
Part B – Key Components

Section B1 – The Post 2010 Environment and the Longer Term

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B1 The Post 2010 Environment and the Longer Term

Executive summary

Our final Business Plan is built on a strong foundation; two years of best-ever performance. We fully expect to maintain our high standards over the coming five years as we deliver our vision: ‘If customers had a choice, they would choose Thames Water’.

This final Business Plan has been developed to ensure that we continue to deliver a high quality service for our customers, and improvements to our natural environment throughout AMP5. To achieve these aims, we have taken on board the constructive feedback that we have received on our draft Business Plan. We have also conducted a rigorous analysis of the risks that we face over the coming five-year period and beyond. This has enabled us to undertake a thorough review of the best way to respond to them and minimise their potential impacts.

As a result we have been able to develop a plan that both responds to the needs and priorities of our customers, but also manages the risks that we have identified, to minimise their impacts on our customers.

We must recognise, however, that we operate in a world where many important factors are outside our control. As well as the regulatory and legislative developments that we have identified as potentially affecting our business over the coming AMP period, there will undoubtedly be many other factors that will require us to respond in order to meet our performance objectives.

Since the submission of our draft Business Plan the risks that we face in our operating environment have increased:

- Changes in the global economy have increased the cost of finance, and have led to a situation where we now face deflation for the first time in the history of the water industry.
- Population and household projections have been affected by the economic downturn, and have been factored into our final Plan alongside other demographic drivers such as a shortage of skilled engineering labour and reductions in household occupancy, which drives up the amount of water consumed per head of population.
- A raft of environmental legislation is expected to come into force in AMP5, and developments in the area of climate change will affect the way we operate.
- Ofwat is working to increase the level of competition in the water industry, which, if successful, could fundamentally change the industry structure, and impose significant implementation and transition costs on the sector.

Although the costs, and in many cases the actual details, of the risks that we have highlighted in our Plan are currently unknown, we have set out their potential implications, and stated how we propose to manage them.

In order to mitigate the increase in customer bills, we have taken on increased company risk - operational, reputational and financial - by:

- absorbing operating cost increases driven by bad debts (above today's levels) and removing a number of incremental operating cost increases from our plan
- retaining our aggressive efficiency challenges despite the risk of persistent deflation
- ✂ [Redacted]
- removing over £350m of climate change-driven investment, revising down our housing and population projections in response to revised forecasts
- ✂ [Redacted]
- accepting increased operating cost and weather risk associated with the operation of our desalination plant
- proposing a 'cap and collar' approach to power costs, meaning that we carry a notable risk while ensuring that potential 'windfall gains', which would occur if prices returned to pre-2007 levels, would be returned to our customers.

In the case of significant regulatory developments over the coming AMP period, we will make representations to support a case for additional funding through a Relevant Changes of Circumstance.

For non-regulatory risks, where the potential costs are significant and highly uncertain, we have identified a number of Notified Items, which would allow for an interim price determination within the AMP5 period. It is important to note that, since the submission of our draft Business Plan, we have reduced our number of Notified Items, consequently taking on more company risk, and protecting our customers from the potential costs.

We are convinced that our approach has enabled us to achieving a balanced plan, which apportions risk fairly between our company and shareholders, and our customers.

Introduction

This chapter describes our view of the environment in which we will operate in the period 2010 to 2015, and beyond.

To provide some context for our view of the future, we first outline our performance during previous asset management (AMP) periods.

We then summarise the key features of the external environment that we foresee as providing challenges and opportunities to which we will need to respond over the coming AMP period and beyond. In particular we explain how our view of the external environment has changed since our draft Business Plan. We set out why and how we propose to address the challenges and seize the opportunities.

Finally we explain how our Business Plan has been developed to mitigate the resulting risks to ensure that it continues to reflect the right balance of activities for customers and the environment.

The chapter is structured under four headings:

- Achievements to Date Compared with Earlier Plans
- Assessment of the Post 2010 Environment for the Company
- Managing Key Risks and Uncertainties
- Achieving the Right Balance for Consumers and the Environment.

B1.1 Achievements to Date Compared with Earlier Plans

Since privatisation and the introduction of incentive-based price cap regulation, the water industry as a whole has achieved substantial success, notably:

- improvements in service to customers and the environment
- significant capital investment
- operational / capital efficiencies.

To help set the context for our final Business Plan, this section firstly provides a snapshot of our achievements since privatisation from AMP1 to AMP3, and then goes on to set out how we have continued to build on these achievements during the current AMP period, AMP4.

B1.1.1 Summary of Historical Activity and Expenditure

Over the first three AMP periods since privatisation we – in common with the UK water industry – invested heavily in order to meet a range of European Directives, principally the Drinking Water Directive and Urban Waste Water Treatment Directive, although many others helped drive the significant investment requirements.

For our water service, AMP1 and AMP2 investment was largely driven by achieving compliance with the Drinking Water Directive. From AMP 1 to AMP3 we invested over £3billion in improving drinking water quality and maintaining and enhancing our asset base to provide a reliable drinking water supply. During this period we completed the London Water Ring Main and upgraded many of our key water treatment works to provide advanced water treatment.

For our sewerage service, our main investment driver since privatisation has been achieving compliance with a range of Wastewater Treatment Directives. Over the first three AMP periods we invested almost £3billion in improving wastewater quality and maintaining and enhancing our asset base, upgrading many of our sewage treatment works in order to enhance the environmental quality of the receiving waters into which we discharge.

This investment across our water and sewerage services has been accompanied by major capex savings achieved through the introduction of innovative new approaches to service delivery. For example, the introduction of granular activated carbon (GAC), as a sandwich within the slow sand filter (SSF) beds at our large surface water treatment works, was a major innovation in AMP1 that addressed the removal of complex organic molecules. Further capex savings were made in AMP2 by extending the operating range of trickling filters (for secondary sewage treatment) - a result of five years' research and development. The alternative would have been to decommission the filters and replace them with activated sludge plants, which would have led to long-term increases in energy and maintenance costs.

Table 1 shows how our performance has improved since the early years of privatisation.

Table 1: Summary of Improvements in our Performance Since Privatisation

Water	Wastewater
<p>Water Quality</p> <ul style="list-style-type: none"> 99.99% = drinking water quality tests meeting standards in 2008 (95% in 1990) (mean zonal compliance) <p>Leakage</p> <ul style="list-style-type: none"> 36% = reduction in leakage since the drought in 1995 <p>Low water pressure</p> <ul style="list-style-type: none"> 95.6% = reduction in the number of properties at risk of low water pressure since 1992-93 <p>Interruptions to supply</p> <ul style="list-style-type: none"> 91% = reduction in the number of properties experiencing unplanned and un-warned interruptions to their water supply since 1995-96 <p>Population growth</p> <ul style="list-style-type: none"> We have met significant growth in the size of our customer base. 8,544,000 population in 2007/08 (7,235,000 in 1988/89) 	<p>STW compliance</p> <ul style="list-style-type: none"> 99.14% = sewage treatment works compliance in 2008/09 (93.4% in 1989/90) <p>River quality</p> <ul style="list-style-type: none"> 76.3% = very good or good chemical quality 2007 (36% in 1990) 64.5% = very good or good biological quality 2007 (60.7% in 1990) <p>Sewer flooding</p> <ul style="list-style-type: none"> 94% = reduction in the number of properties at risk of flooding twice in 10 years since 1990/91 <p>Population growth</p> <ul style="list-style-type: none"> We have met significant growth in the size of our customer base 13,640,000 population in 2007/08 (11,414,000 in 1988/89)

Over the first three AMP periods following privatisation:

- On average our customers' combined bill was more than 15% below the industry average.
- We started and ended the period with the lowest total opex costs per property of the 10 WASCs.
- We delivered over £6bn of capital expenditure in meeting our obligations (broadly equivalent to the total allowances allocated by Ofwat in the Final Determinations for these three AMPs, although there were some significant fluctuations in investment, where we managed business risk by reallocating elements of the capital programme to where it was most needed).

- We piloted the approach to replacing London's Victorian Mains (VMR) in the leakiest of London's District Meter Areas with new plastic pipes. At the time of privatisation, it was assumed that our water mains had an average life expectancy in the order of 500 years¹. As a result, Ofwat set investment levels for mains renovation at very low levels in AMP1, and replacement rates remained far below the industry average in AMP2 and AMP3². Our VMR programme marked a significant change in company strategy and was our response to the fact that the very low level of mains replacement in AMPs 1 and 2 was unsustainable. By the end of AMP4, we expect to have replaced over 2,100 km of water mains, 1,900km of which will be VMR.
- In response to DWI concerns over water quality in the network, we began relining the affected mains. By 2002 we had completed nearly 4,800km of relining, amounting to 15% of our water mains, (compared to an industry average of 8%). We beat the target date for delivery, and set industry-leading productivity rates in the process.
- We reduced labour costs by over a third, and material costs by over 40%.
- Opex and capex efficiencies were delivered through: procurement initiatives; innovative solutions such as trenchless technology (sewerage); reservoir safety standards and pipe-bursting techniques; the introduction of risk management techniques; the setting up of the Management Support Centre; significant headcount reductions; and improved workforce expertise through the development of Investors In People (IIP).
- Whilst maintaining combined bills below the industry average, we paid over £3billion in dividends to our shareholders, broadly in line with the industry average.

The improvement in our service levels over the first three AMP periods was reflected in our overall performance assessment (OPA) score, which increased from 333 points in 1998/99 (the year in which the OPA was introduced) to 390 points in 2004/05. We expect our OPA score to improve to over 400 points in 2008/09.

Significant improvements have also been delivered in the levels of service that we provide to our customers, through a range of initiatives to increase the efficiency and quality of our customer service offerings and of our customer contact centre, including:

- the introduction of a range of services for customers with special needs, including Braille bills, talking bills, and additional help if a supply is disconnected
- the introduction of discounted large user tariffs for commercial customers, to reflect the lower costs associated with supplying large customers
- the establishment of the Customer Assistance Fund to help customers who are struggling to pay their bills, and provide financial incentives and practical assistance to help them manage their money

¹ Thames Water's privatisation underground asset management plan – with assessor's opinion, WS Atkins and Partners, August 1989.

² In the first three AMP periods following privatisation we replaced 2.6% of our water mains compared to United Utilities' 25% and the industry average of 12%.

- the introduction of Interactive Voice Response (IVR) telephony³ and web automation, allowing customers to carry out routine billing and meter reading transactions over the phone or on-line 24 hours a day
- the introduction of debt segmentation techniques, allowing us to move away from a uniform approach to collection, which has increased our ability to collect cash, and has reduced our operating costs
- Ofwat introduced the Guaranteed Service Standard (GSS) to ensure customers have a clear expectation of the level of service they can expect from water companies and recompense when companies fail to meet customer expectations. We have introduced higher levels of compensation than the minimum required by the GSS.

These benefits were delivered whilst maintaining the lowest combined water and sewage bill in the industry for our customers.

B1.1.2 AMP4 Performance

In December 2006, Thames Water was acquired by Kemble Water, a consortium of long-term investors led by Macquarie's European Infrastructure Funds.

The new Board of Directors immediately introduced a new top management team tasked with the delivery of four key strategic objectives for the direction and operation of the regulated business, namely:

- to meet regulatory outputs for the period to 2010, including leakage and security of supply, and achieve stable serviceability for all asset classes
- to make a significant improvement in the service provided to customers
- to operate in an open and transparent manner that builds credibility and trust with all stakeholders
- to achieve efficiencies in both operating costs and capital investment.

Progress against each of these objectives, as at April 2009, is reported below.

Table 2 contains further details of our performance against our AMP4 performance measures.

³ IVR technology does not require human interaction over the telephone.

Table 2: AMP4 Performance Against Monitoring Plan

Performance Measure	Units	Performance			
		2007/08 Actual	2008/09 Forecast	2009/10 Forecast	2009/10 FD04 Target
Customer Service					
DG2 Properties below reference level for low pressure	No.	349	75	75	2,455
DG3 Interruptions to supply – overall performance score	Score	0.24	0.41 ^{Note 1}	0.35 ^{Note 1}	0.35
DG4 Restrictions on water supply – population affected	%	0	0	In line with levels of service	<i>Not specified</i>
DG5 Properties flooded due to hydraulic overload ^{Note 2}					
Internal flooding	No.	234	167	204	<i>Not specified</i>
External flooding		427	529	546	
DG5 Properties flooded due to other causes in the year					
Internal flooding	No.	1,020	960	775	673
External flooding		5,209	5,000	5,000	3,919
DG6 Billing contacts responded to within 5 days	%	99.8	99.9	99.9	99.2
DG7 Written complaints responded to within 10 days	%	99.6	99.6	99.6	99.6
DG8 Bills based on a meter reading	%	99.6	99.7	99.7	99.7
DG9 Telephone calls abandoned	%	7.3	7.5	7.0	4.0 ^{Note 3}
Water Service					
Security of supply index (WRP06 basis)	No.	89	55 ^{Note 4}	100 ^{Note 4}	85 ^{Note 4}
Leakage	MI/d	713	715	665	685 ^{Note 5}
Number of burst mains ^{Note 6}	No.	10,729	14,163	11,473	<i>Not specified</i>
Water quality – mean zonal compliance	%	99.98	99.99	99.98	<i>Not specified</i>
Serviceability assessments:					
Water infrastructure		Stable	Stable	Stable	Stable
Water non-infrastructure		Stable	Stable	Stable	Stable
Sewerage Service					
Pollution incidents – Category 1, 2 and 3 ^{Note 7}	No.	197	220	210	<i>Not specified</i>
Sewer collapses	No.	465	400	498	<i>Not specified</i>
Sewer flooding – reduction of properties at risk of flooding					
Hydraulic overload (internal at least once in 10 years)	No.	2,078	2,425	3,062	2,379
Other causes (internal)		663	940	1,380	1,311
Sewage works discharge quality:					
Compliance with consents	%	99.72	99.14	98.88	98.7
Population equivalent served by compliant works (LUT)	%	100	99.92	99.83	100
Serviceability assessments:					
Sewerage infrastructure		Stable	Stable	Stable	Stable
Sewerage non-infrastructure		Marginal	Stable	Stable	Stable

Note¹ Performance dipped due to 2007/08 being an exceptional year; wet summer and a number of third party events

Note² Properties flooded due to hydraulic overload exclude those as a result of severe weather events

Note³ Basis of FD04 target is different from current reporting – calls to automatic answering systems were not taken into account in setting the target

Note ⁴ Basis of reported result and Ofwat target has changed over time in relation to revisions to our WRMP. The target above is based on a letter from Ofwat dated 8 August 2008

Note ⁵ Leakage target now included a further 5 Ml/d benefit due to additional 300km of Victorian mains replacement in 2009/10

Note ⁶ Burst main numbers reflect Ofwat's revised June return reporting requirements

Note ⁷ Includes water pollution incidents (2007/08 22; 2008/09 22; 2009/10 35)

Meet regulatory outputs for the period to 2010, including leakage and security of supply, and achieve stable serviceability for all asset classes

- Leakage target outperformed in 2006/07 and 2007/08. Outperformance expected in 2008/09.
- Section 19 undertaking target, for security of water supplies to customers, exceeded.
- We expect to achieve stable serviceability for all asset classes by JR09.

Further details of our AMP4 performance to date and for the remainder of the period are contained in Table 2 above.

Make a significant improvement in the service provided to customers

- Achieved our best ever OPA score in 2007/08 (397 points) (this is expected to be bettered in 2008/09 to over 400 points).
- Over 99% of our population equivalent served by compliant works in 2008 (100% in 2007) on a 'look up table' basis.
- 99.99% compliance with drinking water standards (mean zonal compliance) in 2008 – our best ever result.
- Less than 350 customers suffering from low water pressure - a company record, and five times better than the regulatory target.
- Over 70% reduction in the impact of unplanned interruptions to water supplies on our customers in 2007/08.
- 99.8% response to customers' queries on their bills within 5 days.
- 99.6% response to customers' written complaints within 10 days.
- 99.6% of customers received a bill based on a meter reading.

Further details of our AMP4 performance to date and for the remainder of the period are contained in Table 2.

Operate in an open and transparent manner that builds credibility and trust with all stakeholders

In September 2007 we published our draft 25-year strategic plan. The public consultation on its content was the largest we have ever held, and the independent stakeholder research was extensive, including discussion groups with customers, workshops with stakeholders, and interviews with MPs.

The consultation informed the production, in December 2007, of our Strategic Direction Statement, 'Taking care of water', which set out what we think the future holds and how we will respond to it.

Building on this highly successful process we continued to engage with customers and stakeholders in the development of our Business Plan (Further details are provided in Section C1).

Achieve efficiencies in both operating costs and capital investment

✂ [Redacted]

In 2007/08 we delivered our largest ever annual programme of capital expenditure of almost £1bn (gross). Capital investment of £997m in 2007/08 compared with the Final Determination allowance of £834m. The step-up in activity has been driven by investment in a number of major projects, improving security of water supply, addressing leakage and improving wastewater outputs.

In the final two years of AMP4 we expect to deliver further £1.8bn of capital investment in order to deliver on the requirements of our Final Determination. As we move into AMP5, we are committed to embedding the lessons we have learnt from past performance and delivering continuous improvement. The Board and Executive Management Team are committed to maintaining the right level of investment and making the right operational decisions to deliver our customers' priorities.

B1.2 Assessment Of The Post 2010 Environment for the Company

Our final Business Plan has been developed around our customers' priorities and our objective of delivering our company vision: "If customers had a choice, they would choose Thames Water".

In looking to the period beyond 2010, our key challenge is to deliver this vision and to place the delivery of customers' priorities at the heart of our plans⁴. The test we will face is to achieve delivery of this goal within a broader context of environmental, political, regulatory and economic change; all of which will impact on our operating environment.

This section discusses the major changes in our operating environment that we expect to affect our business in the post-2010 period. Where relevant it also explains how our understanding of our future operating environment has changed since our draft Business Plan.

B1.2.1 Economic Outlook

Last August we submitted our draft Business Plan in which we presented an overview of the economic outlook, the potential implications for Thames Water and details of how we had developed our draft Business Plan to reflect these circumstances. At the time, whilst leading commentators spoke of a sharp slow down in economic growth, even the most negative forecasts assumed that the UK would avoid a technical recession (two successive quarters of negative growth).

Nine months on, much has changed. Not only do we find ourselves in the midst of a recession, but we are also facing deflation for the first time in the industry's history.

The sustained economic downturn is having a direct impact on our business: it is posing real challenges for the remainder of AMP4 and will cast a significant shadow on the early years of AMP5.

This section provides details of our current position with regard to the economic environment and how we have factored economic predictions into the development of our final Business Plan.

The economic outlook

In our draft Business Plan we took a view of the future economic environment. We explained how, following the Budget announcement in May 2008, the downturn in the

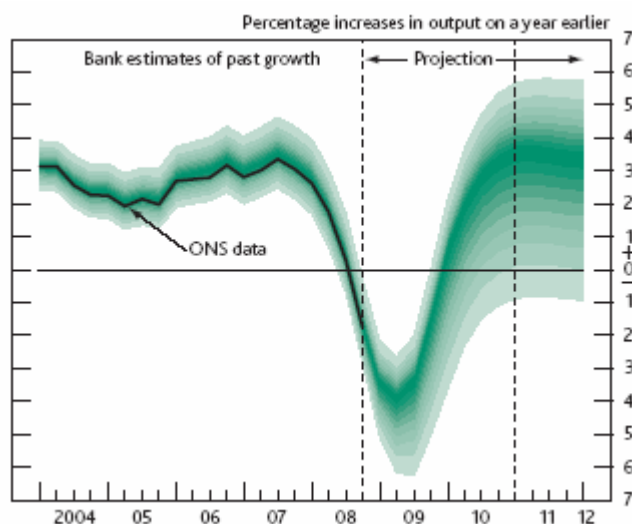
⁴ A detailed description of the work we have undertaken to understand our customers' priorities, and reflect them in our Business Plan is set out in Section C1.

economy had led to a number of commentators revising down their UK GDP growth forecasts. Compared to a consensus forecast of 1.8% growth in the Budget report, the CBI cut its 2009 forecast to 1.5% (June 2008), Barclays cut its 2009 forecast to 0.9% (July 2008), and The National Institute of Economic and Social Research (NIESR) reported that its forecast GDP growth, in the three months to June 2008, was just 0.2% (July 2008).

Despite a general sense that the economy was likely to decline further, at the time of the submission of our draft Business Plan it was believed that a technical recession would be avoided, with forecasts suggesting that, at worst, the UK economy was close to stagnation.

The situation is now very different. In both Q3 and Q4 of 2008, GDP fell by 0.7% and 1.5% respectively; two quarters of negative GDP growth meaning that the economy is now in recession. Evidence from business surveys and the Bank of England suggest a broadly similar trend for at least the first quarter of 2009.

In the Pre-Budget Report (Nov 2008), HM Treasury forecast GDP growth of -1.25% to -0.75% in 2009, increasing to 1.5% to 2% in 2010. The Bank of England's Inflation Report (Feb 09) showed a range of GDP growth in the region of -3% for 2009 (see figure 2 below). The consensus forecast in the March 2009 HM Treasury Forecast for the UK Economy, predicts GDP growth of -3.2% for 2009 and 0.3% for 2010. This is in line with a recent report by Pricewaterhouse Coopers (March 2009)⁵, which suggests growth of -3.25% in 2009, with a gradual recovery over the course of 2010. Forecasts suggest that, at the very least, we face negative growth for the next six to nine months, with a higher probability of growth returning to positive towards the end of 2010.



Source: Bank of England, February 2009

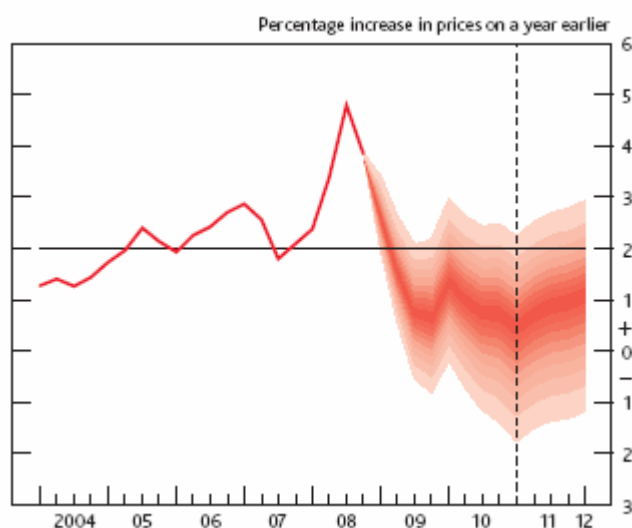
Figure 2: Bank of England GDP Projection Based on Market Interest Rate Expectations

⁵ 'UK Economic Outlook', Pricewaterhouse Coopers (March 2009)

The reduction in GDP growth was initially accompanied by growing inflationary pressures, which drove up power costs during 2007 and 2008. CPI Inflation fell to 3% in January 2009 from a high of over 5% in September 2008. This reduction was driven by decreases in petrol and diesel prices, changes in food and energy prices and the reduction in the rate of VAT in December 2009.

In our draft Business Plan we included the Bank of England's inflation projections taken from the March 2008 Inflation Report, which suggested that CPI inflation was expected to remain well above the Bank's 2% target for the remainder of the current AMP period and through the early part of the next AMP period.

The updated inflation projections, taken from the Bank of England's February 2009 Inflation Report, show that the central projection of CPI inflation now falls well below the 2% target in the medium term, with deflation remaining a real prospect over the next 18 months to two years. (See figure 3 below).



Source: Bank of England, February 2009

Figure 3: Bank of England UK Inflation Projections (CPI)

Section B2 of the Business Plan sets out in more detail Thames Waters current cost structure and the impact of real price effects on our future operating costs.

Whilst the duration of the recession is still unclear, it is certain that the effects of the economic downturn will continue to be felt through the remainder of AMP4 and the early years of AMP5.

AMP4 impact

Sustained instability in financial markets has led to a sharp increase in the cost of finance. The cost of borrowing has seriously affected our business due to the substantial investment that we need to undertake to maintain and improve our

assets. This investment is essential in order to continue to deliver upon our quality obligations and the high standards that customers expect.

The far-reaching effects of the economic downturn have also affected our revenue. As the economic downturn penetrates the wider economy, our customers are experiencing increasing financial pressure. This financial uncertainty, coupled with increasing levels of unemployment, has led to increasing levels of bad debt, which affects our ability to finance our operations.

✂ [Redacted]

The impact of the economic downturn, including our revenue shortfall mentioned above, will be managed by the company and borne by shareholders, not our customers, throughout the remainder of AMP4. However, whilst it is right that the company and shareholders continue to bear some of the risks associated with the economic outlook in AMP5, in order to ensure that we can efficiently finance our functions and undertake necessary investment in our assets we have had to take account of the economic outlook in our final Business Plan for AMP5.

Impact on our AMP5 assumptions

As discussed in the economic outlook (above), the scale of the economic downturn has led to considerable reductions in GDP growth forecasts since our draft Business Plan. Table 3 shows the views of leading commentators at the time of our draft Plan, and how recent predictions differ.

Table 3: Forecasts of GDP Growth

Date	Forecast (%)	2008	2009	2010
May 2008 (draft BP)	HM Treasury	1.75 – 2.25	2.25 – 2.75	3.0
May 2008 (draft BP)	HMT Consensus	1.8	1.8	N/a
Nov 2008	HM Treasury		-1.25 – -0.75	1.5 – 2.0
Jan 2009	HMT Consensus	0.8	-2.4	N/a
Feb 2009	Bank of England		-3.0 approx	2.0 approx
Mar 2009	HMT Consensus	N/a	-3.2	0.3
Mar 2009	PWC report ⁶	N/a	-3.25	0.0

Sources

May 2008 HM Treasury Financial Statement and Budget report, and, HM Treasury, Forecasts for the UK economy

Nov 2008 HM Treasury, Pre-Budget Report 2008

Jan 2009 HM Treasury, Forecasts for the UK economy

Feb 2009 Bank of England, Inflation Report

Mar 2009 HM Treasury, Forecasts for the UK economy

Mar 2009 Pricewaterhouse Coopers, UK Economic Outlook

Based on the severity and the predicted duration of the economic downturn, as reflected in the pessimistic forecasts of GDP growth, we have had to revise a number of the baseline economic assumptions that underpin our final Business Plan. In line with our customers' willingness to pay, we have revised our investment, operating and financial assumptions to the minimum level consistent with delivery of progress on essential improvements in our service and the effective management of risk.

Table 4 below demonstrates how we have had to alter a range of assumptions between our draft and final Business Plans to take account of the changing economic environment. Further explanation is provided below.

⁶ 'UK Economic Outlook', Pricewaterhouse Coopers (March 2009)

Table 4: Changes in Key Assumptions From Draft to Final Business Plan

	Assumption at draft Business Plan	Assumption at final Business Plan
RPI	2008/09 = +2.63% (AMP4) 2009/10 = +2.63%(AMP4) 2010-15 = +2.5% (AMP5)	2008/09 = -0.7% (AMP4) 2009/10 = +1.4% (AMP4) 2010-15 = +2.5% (AMP5)
COPI ⁷	2008/09 = +5.33% (AMP4) 2009/10 = +5.33% (AMP4) March 2011-15 = +4.5% (AMP5) ⁸	2008/09 = -3.0% (AMP4) 2009/10 = 0.0% (AMP4) 2010/2011 = 0.0% (AMP5) 2011/2012 = +1.6% (AMP5) 2012-15 = +5.0% (AMP5)
Housing Development	Household properties connected during AMP5 2010/11 to 2014/15 Water = 173,000 Household properties connected during AMP5 2010/11 to 2014/15 Sewerage = 263,000	Household properties connected during AMP5 2010/11 to 2014/15 Water = 138,000 Household properties connected during AMP5 2010/11 to 2014/15 Sewerage = 220,000
⌘ [Redacted]		
⌘ [Redacted]		
Post-tax cost of equity	7.78%	8.58%
Pre-tax cost of debt	3.91%	4.2%
WACC	4.8%	5.25%
Index-linked debt	25%	5% The assumption that we will be able to source 5% of new debt in RPI-linked form is a company risk. In current market conditions there is an extremely limited supply of RPI-linked debt

We have responded to the economic downturn and revised a number of assumptions in order to mitigate the impact on customer bills. We have not however fully reflected the entire level of potential risk that we will be exposed to in AMP5. By accepting increased company risk, we have been able to ensure that our plans remain affordable for our customers.

⁷ Ofwat has indicated within its methodology statement (March 2008) that it intends to adopt the Infrastructure Output Price Index (IOPI) as its notified index for capex for AMP5. Following further investigation since the submission of our draft Business Plan, we believe that IOPI is less reflective of the water industry than the overall composite index, COPI. It is our opinion that Ofwat should continue to adopt COPI as its notified index for AMP5; our notified index projections are therefore based on COPI projections. (See B7.5.2 for more information)

⁸ We assumed that IOPI would be the capital price index for AMP5

RPI

Our AMP5 RPI projections (+2.5% from March 2011 – March 2015) are consistent with those made within our draft Business Plan, and with the central Government forecast of 2% CPI plus 0.5% uplift for RPI. However, our projections are now lower for the final two years of AMP4 (-0.7 March 2009, +1.4% in March 2010), due to the severe economic slowdown and recession since August 2008.

Headline RPI has fallen from 4.8% in August 2008 to 0.0% in February 2009, its lowest level since 1960. Further reductions are expected, meaning that we face deflation in the coming months. We expect RPI to decline further in the coming months before climbing above zero by the end of 2009. We have based our plan on RPI running at trend (2.5%) from 2011 onwards. This may not be the case and is more optimistic than the latest forecasts. Ofwat must take this into account when setting the cost of capital in our Final Determination through the assessment of expected cashflow and revenues, and our ability to meet key rating agency cover ratios.

In June 2008, Water UK commissioned a report by First Economics on 'The Rate of Frontier Shift Affecting Water Industry Costs'. Based on the outcome of the report, Water UK maintains the position of a 0% frontier shift. We expect to offset predicted increases in current base operational costs with operational efficiencies. However this will become increasingly challenging if RPI falls at a greater rate than real price effects.

COPI

Our COPI forecasts for AMP5 are taken from the Consolidated Buildings forecast set out within the EC Harris Report⁹, which reflects a downward revision of construction inflation driven by the effects of the recession. Construction orders have fallen sharply compared to six months ago, resulting in a 'slump' in the industry. Fewer cost pressures over the next two years are forecast to be followed by a recovery in the medium term. These changes drive the marked down revision in our COPI estimates for 2008/09 to 2011/12 compared to our draft Business Plan.

It is important to note that, in the recent Reckon report on on-going efficiency, Ofwat base their assessment on data going back to 1990. As COPI was negative for some of this period, Ofwat must not make further allowances for negative COPI if deflation does occur in the lead up to AMP5, as this would lead to double-counting with the on-going capital efficiency in the Reckon report.

We propose that our capital funding should be based on COPI (and not Infrastructure OPI) which, as detailed in our revised assumptions, we expect will reduce from now until at least the beginning of AMP5. A decrease in allowances for costs, alongside a predicted reduction in revenue, will place us under financial pressure in terms of capital costs, as we are unlikely to see the same reduction in our own costs, due to the different structure of the industry relative to general construction.

⁹ EC Harris 'Capex price inflation report for Water UK', December 2008

Housing development

For our draft Plan we used projections produced by ☒ [Redacted]. The population projection we used was a 'most likely' projection taking account of the trend-based GAD 2004-based national projection and ONS 2003-based sub-national projection together with proposed housing targets from Regional Spatial Strategies published up to the end of 2006. For households we used Experian's 'policy' projection, which was based on the Regional Spatial Strategy targets.

For the final Plan our first view was from ☒ [Redacted] updates to their projections. The major change in these was that they used the 2006-based national and sub-national ONS trend projections, which generally show significantly higher growth than their predecessors. Experian also updated their projections to take account of proposed revisions to Regional Spatial Strategies published up to July 2008.

If we had used the updated ☒ [Redacted] projections we would have shown substantially more population growth than in the draft Business Plan. Household growth would have been little changed at company level, though with some significant local changes. However, as the severity of the economic downturn became more apparent we felt it was appropriate to use more up to date forecasts and asked the independent experts ☒ [Redacted] to undertake an assessment of how the economic downturn would affect growth. Their view was that reduced employment opportunities could significantly affect migration. They produced ratios showing the predicted effects on population and household numbers, which we have applied to the ☒ [Redacted] figures up to the end of AMP5.

As a result of the ☒ [Redacted] work, the total population forecasts for 2014/15 were reduced by 2.3% for the water supply area and 2.0% for the sewerage area. In terms of growth between 2009/10 and 2014/15, the reductions were 109,000 for water population, 146,000 for sewerage population, 46,000 for water households, and 56,000 for sewerage households.

As regards long-term growth, we have assumed that population and households will return to the ☒ [Redacted] trajectories by 2021. This is in order that our plans remain consistent with government policy.

Bad debt

✂ [Redacted]

Revenue projections

Revenue forecasts are calculated within the Ofwat Reservoir model on the basis of the underlying base data such as household and non-household property growth, changes in metered consumption and the number of customers either opting to have a meter or being metered under our proposed metering programmes.

Since the draft Business Plan, revenue forecasts have reduced due to a number of factors. The key revenue reductions arise from lower forecast metered demand (particularly for the non-household sector) as a result of the worsening impact of the recession, a reduction in the annual growth rate for household properties, and the reduction in our proposed household metering programme in the last three years of AMP5. This reduction is informed by our supply demand strategy, as a result of reduced demand from customers.

Energy prices

✂ [Redacted]

Post-tax cost of equity

Capital market conditions have deteriorated significantly since the submission of our draft Business Plan. Based on the development of the financial equity markets, it is our firm opinion that the market risk premium for AMP5 will not return to the levels seen prior to the credit crunch. We are convinced the cost of equity will be significantly higher than that seen prior to the commencement of the credit crunch.

Whilst it is possible that the early part of AMP4 experienced cost of (equity) capital at, or slightly below, the long-term average cost of (equity) capital, the latter part of AMP4 contains a significant increase in the cost of (equity) capital. There are a number of market-based indicators illustrating this development. ✂ [Redacted] produces a widely used and circulated equity risk premium which has been at circa 6.0% for most of the past few years, but which increased significantly during 2008.

The cost of equity capital is also reflected through the traded dividend yield and through the traded P/E ratios. All other things being equal, the higher the dividend yield, the higher the cost of capital, and the lower the traded P/E ratios, the higher the cost of capital.

The FTSE 100 illustrates a sharp increase in the dividend yield during 2008, with traded dividend yields increasing by more than two percentage points from the start of the year until the end of the year.

In addition, the prospect of deflation has now become a very real possibility. Under our capital structure, which includes a high level of creditor protection, debt investors are effectively protected from short-term deflation risks. Should a trigger event be breached we would go into cash lock-up, preventing dividends from being paid and securing cash within the business for the benefit of creditors. This creditor protection underpins our credit rating, companies who do not have a similar capital structure are perceived by the rating agencies to be at risk earlier (to a potential rating downgrade) because of the impact of deflation. From our perspective, the entire risk created by deflation sits with equity providers. Please refer to section B7 for more details of the impacts of deflation on equity.

Based on this evidence, the real, post tax cost of equity for Thames Water, reflecting the risk associated with the company and its equity investors is at least 9.25%. We are however proposing to base our submission on a cost of equity, which is aligned with the long-term average market risk premium and hence accept a cost challenge of 0.65%. Our submission therefore incorporates a cost of equity (real, post tax) of 8.6%.

Pre-tax cost of debt

Our calculation of the overall cost of debt considers our cost of debt to be raised during AMP5, based upon our projections for both index-linked and nominal debt. We also have a self-imposed challenge to deliver future debt at a cost below the guidance levels proposed by our third-party advisors. Our plan also recognises that we have successfully raised debt at a lower cost in the past which will pass though to benefit customers throughout AMP5.

With regard to debt to be raised during AMP5: we have considered our own experience on yields and prices as a frequent issuer and the opinions of active lead managers we regularly work with. Yields on investment-grade debt have increased significantly since the onset of the financial crisis and, whilst credit spreads for a single A rated issuer are expected (by ~~XXXX~~ [Redacted]) to decline significantly during the course of AMP5 from their current, exceptionally high levels, they are still forecast to remain significantly above the comparative levels at August 2007 (c.200bp vs. 75bp). Expectations are that underlying risk free rates will also increase significantly due largely to HM Government's own forecast debt issuance operations. These factors are forecast to underpin a higher overall average cost of debt for new debt during AMP5.

While we believe that all WASCs will find access to funding in expected market conditions more costly, the impact of the continuing credit crisis will in our case be magnified given our need to regularly access the debt capital markets in order to fund our capital investment programme over AMP5.

The real pre-tax cost of debt of 4.2% is based on a weighted average of the cost of embedded and forward-looking debt of 3.6% and 5.5% respectively. It is important to re-iterate that the 4.2% cost of debt has been calculated after the acceptance of the challenge to out-perform by 50bp in the first six quarters of AMP5 relative to our estimate of the actual cost of debt.

WACC

Our cost of capital is based on the updated industry position as per ~~XXXX~~ [Redacted] report for Water UK¹⁰, supplemented with detailed evidence on how our underlying business risks compare with other WASCs. Conditions in capital markets have deteriorated further since August 2008 as a result of the financial crisis and the economic downturn, which has substantially increased the cost of extensive capital expenditure outlays, and resulted in high levels of volatility and an unprecedented rise in risk premia in both equity and debt markets. These changes have contributed towards a very significant increase in the price of risk relative to the previously benign conditions in financial markets. With the financial crisis and economic downturn expected to continue into AMP5, the cost of capital determination needs to appropriately reflect these market developments. Our WACC case therefore reflects these new market conditions. We have further improved the quantifications and evidence base for our arguments to address the challenges raised by Ofwat during

¹⁰ Cost of Capital for PR09 - A Final Report for Water UK: ~~XXXX~~ [Redacted]

their review of our draft Plan and, as a result, our estimated weighted average cost of capital (WACC) has increased from 4.8% to 5.25%.

Index-linked debt

The problems experienced by the monoline insurers since the onset of the credit crisis have reduced the financing options available to companies, contributing towards both the increase in the cost of debt financing, and preventing the large scale issuance of index-linked debt.

✂ [Redacted] have continued to suffer one or more downgrades from the credit rating agencies. The market has deteriorated to the extent that the index-linked market is effectively closed to large-scale issuance, hence the reduction in our estimate of index-linked debt raised in AMP5 from 25% to 5%. This assumption is being taken at company risk as. The lack of availability of credit wrapped index-linked debt makes it likely that companies will have to revert to traditional public issuance in the debt capital markets and pay credit premia demanded by bond investors.

The revisions that we have made to the assumptions underpinning our final Business Plan are a measured response to the economic downturn. By updating our views of the context in which we operate, we have delivered a robust plan, which ensures that the company and shareholders continue to bear a balanced proportion of risk.

B1.2.2 Changes to the Environmental Framework

New environmental legislation and re-interpretation of existing legislation will have significant implications for our business over the next five years and beyond.

In our draft Business Plan we stated that, due to the uncertainty about the way that much of this legislation would be implemented, it was not possible to include an assessment of the precise scope, timing or costs involved in our draft plan.

Our position, at the submission of our final Business Plan, remains broadly unchanged. Future developments in the environmental regulatory environment will lead to changes in our responsibilities and increases in our operating costs, but we are not in a position to understand their precise impacts on our business operations sufficiently, to be able to factor the costs into our plan with any degree of certainty.

Section B4 (quality enhancements) incorporates all of the confirmed quality obligations that we can reasonably take account of at this stage.

These items have not been priced into our plan due to the level of uncertainty of both their requirements and their associated costs in AMP5. However, if they were to crystallise, they have the potential to impact on our ability to finance our functions, and the costs of our customers' bills.

Table 5 below, provides details of these issues and their likely implications. We have also identified how we believe each issue should be treated in order to minimise the potential impacts to our customers and our company during AMP5. Where appropriate, we have identified Notified Items (NI) and Relevant Changes of Circumstance (RCC) in order that they can be reflected in Price Limits as required.

Table 5: Principal Statutory and Environmental Drivers and Potential Impact

⌘ [Redacted]

One area in which there has been a minor development since our draft Plan is the EU Infraction Proceedings, where the European Court has now conducted a hearing to decide whether the Thames Estuary should be designated a eutrophic-sensitive water under the Urban Wastewater Treatment Directive. However, the outcome of the hearing will not be determined for another three to nine months. We have agreed with Ofwat that treating this as a Relevant Change of Circumstance is the correct approach.

If brought in during the next AMP period, the potential legislative changes outlined above are likely to drive significant costs.

In order to mitigate the risks and uncertainties around the timing and impact of new environmental obligations, we track all new proposals and, where possible, seek to influence these, both nationally and in Europe, in order to ensure that any new statutory requirements are specified in the most cost-beneficial way for customers and the environment.

Where new legislation is introduced, we manage the outcomes at company and shareholder risk. However, certain developments may be of such a scale that we require Relevant Changes of Circumstance or Notified Items in order to ensure access to sufficient funding to meet any new obligations. In terms of future environmental legislation, we may require Relevant Changes of Circumstance for the following:

- the Water Framework Directive
- EU Infractions Proceeding
- Drinking Water Directive

⌘ [Redacted]

- Revision of the Groundwater Directive

We are requesting a Notified Item for the following:

- Legislative requirements for the adoption of private sewers

Table 7 in Section B1.3.4 provides further details of Notified Items.

B1.2.3 Sustainability and Climate Change

Sustainability

In our draft Business Plan we explained the importance of sustainability for our business and identified a number of new challenges that will have sustainability implications for our business for the period from 2010-15 and beyond. These issues remain unchanged and include:

- adapting to the inevitable impacts of climate change, and mitigating our avoidable contributions to climate change
- responding to tighter legislation across a broad range of environmental issues
- challenging the way we operate in order to respond to social and demographic change (such as population growth and changes in household occupancy) and evolving customer expectations.

A further issue that has been addressed through our economic and financial analysis is that of the current economic downturn. Alongside the environmental and social dimensions of our approach to sustainability, we also need to ensure that we manage our response to external economic challenges wherever possible. This will allow us to optimise our ability to finance our operations efficiently and to minimise the potential impacts on customers' bills.

Alongside these challenges, there will also be opportunities, for example in the form of potential efficiencies, innovation, and attracting and retaining talented staff. These drivers, along with our desire to be a leading and responsible business, mean a strategic approach to sustainability is required for the future. This is reflected in our Strategic Direction Statement ('Taking care of water'), Business Plan, Sustainability Strategy ('Responsible Impact') and broader business activity.

'Responsible Impact' provides a high-level overview of the importance of sustainability to our business and a framework for recognising and addressing sustainability risks and opportunities. It set out a number of immediate actions for our business and a target-driven route for performance improvement and potential leadership on sustainability. Further details of our framework are contained within Appendix B1(a).

In our draft Business Plan we explained that, with input from ~~XXXX~~ [Redacted] ~~XXXX~~ [Redacted] we had developed an assessment framework that enables us to assess our sustainability performance at both a strategic (programme) and a project level. Section B1.1.4 of this document provides more detail on this. We have assessed our final Business Plan against the strategic framework. The results show improvements across a range of programmes between our draft and final submissions, and clearly establish a baseline against which we can identify and tackle sustainability issues, now and into the future. Key performance improvements between draft and final Business Plans include:

- Eight of the 12 programmes have improved their overall average sustainability score. None of the programmes decreased their overall average score.
- The wastewater supply/demand programme – the most improved programme overall as a result of a clearer scope for the final Plan, strong compliance performance and future targets, solid governance, robust sewage sludge strategy with a focus on sustainable and beneficial reuse of biosolids.
- Capital maintenance programme – improvements in sensitivity analysis and modelling to better understand the impact of climate change on water mains; greater understanding of asset data upon which to base investment decisions; improved governance.
- Wastewater quality programme – embodied carbon better understood and built into the programme; longer-term population growth impacts factored into planning.
- Sewer flooding alleviation programme – strong stakeholder engagement and specific support to shape the programme/target related impacts.

These changes in scores are similarly reflected in the final scores for our individual sustainability principles (explained further in Section B1.4.4 and Appendix B1(a)):

- Nine of the 12 sustainability principles increased in score and none decreased overall.
- The most improved performance was against principle five – providing safe, reliable and affordable services and enabling all stakeholders to use water wisely and make responsible use of the wastewater system.
- Notable improvements were made across climate change, investment, governance and asset management.

Overall, improvements mean that the sustainability score for the Business Plan as a whole is 3.5 – a good score, indicating compliance with policy and support for a broad range of sustainability outcomes.

Through our project-level sustainability checklist and assessment procedure, we will embed more detailed sustainability consideration into project-level planning, design and implementation. This is being integrated into capital delivery procedures and performance management of AMP5 projects.

Sustainability will guide our long-term strategy and business planning into the future. It is fundamental to the way we run our business, and our approach for AMP5. For further information on our strategic sustainability assessment framework and how this was applied to our draft and final Business Plans, please refer to Appendix B1(a).

Climate Change

Given its potential impacts on our business operations, we have considered the implications of climate change throughout the development of our final Business Plan.

The UKCIP02 climate change scenarios predict that, by the 2050s, summers will become drier (by 20-40%) and winters will become wetter (by 10-20%). We believe that, for the purposes of our business planning, the most likely outcomes of the forthcoming UKCIP climate change scenarios (UKCP09) and how they will affect our plan will be broadly consistent with UKCIP02 scenarios. We have spoken with the Hadley Centre, who are of the same view.

In our draft Business Plan, we explained how changes in weather patterns and the frequencies of droughts, floods and other extreme weather events, will pose serious challenges for our operations, whether providing potable water or disposing of treated sewage.

Climate change has risen up the political and social agenda in the UK since our last Business Plan was prepared in 2004, and companies are receiving increasing direction on how to respond to the challenges of climate change, both through reducing carbon emissions (mitigation) and factoring predictions of the likely impact of climate change into company operations and planning, in order to reduce the potential impact on business performance (adaptation). This section explains how we have taken on board legislation and Government and Ofwat guidance, and included action to both mitigate and adapt to climate change in our final Business Plan¹¹.

¹¹ Further details of our approach to climate change are outlined in our climate change policy, our integrated Climate Change and Carbon Management Strategy and Action Plan, and our Strategic Direction Statement (SDS), Taking Care of Water.

Climate Change Legislation and Guidance

In recent years, guidance and direction released by Government and Ofwat has included:

- Future Water – The Government’s Water Strategy for England (DEFRA)
- The consultation on draft statutory Social and Environmental Guidance to the Water Services Regulation Authority (DEFRA)
- Setting Price Limits for 2010-15: Framework and Approach (Ofwat)
- Overview: TW PR09 Draft Business Plan, Climate Change, Annex 9 (Ofwat)
- Capital expenditure for 2010-15: Capex Incentive Scheme [CIS] – draft baseline Thames Water Report (Ofwat)

In addition, Table 6 highlights a number of significant pieces of emerging legislation that will come into force before the start of AMP5, or during the period, that will have direct implications for the water sector.

Table 6: Current and Anticipated Climate Change Related Legislation and Potential Impact

✂ [Redacted]

We will continue to monitor developments in these areas, and integrate any new requirements into our business operations.

The following sections provide details of our approach to mitigation and adaptation, and where appropriate consider the likely impact of the above legislation on our response to climate change:

Mitigation

We have sought to build the requirements of the Climate Change Act 2008 into our Business Plan by including proposals to reduce our carbon emissions by 20% compared to 1990 levels. This is described in more detail in Section B3 of our Business Plan. We have identified sufficient mitigation activity in our Business Plan to achieve this target, relative to current emissions and emission factors. Our proposals have been further developed and refined since the submission of our draft Business Plan, and include actions to offset growth in emissions due to delivery of the plan.

As Ofwat set out in PR09/14, it is not currently possible to determine the final cost of the CRC, as Defra have not yet finalised the scheme. Ofwat have stated that they will consider their position in the light of the results of the next round of Defra consultation, which we believe will commence in 2009. There is a similar degree of uncertainty associated with the costs of purchasing EU ETS emissions credits from 2013. Given this uncertainty, we have not included any allowance for the costs arising from the introduction of the CRC from 2010, or the requirement to purchase EU-ETS credits from 2013 in our final Business Plan.

Unless and until Ofwat agrees a mechanism to fund water company participation in the CRC scheme, it will remain a real cost to the business and will need to be managed at company risk in AMP5, as it has not been included as a Notified Item. This risk must be reflected in the cost of capital that Ofwat sets for Thames Water.

Full details of our climate change mitigation can be found in section B3 of our Business Plan.

Adaptation

The development of our Business Plan has taken into account the proposals in the Climate Change Act 2008 on how public bodies and statutory undertakers need to carry out their own risk assessment and make plans to address the risks associated with climate change. There are three main strands to our adaptation response to climate change: Water Resources, Flood Resilience and Sewer Flooding, which we have included in our final Business Plan.

Water Resources – One of the most significant drivers for investment in our revised Business Plan is the forecast impact of climate change on both water available for use and the demand for water (see Section B5.1 for full details). Even for the early stages of the 25-year plan during AMP5 the impacts of climate change are highly significant.

For our draft Business Plan we based our assessment of climate change-driven investment on the UKCIP02 climate change scenarios for the full five years of AMP5.

However in response to Ofwat's guidance on climate change, set out in PR09/20, we have removed a significant proportion of climate change driven investment from our final Plan, and will instead base this investment on the UKCP09 scenarios when these become available. We firmly believe that the revised scenarios, when published, will support the requirement for substantial additional investment.

Consequently, our final Business Plan submission only includes climate change-driven investment costs and outputs for the first two years of the planning period (2010/11 and 2011/12). We intend to submit an update of our Business Plan, based on UKCP09 climate change scenarios, within the AMP5 period, to justify the investment required for the last three years of the five-year period.

We discussed this approach with Ofwat at our company meeting in January 2009. It was also agreed that we would work with Ofwat to develop an amended change mechanism that will enable the funding for additional climate change investment to be reflected in price limits on identical terms to the rest of our final determination

Flood resilience – Our work for the final Business Plan is based on best practice modelling of the flood extent and depth at 3842 of our operational sites. This has incorporated both fluvial and pluvial flooding. We have taken a pragmatic view of adopting flood resilience rather than flood resistance, and only sought to protect sites when there are clear operational reasons for doing so. We have assumed that other flood resistance measures currently maintained by others, including the Thames Barrier, will continue to protect our works. We have reviewed our plans with the EA who have accepted our approach in principle.

Our flooding resilience programme is based on Ofwat's 3-staged approach for flood hazards assessment or Service Risk Framework (SRF), planning methodology, best value solution and cost benefit analysis, and hence our AMP5 investment focuses on our most critical assets. Where the term resilience is used it refers to the enabling the site to continue to function, whilst flooded, or minimising the impact of the flood. Full details of our flooding resilience programmes for water and waste are given in Section B6.

Sewerage design standards – In AMP5 we plan to uplift our design standard for sewer flooding schemes to provide alleviation up to a 1 in 30 year storm event. In addition we intend to review the need for additional uplift over and above this as soon as the UKCP09 data becomes available (see Section C6.3.7). Throughout AMP5, we also intend to improve our understanding of our catchments through our Drainage Area Planning programme detailed in Section B3. Moving forwards 'more of the same' eg building greater capacity into pipes and tanks, should not be the only adaptation response to climate change. For AMP6 and beyond other options including sustainable drainage systems (SUDs), storm water charging and re-designing catchments and buildings will become viable options to alleviate the risk of sewer flooding.

B1.2.4 Energy and Utility Skills

The UK is facing significant changes in workforce demographics and skills. As explained in our draft Business Plan, skilled engineering labour is becoming an increasingly scarce resource across the whole of the utility sector. Issues such as an ageing workforce, extensive capital growth programmes and a diminishing pool of potential recruits, especially those with STEM qualifications (science, technology, engineering and maths), are creating a growing skills challenge. Lead times to competency are significant (from two to five years, depending on the skill level). As stated in the final report from the Government commissioned 'Leitch Review of Skills' (2006), there is a clear challenge of developing increasingly skilled workforces, with fewer young people entering work.

We have a workforce with an age profile that is now skewed to older workers, and the increasing loss of skilled workers to retirement presents a major recruitment and training challenge. Significant investment in skills is needed to support capital investment and counteract leavers' profiles.

The water industry, through Water UK, commissioned 'Energy and Utility Skills' (EU Skills) to evaluate the skills required to meet the current and future needs of the water sector. At the time of our draft Business Plan, we were awaiting the results of this modelling work to feed into our final Business Plan.

As a result of EU Skills' modelling work, we now have a good understanding of the scale of the skills issues we face and the associated costs.

Results indicate that in PR09, to address the step change in leavers due to retirement, we will need to recruit and develop 386 new trainees into the business, and significantly increase our apprenticeships, upskilling and development, of an additional 146 employees.

We understand the robust recruitment and training plans required to address the skills challenge over the next 15 years, as a minimum, and the need to invest in the training infrastructure to accommodate the increased numbers. We have developed a long-term resourcing and training plan to respond to this challenge over the coming AMP period.

It is worth noting that the projected skills investment costs for Gas Distribution Networks' directly employed labour over the next price review period, was £72m, which represents the total allocated to all four networks by Ofgem in price limits. The cost for Distribution Network Operators is projected to be significantly more. EU Skills have indicated that the total skills investment required by the regulated water companies is in the region of £200m (with £75m attributable to retirees only), of which our proportion is £15m.

Any step change across these sectors will have a direct impact on the water companies who will be competing for the same resources, especially in the South East where there are extensive capital growth programmes such as CrossRail, The

Olympic and Paralympic Games, and other Government spending initiatives for Schools and Hospitals.

We feel the most effective time to invest is in PR09 to ensure a sustainable resourcing and training plan is established that will deliver our requirements over the next three AMP periods (an approach similar to that taken by the Gas industry). Further information on EU Skills can be found in Section B3.

B1.2.5 Development of Competition

During the last five years we have seen considerable change to the regulatory regime, including the appointment of the first Ofwat Board, Chairman and new Chief Executive. Further changes are expected in the future, notably Ofwat's focus on enabling the development of competition in water, and the recently announced intention to undertake a full-scale review of the regulatory framework in advance of PR14.

The impacts of these related drivers of change on our operating environment are discussed in turn below.

Development of Competition

PR09 is an opportunity to enable competition. In our view this is of particular importance as Ofwat's Competition Review (published 16 May 2008) made a number of recommendations to Government designed to facilitate market-opening including:

- accounting separation
- RCV separation
- value chain separation
- retail competition for all customers; and
- wholesale markets for water and waste water

In February 2008, Defra and HM Treasury commissioned an independent review of competition and innovation in the England and Wales water and sewage markets. Professor Martin Cave was appointed to lead this review and to consider the scope to deliver benefits and drive innovation through developing competition and contestability in all aspects of the water and sewage sector supply chain.

To assess customers' views on competition we carried out customer research in November 2008. Ofwat, CC Water and Defra were all aware of the research. A key finding was that household customers did not see the benefits of competition. Some thought it could initially produce price reductions, but that in the long run prices would increase. There were strong concerns over water quality, as a result of cost cutting by rival companies seeking to make a profit. Participants of the research viewed competition as an opportunity for companies to avoid responsibility, and feared that it would be very difficult to get help with problems. Many felt that the introduction of competition would incur costs, and were not prepared to pay for something that offered little in the way of benefits to themselves.

The independent Cave review published its Interim Report on 18 November 2008, advocating a phased approach to furthering competition that could deliver significant benefits to the economy over the coming decades. The Government has accepted this phased approach and intends to take it forward. The Government also recognised the need for the sector to retain access to capital at keen prices, a critical consideration in the shape and timing of competition related change.

As a first step, and in response to the Review's recommendations, the Government announced, in the 2008 Pre Budget Report, a package of measures to extend retail competition in the water market for large non-domestic customers in England. The Government intends to lower the usage threshold above which businesses and other non-domestic customers are eligible to switch supplier from 50 ML to 5 ML, extend the competition regime to retail wastewater services, remove the current access pricing arrangement for water from legislation (replacing it with criteria to be introduced by Ofwat), and introduce nationally agreed codes to be coordinated by Ofwat in conjunction with stakeholders. The Government has also said it is strongly minded to mandate the legal separation of the retail arm of a company from the rest of its operations, in order to deliver further efficiencies and drive non-domestic competition. It will respond to this, and any further recommendations of the Cave Review, once it receives the final report expected in the spring of 2009.

As a consequence of the Government announcements, Defra is expected to launch a public consultation on the implementation of the 5 ML eligibility threshold in 2009. It is also due to consult in the spring on the implementation of the other reforms as part of the Floods and Water Bill.

Thames Water welcomes moves to develop competition where it will bring clear benefits to customers. We have been seeking to engage positively and constructively with Ofwat and the Cave Review Teams on options for market development and we are participating in Ofwat's accounting separation pilot.

The introduction of competition will drive both costs and benefits. It is our firm belief that those who benefit from competition should meet any implementation and transition costs. It is important that Government and Ofwat are clear that this will be the case and Ofwat should make an explicit commitment to allow projects designed to facilitate and implement competition to be included in prices from 2010.

There has been some clarification of the intentions of Government. However, the details of the changes themselves remain dependent on a large number of decisions, in some cases defined, but yet to be taken eg whether the eligibility threshold will change. In the most part the decisions are undefined eg if the eligibility threshold does change under what market rules will it operate and when will it be implemented.

The decisions yet to be defined and made are initially dependent upon: Ofwat's consultation on the Regulatory Accounting Guidelines; the Cave Review Final Report; DEFRA consultations; the detail of drafted secondary and primary legislation; and any subsequent Ofwat consultations. As a consequence of these there will then potentially be changes to undertakers' licences and the development of nationally agreed market codes. In this context Thames Water are not in a position to provide an accurate cost for the transition and implementation of further competition into our

plan. It is however our expectation that the position will become clearer within AMP5, with the potential for direct implementation costs and financing costs to be incurred.

At this stage the potential costs for Thames Water's customers are assessed to be material. We have calculated that (direct and indirect) costs could be between £230m and £1bn, and possibly higher.

The direct cost of the potential changes for Thames Water customers could range ⌘ [Redacted]. The range is dependent on the potential costs of introducing accounting separation and separate price controls.

The major indirect costs are primarily associated with potential debt finance costs. A study undertaken by ⌘ [Redacted]¹² has identified that there are potentially material indirect costs associated with some proposed market changes, for example:

The arbitrary allocation of the Regulatory Capital Value (RCV) such that retail and water resources receive disproportionate amounts of RCV when compared to other parts of the value chain

The forced Legal Separation of potential elements of the value chain, for example, retail.

⌘ [Redacted] findings highlight that in the event of an arbitrary allocation of the RCV there are very likely to be a number of debt covenant breaches. ⌘ [Redacted]¹³.

The costs incurred to introduce the potential changes are solely for the purpose of providing benefits to customers. As the beneficiaries, it is they who should therefore meet these costs.

In such circumstances we expect Ofwat to set out its commitment that such costs will be passed through in full to customer bills at the point at which they arise via a competition specific Notified Item. Our competition Notified Item is underpinned by analysis undertaken on Thames Water's behalf by ⌘ [Redacted], and work undertaken by ⌘ [Redacted]. This is set out in Section B3.

Ofwat should be aware that the development and introduction of competition will not only drive direct and consequential costs for companies, but may also have a material impact on delivery of Business Plans and embedded efficiency challenges.

Part B7 (Financial Projections) contains further information on the potential impact of competition on our business.

¹² ⌘ [Redacted] Financial Implications of Competition Models December 2008

¹³ ⌘ [Redacted] The Cost of Debt Outlook for the UK Water Industry 29 January 2009

B1.3 Managing Key Risks and Uncertainties

We are committed to high standards of corporate governance in the management of key risks to the appointed business. This section discusses our approach to the management of key risks and uncertainties under the following four sections:

- investment planning and the development of our Business Plan
- day-to-day Operational Risk management
- major projects
- notified items / relevant changes of circumstance.

B1.3.1 Investment Planning and the Development of Our Business Plan

During AMP4, we have invested significantly to improve our understanding of the condition and reliability of our assets. We have transformed our asset management planning capability through the development of our processes, systems and people, and built on the business-as-usual operational risk management approach that was successfully introduced in AMP3. Asset management planning is fully integrated into the company, our wider strategic direction and board objectives. We therefore understand our operating risks better than ever, and this is reflected in the balanced programme of activity proposed in this plan.

We have actively engaged with UKWIR as part of the development of their Asset Management Planning Assessment Process (AMPAP), and we have used the tool internally to identify some of our strengths and weaknesses in relation to Asset Management Planning.

The industry-developed Common Framework for Capital Maintenance Planning (CFCMP) underpins our approach to the development of all asset cases for PR09. We have fully incorporated the CFCMP into our asset planning through the development of a transparent and well-documented internal process that we use across the company to rigorously assess all capital maintenance cases.

Our approach is based on the following steps, which are consistent with the CFCMP:

- past and current performance assessment
- predicted future performance
- risk analysis and need scoring
- solution development
- programme development

Further detail of the alignment between the CFCMP and our internal processes is provided in Part B3 of our Business Plan.

We have enhanced our planning processes between our draft and final submissions to respond to the weaknesses identified and the feedback from Ofwat in our draft CIS baseline.

We have developed our Business Plan around a risk methodology for all four of the investment categories (Base, Quality, Enhanced Levels of Service and Supply Demand Balance). All solutions in our final Business Plan have been assessed against a standard risk framework to identify the risk to customers with and without investment. This risk framework is centred on the key measures of customer service. Customer valuations of service have been derived through the customer preference surveys and attached to the risks to create benefits. In this way we have built a plan that addresses the most significant risks to our customer service. Risk management is therefore embedded in our plan selection.

Risk forecasts are made for future years using calibrated models. This approach enables us to understand and compare the risk profile of all our assets and to be able to assess the investment needed to manage this risk in the future.

Our cost benefit analysis framework is integrated into our Asset Planning System and solution selection criteria. It calculates the whole life cost over a 40-year planning period, incorporating costs associated with maintaining assets, carbon costs and traffic disruption costs.

In identifying the solutions to implement we have also taken into account the risks associated with the costs and benefits. Each solution is given confidence grades to assess the deliverability (addressing possible problems in delivery, eg planning permission) and effectiveness (assessing how confident we are that the project will deliver the assessed benefits). These confidence grades allow us to test the sensitivity of options and consider choosing a mix of solutions that balance solution cost with delivery risk.

Water / Wastewater Risk Frameworks

Under the Common Framework and AMPAP, we must carry out risk assessments on our investment options. Our Water and Wastewater Risk Framework measures align to service to customers, the environment, and some of our business and asset stewardship drivers. On the water side, measures include: interruptions to supply, low pressure, treated water quality, pollution incidents, nuisance and road traffic disruption. On the wastewater side, measures include: internal and external flooding, flow and effluent consents, sludge disposal and odour. Many of the measures originate from the operational risk management methodology that we developed in AMP3. There are 15 measures in the Water Risk Framework and 14 measures in the Wastewater Risk Framework. Each measure has up to five severity bands and a definition of the quantity of the measure. Further detail on these risk frameworks, and the approaches for assessing current and future needs by asset type is included in Sections B3 and C8.

For each measure (and each severity band) we assign a valuation that has been derived from customer valuations through choice experiments or from business knowledge. These valuations are held in our investment management system (IMS) and allow us to value the expected benefits of the interventions stored in our Asset Planning System (APS). We use a 40-year period for our cost benefit assessments of

asset interventions. Our frequency of asset failure projections into the future and the probability of failure leading to impact are made using calibrated models, although for non-infrastructure assets, we sometimes need to rely on expert judgements, depending on the availability of asset failure data.

Operational risk assessment

As per our draft plan, our analysis has been built bottom-up for both operating and capital costs, and then crosschecked against top-down studies. Between draft and final Plans we have undertaken additional bottom-up analysis of our own performance and additional top down benchmarking to validate the savings. We have also included additional detail in Section C2 on the performance of our supply-chain and operations department following feedback from our Reporter.

The changes between draft and final show a refinement rather than a wholesale change in the forecast. Due to the breadth of our analysis we would not expect any other review of our costs to show a materially different answer from that included in our plan.

To reflect the uncertainty in the longer term, AMP5 savings risk analysis was used to define the expected upper, lower and central estimates of the scope for further efficiencies. By assessing the distribution of expected outturn costs, and consistently taking a central view of risk across our entire Business Plan, we have taken a robust, risk-based approach to operational efficiency. Further details of our approach to efficiency are contained within section B2 of the Business Plan.

B1.3.2 Our Risk Management Procedures

We have in place, and will continue to maintain, an integrated Business Risk Management (IBRM) process. Through this process we identify, assess and manage our corporate, strategic, operational and project derived risk exposure.

The IBRM process provides a generic framework for the assessment, labelling, recording and reporting of risks and is supported by robust risk management processes within all business areas.

The IBRM process supports:

- risk informed business planning
- enhanced risk informed decision making at all levels of the business
- delivery of all regulatory and legal obligations
- satisfaction of corporate governance requirements
- protection of shareholder value and other stakeholder interests.

Accordingly it has three principal aims:

- **Corporate Risk Portfolio:** To provide visibility of the corporate risk portfolio the business carries.
- **Governance:** To ensure compliance with all relevant Corporate Governance requirements.
- **Assurance:** The ability to demonstrate adequate corporate and operational risk management arrangements to all key stakeholders.

Risk registers are maintained for all front line and supporting business units, each of which nominates a risk representative responsible for analysing and reporting risks within their organisational unit. This provides a complete inventory of risks to the business, and records each risk along with its respective Risk Owner, Response Plan, Completion Date and Response Plan Owner.

Business unit line management and the associated Executive Management Team (EMT) member are responsible for managing risks and ensuring effective Response Plans are in place. Progress against Response Plans is reviewed and monitored based on significance and communicated to the Risk Review Committee (RRC). There is a requirement that all risks are quantified, and that they are evaluated and categorised in accordance with prescribed methodologies.

On a quarterly basis each business area identifies its material risks using risk thresholds linked to corporate requirements and the respective objectives and KPI's in that business area. Business units escalate these risks via the relevant EMT member for inclusion at the RRC.

The RRC, chaired by the Head of Internal Audit and attended by Risk Advisors from each business area, meets quarterly to assess the escalated business risk portfolios from across TWUL with the objective of establishing the business risk portfolio for escalation to the EMT and Audit and Risk Review Committee (ARRC).

B1.3.3 Major Projects

We will be required to deliver a series of exceptionally large single engineering projects in the coming decade including the Tideway project (comprising the Lee Tunnel, Beckton Sewage Treatment Works Extensions, and the Thames Tunnel) and the Upper Thames Reservoir.

- **The Tideway Project:** The London Tideway Tunnels and the Beckton Sewage Treatment Extensions are driven primarily by statutory obligations, (i.e. compliance with the Urban Waste Water Treatment Directive), although the Beckton Sewage Treatment Extensions will also accommodate growth in the Beckton Sewage Treatment Works catchment. The combined tunnels will provide storage of 1.6 million cubic meters and the Beckton Sewage Treatment Works Pumping Station is designed to enable the tunnel to be emptied in 48 hours. The Environment Agency has been involved throughout the development of these projects and has specified the discharge consents that Beckton Sewage Treatment Works is required to meet following completion of the projects.
- **The Upper Thames Reservoir:** This is a large infrastructure project consisting of the construction of a major new pumped storage reservoir in the upper Thames catchment area, near Abingdon, Oxfordshire. The reservoir is a key component of our preferred programme within our Water Resources Management plan (WRMP), The reservoir is our preferred option for maintaining security of supply in the London Water Resource Zone from 2026/27, and the Swindon/Oxfordshire Water Resource Zones from 2024/2025.

The scale and complexity of these projects entails a high degree of uncertainty and requires a rigorous approach to risk management. We have applied a structured risk management process to the development of the projects – discussed in more detail in ✂ [Redacted]– and in line with HM Treasury’s Green Book guidance, have taken action to adjust for optimism bias.

✂ [Redacted]

Section B4 and ✂ [Redacted] describe the background to these projects in more detail.

B1.3.4 Notified Items

In order to provide companies with clarity in advance of making investment decisions, the regulatory regime must offer assurances that both new obligations, and unexpected events outside of management control, will be properly remunerated so as not to outweigh the incentives to improve efficiency. The need for such assurances follows from Ofwat's duty to finance companies' functions.

✂ [Redacted]

Table 7: Notified Items
✂ [Redacted]

B1.4 Achieving the Right Balance for Consumers and the Environment

This section summarises the approach we have followed to develop our final Business Plan. It describes the eight broad phases of development that we have gone through to ensure that our Plan delivers customers' priorities, meets statutory requirements, delivers environmental improvements, and provides services that are deliver value for money at a price customers can afford. Figure 6 below sets out these key steps:

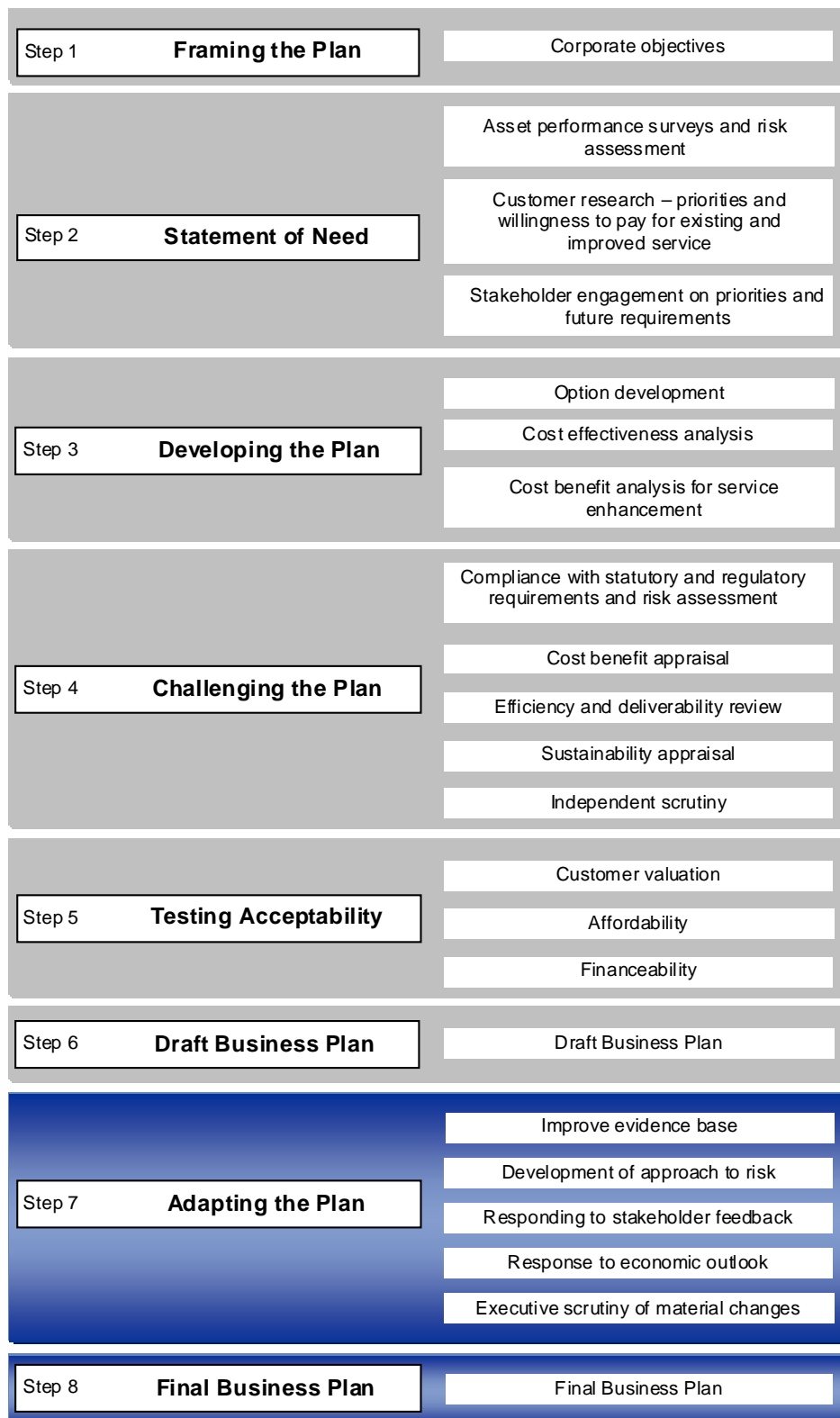


Figure 6: Our Planning and Assessment Process

B1.4.1 Preparing our draft Business Plan (Steps 1 – 6)

Steps 1 to 6 were carried out in the development of our draft Business Plan. Full details were included in our draft Business Plan submission, and are included in Annex B1(b) of this document.

The draft Plan was built on our Strategic Direction Statement ‘Taking care of water’, and was the product of extensive customer and stakeholder consultation.

Our approach combined best practice asset-management, cost-benefit and risk-management processes to identify investment needs, and select capital and operating solutions and investment programmes, that explicitly provided statutory outcomes and service enhancements. We ensured that all solutions and outcomes aligned with our customers’ and stakeholders’ priorities.

We engaged with UKWIR in the development of their Asset Management Planning Assessment Process (AMPAP), and used the tool to enhance our approach to Asset Management Planning. Furthermore, we embedded the industry-developed Common Framework for Capital Maintenance Planning (CFCMP) into our day-to-day operational processes. To integrate the Common Framework into our business, we developed a transparent and well-documented internal process, and ensured its rigorous and consistent application to the entirety of our investment plan. (Further detail of the CFCMP is provided in Part B3 of our Business Plan). The above approach enabled us to undertake a detailed programme of prioritisation to identify the optimum programme of work, which, on the basis of available information, was consistent with our customers’ willingness to pay and the delivery of our strategic objectives.

In line with our commitment to the principles of best practice asset management, our plans were subject to an iterative process of review, scrutiny and challenge by the Executive and the Board. To provide external challenge and augment our internal processes our Chief Executive established the PR09 Challenge Team, whose members were drawn from the external business environment and Thames Water’s senior management team. The role of the Challenge Team was to provide reassurance to the Thames Water Board and Executive that the preparations for PR09 were robust, stood up to commercial scrutiny and had been vetted for stakeholder acceptability. The Challenge Team provided a thorough independent review of Thames Water’s draft Business Plan and undertook a comprehensive strategic review of approximately £3 billion of proposed capital investment accounting for over 60% of Thames Water’s base programme (excluding major projects) as well as base opex costs, incremental opex cases, and Thames Water’s approach to determining the scope for opex efficiency – in total £6 billion of combined AMP5 operating and capital expenditure. We have included the Challenge Team’s final report in Annex B1(c).

We developed an understanding of the acceptability of our Plan throughout its development from our programme of customer and stakeholder engagement, which included: views from our SDS consultation; deliberative research into our draft Business Plan; our quantitative Stage 1 and 2 research into willingness to pay and priorities for the services we provide; evidence from the development of the Tideway and Upper Thames Reservoir proposals; and a quantitative survey of residential

customers, who were asked to express their willingness to pay for the improvements set out in our draft Plan. Despite the economic downturn the results of our peer reviewed quantitative research, undertaken in May and June 2008, provide strong evidence that customers support our plan and are willing to pay.

We recognise that, although our bills are low relative to our peers and other utilities, the bill increase we are proposing coincides with pressure on household budgets from other sources. We agree with customer and stakeholder views that overall responsibility for supporting financially disadvantaged households sits with Government, but that safety nets need to be in place for those likely to suffer hardship due to rising water and sewerage charges. Section B6 of our Business Plan includes a range of measures to help mitigate the increased burden that will be faced by the most vulnerable customers.

We have worked to ensure the development of a balanced Business Plan, which accurately reflects the priorities of our customers and stakeholders, meets statutory requirements, delivers environmental improvements, and provides services that will deliver value for money, at a price that customers can afford.

This industry-leading approach to business planning was favourably reviewed by our Reporter and commended by CCWater.

B1.4.2 Moving from draft to final Business Plan (Steps 7 – 8)

The starting point for development of our final Business Plan was our draft Plan.

As we said we would in our draft Plan, we have updated our investment plans, operating cost cases, financing assumptions and delivery plans in the light of new information, improved analysis, and the views and feedback of our customers, stakeholders and regulators.

We have significantly improved our cost benefit analysis, improving our treatment of costs to make them more reflective of their bill impacts, and ensuring greater inclusion of social and environmental costs, including carbon, in the analysis of our final Plan. We have more extensively applied risk assessment to development of our proposals in line with the Common Framework approach to asset planning. We have received and responded to clarification on quality obligations from our quality regulators and reflected the implications of Ofwat's latest regulatory guidance (eg on climate change).

Our underlying assumptions have been updated to take account of the dramatic change in the economic outlook – notably: the level of expected future demand on our network from population growth and new housing development, the business impact of substantially lower projected future revenues and the impact for our customers of the cost and affordability of our plans.

To minimise the bill impact of our plans we have continued to develop our delivery model, further challenging supply chain partners and procurement practices in order to drive out any unnecessary costs.

We have undertaken a deliverability review to assess the impact of the London 2012 Olympic and Paralympic Games on our ability to effectively operate in London during the run-up to the Games. We are now confident that we can programme the delivery of our plans to accommodate the significant impact that the Games will have on our operations in London, at no extra cost to customers. But this is only achievable because we have been prepared to accept greater operating risk.

We have refined our approach to risk, undertaking case-by-case analysis of the expected outturn range of our operating costs and in all cases opting for a central estimate, or a lower more challenging estimate, of cost. We have also maintained our very challenging approach to the scope for improvements in our operating and capital cost efficiency as set out in the draft Plan despite the more challenging economic environment that we now expect to face. As a result, in our final Plan, relative to the draft, the company will bear significantly more risk than our customers.

We have instituted a Change Protocol to ensure a transparent and robust approach to the refinement and agreement of our plans. This process has governed all material changes made between our draft and final submissions. This approach was built around Executive scrutiny of material changes to our Plan. It has ensured full ownership and support by the Executive for our final Business Plan, ensured strategic assessment and scrutiny of how proposed changes achieve an improved balance in our plan relative to our strategic objectives and enabled the maintenance of clear links between our Board objectives and the outcomes to be delivered by our final Plan.

Appendices

Available on CD:

Appendix B1a - Sustainability Assessment Summary

Appendix B1b - Preparing our DBP Steps1-6

Appendix B1c - Challenge Team Report.