	415	440	1,245
NI Water Business Plan	374	397	419	1,190
Utility Regulator draft determination	346	351	357	1,054

Table 1.5: NI Water Revenue Requirement for PC10 (Out-turn) (£m)

Table 1.6: NI Water Borrowing Requirement for PC10 (Out-turn) (£m)

Required revenue in £m	2010-11	2011-12	2012-13	PC10
DRD draft Social and Environmental Guidance	130	120	90	340
NI Water Business Plan	140	140	100	380
Utility Regulator draft determination	101.5	92.3	97.9	291.6
Note: figures may not add due to rounding				

1.6.2. 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.

1.6.3. Table 1.7 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.

Revenue Group	Forecast Revenue over PC10 (£m)	Subsidy allocation
Domestic unmeasured water	335	Subsidy and contribution through rates
Domestic unmeasured sewerage	368	Subsidy and contribution through rates
Non-domestic measured water	129	domestic allowance subsidy
Non-domestic measured sewerage	86	domestic allowance subsidy
Non-domestic unmeasured water	13	50% subsidy
Non- domestic unmeasured sewerage	13	50% subsidy
Trade effluent (includes Roads Drainage costs of approximately £56.3m)	73	0% subsidy
Non tariff basket revenue (includes large users)	37	0% subsidy
Total Required Revenue	1054	

1.6.4. On average approximately 72% of the revenue requirement over PC10 i.e. £757m is forecast to be paid through subsidy. The NI Water Business Plan forecast a subsidy level of £852m over the PC10 period. This draft determination therefore provides a saving of £95m on the level of subsidy over the PC10 period.

1.6.5. Table 1.8 shows the sources of revenue over the PC10 period including revenue from subsidy, Road Drainage re-charge and revenue from charges (non-domestic).

Table 1.8 - Annual Subsidy Requirement in PC10 (Out-turn) (£m)

	2010-11	2011-12	2012-13	Overall Total
Subsidy Requirement	245	252	260	757
Roads Drainage Re-charge	19	19	18	56
Revenue from charges	82	80	79	241
Total Revenue	346	351	357	1,054
Note: Figures may not add due to rounding.				

1.7. Draft Determination Price Limits

1.7.1. We have a legal duty to determine price limits, often referred to as K factors, 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 caps are allowed to rise or fall on an annual basis during the Price Control period.

1.7.2. We utilise price limits within the various tariff baskets to ensure that there is no cross subsidy between customer groups. In setting the price limits, we have been mindful of the Ministerial Social and Environmental Guidance, and sought to balance affordability with compliance and customer priorities. K factors for PC10 are shown in table 1.9.

Tariff Basket	2010-11	2011-12	2012-13
Unmeasured Water Supply	-11.3%	-1.3%	-2.6%
Unmeasured Sewerage Service	-2.2%	1.5%	1.6%
Measured Water supply	-6.0%	-6.0%	-6.0%
Measured Sewerage Service	-3.6%	-3.6%	-3.6%
Trade Effluent	-4.6%	-4.6%	-4.6%

Table 1.9 - K Factors for PC10

PC10 Weighted Average Charge Increase (WACI)

1.7.3. 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.

WACI (Weighted Average Charge Increase) = K factor plus inflation (RPI)

Average Notional Household Charge

1.7.4. While we have assumed that there will be no direct domestic charges over the period of this price control, Table 1.10 shows the notional average household charge over the PC10 period.

	Averag	e Notional (2009-1	Household 0 prices)	Difference (£) 2009-10 to 2012-13	
	2009-10	2010-11	2011-12	2012-13	
NI Water PC10 BP	£391	£407	£414	£418	£27 increase
Utility Regulator PC10 draft determination	£391	£369	£369	£369	£22 decrease
Utility Regulator draft determination saving	-	£38	£45	£49	-
Note: Smoothing of revenue over the period has led to a flat £369 notional bill in each year					

Table 1.10 – Average Notional Household Charge

Affordability

1.7.5. We note the commentary and recommendations made by the IWRP and that decisions in relation to affordability rest with the Department and the NI Executive. However, to inform discussions and based upon IWRP recommendations endorsed by the NI Executive we note the impact of the following IWRP recommendations:-

- The cost of road drainage should be paid out of general taxation and charged to the DRD Roads Service; and
- The contribution already made by consumers for water and sewerage services in their rates should be discounted from any direct bill for water and sewerage services.

1.7.6. We have therefore adjusted the notional average household bill to take account of these factors as shown in table 1.11.

Table III – Aujusteu Average Notional Domestie Onarge	Table 1.11 – Ad	justed Average	Notional Do	omestic Charge
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	Average Notional Household Charge (2009-10 prices) (£)			
	2009-10	2010-11	2011-12	2012-13
Utility Regulator PC10 draft determination includes Road Drainage – indicative	411	388	388	388
Reduction for Roads Drainage re-charge to DRD Roads Service (approx £19 p.a.)	391	369	369	369
Reduction for contribution made in rates bill (approx £160 p.a.)	231	209	209	209

Condition C: Infrastructure Charges

1.7.7. Under Condition C of the Licence we are required to set infrastructure charges for the PC10 period for both water and sewerage services. The infrastructure charge provides a contribution towards the cost of developing local networks to serve new customers. NI Water can levy an infrastructure charge, as well as the direct cost of making new connections.

1.7.8. 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.

1.8. Content of this Report

1.8.1. We have set out further details of the draft 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.

1.9. Next Steps

1.9.1. This draft determination has been published for consultation. A final determination will be determined on 18 December 2009.

1.9.2. Between the draft and final determinations we will provide further briefing to stakeholders on our work and receive representations from NI Water on the draft determination. We also encourage consumers and stakeholders to provide feedback on the draft determination to inform the price control process. Feedback should be provided to:

Mr Keith Hunt Water Regulation Directorate Utility Regulator Queens House 14 Queen Street Belfast BT1 6ED email keith.hunt@niaur.gov.uk

1.9.3. A summary of responses will be published with our final determination. If you would prefer your comments not to be published, please indicate this when responding. Requests for non publication of responses will be respected but, in accordance with the Freedom of Information Action 2000, cannot be guaranteed. For further information about the confidentiality of responses please contact the Information Commissioner's Office.

1.9.4. Responses must be received by the 5.00pm on the 6th November 2009. We will carefully consider all responses to the draft determination received up to that date as we complete our 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_2 007 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.

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
	12 hours	0.30	0.23	0.15	properties
	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

 Table 2.1 – Performance Against Selected SBP targets by 2009-10

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 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. For the final determination for PC10 we expect the company to review and clarify its outputs and targets and establish clearer links between activity, expenditure and outputs.

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 an 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.

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 draft 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 (timing and extent) of activities and outputs which formed the basis of our assessment of the costs and price. Price limits and outputs cannot be considered separately: the draft determination is a package of both the price limits and the 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. 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 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. 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 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 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.

3.1.6. The PC10 outputs included in this draft determination are summarised in 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 included 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: the sewerage outputs for PC10 included: 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.
- Overall Performance Assessment: we have adopted the OPA methodology, currently used in Scotland, England and Wales. This combines a basket of outputs in a single score which allows NI Water's overall improvement to be tracked.
- 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.

Table 3.1 – PC10 Output Summary

Consumer Service	2009-10	2010-11	2011-12	2012-13
Properties at risk of receiving pressure below reference level (DG2) (see Note 1)	4855	3258	2268	1550
Interruptions to supply – composite score (DG3)	1.14	1.10	1.05	1.01
Interruptions to supply >12 hrs (% of properties) (DG3)	0.225	0.219	0.212	0.206
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	99.99	99.99	99.99
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	97.5	98.5	99.6
Call handling satisfaction score (1-5)	4.6	4.7	4.7	4.7
Percentage of calls not abandoned (DG9)	99	99	99	99
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)	PC10 targets to be assessed for the final determination following a review of NIW leakage data for 2008-09.			the final of NIW

Nominated outputs for trunk main schemes (4r) 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 (%)				
Social and Environmental Guidance limit	99.65%	99.70%	99.70%	99.70%
Target operating level (see Note 1)	Further information from NI Water to establish operating targets for PC10.			
Mean zonal compliance (MZC) iron (%)				
Operational performance indicator (MZC turbidity, iron and manganese) (%) (Note 3)	99.20%	99.20%	99.28%	99.30%
Nominated outputs for water treatment works upgrades completed (2nr), 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	85 km over PC10			
Length of non-critical sewer renewed	12 km over PC10			

Consumer Service	2009-10	2010-11	2011-12	2012-13	
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					
% of WwTWs non-compliant with (Water Order) numeric consents	12.2%	11.4%	9.4%	7.0%	
% WwTWs non compliant (UWWTD consents)	8.1%	8.3%	5.6%	1.4%	
% of WwTW treatment works discharges failing numeric consents	12.6%	11.8%	9.4%	7.0%	
% of total pe served by WwTWs in breach of Water Order consent (LUT)	6.1%	6.0%	4.8%	2.3%	
% of total pe served by WwTWs in breach of UWWTD consent (LUT)	3.7%	3.7%	2.4%	1.5%	
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 2007-08 119 130 145 201 assessment					
 NI Water Business Plan targets. We have requested the company to reconsider these targets and provide additional information in advance of the final determination to demonstrate that they are robust and challenging. 					
 OPI TIM target based on individual parameter projections provided in NI Water's PC10 Business Plan. 					

3.1.7. We will develop a schedule of nominated outputs and activities for PC10 in conjunction with the company and the quality regulators for the final determination.

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

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).

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 watersCarbon emissions	Dealing with customer complaints Ease of telephone contact Response time Noise

Table 3.2- Consumer Survey Service Features

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 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, in common with water and sewerage companies in Scotland, England and Wales, expects to deliver levels of service approaching 100% for most of these measures by the end of PC10.

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. We expect the company to review the Principal Social and Environmental Guidance and determine, in conjunction with DRD whether the revision results in any additional cost which we should consider for the final determination.

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. NI Water estimates that the number of properties at risk of receiving pressure below reference level was 5783 at the end of 2008-09. 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 1550 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 at risk of receiving low pressure (DG2)	10321	5783	4855	3258	2268	1550

- 3.5.3. From our review of the company's proposals we have concluded that:
 - The company removed properties from the at risk category in 2008-09 due to better information following pressure logging. Completion of this work may identify additional properties which can be removed from the at risk category due to better information rather than by company action.
 - The company has not set out detailed specific plans to improve pressure and we have some concerns about the calculations made by the company to relate water mains activity to the number of properties removed from the at risk category.
 - We recognise that the efficient delivery of the water mains rehabilitation
 programme requires the company to focus investment in specific areas based
 on prioritisation of outputs. This could limit the rate at which properties served
 with low pressure can be addressed. However, alternative local improvements
 could also be considered to separate improvements to pressure from the water
 mains rehabilitation programme.

3.5.4. In its Business Plan the company indicated that its confidence limits on its DG2 target for PC10 is $\pm 25\%$. From our analysis we agree that the confidence in this output is low. For the final determination we expect the company to review its target in light of our comments and propose robust and challenging targets for PC10.

Unplanned Interruptions to Supply (DG3)

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

Table 3.4 – Proposed Improvements to Interruptions to Supply

	07-08	08-09	09-10	11-10	11-12	12-13
DG3 score ¹	1.43	1.41	1.14	1.10	1.05	1.01
Unplanned interruptions to supply >12 hrs	1839	2010	1800	1750	1700	1650

3.5.6. From our review of the company's proposals we have concluded that:

- The link between improvements and investment is weak. We would expect the company to improve its understanding of interruptions to supply to develop a more robust plan for PC13.
- The company has 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.

3.5.7. 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 Wales².

3.5.8. 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 Figure 3.5 below).

¹ The overall score for interruptions to supply combines unplanned interruptions greater than 6 hours, 12 hours and 24 hours, weighting higher duration events.

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

Figure 3.5 – Frequency of Pipe Bursts



3.5.9. 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.





3.5.10. 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.

3.5.11. 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.

3.5.12. 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.

3.5.13. 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.

Flooding of Properties and External Areas from Sewers

- 3.5.14. 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).

3.5.15. 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:

- 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.

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%	97.5%	98.5%	99.0%
Telephone calls receiving an engaged tone (DG9)		0.0%	0.0%	0.0%	0.0%	0.0%
Telephone calls abandoned (DG9)	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%

Table 3.5 - Responding to Consumer Contact in PC10

3.6.6. 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.

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%	99.0%		
Telephone calls receiving an engaged tone (DG9)	0.0% - 6.3%	0.0%		
Telephone calls abandoned (DG9)	1.1% - 11.5%	1.0%		
Range for DG7 and DG9 exclude data for Southern Water which was addressing a major failure in the management of consumer contact.				

Additional Consumer Response Measures for PC10

3.6.7. 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.

3.6.8. 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 171.8 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 to date 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.

	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					
Revised leakage targets (new methodology)		186	182	178	175	172

Table 3.8 - NI Water Leakage Targets and Performance.

3.7.10. The company was expected to deliver a reduction in leakage of 20 Mld in the last two years of the SBP. The company will only deliver a reduction of 5 Mld over this period, a shortfall in delivery of 15 Mld. The targets now proposed by the company for 2012-13 are less demanding than the original target for the final year of the SBP when compared on a like for like basis.

3.7.11. NI Water has attributed this shortfall to a severe winter in 2008-09 when freezing conditions resulted in an increase in leakage. We accept that it may not be possible to meet leakage targets each year, but expect the company to make continuous improvements towards its economic level of leakage and deliver on its commitments to consumers. We believe that the company should be able to recover much of the increase in leakage due to a cold winter as it completes its DMA sweeps in the subsequent year. We expect the company to review its proposed leakage targets for the final determination to take account of the SBP targets and increase its rate of progress towards its economic level of leakage.

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.
- Delivery of leakage targets.

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. The targets proposed by NI Water for PC10 are set out in Table 3.9.

Water Quality Parameter/Location	07-08	08-09	09-10	11-10	11-12	12-13
Water treatment works coliform non- compliance	0.12%	0.08%	0.08%	0.08%	0.08%	0.08%
% bacteriological samples from service reservoirs failing standard	0.24%	0.13%	0.13%	0.13%	0.13%	0.13%
% mean zonal compliance (40 parameters)	99.30%	99.49%	99.65%	99.70%	99.70%	99.70%
% mzc for faecal coliform	99.80%	99.44%	99.60%	99.60%	99.60%	99.60%
% mzc for pesticides – other substances	99.03%	99.81%	99.81%	99.81%	99.81%	99.81%
% mzc for trihalomethanes (THMs)	79.37%	86.45%	90.00%	92.00%	94.00%	98.00%
% mzc for aluminium	98.78%	98.88%	98.90%	99.00%	99.10%	99.20%
% mzc for manganese	98.87%	99.47%	99.50%	99.53%	99.56%	99.60%
% mzc for turbidity	99.77%	99.96%	99.80%	99.81%	99.82%	99.83%
% mzc for lead	98.79%	98.57%	98.60%	98.70%	98.90%	98.90%
% mzc for iron	98.29%	98.24%	98.30%	98.40%	98.50%	98.60%

Table 3.9 – Water Quality Compliance Projected into PC10

3.8.4. The company's forward projections indicate either stable or gradual improvement in individual water quality compliance in PC10. We believe that the company's targets for PC10 are broadly consistent with its proposed investment. We accept that there will be variation of results for individual parameters in any one year and the key target for PC10 will be the combined MZC for 40 parameters.

3.8.5. The combined MZC of 99.70% proposed by the company for 2012-13 reflects the target set in the Social and Environmental Guidance. It is lower than the target of 99.77% for the end of the SBP. 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 a response to a query on the Business Plan the company has confirmed that its MZC for 2009-10 is expected to be close to the SBP target. In view of the on-going investment we expect the company to exceed its proposed MZC target for each year of PC10. As a result, we expect the company to set an operational MZC target for PC10 for the final determination which reflects its current compliance and future investment. Based on our understanding of 2008 and 2009 compliance data we believe that a reasonable operational target for 2012-13 which reflects recent investment and continuing investment in PC10 would be 99.80%.

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.

3.9. 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 proposed by the company in its PC10 Business Plan as an output measure for sewerage capital maintenance.

Table 3.10 – Sewerage Activity Rates for PC10

Activity	Km in PC10
Length of critical sewer renewed	15.0
Length of critical sewer renovated	70.3
Length of non-critical sewer renewed	3.7
Length of non-critical sewer renovated	7.8

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:

	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.

3.10. Sewage Treatment Quality Outputs

3.10.1. 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.

3.10.2. 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.

3.10.3. 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.

3.10.4. 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 named 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.

3.10.5. 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. We expect the company to work with NIEA to agree the detail of any additional outputs to be delivered and provide an estimate of this work to include in the final determination.

3.10.6. 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.

3.10.7. 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 Table 3.11

	07-08	08-09	09-10	11-10	11-12	12-13
% of WwTWs non-compliant with (Water Order) numeric consents	11.8%	9.4%	12.2%	11.4%	9.4%	7.0%
% WwTWs non compliant (UWWTD consents)	10.3%	13.0%	8.1%	8.3%	5.6%	1.4%
% of WwTW discharges failing numeric consents	13.0%	11.1%	12.6%	11.8%	9.4%	7.0%
% of total pe served by WwTWs in breach of Water Order consent (LUT)	14.0%	9.4%	6.1%	6.0%	4.8%	2.3%
% of total pe served by WwTWs in breach of UWWTD consent (LUT)	7.4%	9.4%	3.7%	3.7%	2.4%	1.5%

Table 3.11 – Sewage Compliance Outputs for PC10

3.10.8. NI Water has projected an increase in the proportion of wastewater treatment works non-compliant with their water order numeric consents in 2009-10. This based on:

- NI Water's assessment of treatment works compliance risk for the year.
- Additional reported failures from the application of upper tier criteria on 2009-10.
- The introduction of new consents before the planned completion of investment included in the SBP.

3.10.9. We have reviewed and accepted the company's assessment for this draft determination. We will work with the company and NIEA to verify the links between current performance, movements in works categories, the introduction of new consents and the impact of the capital programme for the final determination.

3.11. Asset Serviceability Outputs

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

3.11.2. 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.

3.11.3. 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.

3.11.4. 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.

3.11.5. 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.

3.11.6. 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.

3.11.7. Because serviceability is a relative measure, there is no need to use the same serviceability indicators as other company's 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.

3.11.8. 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.

3.11.9. 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.

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 3.12 – Water Infrastructure Serviceability Indicators

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.

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 insufficent data to establish trend. Monitor for PC10 and consider serviceability trends for PC13.

Table 3.14 – Water Non-Infrastructure Serviceability Indicators

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 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.

3.11.10. 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.

3.11.11. 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.

3.12. Overall Performance Assessment (OPA)

3.12.1. 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.

3.12.2. 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. 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.

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	England and Wales data for 2008-09 not available					105	

Table 3.16 – NI Water OPA Score Compared with England and Wales

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 the final determination

3.12.3. 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.

3.12.4. 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	119	130	145	201

3.12.5. 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.

3.12.6. 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.

3.13. Management and General Outputs

3.13.1. The draft 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. For this reason we will consider appropriate outputs for new systems and asset data improvements for inclusion in the final determination.

3.14. Opportunity for the Delivery of Additional Outputs

3.14.1. Following our challenge of the capital programme set out in Section 4 we have concluded that there is the opportunity to deliver additional urgent outputs within the funding limits set out in the Social and Environmental Guidance.

3.14.2. We have reviewed the opportunities to deliver additional outputs with the key stakeholders.

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

4.1.4. 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.

4.1.5. 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 and we have taken account of his observations in arriving at our assessment of a reasonable level of expenditure for the PC10 period.

4.1.6. 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.

4.1.7. 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 4.4 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.

4.1.8. 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.

4.1.9. The impact of our challenge to the capital programme is to reduce capital investment from the \pounds 585m proposed by the company to \pounds 483m post efficiency, a reduction of \pounds 102m (17.6%), see Table 4.1.

	NI Water Business Plan	Draft Determination	Variance
Total capital expenditure (pre-efficiency)	£622m	£542m	-12.8%
Total capital expenditure adjusted for efficiency	£585m	£483m	-17.6%
Overall scope for efficiency	5.8%	10.9%	
Scope for additional outputs		£38m	
Total investment		£520m	
· · · · · · · · · · · ·			

Table 4.1: Overall Adjustment to the Proposed Capital Investment

1. Figures may not add due to rounding

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

4.1.10. 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.

- 4.1.11. The following sections of this chapter:
 - Define the purpose categories used in our analysis of capital investment and summarise investment by purpose category;
 - Summarise the results of our challenge to the capital programme before we adjust expenditure for efficiency;
 - Summarise our approach to assessing capital maintenance and the outcome of our analysis, with more detailed information in Annex B and
 - Set out our view on investment in renewable energy by NI Water.

4.1.12. 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. Allocation of Capex by Purpose

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

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.

Table 4.2: Purpose Category Definition

4.2.2. A comparison of the post efficiency expenditure proposed in NI Water's Business Plan and that included in this draft determination by purpose category is presented in Table 4.3.

	Water		Sewerage		Total		
Purpose category	NIW	UR	NIW	UR	NIW	UR	
Quality	35	29	129	128	164	157	30%
Base	112	105	140	119	252	224	43%
Enhanced service	19	15	28	24	47	40	8%
Growth	87	54	36	45	123	99	19%
Total	253	204	332	316	586	520	
Allocation		39%		61%			
The determination includes £38m for additional outputs not included in the NI Water Plan							

Table 4.3 - Summary of Investment by Purpose Category (£m) (2007/08 Prices)

4.2.3. 43% of the investment included in the determination is directed at maintaining existing assets and serviceability while 57% is directed at enhancing assets, improving levels of service and addressing development and growth.

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

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

4.3.2. 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.

4.3.3. The impact of our challenge to the Business Plan CAPEX is summarised in Table 4.4 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.

Sub Programme		NI W Busine Pre-eff	/ater ss Plan iciency	Draft Determination Pre-efficiency		
		Base	Enhance ment	Base	Enhance ment	
1	Capitalised salaries and on-costs	14.332	21.910		16.553	
2	Base maintenance non-infrastructure	89.048	0.000		0.000	
3	Water resources	3.583	2.099		2.099	
4	Water treatment	2.230	3.455		2.868	
5	Trunk mains	1.094	18.405		17.509	
6	Service reservoirs	12.173	14.027		13.389	
7	Water mains rehabilitation	55.834	63.752		45.546	
8	Sewerage	31.913	18.071		18.071	
9	Leakage	0.000	18.000		2.460	
10	Flooding programme	0.000	12.326		10.262	
11	Unsatisfactory intermittent discharges	0.000	42.548		40.614	
12	Wastewater treatment	6.634	101.035		88.453	
13	Operational capital	23.295	4.510		4.510	
14	Miscellaneous	0.000	3.898		3.898	
15	Management and General	29.347	28.423		29.194	
	Total pre-efficiency	269.483	352.458		295.426	
	Total post efficiency	252.300	333.286	224.412	258.376	
	Add additional outputs				37.500	
		252.300	333.286	224.412	295.876	
		585.586		520.287		

 Table 4.4: Capex Challenge by Sub-Programme (2007/08 Prices) (£m)

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

Capitalised Salaries and On-Costs.

4.3.5. We have applied the percentage additions for capitalised salaries and on-costs used by the company in its Business Plan to the relevant post efficiency project cost, with the exception of water infrastructure where we have replaced the Business Plan percentage of 7.25% with 5.0%, consistent with the Cost Base and as recommended by the Reporter.

4.3.6. 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 £3.5m total over three years from the PC10 Opex to account for this reallocation.

Base Maintenance Non-Infrastructure

4.3.7. The base maintenance expenditure programmes covering general noninfrastructure maintenance have not been considered separately. We have determined capital maintenance expenditure through econometric modelling.

Water Resources

4.3.8. 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

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

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

Trunk Mains

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

Service Reservoirs and Clear Water Tanks

4.3.12. 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.

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

Water Mains Rehabilitation

4.3.14. Our analysis of the SBP period indicates that the company has applied higher unit rates to water mains rehabilitation in PC10 than the cost of delivery during the SBP. This was confirmed by the Independent Reporter. We have therefore reduced the pre-efficient cost of water mains to reflect current unit cost rates of delivery.

4.3.15. NI Water's Business Plan proposed an increase in water mains activity from the 910 km included in the SBP to 1067km in PC10. Recent rates of activity appear to have maintained the conditioning of water mains and delivered improvements in interruptions to supply, the number of properties at risk of receiving low pressure and water quality. NI Water has not set out a forward plan targeting the increased rate of activity linked to improved performance. In the draft determination we have reduced the rate of activity to 900km over three years to reflect recent activity rates.

4.3.16. During PC10 we expect NI Water to develop its plans for water mains rehabilitation to allow it to clearly identify the benefits of increasing mains activity. In particular we expect the extent of the water 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.

4.3.17. We have increased the water infrastructure capital maintenance allowance in the draft 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

4.3.18. NI Water included £18m (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.

4.3.19. 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.

4.3.20. 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

4.3.21. 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.

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

Flooding Programme

4.3.23. 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.

4.3.24. 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.

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

4.3.26. 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

4.3.27. 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.

4.3.28. 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.

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

4.3.30. The proposed investment in one scheme for East Belfast dominates the UID programme which comprises 50% of the overall cost. The Reporter has noted the uncertainty in the cost estimate of this scheme estimated at £20 m pre-efficiency. The Reporter noted that further study work might result in a significant reduction in costs. Alternatively, the project costs might escalate significantly if a strategic tunnel solution

was necessary. We will consider the uncertainty associated with this scheme with the company for the final determination.

Wastewater Treatment

4.3.31. 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.

4.3.32. 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.

4.3.33. 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.

4.3.34. Based on the observations of the Independent Reporter, we have reduced the contingency applied to PC10 new start projects, by 5%. For some 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

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

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

4.3.37. 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

4.3.38. 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

4.3.39. 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.

4.3.40. 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.

4.3.41. 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.

4.3.42. 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 4.5 below.

4.3.43. We have excluded two elements of work proposed by NI Water which do 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.

4.4. Capital Maintenance Investment

Introduction

4.4.1. 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.

4.4.2. Our draft 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.

4.4.3. 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.

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

4.4.5. NI Water's Business Plan included capital maintenance investment of £252m. Based on comparative analysis we have concluded that company should be able to maintain its assets over PC10 for £224m.

Background

4.4.6. Capital maintenance investment is divided between:

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

4.4.7. 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.

4.4.8. 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.

4.4.9. 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.

4.4.10. 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.

4.4.11. 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.

4.4.12. 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.

4.4.13. 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

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

Service Area	Base maintenance (£m) total for 3 years			
	Pre-efficiency	Post-efficiency		
Water infrastructure	64.835	60.978		
Water non-infrastructure	54.178	51.098		
Sewerage infrastructure	40.340	37.963		
Sewerage non-infrastructure	108.593	102.261		
Total	267.946	252.300		

4.4.15. 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

4.4.16. 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.

4.4.17. 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.

4.4.18. 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:
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.

Table 4.6 – PC10 Capital Maintenance Methodologies

4.4.19. 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:

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 17% lower than the median position in England and Wales.
	We have applied an efficiency adjustment of 17% 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.
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.

Table 4.7 – PC10 Capital Maintenance Efficiency Adjustment

Base Maintenance Adjustment for Alpha and Omega PPP

4.4.20. 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.

4.4.21. 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 noninfrastructure gross asset value for water and sewerage companies in England and Wales in 2007-08.

4.4.22. 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.

4.4.23. The outcome of our analysis is summarised in Table 4.8

Table 4.8 – Capital Maintenance	Analysis Outcome ((2007-08 Prices)
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BASE MAINTENANCE METHODOLOGY	Pre-Efficiency estimate (£m)	Post-Efficiency estimate (£m)	PPP Adjustment (£m)	Final Value (£m)
NI Water Business Plan	267.945	252.301	included	252.301
Econometric modelling	264.481	232.068	-17.629	214.439
Unit cost analysis	186.372	163.532	-17.629	145.903
Cost Base analysis	267.945	243.581	included	243.581

4.4.24. 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

4.4.25. 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 4.9.

SERVICE	NI Water Business Plan (£m)	Econometric Analysis (£m)		
Water infrastructure	60.978	37.280		
Water non-infrastructure	51.098	57.969		
Sewerage infrastructure	37.963	29.272		
Sewerage non-infrastructure	102.261	89.917		
Total 252.300 214.439				
 All costs are in £m post efficiency at 2007-08 prices Costs presented post PPP adjustment and adjustment for water 				

Table 4.9 - Capital Maintenance by Service (Post Efficiency)

4.4.26. 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.

Item	Value £m	Commentary
Water resources	3.884	Maintenance of impounding reservoirs based on panel engineers recommendations.
Water trunk mains	0.982	Proportional allocation from the trunk main schemes.
Water mains rehabilitation	37.265	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	2.310	Allocation of leakage budget.
Operational capital (water)	3.041	General operational capital budget for small scale works and reactive maintenance based on historic run rates of expenditure.
Total	47.482	

Table 4.10 – Infrastructure Investment (Post Efficiency) from Utility Regulator's Bottom Up Analysis (2007-08 Prices).

4.4.27. 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 £10m 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

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

4.4.29. 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 £10m to ensure that the specific activities which will form PC10 outputs are adequately funded.

4.4.30. Our determination is based on total capital maintenance expenditure of £224.239m over PC10.

4.5. Our Approach to Renewable Energy

4.5.1. 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.

4.5.2. 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.

4.5.3. 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.

4.5.4. 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.

4.5.5. 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.

4.5.6. 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.

4.5.7. 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.

4.5.8. 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.

4.5.9. 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.

4.5.10. In view of our support, in principle, for the company's proposal, the draft determination includes the investment proposed by NI Water in its submission. For the final determination we expect the company to provide a robust business case for the investment and to demonstrate that it has complied or will comply with the provisions 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 document 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 0.83 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)

- 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. We remain open to company representations up to final determination with respect to any special factors claim
- 5. Our continuing efficiency or frontier shift assumption is 0.4% pa
- 6. We expect 16.04% capital enhancement efficiency savings in the first year of PC10 (2010/11), rising to a cumulative 16.1% 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

						J
Standard Cost Submitted (Grassland Mains 100mm)	Chosen enchmark	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%

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.³ The percentage of investment attributable to each standard cost will be determined by three factors:

³ This process is detailed in the Ofwat capital unit cost Feedback Report, May2003.

- 1. Proportion of stock
- 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. At present we are minded to assume an even split in terms of the proportion of stock e.g. 25% = 100mm, 25% = 200mm, 25% = 300mm, 25% = 400mm. 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 Regulator is prepared to consider any NI Water proposal in order to populate infrastructure tables C2.2 and C2.6 with forecast expenditure weights, ideally split across both the vertical and horizontal, but at least by the vertical (which is predominantly split by pipe diameter).

5.3.8. If NI Water wish the Utility Regulator to consider applying an alternative weighting other than equal weights by sub-service category, we would invite the company to articulate its preferred method supported by a reasonable explanation and company data (GIS based or otherwise) in its representations to this draft determination.

5.3.9. Upon receipt of NI Water's application, we shall consider whether to use the company preferred weighting method at final determination.

Step 3 – Generating Efficiency Targets

5.3.10. 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

	Α	В	С
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%

5.3.11. 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 at the current time (although this is without prejudice to any decisions at final determination stage).

- 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 variations⁴.

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.
- Ofwat's PR09 approach this involves accepting the estimates of the BCIS (Building Cost Information Service) regional factor for N 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 Ofwat⁵.
- 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 At PR04 the approach to the RPA was asymmetric, in favour of companies with higher than national average costs as measured under the BCIS.

⁵ The full list of national and regional price split percentages are included in the Cost Base Feedback Report: August 2008

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 average⁶. Although there is general recognition that 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 (0.83), the adjustment used at NIAMP2 (0.85) and the figure recommended by NI Water in its PC10 Business Plan (0.934)

5.4.6. Whilst our approach for the final determination has yet to be confirmed we are minded to adopt an adjustment factor of 0.83 for the draft determination on the basis of specialist advice on NI Water's regional construction cost relativity, provided by Mott McDonald our engineering consultant.

Choice of Benchmark

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

5.4.8. 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.

5.4.9. 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.

⁶ The majority of BCIS points are within 0.95 to 1.10 range.

- 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 and 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.

5.4.10. At this draft 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.

5.4.11. 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 peers⁷.

Rate and Length of Catch-Up

5.4.12. 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.

5.4.13. 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.

5.4.14. 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.

5.4.15. 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.

5.4.16. 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.

Asymmetric / Symmetric Adjustment

5.4.17. 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.

⁷ 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'.

Special Factors

5.4.18. In its draft Cost Base submission, NI Water made no application for any special factor treatment of standard costs. The Utility Regulator remains open to any company approach to us on this issue.

Continuing Efficiency

5.4.19. 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.

5.4.20. 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 determination we have revised our expectation in line with Ofwat's own consideration such that we shall assume 0.4% p.a. frontier shift.

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

Cost Base Issue	Current Approach
Regional Price Adjustment	0.83
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	No – but may consider any additional information between draft and final
Continuing Efficiency	0.4% pa

Table 5.3 - Approach to Capital Enhancement Efficiencies

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	19.0%		
Water - Non-Infrastructure	14.0%		
Sewerage – Infrastructure	15.5%		
Sewerage - Non-Infrastructure	13.9%		
Weighted Average	15.7%		
Efficiency gap based on Upper Quartile benchmark, Ofwat, RPA = 0.83 and 75% catch-up			

5.5.2. The total scope for catch-up is assessed to be 20.9%. This is reduced to 15.7% 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	15.7	0	0
Frontier shift	0.4	0.4	0.4
Overall compounded improvement profile	16.04%	16.37%	16.71%

5.5.3. These figures represent the overall efficiency challenge applied to the capital enhancement programme by the Utility Regulator at draft 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 draft determination. This is the cost of maintaining services at existing levels
- 2. Step 2 adjust for additions to baseline opex. We detail NI Water's claimed additions to baseline opex and our decisions
- Step 3 determine VER/VS and BIP additions to opex. We outline our treatment of NI Water's other claimed additions to opex including VER/VS and BIP
- 4. 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 on the Water Distribution Model, as well as our negative Regional Wage Scope Adjustment special factors
- 5. 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
- 6. Step 6 treatment of PPPs. We detail our approach to NI Water's claims for pass-through of PPP costs, the regulatory principles we apply prior to allowing any pass through, 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
- 8. Step 8 our conclusions. We present our conclusions and reflect on both the scale of challenge for NI Water and their deliverability

6.1.3. In summary the main conclusions we reach under this chapter include the following⁸:

- 1. Baseline opex is £171m net of atypicals
- 2. NI Water are by extension of efficiency bandings a band J company with an efficiency challenge of almost 50%
- 3. We allow special factor and atypical expenditure of £17m compared to £41m claimed by NI Water
- 4. We allow £39m additions to baseline operating expenditure across PC10, equivalent to just over a third NI Water's claim for £100m
- 5. BIP costs of £12m across PC10 are disallowed pending further information from NI Water in response to our key regulatory tests
- 6. VER/VS costs of £18m across PC10 are allowed
- 7. A new continuing efficiency is applied to the PPPs of 0.125% pa
- 8. Total efficiency challenge of 6.91% per annum applied to operating expenditure
- 9. NI Water to save £21m additional cumulative efficiencies by end of PC10
- 10. Annualised delivery of efficiencies of 6.1% per annum(prior year opex excluding PPP capital charges) compared to 3.4% per annumPC10 Business Plan
- 11. NI Water can expect to move up the efficiency rankings by close of PC10 if they meet 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.

6.2.2. The baseline level of operating costs is the expenditure incurred in the base year i.e. 2007-08 for this draft 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 baseline year. The baseline needs to reflect the actual underlying level of operating

⁸ Unless otherwise stated our operating expenditure analyses are 2007/08 prices.

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 draft business plans.

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 important, 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 capitalised⁹.

6.2.6. We have decided to use 2007/08 as the base year for this draft 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 the most up-to-date comparable operating costs available.

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. It is possible, however, that there will be a difference between the level of operating expenditure that we use for monitoring purposes (for the remainder of the 2007-10 SBP period) and the baseline operating expenditure 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).

⁹We 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 costs associated with voluntary early retirement/voluntary severance (VER/VS). 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 £4.4m for VER related costs and £8.115m for business improvement.

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.

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
Atypicals	VER/VS	£4.564m
	Business Improvement Plan	8.115m
Base operating expenditure		£171.069m

Table 6.1 - Calculation of Base Operating Expenditure 2007-08

6.2.12. This adjusted total operating expenditure forms the baseline for this draft 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 draft 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 Table 6.2 below we set out the derivation of NI Water's total opex figure from their baseline estimate. This sets out the following principal steps in deriving their total opex net of PPP as included within the PC10 Business Plan:

- baseline opex net of atypicals is equal to £171m (average, PC10);
- opex gross of atypicals is equal to £178m (average PC10);
- opex including additions to baseline operating expenditure is £216m (average PC10), i.e. 26% higher than base opex expenditure;
- NI Water identify reductions to opex of around £15m per annum, primarily in relation to activities transferred to PPP operators¹⁰; and,
- Operating expenditure net of efficiencies is estimated at £184m in 2009-10 or £166mper annum on average over PC10.

6.3.2. We deal with our treatment of atypicals in the following section. The striking issue with regard to NI Water's opex claim is the level of 'special opex adjustments' relative to the base year opex level (see Table 6.2 below).

¹⁰ The overall effect of the new PPPs upon operating expenditure has been to raise baseline opex by £22.8m per annum on average across the PC10 period.

Key Regulatory Tests for Additional Opex

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

(2007/08 prices)	2009/10	2010/11	2011/12	2012/13	Average
A. Baseline					
Baseline Opex (net of atypicals)	171,069	171,069	171,069	171,069	171,069
B. Atypicals/ PPP costs					
Less net PPP costs	(2,872)	(2,872)	(2,872)	(2,872)	(2,872)
Atypical – VER and VS	7,524	6,196	6,565	4,830	5,864
Atypical – Business Improvement	8,000	5,165	4,244	3,024	4,144
Sub-total - Opex + Atypicals (=A+B)	183,721	179,558	179,006	176,051	178,205
C. Additions					
Opex from capex	Nil	1,000	2,000	4,000	2,333
Unregulated costs	2,000	2,000	2,000	2,000	2,000
Sub-total (=A+B+C)	185,721	182,558	183,006	182,051	182,538
D. Special Opex Adjustments (exc PPPs)					
Power	16,874	13,467	7,023	7,013	9,168
Environmental compliance (70%) and Regulation (30%)	5,980	8,262	8,992	8,954	8,736
Information and Communications Technology	1,371	4,186	4,186	4,186	4,186
New Organisational Functions	3,591	5,889	4,426	3,869	4,728
New Functions	3,940	3,509	3,509	3,509	3,509
Chemicals	2,275	2,473	2,473	2,473	2,473
Rates	388	440	521	379	447
Special Opex Adjustments (exc PPPs)	34,419	38,226	31,130	30,383	33,246
Sub-total (=sum(A:D))	220,140	220,784	214,136	212,434	215,785
increase (as multiple of baseline opex)	1.29	1.29	1.25	1.24	1.26
E. Reductions (exc. efficiency)					
PPP Reductions	-10,292	-10,292	-10,292	-10,292	-10,292
Crystal Alliance	-2,750	-2,750	-2,750	-2,750	-2,750
Capitalisation Policy	Nil	-1,691	-1,691	-1,691	-1,691
Total reductions	-13,042	-14,733	-14,733	-14,733	-14,733
F. Total					
Total pre-efficiency opex (=sum(A:E)	207,098	206,051	199,403	197,701	201,052
Efficiency saving (cumulative)	-22.873	-28,618	-34,865	-41,162	-34,882
Total post-efficiency	184,225	177,433	164,538	156,539	166,170

Table 6.2 - NI Water's Baseline Opex (net of PPP)

Business as Usual Costs

6.3.4. Where we have determined NI Water's claim for additional operating expenditure as Business as Usual 'BAU', NI Water fails to meet the first of our regulatory tests. Many of these opex costs are presented as 'new' when they are no more than updated versions of what has gone before; many are new replacement for old such as, for example, software licences with more up to date versions.

6.3.5. 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.

6.3.6. Our considered view is that BAU opex represents replication of funding which is already funded within NI Water's baseline and is therefore not in the best interests of consumers (taxpayers). 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

6.3.7. We have allowed some £39m across the PC10 period, or just over a third of NI Water's £100m claim for additions to baseline operation expenditure (see Table 6.3 below).

Power Costs

6.3.8. 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 has included within its own analysis is about right. We had concerns over NI Water's forecast increase in power consumption and subsequent to our challenging the company through a PC10 Business Plan query we are broadly content to allow much of their forecast additional cost increases.

6.3.9. We verified the company's calculations around power, both quantity and price assumptions and derived our own estimate and forecast of costs, including a 2% per annum energy efficiency assumption which we applied to year-to-year or incremental increases in consumption, net of any opex from capex.

2009/10 Opex

6.3.10. 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 since NI Water's estimate of baseline opex accords with its statutory accounts, this is not clear for 2009/10. We estimate that a further reduction in additional

baseline opex of the order of \pounds 15m is required in 2009/10 bringing baseline opex down to \pounds 213m compared to NI Water's estimate of \pounds 228m.

6.3.11. This is important, since accepting a NI Water claim for opex spend of £228m 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 6.3 - NI Water's Claimed and Allowed Additional Ope

Additional opex claimed by NI Water (nominal prices unless otherwise stated)	PC10- Total (£000)	Criteria Met?	Comment	Allowed opex PC10 - Total
1. Power (2007/08 prices)				(2000)
Energy prices and volumes	27,503	Partially	Shorter regulatory period allows greater opportunity for NI Water to hedge future price changes; supports allowing full claim for additional costs subject to cost risk remaining with NI Water. However, we do not support all of NI Water's claimed usage increase and absence of any energy efficiency assumption for PC10. We have reduced usage by 2.1% from that claimed at close of PC10 (including a 2% per annum energy efficiency reduction to the incremental change in usage)	18,569
Sub-total (2007-08 prices)	27,503			18,569
2. 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	£10.2m for increased fuel costs – possibly meets exogenous criterion but no regulatory precedent for inclusion; stronger and better incentives from company keeping cost risks	0
Electrical Inspection Testing	900	Y	New/exogenous cost required by the Institute of Electrical Engineers	900
Moleseye Charge	3,500	Y	New/exogenous re-instatement charges from DRD Roads Service	3,500
Regulator/Reporter costs	3,600	Y	A new obligation. WICS allowed	3,600

				Reporter/Regulation charges at SR06	
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	3,212	Ν	BAU	0
	Sub-total	26,572			11,360
	Sub-total (2007-08 prices)	26,208			10,527
3.	Information and Communications Technology				
Stra	tegic expenditure / ICT and other systems	12,696	N	BAU	0
	Sub-total	12,696			0
	Sub-total (2007-08 prices)	12,558			0
4.	Corporate				
	Governance	849	N	BAU	0
	Financial	2,152	Ν	BAU	0
	Accommodation	3,773	Ν	New HQ accommodation a management choice based upon efficiencies and business needs v additional cost; NI Water already funded for accommodation	0
	Legal	453	N	BAU	0
	Bad debt	7,108		2% rate of bad debt assumed rather than 2.5% used in PC10 Business Plan	5,686
	Sub-total	14,335			5,686
	Sub-total (2007-08 prices)	14,184			5,270
5.	New Organisational				
	Functions	0.070	N 1	DALL	
	Asset management	2,970	N	BAU	-
	Commercial	2,922	N	BAU	-
	Finance and Regulation	4,338	N	BAU	-
	Customer Services Team	414	N	BAU	-
	Sub-total	10,644			0
	Sub-total	10,527			0
6.	Chemicals				

NIEA / Environmental	2,280	Y	New/exogenous costs	2,280
Price increases	3,420	Ν	Possibly meets exogenous criteria, although markets are now calmer than 2008/09 and Euro:£ moving back in favour of company. No regulatory precedent to support inclusion	-
Opex from capex	1,800	Y	New chemicals resulting from new capex	1,800
Sub-total	7,500			4,080
Sub-total (2007-08 prices)	7,419			3,783
7. Rates				
Rates (2007-08 prices)	1,340	Y	Query process discovered most of cost increases were additional to 2007/08 baseline	1,140
Sub-total (2007-08 prices)	1,340			1,140
Total (2007/08 prices)	99,739			39,289

Adjustments for Cost Allocation Practices

6.3.12. We have adjusted upwards NI Water's opex for leakage by £2.8m per annum for 2009/10 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
- Movement of leakage beyond ELL to meet supply deficit = capital enhancement expenditure

6.3.13. 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.

6.3.14. Furthermore, we have reduced opex by £1.2m for M&G salaries and wages which had already been capitalised and included within the company's capital submission.

6.3.15. We have uplifted operational spend by $\pounds 5m$ net for PC10 to allow for the correct allocation of costs in relation to leakage (+ $\pounds 8.5m$) and salaries and wages costs (- $\pounds 3.5m$).

Other adjustments

6.3.16. In the course of our examination of NI Water's PC10 Business Plan we also made one further material change. This reflected the 'disallowed baseline' cost of £2.87m per annum for Kinnegar wastewater treatment works, since we have treated all such PPP costs separately.

Treatment Prior to Final Determination

6.3.17. We are seeking further assurances and analyses from NI Water to substantiate their claimed additional baseline opex and reserve the right to either draw down from our draft determination 'allowed opex' totals as set out above, or decline altogether NI Water's claims under items two and six if we remain uncertain of its veracity prior to 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 the regulatory period 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 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 are not content to allow carry across of BIP into PC10 we recognise the requirement for NI Water to have available sufficient flexibility to deliver efficiencies from a VER/VS programme. It remains unclear whether NI Water's claim for carry over into PC10 was entirely due to unavoidable delay(s) outside management control. Whilst aware of some delay of up to a year in gaining the necessary approvals to proceed with their VER/VS and BIP projects, these were expected to have been completed by end of the SBP period. This would predicate perhaps a carry across into 2010/11 only. As presented within the PC10 Business Plan, atypicals appear to both end in 2012/13 and carry across into PC13.

6.4.5. In addition, expenditure by end of the SBP transition period for BIP appears almost the same as that approved by Minister and since BIP programmes were to have finished by close of SBP, NI Water's claim for additional BIP lacks any prima facie case.

6.4.6. Any VER/VS and BIP funded activity during PC10 will remain ring fenced for the duration; we would not expect to be asked to fund either programmes at PC13 onwards as NI Water should by then have sufficient internal revenues to pump-prime its own efficiency programmes.

6.4.7. The above is especially important with respect to our protecting customers (and taxpayers) from paying more than once for the same outputs. 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.

6.4.8. We recognise both VER and BIP are important means by which NI Water may deliver up additional efficiencies going forward. 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.

Transparency Incentive

6.4.9. On a point of regulatory principle and to incentivise NI Water towards greater transparency than it has to date, we are not content to allow BIP funding at draft determination until such time as NI Water provide for fuller explanation and substantiation of the need for such expenditure set against our key regulatory tests.

6.4.10. We would also hope NI Water will provide the necessary and appropriate information to advance their claim for VER/VS funding before final determination. Whilst we have allowed VER/VS funding in this determination we reserve the right to review and draw down on same in light of further and expected representations from NI Water. We reserve such right across the PC10 funding period so that if the company's delivery of headcount reduction and or spend on VER/VS is not as planned we shall consider instigating claw-back where the situation demands.

6.5. Step 4 – Determine Adjustment for Special Factors and Atypicals

Background

6.5.1. 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 them around the same time to inform them of our views in respect of their 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.

6.5.2. The following sections describe our adopted modelling assumptions at this determination *inter alia* (among other things) our response to various company representations, including their PC10 Business Plan and subsequent letter of response to our initial determination on their special factors and atypical expenditure claim.

Special Factors and Atypical Expenditure Claims¹¹

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

¹¹ Atypical expenditure claims along with special factors allows prior modelling adjustment of opex to ensure relative efficiencies and targets are calculated in as 'like-for-like' basis.

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 - Special Factors (2007/08 Prices)

Table 6.5 - 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

6.5.4. 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 our 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.

6.5.5. 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.

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

Regional Wage Scope Adjustment

6.5.7. NI Water's advancement of an argument around NI Water having 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.¹² 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.

6.5.8. For clarity, we are minded to acknowledge any further company representation on this issue at our final determination.

Water Distribution Model

6.5.9. 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.

6.5.10. 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 \pounds 7.22m.

6.5.11. Perhaps the adjustment is 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

¹² 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.

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 is more reasonable allowance at 4% above the England and Wales average. This therefore illustrates the logic behind the determination.

		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

Table 6.6 - NI Water's predicted costs (2007/08 Prices)

6.5.12. We welcome the company's offer to work collaboratively with NIAUR 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, there will result in a positive relationship with density. In other words, were we to replace the present specification with a density function this would be to NI Water's disadvantage given the company's network serves a largely rural province and therefore less dense network. 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 In(pipe length/resident population) is associated with a lower cost per person.'

6.5.13. We are happy to share our understanding of cost drivers for water distribution functional expenditure and to this end we include Professor Hughes' report at Annex E.

6.6. Step 5 – Triangulation of Efficiency Models

6.6.1. 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.

6.6.2. Also important, but less so than discounts, is whether to exclude 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 otherwise less than would 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

6.6.3. 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 alternative¹³ and the two options are presented below.

6.6.4. 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 2004.¹⁴
 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

¹³ Cubbin's alternative approach was commissioned by WaterUK at the time of PR04 but never subsequently adopted by Ofwat

¹⁴ Assessing Ofwat's Efficiency Econometrics, March 2004, Professor Cubbin, City University for WaterUK (industry organisation including NI Water as member)
reasons with confidence. Hence the applications of 58% and 50% discounts depending on the model¹⁵.

6.6.5. 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.

6.6.6. 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. 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 Water¹⁶.

6.6.7. 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)

6.6.8. 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

6.6.9. 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.

¹⁵ 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.
¹⁶ 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.

6.6.10. 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.¹⁷

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

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%	27.1%
Percentage above benchmark	84.0%	95.0%	35.3%	37.0%
Equivalent Ofwat efficiency banding	E	E	E	E
Equivalent Ofwat efficiency banding	I	J	E	E

Table 6.7 - NI Water's efficiency banding¹⁸

6.6.12. 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.

 ¹⁷ For the Water Resource & Treatment Econometric Model (only one part of the water service calculation): NI Water Actual Cost = £24.6m
 Predicted Cost (Based on England and Wales average performance) = £12.9m
 Benchmark Cost = £10.8m

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 = (£24.6m / £12.9m)x100 = 191 Average Company = (£12.9m / £12.9m)x100 = 100 Benchmark Company = (£10.8m / £12.9m)x100 = 84

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 91 points or £11.7m to get to the averagely efficient company so that:

 \rightarrow (91/191)x100 = 47.6% cost reduction required

 \rightarrow (11.7/24.6)x100 = 47.6% cost reduction required

¹⁸ When describing any company's efficiency banding the comparison relative to benchmark costs (denominator) is used. This ensures bandings compliment Ofwat's so that NI Water's relative banding might be assessed in comparison to the wider industry.

6.6.13. Application of Cubbin discounts would, in effect require the Utility Regulator to ignore NI Water's position relative to the wider industry around band J (once Ofwat bandings are extended to include the much larger efficiency gap currently experienced by NI Water¹⁹) and label it a band E company²⁰.

Sensitivity to Catch-up Rate

6.6.14. Determining which catch-up rate to use makes a significant and material difference to any efficiency challenge and we 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

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

6.6.16. 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.

6.6.17. NI Water's PC10 Business Plan states their wish to improve from a lower band E position to an upper band D by the end of the PC10 period. This analysis is flawed in that the company have assessed efficiency bandings based on required percentage reductions in operational expenditure *relative* to their pre-efficiency position. The relativity has been incorrectly applied to a much larger denominator than applies when efficiency bandings are correctly estimated relative to the level of efficient expenditure any company ought to incur if it operated as efficiently as a benchmark company. The correct analysis places NI Water at band J by extension of the Ofwat bandings.

6.6.18. Adoption of a pure Ofwat approach (excluding business activity models) facilitates an improvement in published performance from band J to band F or E if high rather than low catch-up is applied. Put another way, NI Water may possibly by end of PC10 be able to place itself at the bottom left hand quadrant or band E of the efficiency banding matrix, a position it considers itself to already have achieved prior to PC10.

¹⁹ Band B (5% to 15% or benchmark) up to Ofwat's lowest Band E (Greater than 35%), then by extension we adopt Band E (35% to 45%) and Band F (45% to 55%), Band G (55% to 65%), Band H (65% to 75%), Band I (75% to 85%) and Band J (85% to 95%) etc..

²⁰ Whilst NI Water's efficiency challenge appears much less with a new efficiency banding of E this would require re-banding of Ofwat comparators. The entire E&W industry would now likely reside within band A (perhaps B) rather than across bands A to C as at PR09.

Annualised Targets

6.6.19. 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.

6.6.20. 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

6.6.21. 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 Regulator²¹, LECG highlighted the efficiency assumptions made by Ofwat, WICS and other regulators in previous price controls.

The Top-Down Average and Range of Efficiency Assumptions					
Company	Low	Average	Тор		
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%		

Table 6.8 - Top-Down Opex Efficiency Precedents

6.6.22. 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.

²¹ See Annex F, 'Top-down analysis of efficiency assumptions in the UK Regulated Sector', January 2008, LECG

6.6.23. 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

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



Figure 6.1 - Central Range Efficiency Target Using Triangulation

6.6.26. 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 his calculations whilst subject to their own judgemental error were, 'generally of the correct order of magnitude'.

6.6.27. 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.

6.6.28. 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

6.6.29. Regulatory experience over the SBP period is largely informed by the Utility Regulator's analysis underpinning advice to 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.

6.6.30. A surprising feature of NI Water's PC10 Business Plan submission is their evidence with respect to expected opex efficiencies for 2008/09 and 2009/10 which indicate differences in both years compared to Ministerial targets. These therefore conflict with their oft quoted contention of delivering to Ministerial targets in each and every year of the SBP transition period. On the basis of the DRD Ministerial efficiency target for 2009/10 we would expect a materially lower opex going into PC10.

IWRP Views on Efficiencies

6.6.31. 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.

6.6.32. 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'.

6.6.33. 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.

6.6.34. 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

6.6.35. The Utility Regulator introduced a Cubbin discount derived range of operational efficiency targets at the time of advising Minister over 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 use²². On this basis alone, the requirement to continue imposing Cubbin discounts is removed.

Conclusion

6.6.36. 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.

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

6.7. Step 6 - Treatment of PPPs

Background

6.7.1. 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 activities²³.

²² See also, Table 5 and 6, page 18 of our Operational Efficiencies: a methodological note (Annex A to our letter to NI Water dated 24th April 2009).

²³ 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

Licence Considerations and Statement of Regulatory Principles and Intent

6.7.2. 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.

6.7.3. 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

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

- 6.7.5. Three important points emerge from the above:-
 - 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 their PPPs legacy contracts are unlikely to offer up additional efficiencies for the foreseeable future; and,
 - NI Water offer up only limited evidence for the PPPs operational Value for Money by re-asserting Alpha and Omega were '15%pa and 6%pa respectively against the associated benchmark costs' as set out in the PPPs Final Business Cases.

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.

6.7.6. All 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 continuous improvement efficiencies will be optimised.

PC10 Business Plan Query

6.7.7. 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.

6.7.8. It is evident 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).

6.7.9. 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

6.7.10. 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.'

6.7.11. 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 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:

	Wa	iter	Sewe	erage
	PR04	PR09	PR04	PR09
Band A	4	3	4	3
Band B	4	5	6	5
Band C	2	2	0	2

De-convergence in Ofwat Bandings (PR04 to PR09)

PPP Continuing Efficiencies

6.7.12. Given the expectation that even very efficient companies, (those within band A), can be expected to deliver continuing efficiencies, the Utility Regulator is convinced there is merit in applying same to operational expenditure elements of the PPPs unitary charges for PC10. Accordingly we have included a 0.25%²⁴per annum efficiency challenge on the pure opex PPP costs faced by NI Water. Given NI Water 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.

6.7.13. 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.

6.8. Step 7 – Examine Company View

PC10 Business Plan

6.8.1. NI Water contends 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. This is based on an incorrect interpretation of the Ofwat bandings²⁵ and their classification of themselves at band E rather than band J as detailed in section 6.6.

²⁴ We have also included a 0.25% per annum assumption for frontier shift to our base opex efficiency targets.

²⁵ Ofwat's bandings are relative to benchmark expenditure rather than pre-efficiency opex, hence much higher percentage differences to the benchmark apply to NI Water.

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)

Table 6.9 - NI Water View on Opex Efficiencies

6.8.2. The above expenditure profile of cumulative opex efficiencies is predicated upon a view of total net opex after exclusion by NI Water 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 including 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.

6.8.3. 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.

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

Delivery of Opex Efficiencies

6.8.5. NI Water is at pains to stress 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 single HQ accommodation block from the present, disparate number of offices located around Belfast.

6.8.6. 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.

6.8.7. 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.

6.8.8. Of greater concern is NI Water's contention that they will achieve relatively low opex efficiencies in 2009/10 of 2.17% and 1.49% for water and sewerage respectively. After advising Minister last year on a range of options for a 2009/10 opex efficiency target, a 9% opex efficiency target was set NI Water by DRD. Alongside no further additional funding for power cost increases of £12m in the same year the overall effect was an opex efficiency of 12% in 2009/10.

6.9. Step 8 – Our Conclusions

Required Efficiencies

6.9.1. 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.

6.9.2. We accept we are likely to face 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.

6.9.3. 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) equal to 6.68% per annum and we allow NI Water to use such efficiencies as it has been able to deliver during the SBP, including new PPPs, to deliver against this target over the three year PC10 period.

6.9.4. 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.

6.9.5. Our approach re-confirms the DRD Minister's expectation for relatively high opex efficiencies in 2009/10 of 9% set against the unexpected inclusion of a much lower 1.81% opex efficiency target for 2009/10 within NI Water's PC10 Business Plan²⁶. 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 £13.6m per annum of NI Water's claims for additional operating expenditure a higher efficiency challenge ceteris paribus (all other things being equal) is an inevitable consequence for NI Water.

6.9.6. We are confident 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 ceteris paribus (all other things being equal) NI Water entering or being close to efficiency band E. Such expectation has to be tempered by the probable improvement in efficiency or frontier shift for the industry as a whole; NI

²⁶ Application of the Ministerial opex efficiency targets of 5% and 9.1% for 2008/09 and 2009/10 respectively supports an opex baseline (post-efficiency) in 2009/10 of £224m if additions to opex are assumed. If such additions are excluded from the analysis the expected baseline for 2009/10 would fall to £204m, somewhat below that which we anticipate.

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.

6.9.7. 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 aspirations towards becoming 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.

6.9.8. Including our continuing efficiency assumption we determine a 6.91%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

6.9.9. We do not consider NI Water will require opex of £228m in 2009/10 and after adjustment for reasonable additions to baseline we anticipate a revised opex total for 2009/10 of £212m (including efficiency). Indeed, total operating expenditure as reported within the company's latest AIR09 was £207.6m in 2008/09, appreciable lower than the company's £214m claimed opex within its PC10 Business Plan (once all claimed additional opex is included). By contrast and by extension of our regulatory stance on claimed additional opex for PC10, we estimate that for 2008/09 a reasonable opex figure closer to £205m is warranted.

6.9.10. In the first year of PC10 our efficiency challenge to NI Water equates to a reduction of £38m in opex to £190m, or 16.7% relative to on NI Water's view for 2009/10 baseline opex. Such a step change is necessary to counteract the appreciable 24% increase in opex claimed by the company relative to its 2007/08 baseline opex position and anticipated opex for 2009/10. On any comparison to the England and Wales industry the anticipated increase in baseline operating expenditure by NI Water is unfavourable.

Conclusions on Efficiencies

6.9.11. By the close of PC10 we determine NI Water will make an additional cumulative opex efficiency savings of £21m. Additionally, we have disallowed £12m cumulative BIP expenditure plus the greater part of NI Water's additional operating expenditures claim amounting to £60m cumulative across PC10; the jury remains out on whether we fund all or part of NI Water's £17.6m total PC10 VER/VS programme at Final Determination.

Reduction in NI Water's PC10 Business Plan and Utility Regulator Dr Determination £m (2007/08 prices)	aft	98
Disallowed base operating expenditure		
Power	-8.9	
Environmental compliance (70%) and Regulation (30%)	-15.7	
Information and communications technology	-12.6	
Corporate	-8.9	
New organisational functions	-10.5	
Chemicals	-3.6	
Rates	-0.2	
Total disallowed additions to opex baseline		-60.4
Disallowed BIP or One Programme		-12.4
Adjustment for review of cost allocation		5.0
Disallowed baseline		-8.6
Additional cumulative efficiencies		-21.0
Total reduction in PC10 operating expenditure		-97.5

Table 6.9 - Reconciliation of PC10 Business Plan to Draft Determination

6.9.12. 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 6.1% per annum across PC10 compared to NI Water's offered up 3.4% 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.

6.9.13. 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 S-shaped 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.

6.9.14. 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:

6.9.15. 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.

6.9.16. From the graph we note:

- While we share NI Water's view of declining operating costs from 2009/10 we have a different view of the starting point for opex for 2009/10. We have plotted the company's estimate for 2009/10 at £228m. However, if NI Water is to fully meet their Ministerial efficiency target for 2009/10 we perceive our post efficiency opex view from 2010/11 onwards is both reasonable and achievable.
- By the end of PC10 we return to levels of operating expenditure comparable to the early 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. There is nevertheless considerable scope for additional efficiency given that the current efficiency gap requires close to a 50% 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)

6.9.17. 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 £629m total operating expenditure to £531m total allowed opex across PC10. We have therefore reduced NI Water's claimed operating expenditure across the PC10 period by a total of £97.5m and the components of this saving are detailed in Table 6.11:

	2009-10	2010-11	2011-12	2012-13	PC10
NI Water PC10 Business Plan Opex (inc.PPP)	228	221	208	199	629
Disallowed additions to baseline opex	-13	-21	-20	-20	-60
Disallowed BIP	0	-5	-4	-3	-12
Disallowed baseline (Kinnegar)	-3	-3	-3	-3	-9
Allowed leakage and capitalised salaries	2	2	2	2	5
Total disallowed opex	-14	-27	-25	-24	-76
NI Water opex less disallowed opex	213	195	183	175	552
Additional efficiencies (above NI Water)	-1	-5	-7	-9	-21
Utility Regulator allowed opex	212	190	176	166	531
Note - figures may not add due to rounding					

Table 6.10 - Breakdown of Claimed Versus Allowed PC10 opex (2007-08 Prices)

6.9.18. The table illustrates that the majority of the difference is represented by expenditure which the Utility Regulator does not deem required. On a 'cumulative efficiencies' basis, we apply £21m 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.

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 notional Regulatory Capital Value (RCV) for NI Water. The cash return allowed on this notional 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 as well as adopting an notional RCV building block approach.

7.1.3. There are a number of approaches that could be used to set NI Water's initial notional 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 notional 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)²⁷ considered these approaches and concluded that 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.

²⁷ 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) derived 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.

7.1.7. At this time the Utility Regulator considers that the UBS Financial and Strategic Review of Water Service report reasonably demonstrated that using the comparator and discounted cash flow approach that the opening RCV figure for NI Water should be around £1 billion. Our approach to setting the opening indicative notional RCV i.e. (2009-10) for PC10 broadly confirms the analysis undertaken in the UBS Financial and Strategic Review of Water Service and is broadly consistent with its valuation. In the event the opening RCV for NI Water was agreed at approx £800m for 1st April 2007. The Utility Regulator expects to carry out further analysis on the RCV for PC13.

The Allowed Rate of Return

What is a Rate of Return?

7.1.8. 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 $\pounds 200$ in a bank at the start of the year and at the end of the year the bank statement says there is $\pounds 210$ in the account. We can calculate the rate of return as follows:

Rate of return	=	$\frac{210-200}{200}$	х	100%
	=	<u> 10 </u> 200	Х	100%
	=	0.05	x	100%
	=	5%		

7.1.9. 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?

7.1.10. 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 draft Ministerial 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 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.

7.1.11. Our objective therefore 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?

The Weighted Average Cost of Capital (WACC) is the overall cost of capital for 7.1.12. 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 bankers. 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 equity of a firm than from its debt.

7.1.13. 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 =
$$\left\{ r^{D}_{x} \left[\frac{D}{D+E} \right] \right\} + \left\{ r^{E}_{x} \left[\frac{E}{D+E} \right] \right\}$$

Where: r = return; D = debt E = equity

Taxation

7.1.14. 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.

7.1.15. 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 =
$$\left\{ r^{D}_{x} \left(\frac{D(1-t)}{D+E} \right) \right\} + \left\{ \left[r^{E}_{x} \frac{E}{D+E} \right] \right\}$$

Where: r = return; D = debt; E = equity; T = corporation tax rate

Inflation

7.1.16. 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

Real rate of return =
$$\left\{ (1 + \text{nominal rate of return}) / (1 + \text{inflation rate}) - 1 \right\}$$

7.1.17. 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

7.1.18. Our starting point for analysing and setting the allowed rate of return PC10 was to review the NI Water Strategic Business Plan (SBP), 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.

7.1.19. However, the IFM Assumption and Data Book stated that the return of 5.1% is 'uplifted annually to reach the 'fixed' revenue line.' This analysis highlights that the opening RCV may have been set too low and consequently an artificial (increasing) return on RCV was utilised in order to meet a higher 'fixed' revenue line. We have not accepted this construct for PC10.



Figure 7.1 – Implied Weighted Average Cost of Capital and its Components as per the SBP

7.1.20. 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 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.

7.1.21. The above analysis leads us to conclude that the opening RCV for NI Water for 1st April 2007 may have been set lower than that reasonably required to ensure the financial sustainability of NI Water. To ensure NI Water had an adequate level of revenue to finance its functions, the SBP therefore included a financing adjustment that resulted in 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 by setting the indicative notional RCV in such a way that NI Water would not breach its financial ratios for 2012-13, provided it meets the targets set by us in this draft 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 the range set by other regulators.

Conclusion on Setting NI Water's Initial Notional RCV for PC10

7.1.22. We have used the RCV building blocks approach as well as a cash based approach to determine price caps, which required us to set an indicative initial notional 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.

7.1.23. We consider 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. Our approach to setting the indicative initial RCV for PC10 i.e. at the end of 2009-10, broadly confirms the analysis undertaken in the UBS Financial and Strategic Review of Water Service and our setting the indicative initial notional RCV for NI Water at £1500m. Taking account of capital expenditure and therefore additions to the asset base and inflation over the SBP period this would equate to an indicative opening RCV for NI Water of approximately £1 billion for 1st April 2007. 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 and compared this to an Regulatory Capital Value building blocks approach. The RCV building blocks approach separates the cash cost of replacing assets (depreciation) from the financing and management costs. These financing costs and management costs 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 intend to set an initial indicative notional 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 his observation of the cost of capital in the market. NI Water's cost of debt is set by Government. The Government is also the only shareholder for NI Water. 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 debt or 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.

Financing of NI Water

7.2.5. As a Government Owned Company, NI Water has only two sources of funds: revenue from customers (or subsidy) and new debt. NI Water does not borrow directly from the capital markets, NI Water being a Government Owned Company is not allowed to borrow from the private sector apart from an overdraft facility to service the day-to-day needs of the company.

7.2.6. NI Water currently has 3 loan facilities from DRD and these are as follows:

- £1.28 billion fixed coupon unsecured capital loan notes 2027;
- £20m working capital facility; and,
- £55m revolving credit facility.

7.2.7. NI Water may generate surpluses and therefore may have retained earnings, which it could invest to achieve the outputs set by the NI Executive. However, NI Water's ability to accumulate such retained earning is impaired, as it is required to pay dividends its shareholder.

7.2.8. Scottish Water on the other hand (also a public sector organisation) can reinvest any surpluses generated for the benefit of current and future customers because it does not pay dividends.

7.2.9. 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.

7.2.10. We examine each in turn and summarise the advantages and disadvantages of each approach.

Ofwat's Assessment of the Allowed Cost of Capital

7.2.11. 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.

7.2.12. We are not 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 Book²⁸

7.2.13. 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':

7.2.14. 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'.

7.2.15. 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

7.2.16. 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 notional RCV in order to produce an allowed rate of return.

7.2.17. 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. Expected RPI inflation is 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.

7.2.18. The allowed rate of return on the equity portion of the RCV is 7.1%.

Conclusion on the Allowed Rate of Return for PC10

7.2.19. 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.

7.2.20. 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.

²⁸ 'The Green Book' Appraisal and Evaluation in Central Government, HMSO, 2003.

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 draft determination sets the maximum revenue that NI Water should require based on the priorities outlined in the draft 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 moved towards an indicative notional regulatory capital value building blocks approach to price caps in this draft determination. We have set price caps in 2012-13 such that NI Water will comply with all of the financial ratios monitored by Ofwat if it were to perform at the level assumed by this draft determination.

7.3.3. This chapter provides a brief summary of how we have calculated the revenue cap and ensured that we will be in a position to use the regulatory capital value method of price caps at the next price control i.e. PC13.

The Calculation of Revenue

The financial model calculates revenue using a building block approach as follows:



7.3.4. 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 for level of operating expenditure in each year.
- We identified the allowed for costs of Public Private Partnerships.
- We estimated asset disposals and the cash proceeds from disposals.
- We determined an appropriate rate of return.

7.3.5. 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.

7.3.6. We used the financial model to identify the cash return on the notional RCV required by NI Water in 2010-13. As the rate of return was fixed, this meant that in effect we were determining the indicative notional regulatory capital value that we required in 2010-13 in order to ensure that NI Water would comply with the targeted financial ratios if it were to perform at the level assumed by this draft determination.

7.3.7. This was an iterative process because different Regulatory Capital Values in 2012-13 resulted in different Regulatory Capital Values in earlier years. These different

Regulatory Capital Values affected the revenue required in each year. The level of revenue in turn affects the surplus generated, borrowing required and the cash flow generated in 2012-13.

7.3.8. The financial model helped us to resolve this circular calculation. The calculation provided us with a value for the initial indicative notional RCV for PC10. We checked this calculated value for the initial RCV with the UBS Financial and Strategic Review of Water Service analysis of comparators and discounted cash flow approach to establishing an indicative opening RCV for NI Water and found it to be broadly reasonable.

Monitoring Financial Performance

7.3.9. Our approach simplifies the monitoring of NI Water's financial performance. NI Water's financial performance will be in line with the assumptions in the determination of charges if it complies with each of the targeted financial ratios in 2012-13. We can monitor progress by reviewing NI Water's financial indicators during the regulatory control period 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 an indicative notional Regulatory Capital Value building blocks method of price caps in this draft 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 this draft determination, then it will comply with all of the cash-based ratios used by Ofwat to monitor the industry in England and Wales, though we have set the gearing target at 55%.

7.4.3. This will facilitate monitoring as it will be clear (through a comparison of the targeted financial ratios) whether or not NI Water has met the financial terms of the determination of charges. 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 the Revenue Cap

Introduction

7.5.1. In the previous section, we described how we set the revenue cap. This section now 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 for. This information allows us to calculate the required indicative notional regulatory capital value in 2012- 13 and therefore the initial indicative notional RCV 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 (Out-turn Prices) (£m)

Investment Category	2010-11	2011-12	2012-13
Infrastructure renewals expenditure	25.5	26.1	26.7
Other investment (including grants and contributions)	153.9	146.4	153.7
Total Investment	179.4	172.5	180.4

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.

Depreciation Category	2010-11	2011-12	2012-13
Current Cost depreciation	52	53.2	54.4
Infrastructure Renewals Charge	25.5	26.1	26.7
Total depreciation and infrastructure charges	77.5	79.3	81.1

Table 7.3 - Depreciation and Infrastructure Renewals Charges (Current CostBasis) (Out-turn Prices) (£m)

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 (Out-turn Prices) (£m)

	2010-11	2011-12	2012-13
Total allowed for operating costs	154.6	143.6	135.8
Note: includes atypical costs e.g. VER /VS			

Allowed Costs of Public Private Partnerships

7.5.8. Table 7.5 shows the allowed for PPP costs.

Table 7.5 - Allowed for PPP Costs (Out-turn Prices) (£m)

	2010-11	2011-12	2012-13
Allowed for PPP costs	45.3	46	47.1

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 (Out-turn 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 4.8% 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. 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 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 notional RCV required by NI Water in 2012-13. The rate of return was fixed so we were able to determine the notional RCV that we required in 2012-13. The constraint was that NI Water should comply in 2012-13 with all of the targeted cash-based financial ratios. We have used these ratios on the basis that the N.I. Executive will agree that NI Water should

be a financially sustainable company. In practice, of course, NI Water will only comply with these financial ratios if it were to perform at the level assumed in this draft determination. The financial model calculated the value of both the initial and 2012-13 notional RCV.

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 (Out-turn Prices) (£m)

	Nominal Prices	2010-11	2011-12	2012-13	
	Closing RCV (previous year)	1500	1631	1758	
plus	Inflation Adjustment	35	38	40	
plus	Adjustments	2	1	0	
equals	Opening RCV	1537	1670	1799	
plus	New Investment excluding PPP	154	146	154	
plus	Infrastructure Renewals Expenditure	26	26	27	
less	Grants and contributions	3	4	4	
less	Depreciation	49	50	51	
less	Infrastructure Renewals Charges	26	26	27	
less	Disposal of Assets	7	5	4	
equals	Closing RCV	1631	1758	1893	
	Year Average	1566	1695	1826	
Note: Figures may not add up 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%

2009-10	2010-11	2011-12	2012-13
n/a	154.6	143.6	135.8
n/a	45.3	46	47.1
n/a	52	53.2	54.4
n/a	25.5	26.1	26.7
n/a	74.9	81	87.3
n/a	0	0	0
n/a	352.3	349.9	351.3
364.3	346.1	350.9	357.1
-	- 18.2	+4.8	+6.2
364.3	338.3	335.3	333.5
	-26	-3	-1.8
	2009-10 n/a n/a n/a n/a n/a n/a 364.3 - 364.3	2009-102010-11n/a154.6n/a45.3n/a52n/a25.5n/a74.9n/a0n/a352.3364.3346.1364.3338.3-26	2009-102010-112011-12n/a154.6143.6n/a45.346n/a5253.2n/a25.526.1n/a74.981n/a00n/a352.3349.9364.3346.1350.9364.3338.3335.3364.3-26-3

Table 7.8 - Revenue Caps 2010-13 (Out-turn Prices) (£m)

1 Figures may not add up due to rounding.

2 Net present value neutral smoothing may result in slight difference in revenue presented.

Financial Performance

7.5.15. In Table 7.9 we set out the value of each targeted ratio for each year of this regulatory control period. NI Water should comply with each of these ratios for 2012-13, provided it meets the terms of this draft determination. We will monitor NI Water financial performance and sustainability in PC10 using these ratios.

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 1	Around 1.6 times	1.7	1.8	1.9
Funds from operations: debt	Greater than 13%	12.9%	13%	13.1%
Retained Cashflow: debt	Greater than 8%	6.9%	9.6%	10.1%
Gearing (adjusted for PPP asset / liability)	Less than 55%	50.5%	51.1%	51.2%

Table 7.9 - Financial Performance 2010-13

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 Minister's draft 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 DRD draft 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: £101.5m (out-turn prices);
- 2011-12: £92.3m (out-turn prices); and,
- 2012-13: £97.9m (out-turn prices).

Table 7.10 - Public Expenditure (£m) (Out-turn Prices)

		2010-11	2011-12	2012-13
2007-10 SBP carryover (£m)	£0m			
Available public expenditure at start of year (including carry-over) (£m)		119.4	113.8	122.6
Public expenditure used (£m)		125.5	81.2	74.4
Unused public expenditure at year end (£m)		(6.2)	32.6	48.2
7.5.18. We believe that any unused public expenditure in PC10 (approx £40m) should be held in restricted cash reserves to protect customers from the consequence of any cost shocks that could not have been avoided by prudent management action.

7.5.19. As described in Chapter 9, there is an interim determination process. This is only triggered when a certain threshold is breached and the costs incurred could not have been avoided by prudent management action.

7.5.20. This lending should only be made available to NI Water with the agreement of the Utility Regulator and the Department of Regional Development and only to cover the costs of events that could not have been avoided by prudent management action. Access to a sufficient level of restricted reserves in the event of a cost shock ensures that further public expenditure may not be required.

7.5.21. It is for the NI Executive to decide how it would deal with under-performance against the final determination. Our view remains that customers (and or government) should not be asked to pay twice for the same output.

Summary Income and Expenditure Account

7.5.22. The summary income and expenditure account is set out in Table 7.11.

Table 7.11 - Summary Income and Expenditure Accounts 2010-13 (CurrentCost basis, Out-turn Prices) (£m)

	2010-11	2011-12	2012-13
Turnover	346.1	350.9	357.1
Operating Costs	-154.6	-143.6	-135.8
PPP	-26.5	-26.9	-27.7
Infrastructure Renewals Charge	-25.5	-26.1	-26.7
Current Cost Depreciation (before application of broad equivalence)	-92.4	-99.5	-106.8
Amortisation of PPP	-3.7	-3.7	-3.8
Amortisation of Deferred Income	2.9	3	3.1
Current Cost Profit / Loss on disposal of fixed assets	-2.7	-1	-0.2
Operating surplus before working capital adjustments	43.5	53.0	59.2
Working Capital adjustments	1.8	1.1	1
Operating surplus before interest	45.3	54.1	60.2
Net interest payable	-50.3	-55.8	-60.0
Current Cost financing adjustment	22.1	24.2	26.2
Surplus before taxation	17	22.5	26.5
Deferred Taxation	-16	-17.3	-18.3
Dividends	-26	-27	-29
Current Cost Surplus (Loss) for financial year	-24.9	-21.7	-20.9
Note: Figures may not add due to rounding			

Summary Balance Sheet

7.5.23. The summary balance sheet is set out in Table 7.12.

Table 7.12 - Summary Balance Sheets 2010-13 (Current Cost Basis, Out-turn Prices) (£m)

	2010-11	2011-12	2012-13
Tangible assets	7413.4	7626.3	7844.5
PPP assets	105.7	104.4	102.9
Third Party Contributions	-101.1	-104.1	-107.7
Working Capital	-49.8	-45.1	-43.5
Cash (net of overdrafts)	-1	1.2	2
Infrastructure prepayment (accrual)	-16.9	-16.9	-16.9
Net operating assets	7350.4	7565.8	7781.4
Short term liabilities	-29.5	-30.9	-33.3
Investments	0.1	0.1	0.1
Government Loans	-773.8	-855.0	-929.4
PPP creditor	-97.6	-91.6	-85.3
Other creditors	-3.4	-3.4	-3.4
Total Provisions	-56.2	-71.4	-89.2
Net assets employed	6390	6513.6	6640.9
Income and expenditure account	-146	-167.7	-188.6
Current cost reserves	5864.3	6009.6	6157.8
Other reserves and share capital	671.7	671.7	671.7
Total Capital and Reserves	6390	6513.6	6640.9
Note: Figures may not add due to rounding			

Summary Cashflow Statements

7.5.24. The summary cashflow account is set out in table 7.13.

Table 7.13 - Summary Cashflow Statements 2010-13 (Current Cost Basis, Out-turn Prices) (£m)

	2010-11	2011-12	2012-13
Current Cost Operating Profit	45.3	54.1	60.2
Total Depreciation, amortisation and infrastructure charges	118.7	126.3	134.2
Change in working capital and working capital adjustment	-28.5	-5.8	-2.5
Other non cash profit and loss items	-2.1	-2	-0.5
Current cost profit / loss on sale of assets	2.7	1	0.2
Net cash flow from operations	136.1	173.6	191.5
Cash changes in non operating debtors / creditors	-10.3	1.4	2.4
Net cashflow from returns on investment and servicing of finance	-50.3	-55.8	-60.0
Net cash outflow from investing activities (including IRE)	-171.8	-165.3	-172.3
Retained earnings paid	-26	-27	-29
Net cash flow before financing	-122.3	-73.1	-67.3
Financing cash flow			
New Government Loans	125.5	81.2	74.4
PPP capital repayments	-5.8	-6	-6.2
Net cash inflow from financing	119.7	75.2	68.2
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

7.5.25. 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.

7.5.26. 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 draft 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 for NI Water.

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 depreciation²⁹. MEA valuation is most suited for industries that use long-lived 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 takes no account of changes in technology. It would be likely to overstate the appropriate level of depreciation.

²⁹ Ofwat RAG 1.03, January 2003

Ofwat's Approach to Determining a Depreciation Charge

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).

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 simple³⁰. 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 2002³¹, 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 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.

³⁰ 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).

³¹ Ofwat, 'The approach to depreciation for the periodic review 2004 – a consultation paper', (March 2002).

- 7.6.21. In this draft determination, therefore, our approach to calculating depreciation:
 - Uses Ofwat's five-step classification of asset life, ranging from very short to long;
 - 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 \pounds 6,689.4m for all assets and after deduction of depreciation of \pounds 74m.

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 Ministers' 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.

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.

Table 7.14 - Asset Life Categories

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 7.15 - Profile of Non-Infrastructure Capital Maintenance Investment2010-11 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%

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.			

Table 7.16 - Profile of Capital Enhancement Investment 2010-11 to 2012-13

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 ± 100 m is added in year one, then in year one the depreciation charge on that asset would be ± 10 m.

7.6.28. In years 2, 3, 4 and 5, the depreciation charge would be \pounds 20m. In year 6, the depreciation charge would be a further \pounds 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 of between 10% and 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

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

Table 7.17 - NI Water Claimed Depreciation Charge (2010-13) (Out-turn Prices) (£m)

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 as set out in table 7.18

Table 7.18 - Total Depreciation Charge 2010-13 (Out-turn Prices) (£m)

	2010-11	2011-12	2012-13
Allowed Current Cost Depreciation	52	53.2	54.4

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 regulated 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 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 finalized 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 caps 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

8.1.2. We are concerned 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.

8.1.3. In determining the weighted average charge increase (i.e. price caps) for each customer group for the PC10 period, we have employed the revenue allocations determined in NI Water's PC10 tariff model, having first removed water, sewerage and surface water volumes attributable to large users. Versions of this model were used by NI Water to determine charges for both 08-09 and 09-10. These models were submitted to the Utility Regulator and interrogated prior to our approval of tariffs for these periods. This source of data was used (rather than the NI Water Business Plan) because:-

- The volumes of water and wastewater attributable to each customer group as reported by NI Water in its Business Plan submission (tables B5-1 and B5-4) were markedly different from those employed by NI Water in setting tariffs in 09-10 and in its PC10 tariff model; and,
- The impact of any change in water/wastewater volumes and customer numbers on revenue allocations can be reviewed and assessed.

8.1.4. The company is required as part of the undertakings to align the data employed for tariff purposes and water balance purposes, which it has yet to do.

8.1.5. The company must reconcile these data and propose a single figure which is common to both the water balance and for tariff setting. We expect a reconciliation to be provided in NI Water's response to the draft determination.

8.1.6. We have accepted NI Water's application of supply pipe leakage and meter under-registration corrections to water volumes and have applied these in determining revenue allocations.

The Domestic Customer Base

8.1.7. 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

8.1.8. In proposing price caps, 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.

8.1.9. It should be noted that the financial correction factors as outlined in Condition B of NI Water's licence may correct for any variances in PC10 assumptions against out-turn data, such as:-

- Customer Numbers (Non-domestic);
- Chargeable Volumes; and,
- Trade Effluent Strengths.

8.1.10. 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.

8.1.11. 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

8.1.12. We have based the allocation of revenue between the customer groups on the recently submitted PC10 tariff model having first removed water, sewerage and surface water volumes attributable to large users. This is an updated version of the 09-10 tariff model and has been amended to reflect more recent data and assumptions.

8.1.13. 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).

8.1.14. However, for PC10 we have taken the decision to exclude the apportionment of leakage (MLE) from the allocation calculations for the following reasons:-

- The actual impact on allocation is small;
- 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.

8.1.15. We have allowed for the inclusion of customer supply pipe and meter underregistration 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

8.1.16. 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 PC10 Business Plan submission on domestic number equivalents that we have assumed for domestic water and domestic wastewater revenue purposes.

Year	Water		Was	tewater
	Number of Billed Domestic equivalents	Percentage change in Billed Domestic equivalents	Number of Billed Domestic equivalents	Percentage change in Billed Domestic equivalents
2007-08	639,090	-	560,590	-
2008-09	641,547	0.4%	573,597	2.3%
2009-10	657,265	2.5%	571,451	-0.4%
2010-11	647,424	-1.5%	564,913	-1.1%
2011-12	653,424	0.9%	570,149	0.9%
2012-13	660,424	1.1%	576,257	1.1%

Table 8.1 - NI Water PC10 Business Plan Submission – Projection of Domestic (Equivalents)

8.1.17. NI Water's forecast for new domestic connections for the PC10 period was based on forecasts of new builds for NI as provided by the Construction Employers Federation (CEF). NI Water did not provide this report with its PC10 business plan submission.

8.1.18. There are very minor differences between the PC10 tariff model customer numbers and those submitted in the Business Plan (<1%). We consider these differences to be minimal and not to have a material impact on revenue allocations.

8.1.19. We note that the growth in customer numbers of domestic households as contained within NI Water's business plan does not correspond to the CEF projections for 2010-11 as NI Water claimed. The CEF forecast an increase in new builds of 5,000 for 2010-11, whereas the relevant submission from NI Water shows a sharp decline in domestic connections as can be evidenced in Table 8.1.

8.1.20. However 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.).

8.1.21. 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 0.7%. 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 0.7%. 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.

8.1.22. 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.

8.1.23. 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

8.1.24. 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 taken by these customers.

8.1.25. 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.

8.1.26. 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 caps.

8.1.27. We note that NI Water plans to update its non-domestic growth forecasts as part of its response to the Utility Regulator's draft determination. We require that NI Water's updated non-domestic growth forecasts should refer to any secondary data they draw on in their report so it possible for the Utility Regulator to confirm NI Water's conclusions. NI Water must explain (where applicable) why its' forecasts and assumptions deviate from any secondary sources they refer to. NI Water's non-domestic customer base forecasts were used in setting price caps. These projections are summarised in Table 8.2. Our conclusions on these forecasts are shown below.

Water

- 8.1.28. NI Water's forecast of number of connected premises consists of assumptions on:
 - New connections of non-domestic properties with installed meters at approx 2.25% increase between 2009 and 2012, and;
 - Installation of meters at properties previously without a meter at approx 5% increase between 2009-10 and 2012-13.

8.1.29. 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.

8.1.30. We consider that NI Water's assumptions on volumes are broadly reasonable given the current economic climate. However, we note the different volumes for non-domestic unmeasured water customers and therefore implied consumption figures recorded in NI Water's supply demand forecasts compared to volumes used for deriving tariffs and this remains a significant concern for us.

Foul Sewerage

8.1.31. NI Water's forecast of a 25% increase in the number of connected premises between 2008-09 and 2012-13 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.

8.1.32. 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.

8.1.33. We consider that NI Water's assumptions on volumes are broadly reasonable given the current economic climate. We however note the different volumes and therefore implied consumption figures recorded in NI Water's supply / demand forecasts compared to volumes used for deriving tariffs.

Road Drainage

8.1.34. We consider that NI Water's assumptions on Roads Drainage, annual run off volume of 64.2 million m³ 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.

Trade Effluent

8.1.35. Whilst NI Water has not provided any supporting evidence to support their forecasts on Trade Effluent volume. NI Water's high level assumptions appear reasonable set against forecasts in Great Britain. NI Water forecast a projected reduction in volume of approx 3% over the PC10 period or approx 1% per annum. NI Water's high level assumptions appear reasonable set against forecast in Great Britain where many companies have experienced reductions in trade effluent volumes over the last 10 years.

Year	2009-10	2010-11	2011-12	2012-13	
Water					
Number of connected premises (metered)	69,239	69,440	70,938	73,465	
Volume (MI)	38,746	38,365	38,302	39,137	
Number of connected premises (unmeasured)	20,418	20,228	19,222	18,217	
Foul sewerage					
Number of connected premises (metered)	21,795	22,066	23,218	24,683	
Volume (MI)	19,313	18,182	17,918	18,351	
Number of connected premises (unmeasured)	17,912	17,557	16,557	15,557	
Road Drainage					
Road Drainage Volume (million cubic metres per annum)	64.20	64.20	64.20	64.20	
Trade Effluent					
Number of connected premises	667	667	687	697	
Volume (MI)	6,533,481	6,369,400	6,362,010	6,329,439	
Note: Material Non-domestic premises volumes include domestic allowance volumes but evoludes					

Table 8.2 - Projections of Non-Domestic Customer Base

Note: Metered Non-domestic premises volumes include domestic allowance volumes but excludes volumes associated with large users. Although part of the trade effluent volume relates to large users, we have included the entire Trade Effluent volume to ensure equitable tariff caps for all Trade Effluent customers.

Conclusions on Key Customer Base Assumptions

8.1.36. 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.

8.1.37. 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 caps. We expect NI Water to improve its customer and volume data and ensure that it is internally consistent in relation to data employed for volume forecasts used for tariffs and for supply / demand forecasts. We remain concerned over the markedly different volumes of water/wastewater reported in its PC10 tariff model, the Business Plan part B5 tables and the AIR09. We expect NI Water to reconcile these data as part of its response to the draft determination.

8.2. Level of Subsidy in PC10

Introduction

8.2.1. 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. We have not made any assumptions on any subsidy which may be applicable for septic tank emptying over the PC10 period.

The Structure of Charges in Northern Ireland

8.2.2. Charges (where applicable) to individual customers will vary according to the type of customer and the service they are receiving.

- 8.2.3. In particular, 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)

8.2.4. 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)

8.2.5. The unmeasured domestic (household) notional charge is also based on the Capital Value of each household property. This notional charge includes surface water from drainage 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)

8.2.6. Currently no domestic customers pay for water services charges based on usage.

Domestic Measured Wastewater (Notional)

8.2.7. Currently no domestic customers pay for wastewater services charges based on usage.

Non-Domestic Unmeasured Water

8.2.8. 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

8.2.9. 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

8.2.10. 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

8.2.11. 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.

8.2.12. There are no discounts for customers who discharge large volumes of wastewater.

8.2.13. The cost of surface water drainage for non-domestic measured wastewater is included in the tariff for measured wastewater.

Trade Effluent

8.2.14. 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.

8.2.15. Trade effluent customers pay a variable rate based on the actual volume and strength of the effluent discharged.

8.2.16. The Mogden formula is: $C = R + V + (O_t/O_s)B + (S_t/S_s)S$

Where:

С	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.
Os	is the chemical oxygen demand in mg/l of the settled sewage standard strength.
В	is the unit cost in pence per cubic metre of the biological oxidation treatment of settled sewage.
St	is the total suspended solids in mg/l of the trade effluent at pH 7.
Ss	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

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 channelled 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. The cost of providing these facilities is, in Great Britain, paid for by sewerage customers. This is because 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. 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 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.

Table 8.3 - Indicative Roads Drainage Re-charge Over PC10 (Out-turn Prices)

	2010-11	2011-12	2012-13
Forecast Roads Drainage Re-Charge (£m)	£19.22	£18.78	£18.34

Domestic Allowance for non-domestic customers (measured)

8.2.17. We have assumed for the purposes of PC10 draft determination that the domestic allowance for non-domestic (water and sewerage measured) 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

8.2.18. 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)

8.2.19. 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.

Revenue Group	Forecast Revenue over PC10 (£m)	Subsidy allocation
Domestic unmeasured water	335	Subsidy and contribution through rates
Domestic unmeasured sewerage	368	Subsidy and contribution through rates
Non-domestic measured water	129	domestic allowance subsidy
Non-domestic measured sewerage	86	domestic allowance subsidy
Non-domestic unmeasured water	13	50% subsidy
Non- domestic unmeasured sewerage	13	50% subsidy
Trade effluent (includes Roads Drainage costs of approximately £56.3m)	73	0% subsidy
Non tariff basket revenue (includes large users)	37	0% subsidy
Total Required Revenue	1054	

Table 8.4 - Revenue Groups for PC10 with Subsidy Allocation (Out-turn) (£m)

8.2.20. On average approximately 72% of the Revenue requirement over PC10, i.e. £757m is forecast to be paid through subsidy. The NI Water business plan forecast a subsidy level of £852m over the PC10 period. This draft determination therefore provides a saving of £95m on the level of subsidy over the PC10 period.

8.2.21. 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 (Out-turn) (£m)

	2010-11	2011-12	2012-13	Overall Total
Subsidy Requirement	245	252	260	757
Roads Drainage Re-charge	19	19	18	56
Revenue from charges	82	80	79	241
Total Revenue	346	351	357	1054
Note: Figures may not add due to rounding.				

Conclusions on Level of Subsidy in PC10

8.2.22. 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 draft determination provides a saving of £95m on the level of subsidy over the PC10 period.

8.3. Charge Limits for PC10

Introduction

8.3.1. 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 caps are allowed to rise or fall on an annual basis during the Price Control period.

8.3.2. We utilise price limits within the various tariff baskets to ensure that there is no cross subsidy between customer groups. In setting the price limits, we have been mindful of the Ministerial Social and Environmental Guidance, and sought to balance affordability with compliance and customer priorities.

'K' Factors for PC10

8.3.3. 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).

8.3.4. 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.

8.3.5. 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.

8.3.6. A price cap 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 caps will allow non-domestic customers to understand the likely impact of any tariff changes on their bill for the relevant period.

8.3.7. The K factor is the percentage increase above inflation by which tariff basket price caps are allowed to rise on an annual basis during the Price Control period. NI Water is allowed to increase the weighted average charge for each of its tariff baskets by up to the K factor plus inflation. For the purposes of this draft determination we have assumed an inflation figure of 2.3% for each year of PC10. The draft 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	-11.3%	-1.3%	-2.6%
Unmeasured Sewerage Service	-2.2%	1.5%	1.6%
Measured Water supply	-6.0%	-6.0%	-6.0%
Measured Sewerage Service	-3.6%	-3.6%	-3.6%
Trade Effluent	-4.6%	-4.6%	-4.6%

PC10 Weighted Average Charge Increase (WACI)

8.3.8. 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.

WACI (Weighted Average Charge Increase) = K factor plus inflation (RPI)

8.3.9. For the purpose of this draft determination we have assumed an inflation figure of 2.3% for each year of PC10. This is the inflation figure that NI Water should use in its draft scheme of charges for 2010-11.

8.3.10. Taking account of this inflation figure the weighted average charge increase for each year of PC10 is shown in Table 8.7.

	2010-11	2011-12	2012-13
Weighted Average Charge Increase (WACI)	-4%	+ 1%	+0.5%

Table 8.7 - PC10 Weighted Average Charge Increase (WACI)

Condition B: Revenue Correction Factor

8.3.11. During the period 2007 to 2010, NI Water's revenue cap was set by DRD. The licence under which NI Water operates allows for a number of corrections to this revenue to be carried forward into 2010 and 2011. These correction factors, which translate into amounts of money may be due to, for example, changes in the number of customers during the period, differences between the volumes of water sold and that predicted, the impact of actual RPI compared with the forecast RPI and differences in what the company was allowed to raise from customers and what it actually raised. The draft correction figure may be taken into consideration in the setting of price caps for PC10 within the final determination.

8.3.12. However, we anticipate that DRD will fund any positive correction factor which results from changes to the numbers of domestic customers and/or the capital value of property on which domestic charges are determined. This is because there was no domestic charging in the 2007-10 period and customers in 2010 and beyond should not be expected to pay for services received by customers during 2007-10 where domestic charges were paid for on their behalf by the NI Executive irrespective of whether domestic charges are levied or not during the PC10 period (2010 - 2013).

Condition C: Infrastructure Charges

8.3.13. 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.

8.3 Conclusion

8.3.14. 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 both ensure stability and reduced tariffs 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 threshold³² 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. We have assumed that the current revolving credit facility of £55m will remain in place for the PC10 period and could be accessed by NI Water in the event that both the Utility Regulator and the Department for Regional Development agree that the costs incurred by NI Water could not have been avoided by prudent management action and that additional lending was an appropriate response. In time if NI Water were to be facilitated to build up 'restricted' cash reserves of approximately £40m, the consequence of any cost shocks may not need to be met from public expenditure and / or customers.

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 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.

³² Effect must exceed 10% of allowed revenue when calculated as the NPV over 15 years for operating costs and revenue.

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.

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 (2007-08) that there was a surplus of £5.7m at the last actuarial valuation of the pension scheme. 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's view is 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 has 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;
- 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.

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 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 RCC1. 2. **First time drinking water connections**. We consider that 'first time drinking water connections' is covered by section 2.9 in Principal 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 has argued that it is impossible to fully mitigate against climate change, however they have implemented several approaches to understand and mitigate the risk. The company has 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 depending upon its final league table position.

9.2.13. The Utility Regulator has considered NI Water's argument carefully and is 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 does not agree this should be a notified item. There is no precedent for impact of climate change or any Carbon Reduction Charge being accepted as a notified item nor have NI Water demonstrated that the risk is material within the PC10 period.

IFRS Implementation

9.2.14. 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 company asked Ofwat to carry out an interim determination as a result of this change.

9.2.15. The Utility Regulator has reviewed the precedence set by other regulators with regards to this item. Based on this review, the Utility Regulator is minded not to allow general provisions that apply to any company. However, the Utility Regulator is minded to only allow any increase in cash tax paid relating to 'infrastructure renewals expenditure' as a result of applying IFRS for the purpose of a notified item as this provision specifically affects water companies. We have assumed zero cash tax is payable by NI Water in the PC10 period. It is important to note that the Utility Regulator will only allow for this to be treated as a notified item provided that NI Water is compelled to follow IFRS rather than choosing to adopt it. We are unaware of an instance of where any UK water company has been compelled to follow IFRS. Currently, Condition B of the licence does not specifically address the treatment of tax for the purposes of calculating materiality. For materiality purposes we intend to regard tax in a similar way to changes in operating costs and revenue (i.e. 15 years).

Opening Tax Balance with HMRC and Changes in the Tax Regime

9.2.16. 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.

9.2.17. The Utility Regulator is minded not to accept this item as a notified item. 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 prior to a Price Control (in this case PC13).

9.2.18. 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 draft determination or included it as a notified item.

Current Rates Assessment

9.2.19. 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. Waste water: specialist assessment estimated replacement cost.
- 3. Mobile phone masts: rental value.

9.2.20. 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.

9.2.21. At this stage the Utility Regulator is minded not to allow this as a notified item. The Utility Regulator has consulted with the relevant rates authorities to determine the possible effect of rates valuation on NI Water and we do not conclude that a more commercial approach will be taken to the valuation of rates relevant to NI Water from 2010.

9.2.22. The base operating expenditure figure we will take forward from 2007-08 into price limits already takes account of rates payable at a level we think is appropriate.
Energy, Fuel and Raw Material Costs

9.2.23. 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 prices of chemicals due to increased global demand, increased cost of fuel and adverse currency movement between Euro and Great British Pound.

9.2.24. The Utility Regulator considers all of the above costs can be efficiently managed by the company. First, changes in energy, fuel and chemical prices are a risk that is partly mitigated through RPI indexation. Second, the base operating expenditure figure we will take forward from 2007-08 into price limits already takes account of energy, fuel and chemical at a level we think is appropriate. Our view is that NI Water can manage any remaining energy 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 is minded not to allow these costs as notified items. In addition the Utility Regulator notes that DRD did not accept these items as notified items in the SBP period.

Disputed Terrorism

9.2.25. Within their PC10 Business Plan submission NI Water described that disputed terrorism may occur where NI Water suspects an act of terrorism but 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.

9.2.26. The Utility Regulator is minded not to consider disputed terrorism as a notified item as this risk for NI Water is the same as for other water companies and there is no regulatory precedence for this to be included as a notified item.

9.2.27. The Utility Regulator's Proposed Notified Items for this Draft Determination are set out in Table 9.1:

Table 9.1: Proposed Notified Items for PC10.

Proposed Notified Items for PC10

Increases in the taxation (payable) of infrastructure expenditure arising from the introduction of IFRS: We would only consider an application from NI Water if it was compelled to follow IFRS, not if it chose to adopt IFRS for other reasons. Currently, Condition B of the licence does not specifically address the treatment of tax for the purpose of calculating materiality. For materiality purposes we intend to regard tax in a similar way to changes in operating costs and revenue (i.e. over 15 years)³².

Non-Domestic Customer Volumes

9.2.28. 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.

9.2.29. The Utility Regulator considers that this correction factor is not a specific proposal for a notified item. The Utility Regulator considers that symmetrical non-domestic correction factor mechanisms may be appropriate for PC10. The Utility Regulator considers that any over or under recovery of non-domestic revenue against the Utility Regulator's PC10 assumptions be recovered at PC13 on an annualised basis accounting for the effects of NPV analysis. The Utility Regulator considers that any relevant draft correction factor from the SBP period (i.e. 2008-09 and 2009-10) be taken account of in the final determination. Any difference between the final relevant correction factors and draft relevant correction factors for 2009-10 would be taken account of at PC13 since the final correction factor would be unknown until after the final determination. The implementation of the outlined correction factors for PC10 will require a licence modification and we intend to consult on this after the final determination.

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. We will consult with the company on the format and content of this publication in advance of the final determination.

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 of the Business Plan. The information provided in the Business Plan was not of sufficient detail to allow effective monitoring. We expect the company to provide a baseline programme for monitoring once we have completed 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.

The period for which NI Water bills customers starting on 1 April each year.	
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.	
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 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.	
A defined set of standardised capital work items and projects.	
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.	
The minimum return that providers of capital require to prompt them to invest in or lend to the appointed water companies given their risk.	
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.	
A measure of the consumption, use or wearing out of an asset over the period of its useful economic life.	
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.	
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.	
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.	
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 \pm 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 $RPI \pm K$. 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.
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 <u>www.fwr.org</u> .
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

Water only Company	An appointed water only company. WoCs provide water but not sewerage services.
AIR	Annual Information Return
BIP	Business Improvement Programme
BP	Business Plan
CAPEX	Capital Expenditure
CCD	Current Cost Depreciation
CCNI	Consumer Council Northern Ireland
СОРІ	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
КРІ	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)
ΟΡΑ	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.	
Custom	er 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.	
Custom	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).	
Custon	ner 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.	
21	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 L	eakage 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.	
1E	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.
Sustair	nability 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).
61	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.