Water industry forward look 2010-30

Some possible views of the future

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20 March 2006

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Viewpoints

This is the first in a series of occasional viewpoints.

These are the result of research carried out and will be presented by individual members of Ofwat's staff or Board members. They may not necessarily represent our current approach, but are intended to stimulate debate and give a wider audience an indication of how our policy might evolve. In some instances, the views expressed may even challenge our current thinking.

1 Introduction

The water industry is a long-term industry subject to price reviews, currently every five years. A long-term perspective is essential in an industry where infrastructure installed many years ago is still fit for purpose and projects may take many years from inception to completion. As an aid to long term planning, it was felt useful to speculate on possible outlooks for the medium to long term future of the water industry.

In this water industry forward look[1] (WIFL) we have examined the possible future implications for financing and household customers' bills of four scenarios over the next 25 years. We have considered the potential range of operating and capital costs and the revenues associated with a number of known potential drivers of change for the industry under each scenario. We have also considered whether the levels of investment are manageable.

Here we report our findings of the possible implications for financing and household customers' bills for each of the scenarios for the period 2010-30. We have modelled the scenarios at an industry level using an industry aggregate dataset as if the industry was a single company.

This forward look is not forecasting inputs to or predicting the outcomes for the 2009 price review and beyond. It simply models scenarios on the basis of certain assumptions that we believe to be within plausible ranges given our current understanding of issues facing the industry. The scenarios are descriptions of different plausible futures. They are not predictions of strategies or policies or 'best and worse' case outcomes. As part of the development of the potential ranges of costs and revenues we shared our thinking with some of the stakeholders to test that the underlying assumptions are plausible.

This exercise does not pre-judge the 2009 price review. This report is not an Ofwat policy paper. We will consider afresh all the issues pertinent to setting price limits, including the consultations we have initiated recently on financeability issues (jointly with Ofgem) and the length of the review period. Others will make their contribution to the 2009 review as appropriate.

We extended our Aquarius 3 financial model (used for setting price limits in 2004) to accommodate the longer timescales of WIFL. This model is available to Aquarius 3 licence holders.

We present monetary figures in two price bases in this report. Average household bills are presented in 2005-06 prices, all others are in 2002-03 prices.

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[1] The water industry forward look is referred to as "forward look" in the remainder of this paper.

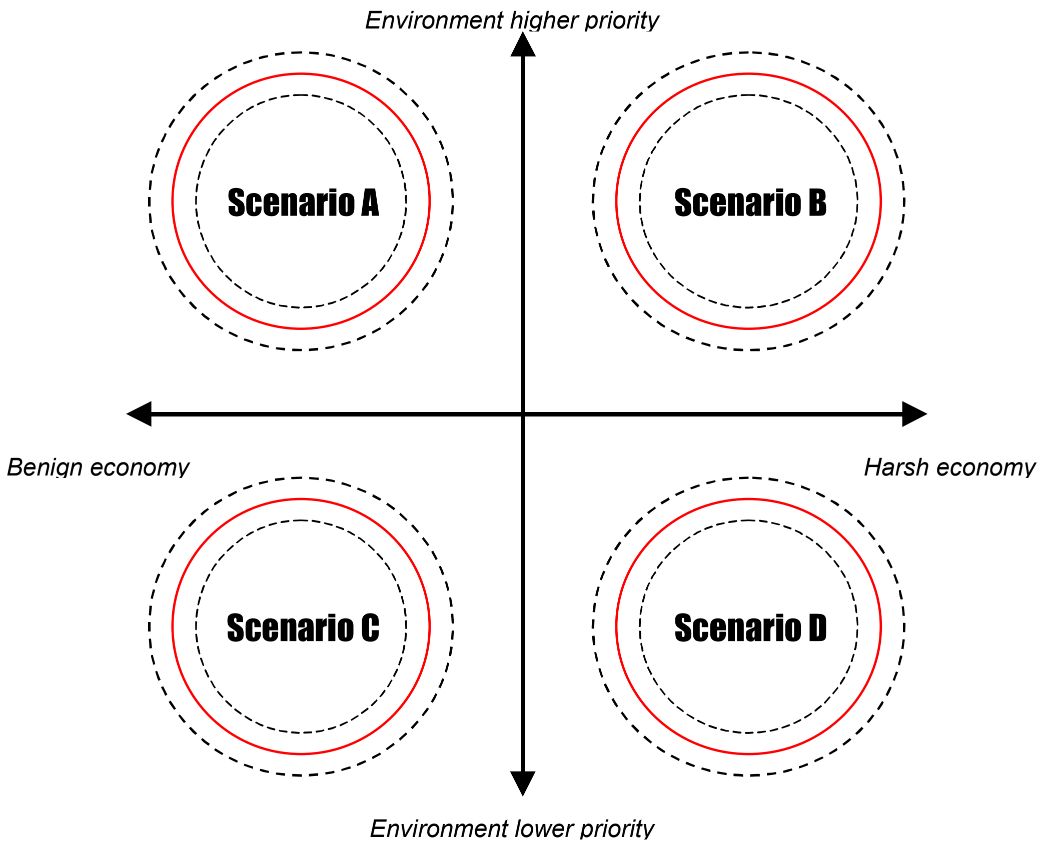
2 Scenarios

2.1 Overview of scenario approach

We have used a scenario approach to consider the differing impacts of the drivers of change. We have combined two key elements – macroeconomic trends and the relative importance placed on environmental improvements as depicted in figure 1 to produce four scenarios. The differing impacts of the potential drivers of change have been used to build the four scenarios described at a high level as follows.

- Scenario A: benign macroeconomy with higher priority placed on the environment.
- Scenario B: harsh macroeconomy with higher priority placed on the environment.
- Scenario C: benign macroeconomy with lower priority placed on the environment.
- Scenario D: harsh macroeconomy with lower priority placed on the environment.

Figure 1: Scenario approach

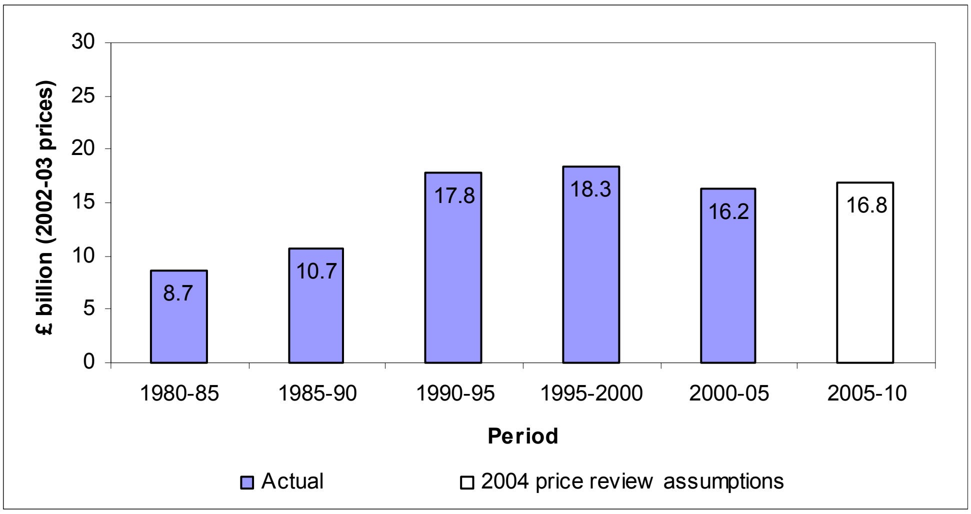


For each scenario we have developed a central case – shown as the solid circle in figure 1 and ranges around this central case – shown as the dashed circles. The details of this are set out further in section 2.2.

The assumptions underlying the scenarios were not developed as ‘extremes’, ie at the outer boundaries of possible outcomes. They have been developed by incorporating the main drivers of change into hypothetical chains of events. A full description of the scenarios is in appendix 1. By constructing the scenarios as a chain of events across possible drivers for change we arrive at a range of levels of investment. The scenarios therefore do not represent the boundary of the cost range – they are not ‘best or worst’ outcomes.

For a long-term industry, the historical context of investment is important. Figure 2 shows that between privatisation in 1989 and 2010 the water companies will have managed a programme of capital investment totalling around £70 billion in England and Wales. There has been a range in the mix of projects in terms of scale but none have dominated in proportion to the overall scale of the programme. In addition, there have been few major long-term projects. More large-scale projects may be needed in future. For example, in the 2004 price review we accepted the need for investigative work before 2010 on up to five new reservoirs mainly designed to help improve security of supply in the south-east of England.

Figure 2: Level of capital investment 1980 to 2010



This forward look builds on the historical experience but also takes account of a number of potential drivers for changes to industry costs beyond 2010. These reflect different strategies for maintaining serviceability and defining the scope and scale of environmental and sewer flooding improvements. We also consider the impact of climate change in conjunction with housing growth and demand management on the demand for water and sewerage services. Given the scale of potential investment, we also look at different options for the Thames Tideway. Throughout we have had regard to the impact of the Traffic Management Act and the Water Framework Directive. We have assumed challenging efficiency targets for both operating and capital expenditure in all of the scenarios.

2.2 Overview of modelling approach

We have used our ‘building block’ approach that we used at the 2004 price review to assess the impacts of the scenarios on average household bills. This is shown diagrammatically in appendix 2.

Although we have used our assumptions on future costs and revenues to develop a central case for each scenario, there are no ‘right answers’ in exercises involving projections into the future. This is particularly the case here where the time horizons are long.

We have taken a confidence interval approach, determining an upper and lower limit of cost and revenue inputs to the financial model. In this way we were able to model the range and central case of price limits that would result for each scenario. This provides a perspective on the sensitivity of the assumptions for each scenario. A summary of the projected levels of investment and the resulting impacts on average household bills for water and sewerage services at an industry level are set out in chapter 3.

The financial assumptions for scenarios A and C – the benign macroeconomy views – are a continuation of the assumptions underpinning the final determinations in the 2004 price review where RPI inflation is 2.5% per annum and the nominal interest rate is 6.8%. However, unlike the final determinations, capital cost inflation is assumed to be higher than RPI in the short-term reflecting pressure created by the 2012 Olympics. For scenarios B and D – the harsh macroeconomy views – we have assumed inflation is stable at 2.5% per annum for 2006-10. This is followed by linear growth in inflation between 2010 and 2018 and linear deflation between 2019 and 2025 returning to 2.5% per annum. Nominal interest rates increase in response to rising inflation but not by as much as the change in inflation. Capital cost inflation is assumed to be the same as RPI throughout the period.

For each scenario we have assumed the same cost of capital as we used for the last price review in 2004, ie 5.1% real, post-tax. We have chosen not to vary it between the scenarios. A small change to the cost of capital has a significant impact on the financial projections. By keeping the cost of capital constant across the scenarios we can make direct comparisons of the modelled outcomes and illustrate the bill implications of the different levels of investment.

Our financial assumptions are described in more detail in appendix 3.

3 Results

3.1 Introduction

As set out in section 2.2 we have produced a central case and a range around this for each scenario. We present the outcomes for the central case in section 3.2 and those for the ranges around the central case are in section 3.4.

A critical factor for the impact on customers' bills is the way in which capital investment is financed. The large investment programmes that are a characteristic of the water industry means that most water companies are cash flow negative, ie they spend more money than they collect from customers. This means that companies must be 'financeable', ie be able to attract investors and lenders at reasonable cost. There are a number of potential ways of achieving this and Ofwat (jointly with Ofgem) has recently issued a discussion paper on this, 'Financing Networks'. The central case has been modelled using two of the approaches covered in 'Financing Networks'. For the purposes of this forward look exercise we illustrate the differing outcomes arising from the financing approach we adopted in the 2004 price review and from two levels of rights issue. This is presented in section 3.3.

3.2 Central case assumptions and outcomes

The aggregate capital investment and operating cost projections for the industry derived from our assumptions are set out in table 1.

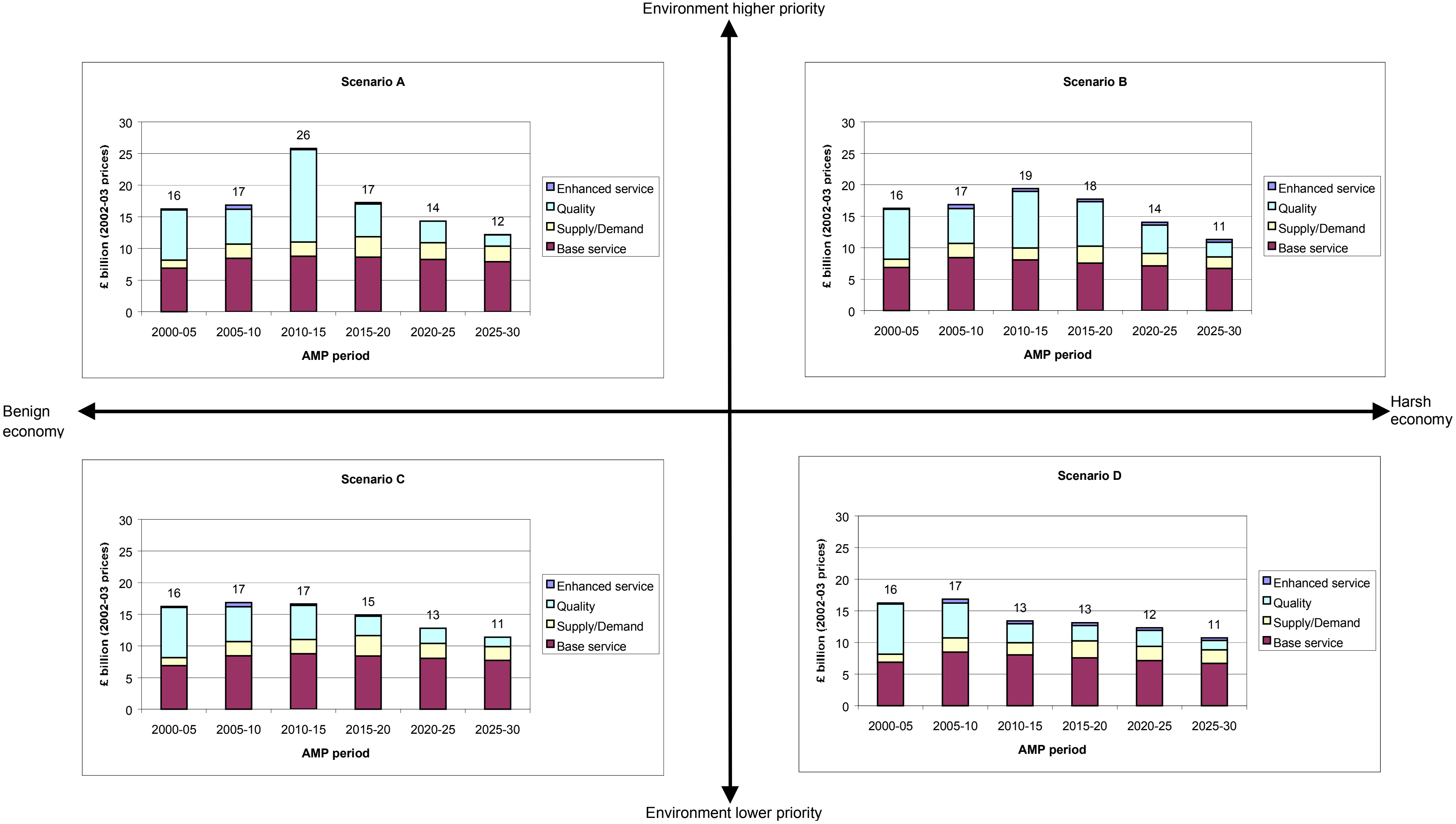
Table 1: Projected investment levels 2010-30 – central case

(2002-03 prices)	Capital expenditure Total £ billion	Operating expenditure Annual average £ billion
Scenario A	69.5	3.4
Scenario B	62.5	3.2
Scenario C	55.7	2.9
Scenario D	49.5	2.7

3.2.1 Capital investment projections

Capital investment between 1990 and 2010 will be around £70 billion and average annual operating costs for 2005-10 are estimated to be £2.95 billion. Figure 3 compares the capital investment forecasts in each of the five-year periods to 2030 for each of the scenarios. It also shows a breakdown of the investment between maintenance and enhancement expenditure.

Figure 3: Capital investment projections – central case

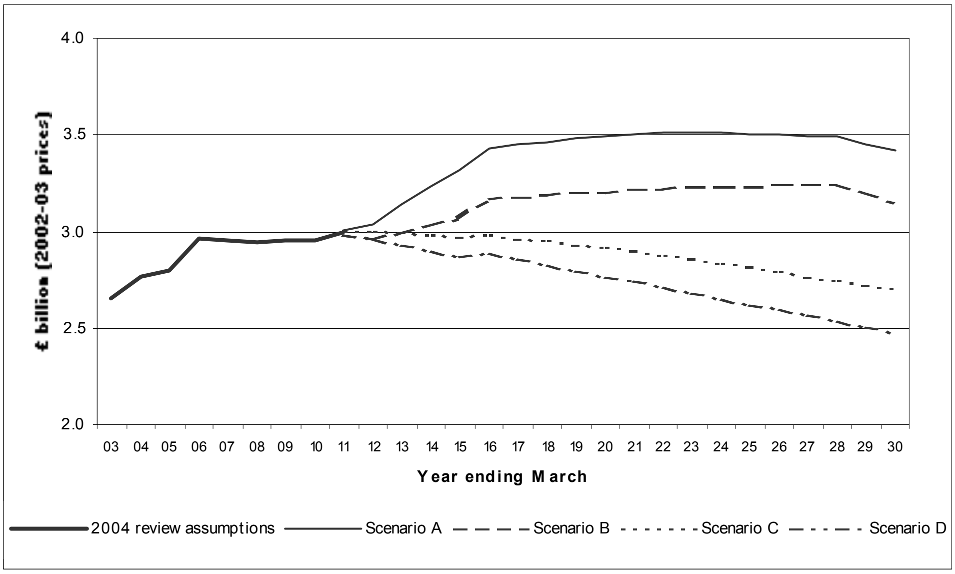


The capital programme is projected to be the largest under scenario A amounting to nearly £70 billion during 2010-30, around the same as 1990-2010. The next largest is scenario B with £62 billion, then scenario C with £56 billion and the smallest capital programme is under scenario D with £50 billion. In all the scenarios the capital programme follows a falling profile throughout the 2010-30 period reflecting the profile of expenditure on the enhancement programme.

3.2.2 Operating expenditure projections

Figure 4 shows the trend in annual operating expenditure. It rises to peak during 2020-25 at around £3.5 billion and £3.2 billion in scenarios A and B respectively, but follows a falling profile throughout the period in scenarios C and D.

Figure 4: Operating expenditure projections – central case



3.2.3 Revenue projections

In addition to forecasting capital and operating costs we also forecast base revenue for each scenario.

Base revenue rises under scenarios A and C partially offsetting the impact of rising costs on the price limits, but remains relatively stable in scenarios B and D beyond 2010. The drivers of rising revenue in scenarios A and C, namely increasing property numbers and increases in household consumption, increase at faster rates than in 2005-10. However, the counterbalancing aspects to rising revenue do not change to the same degree. The absolute number of optional meters installed in each year falls as the number of households that would willingly opt for a meter is exhausted and reductions in non-household volumes start to level out.

We have assumed water scarcity status will be achieved for most companies in the south-east during the period. The resulting large increases in selective metering do not have a significant impact on revenues. We have assumed that these properties have average characteristics so that metering does not unwind existing cross-subsidies and reductions in demand are broadly offset by the higher charges that reflect the additional costs of maintaining a metered account.

3.2.4 Impact on household bills

Table 2 shows the impact on average household bills from the modelled outcomes from the four scenarios. These use our central case assumptions for cost and revenues and also use the same approach as we adopted at the 2004 price review for financeability.

Table 2: Impact on average household bills

£ 2005-06 prices	Bill in 2009-10	Peak bill			Bill in 2029-30	
		peak	year	change from 2009-10		change from 2009-10
Scenario A	£307	£398	2015-16	30%	£363	18%
Scenario B	£307	£382	2018-19	24%	£357	16%
Scenario C	£307	£333	2014-15	8%	£302	-2%
Scenario D	£307	£323	2010-11	5%	£287	-7%

Average household bills are projected to be at their highest under scenario A. These peak at £398 in 2015-16, an increase of around 30% compared to the level in 2009-10. They then fall back to £363 by 2029-30, which is still an increase of 18% compared to 2009-10. Scenario A is projected here to have the greatest level of capital investment, nearly £70 billion over the 20 years including £26 billion in 2010-15 alone.

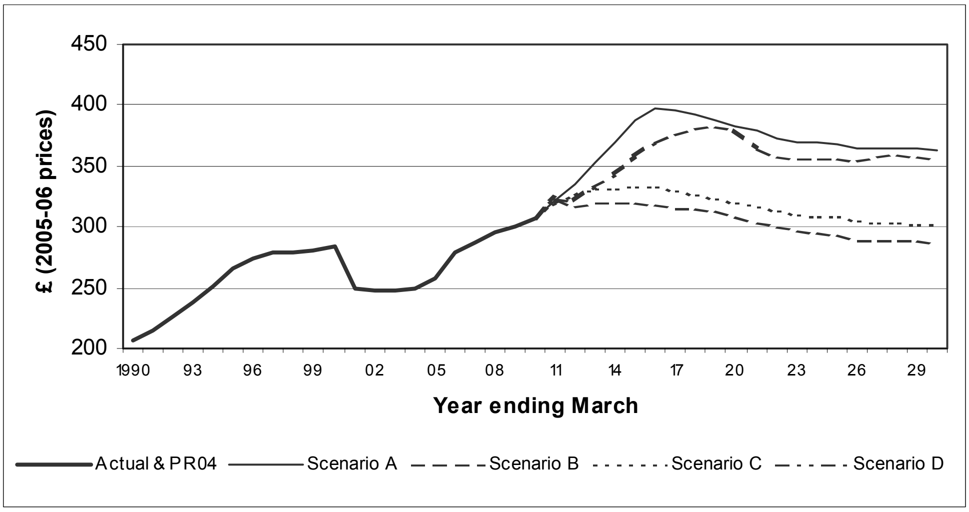
Scenario B also shows a significant rise in bills, peaking in 2018-19 at £382, an increase of 24% compared to 2009-10. Like scenario A, this then falls back to £357 by 2029-30, an increase of 16% over 2009-10. Again the levels of investment remain high at around £62 billion over 20 years.

Scenarios C and D, which assume a lower priority given to the environment, do not give rise to such peaks in household bills. The peak change is projected to occur in 2014-15 with an 8% rise for scenario C and in 2010-11 with a 5% rise in scenario D. Both of these scenarios show an overall reduction in bills by 2029-30 (compared with 2009-10) with scenario C lower by 2% and scenario D by 7%.

It should be noted that the peaks in bills could be mitigated if the peaks in capital investment could be reduced through delaying or deferring it to later periods.

Figure 5 shows the trend in household customers' bills in a longer context showing the change in bills over the 40-year period from privatisation to 2030.

Figure 5: Trend in projected average household customers' bills by scenario



3.3 Modelled financing approaches

The financial assumptions for this forward look are, as noted in section 2.2, the same as we used for the 2004 price review. This includes the approach to financeability.

As expected, the financeability issue faced at the 2004 price review continues beyond 2010 for all scenarios. If allowed returns are equal to the weighted average cost of capital (WACC), then in all the scenarios the package of financial projections do not satisfy the financial ratio criteria needed to maintain a credit rating well within investment grade. Price limits and hence customers' bills need to be increased to achieve a satisfactory trend in the package of financial ratios consistent with such a credit rating. It is on this basis that the bill changes described in section 3.2.4 for the central case have been derived.

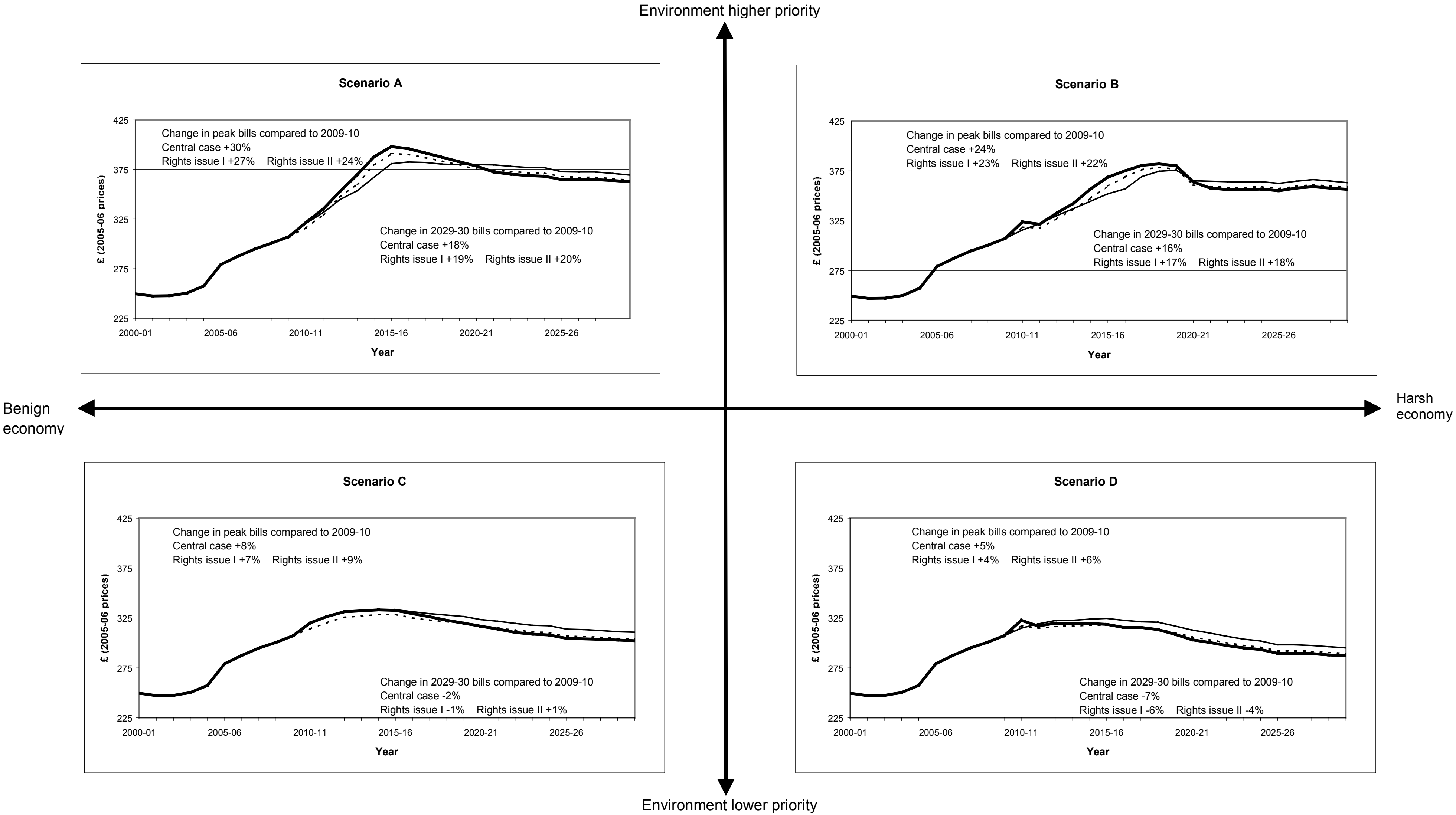
This is not, however, the only way of achieving financeability. Ofwat and Ofgem have recently issued a discussion paper, 'Financing Networks', which includes a series of options on how this may be done. The paper distinguished market-led solutions such as rights issues or greater use of index linked debt from regulator-led ones such as accelerating the amounts allowed for depreciation or the approach Ofwat adopted at the last price review of increasing revenues.

In order to illustrate this we have also modelled two levels of rights issues for each of the scenarios to mitigate the need to increase bills to meet acceptable financial criteria. We assume the rights issues occur in 2010. Rights issue I reduces gearing to around 55% at the start of the 2010-15 period and rights issue II reduces gearing to 50%. We have assumed that the new equity attracts the same dividend yield and growth as existing equity. However, we recognise that shareholders might require a higher yield to induce them to take up a rights issue. Further details on our assumptions for the rights issue sensitivities are set out in appendix 4.

Figure 6 shows the impact on household customers' bills of the two sensitivities for rights issues compared with the bills arising from a continuation of the approach taken in the 2004 price review (ie those set out in section 3.2.4).

Figure 6 shows that customers tend to experience the highest bills when the required captial investment (and hence financeability uplift) is at its peak. The requirement for financeability revenue tails off in the later periods, particularly in scenarios A and B. As can be seen from figure 6, the impact of the rights issues is greatest in the periods of highest capital investment, ie in 2015-20 for scenarios A and B. The impact of assuming rights issues is less pronounced on scenarios C and D. For scenario A bills at the end of the 2010-15 period are £7 lower with rights issue I (£9 for scenario B) and £17 lower with rights issue II (£15 for scenario B). Bills in 2030 are broadly the same as in the central case although in all scenarios they are slightly higher for the rights issue sensitivities reflecting the higher weighted average cost of capital associated with lower gearing.

Figure 6: Impact of rights issue on projections of average household bills



Bold line represents actual bills and 2004 price review projections to 2009-10 and, thereafter, the central case adopting the 2004 price review approach to financeability.
Dashed line represents rights issue I.
Light line represents rights issue II.

3.4 Outcomes for the ranges around the central case

This section discusses the outcomes for the financial modelling of ranges around the central case assumptions. It compares the average household bills, underlying costs and revenue for financeability for each scenario. The average household bills presented in this section are based on the modelled outcomes from the continuation of the 2004 price review approach to financeability.

3.4.1 Capital investment projections

Table 3 shows that the capital programme over the period 2010-30 has significant variation with the minimum investment at around 15% lower than the central case and the maximum at around 20% higher. This is consistent across all scenarios.

Table 3: The ranges of capital expenditure projections 2010-30

		Five-year totals				Total
£ billion (2002-03 prices)	2005-10	2010-15	2015-20	2020-25	2025-30	2010-30
Scenario A minimum		23.0	14.8	12.2	10.2	60.1
Scenario A	**16.8**	**25.8**	**17.2**	**14.3**	**12.2**	**69.5**
Scenario A maximum		29.3	20.6	17.5	15.2	82.7
Scenario B minimum		16.9	15.1	11.9	9.3	53.2
Scenario B	**16.8**	**19.4**	**17.7**	**14.0**	**11.3**	**62.5**
Scenario B maximum		22.5	20.8	16.7	13.8	73.8
Scenario C minimum		14.7	12.9	11.0	9.6	48.3
Scenario C	**16.8**	**16.6**	**14.9**	**12.8**	**11.4**	**55.7**
Scenario C maximum		19.3	17.6	15.4	13.9	66.2
Scenario D minimum		11.5	11.0	10.3	8.8	41.5
Scenario D	**16.8**	**13.4**	**13.1**	**12.3**	**10.7**	**49.5**
Scenario D maximum		15.9	15.7	14.9	13.2	59.7

3.4.2 Operating expenditure projections

Annual average operating costs over 2010-30 fall within a smaller range, with minimum values around 5% lower than the central case, and maximum values around 5% higher. Table 4 compares the annual operating expenditure in each period.

Table 4: The ranges of operating expenditure projections 2010-30

		Annual averages				Average
£ billion (2002-03 prices)	2005-10	2010-15	2015-20	2020-25	2025-30	2010-30
Scenario A minimum		3.0	3.3	3.3	3.3	3.2
Scenario A	**3.0**	**3.1**	**3.5**	**3.5**	**3.5**	**3.4**
Scenario A maximum		3.3	3.6	3.7	3.7	3.6
Scenario B minimum		2.9	3.1	3.1	3.1	3.0
Scenario B	**3.0**	**3.0**	**3.2**	**3.2**	**3.2**	**3.2**
Scenario B maximum		3.1	3.3	3.4	3.4	3.3
Scenario C minimum		2.9	2.8	2.7	2.6	2.8
Scenario C	**3.0**	**3.0**	**3.0**	**2.9**	**2.7**	**2.9**
Scenario C maximum		3.1	3.1	3.0	2.9	3.0
Scenario D minimum		2.8	2.7	2.6	2.4	2.7
Scenario D	**3.0**	**2.9**	**2.8**	**2.7**	**2.5**	**2.7**
Scenario D maximum		3.0	2.9	2.8	2.6	2.8

3.4.3 Revenue projections

For the base revenue projections only the assumptions on the rate of meter uptake and property numbers were changed. Consequently, there is a range of less than ±1% from the central case in the base revenue projections for all scenarios.

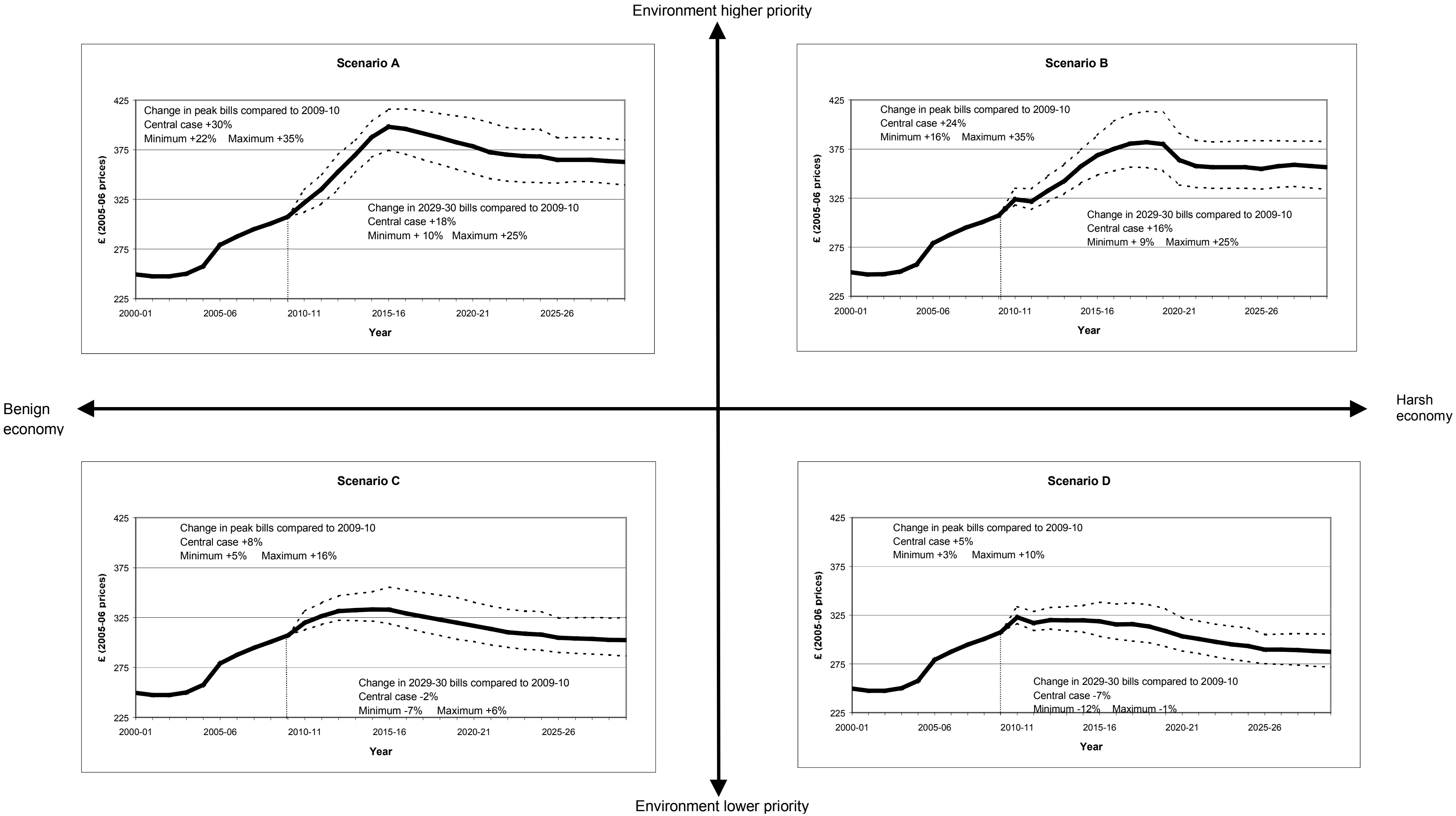
3.4.4 Impact on household bills

Table 5 summarises the peak average household bills and figure 7 the trend over the period to 2029-30 for the ranges around the central case for each scenario.

Table 5: Changes in projected average household bills 2010-30 and the possible ranges for each scenario

£ 2005-06 prices	Bill in 2009-10	Peak bill peak	year	change from 2009-10	Bill in 2029-30	change from 2009-10
Scenario A minimum		£375	2015-16	22%	£340	10%
Scenario A	**£307**	**£398**	**2015-16**	**30%**	**£363**	**18%**
Scenario A maximum		£416	2016-17	35%	£385	25%
Scenario B minimum		£356	2017-18	16%	£334	9%
Scenario B	**£307**	**£382**	**2018-19**	**24%**	**£357**	**16%**
Scenario B maximum		£413	2018-19	35%	£383	25%
Scenario C minimum		£322	2012-13	5%	£287	-7%
Scenario C	**£307**	**£333**	**2014-15**	**8%**	**£302**	**-2%**
Scenario C maximum		£355	2015-16	16%	£325	6%
Scenario D minimum		£317	2010-11	3%	£272	-12%
Scenario D	**£307**	**£323**	**2010-11**	**5%**	**£287**	**-7%**
Scenario D maximum		£338	2015-16	10%	£306	-1%

Figure 7: Projected average household bill ranges for 2010-30 by scenario



Solid line represents actual bills and 2004 price review projections to 2009-10 and, thereafter, the central case.
Dashed lines represent the minimum to maximum range.
The vertical dotted line shows the 2009-10 average bill against which the percentage changes are calculated.

Table 6 compares the average household bill at the end of each five-year period to the average household bill at the end of the previous period. The change in average household bills is in a range that at its highest shows a difference of 11 percentage points between the minimum and maximum results. This is in 2014-15 for scenarios A and B. Changes in average household bills in subsequent periods follow a narrower range.

Table 6: The range in percentage movements in average household bills for 2010-30

	Bill in 2009-10	Change over five years to			
£ 2005-06 prices		2014-15	2019-20	2024-25	2029-30
Scenario A minimum		20%	-3%	-4%	-1%
Scenario A	**£307**	**26%**	**-1%**	**-4%**	**-2%**
Scenario A maximum		31%	1%	-3%	-3%
Scenario B minimum		11%	4%	-5%	0%
Scenario B	**£307**	**16%**	**6%**	**-6%**	**0%**
Scenario B maximum		22%	10%	-7%	0%
Scenario C minimum		5%	-6%	-4%	-2%
Scenario C	**£307**	**8%**	**-4%**	**-4%**	**-2%**
Scenario C maximum		14%	-2%	-4%	-2%
Scenario D minimum		0%	-5%	-5%	-2%
Scenario D	**£307**	**4%**	**-3%**	**-5%**	**-2%**
Scenario D maximum		9%	-1%	-6%	-2%

3.5 Effect of inflation

The projections of the average household bills are presented in real terms at 2005-06 prices in the previous sections. They do not take account of future inflation. In scenarios A and C under the benign macroeconomic assumptions, the cumulative inflation by 2029-30 is 81% (compared to 2005-06 starting prices) but is double this at 166% under scenarios B and D with the harsh macroeconomy. The impact on average household bills of these differing assumptions for inflation is set out in table 7 for the central case.

Table 7: Impact of inflation

	2029-30 average household bill		Uplift from impact of inflation
	2005-06 prices	2029-30 prices	
Scenario A	£363	£656	£293
Scenario B	£357	£947	£590
Scenario C	£302	£547	£245
Scenario D	£287	£763	£476

As can be seen, the projected bills under scenarios B and D are far higher when inflation is taken into account. However, overall earnings growth in nominal terms would be expected to follow the path of inflation and hence the relative outcomes of the scenarios will remain the same, ie scenario A has the highest impact on bills and scenario D the lowest.

3.6 What is a manageable level of investment for the industry?

A secondary objective of the forward look exercise was to consider whether the industry has the ability to manage the volume of construction for the projected investment levels.

One way of looking at this is to assess the overall level of capital investment in the industry as a proportion of the gross domestic product. Since privatisation this has broadly ranged between 1.5% and 2% each year. We therefore suggest that total capital investment amounting to around 3% of gross domestic product in a five-year period would be the maximum investment sustainable by the industry. Assuming economic growth of 1.5% per annum gives a range of maximum investment of £37 billion in 2010-15 rising to £47 billion in 2025-30. At the industry level, the capital expenditure required in each five-year period under scenario A, which has the largest capital programme, does not exceed this ceiling.

4 Next steps

Ofwat's Aquarius 3 financial model, version 6.1 (WIFL), has been used to model the outcomes included in this paper. This version of the financial model has been created from the model used for the 2004 final determinations by extending the time horizon to 2029-30. The WIFL update of the Aquarius 3 financial model is available to Aquarius 3 licence holders.

It is possible to build on the modelling carried out to date to explore the impact of other parameters and approaches, for example:

- alternative operating and capital costs;
- alternative financial assumptions; and
- other approaches to mitigating financeability as set out in our 'Financing Networks' paper. This possibility will be considered in due course by the WSRA.

It would also be possible to update this forward look at suitable intervals to take account of new information on the potential drivers for changes to industry costs. Any updating by Ofwat is likely to occur at a similar point in the price review cycle after prices are set in 2009 so as to avoid introducing uncertainty or the perception of pre-determining the price review.

The WIFL update of the Aquarius 3 financial model allows others to explore alternative scenarios and assumptions if they wish.

Scenario A – benign economy/high environmental priority

Overview

- The economy continues to grow in line with current Treasury forecasts.
- There are no national economic shocks.
- Government continues to give priority to environmental improvements.
- Housing growth in the south-east of England is sustained at a much higher rate than in the rest of the country.
- Climate change has a greater impact than forecast at the 2004 price review (PR04).

Assumptions

Efficiency

- Efficiency in the water industry continues to be above inflation.
- The benign economy drives improvements in new technologies and practices at a steady pace.

Efficiency improvements assumed for each five-year period

	2005-10 (PR04)	2010-30
Capital expenditure efficiency		
Water service – capital maintenance	7.9%	7.9%
Water service – capital enhancements	11.9%	11.9%
Sewerage service – capital maintenance	9.2%	9.2%
Sewerage service – capital enhancement	12.9%	12.9%
Operating expenditure efficiency (per annum)		
Water service – base	1.4%	1.4%
Water service – enhancements	1.85%	1.85%
Sewerage service – base	1.3%	1.3%
Sewerage service – enhancements	1.75%	1.75%

Base service

Companies continue to plan capital maintenance using the common framework risk-based approach. The asset base continues to grow and serviceability is maintained. Expenditure includes new costs arising from the Traffic Management Act.

Climate change impacts on sewerage systems from 2015. The performance of the sewerage system (including internal and external flooding incidents) is maintained through additional capital maintenance, as customers have the funds, and there is a willingness to adopt a ‘pay as you go’ approach to funding those improvements.

Operating costs reflect:

- the Traffic Management Act introducing new costs;
- rising energy costs (increasing by 1% more than RPI);
- removal of the pension deficit by 2010 with no further problems experienced; and
- the level of bad debt stabilising at the 2004 level.

Supply/demand

Consumption per head grows only marginally reflecting water efficiency measures.

Optional metering continues to grow in line with assumptions made at PR04.

Water scarcity status is achieved by eight companies in the south-east of England over the period. All eight achieve 90% meter penetration by 2025.

The impact of climate change is greater than that forecast at PR04.

Housing growth in the south-east of England reflects the full impact of the proposed sustainable communities plan.

Quality

Water companies in England and Wales continue to meet deadlines for full compliance with EU directives.

Customers support the intrinsic value of the environment as well as its value to others and future generations.

Ministers choose to proceed with a significant environmental programme.

Half of the investment under the Water Framework Directive is assumed to be completed by 2015 and the remainder by 2027.

The Thames Tideway interceptor tunnel (the Thames Tideway Strategic Study Steering group’s preferred solution involving a 35km long storage and transfer tunnel) is completed by 2020.

Nutrient removal by 2015 is assumed for significant discharges to all coastal areas considered by the European Commission to be at risk of eutrophication.

Investment is carried out in the period to 2015 to improve the resilience of the industry's assets.

Capital expenditure includes new costs arising from the Traffic Management Act.

Enhanced service levels

The frequency of internal sewer flooding reaches its economic level by 2010. There is a drive to reduce the incidence of external sewer flooding problems to its economic level by 2020. The economic level is maintained (through capital maintenance) despite the increasing number of problems.

Scenario B – harsh economy/high environmental priority

Overview

- Economic growth slows and there are periods of recession.
- There are periods of sustained high inflation causing pressure to minimise investment levels.
- Government continues to give priority to environmental improvements but economic pressures constrain the extent of improvements.
- Government exercises a conservative approach to achieving EU directives to minimise costs.
- Housing growth in the south-east of England is sustained at a higher rate than in the rest of the country but reflects the economic situation.
- Climate change has a similar impact to that forecast at the 2004 price review (PR04).

Assumptions

Efficiency

- Efficiency in the water industry continues to be above inflation.
- The difficult economic climate drives improvements in new technologies and practices at a faster rate.

Efficiency improvements assumed for each five-year period

	2005-10 (PR04)	2010-30
Capital expenditure efficiency		
Water service – capital maintenance	7.9%	9.5%
Water service – capital enhancements	11.9%	14.2%
Sewerage service – capital maintenance	9.2%	11.0%
Sewerage service – capital enhancement	12.9%	15.4%
Operating expenditure efficiency (per annum)		
Water service – base	1.4%	1.7%
Water service – enhancements	1.85%	2.2%
Sewerage service – base	1.3%	1.6%
Sewerage service – enhancements	1.75%	2.1%

Base service

Companies continue to plan capital maintenance using the common framework risk-based approach. The asset base grows slowly reflecting constrained levels of enhancement investment. Expenditure includes new costs arising from the Traffic Management Act.

Companies and customers carry a higher risk that serviceability will not be maintained.

Taste and odour problems are addressed through capital maintenance solutions.

Operating costs reflect:

- the Traffic Management Act introducing new costs;
- a rapid rise in energy costs (increasing by 1.5% more than RPI);
- removal of the pension deficit by 2010 but with further problems reoccurring thereafter; and
- the level of bad debt rises steadily, sensitive to bill increases of more than 5%.

Supply/demand

Consumption per head stabilises from 2010 reflecting comprehensive water efficiency measures.

Levels of optional metering rise above those assumed at PR04 reflecting an attempt to minimise the impact of rising bills.

Water scarcity status is achieved by eight companies in the south-east of England over the period. All eight achieve 90% meter penetration by 2025.

The impact of climate change is in line with that forecast at PR04.

Housing growth in the south-east of England does not reflect the full impact of the sustainable communities plan, constrained by economic circumstances.

Quality

Water companies in England and Wales achieve only the minimum required environmental improvements set out in EU directives.

Customers support the intrinsic value of the environment, but investment is constrained to reflect economic pressures.

Ministers choose to proceed with a moderate environmental programme.

Investment driven by the Water Framework Directive is assumed to have an even profile over the period to 2027.

Only the West London section of the Thames Tideway interceptor tunnel is completed.

Nutrient removal by 2020 is assumed for significant discharges affecting the north-east Irish Sea.

Investment is carried out in the period to 2015 to improve the resilience of the industry's assets.

Capital expenditure includes new costs arising from the Traffic Management Act.

Enhanced service levels

Climate change impacts on sewerage systems from 2015. Affordability constrains investment on alleviating sewer flooding problems. The frequency of internal sewer flooding reaches its economic level by 2010 and is maintained at that level. Only extreme external incidents are dealt with.

Scenario C – benign economy/lower environmental priority

Overview

- The economy continues to grow in line with current Treasury forecasts.
- There are no national economic shocks.
- Government exercises a conservative approach to achieving EU directives to minimise costs.
- Housing growth in the south-east of England is sustained at a much higher rate than in the rest of the country.
- Climate change has a similar impact to that forecast at the 2004 price review (PR04).

Assumptions

Efficiency

- Efficiency in the water industry continues to be above inflation.
- The benign economy drives improvements in new technologies and practices at a steady pace.

Efficiency improvements assumed for each five-year period

	2005-10 (PR04)	2010-30
Capital expenditure efficiency		
Water service – capital maintenance	7.9%	7.9%
Water service – capital enhancements	11.9%	11.9%
Sewerage service – capital maintenance	9.2%	9.2%
Sewerage service – capital enhancement	12.9%	12.9%
Operating expenditure efficiency (per annum)		
Water service – base	1.4%	1.4%
Water service – enhancements	1.85%	1.85%
Sewerage service – base	1.3%	1.3%
Sewerage service – enhancements	1.75%	1.75%

Base service

Companies continue to plan capital maintenance using the common framework risk-based approach. The asset base continues to grow but reflects some constraint on the investment in asset enhancements. Serviceability is maintained. Expenditure includes new costs arising from the Traffic Management Act.

The performance of the sewerage system (including internal and external flooding incidents) is maintained through additional capital maintenance, as customers have the funds, and there is a willingness to adopt a ‘pay as you go’ approach to funding those improvements.

Operating costs reflect:

- the Traffic Management Act introducing new costs;
- rising energy costs (increasing by 1% more than RPI);
- removal of the pension deficit by 2010, with no further problems experienced; and
- the level of bad debt stabilising at the 2004 level.

Supply/demand

Consumption per head grows only marginally reflecting water efficiency measures.

Optional metering continues to grow in line with assumptions made at PR04.

Water scarcity status is achieved by eight companies in the south-east of England over the period. All eight achieve 90% meter penetration by 2025.

The impact of climate change is in line with that forecast at PR04.

Housing growth in the south-east of England reflects the full impact of the proposed sustainable communities plan.

Quality

Customers do not support the intrinsic value of the environment, or its value to others and future generations.

Ministers require the industry to proceed with only a limited environmental programme.

Investment driven by the Water Framework Directive is assumed to have an even profile over the period to 2027.

The Thames Tideway interceptor tunnel is not implemented.

Nutrient removal by 2015 is assumed for significant discharges affecting the north-east Irish Sea.

Investment is carried out in the period to 2015 to improve the resilience of the industry’s assets.

Capital expenditure includes new costs arising from the Traffic Management Act.

Enhanced service levels

The frequency of internal sewer flooding reaches its economic level by 2010. There is a drive to reduce the incidence of external sewer flooding problems to its economic level by 2020. The economic level is maintained (through capital maintenance).

Scenario D – harsh economy/lower environmental priority

Overview

- Economic growth slows and there are periods of recession.
- There are periods of sustained high inflation causing pressure to minimise investment levels.
- Government exercises a conservative approach to achieving EU directives to minimise costs.
- Housing growth in the south-east of England is sustained at a higher rate than in the rest of the country but reflects the economic situation.
- Climate change has a greater impact than forecast at the 2004 price review (PR04).

Assumptions

Efficiency

- Efficiency in the water industry continues to be above inflation.
- In line with a harsh economy there is a fast rate in new technologies and practices.

Efficiency improvements assumed for each five-year period

	2005-10 (PR04)	2010-30
Capital expenditure efficiency		
Water service – capital maintenance	7.9%	9.5%
Water service – capital enhancements	11.9%	14.2%
Sewerage service – capital maintenance	9.2%	11.0%
Sewerage service – capital enhancement	12.9%	15.4%
Operating expenditure efficiency (per annum)		
Water service – base	1.4%	1.7%
Water service – enhancements	1.85%	2.2%
Sewerage service – base	1.3%	1.6%
Sewerage service – enhancements	1.75%	2.1%

Base service

Companies continue to plan capital maintenance using the common framework risk-based approach. The asset base grows slowly reflecting the constrained levels of enhancement investment. Expenditure includes new costs arising from the Traffic Management Act.

Companies and customers carry a higher risk that serviceability will not be maintained.

Taste and odour problems in drinking water are addressed through capital maintenance.

Operating costs reflect:

- the Traffic Management Act introducing new costs;
- a rapid rise in energy costs (increasing by 1.5% more than RPI);
- removal of the pension deficit by 2010 but with further problems reoccurring thereafter; and
- the level of bad debt steadily rises, sensitive to bill increases of more than 5%.

Supply/demand

Consumption per head stabilises from 2010 reflecting comprehensive water efficiency measures.

Levels of optional metering rise above those assumed at PR04 reflecting an attempt to minimise the impact of rising bills.

Water scarcity status is achieved by eight companies in the south-east of England over the period. All eight achieve 90% meter penetration by 2025.

The impact of climate change is greater than that forecast at PR04.

Housing growth in the south-east of England does not reflect the full impact of the sustainable communities plan, constrained by economic circumstances.

Quality

Customers do not support the intrinsic value of the environment, or its value to others and future generations, and investment is constrained to reflect economic pressures.

Ministers require the industry to proceed with a very limited environmental programme.

Limited investment under the Water Framework Directive is assumed in the period to 2015 with an even profile of investment thereafter to 2027.

The Thames Tideway interceptor tunnel is not implemented.

Investment is carried out in the period to 2015 to improve the resilience of the industry’s assets.

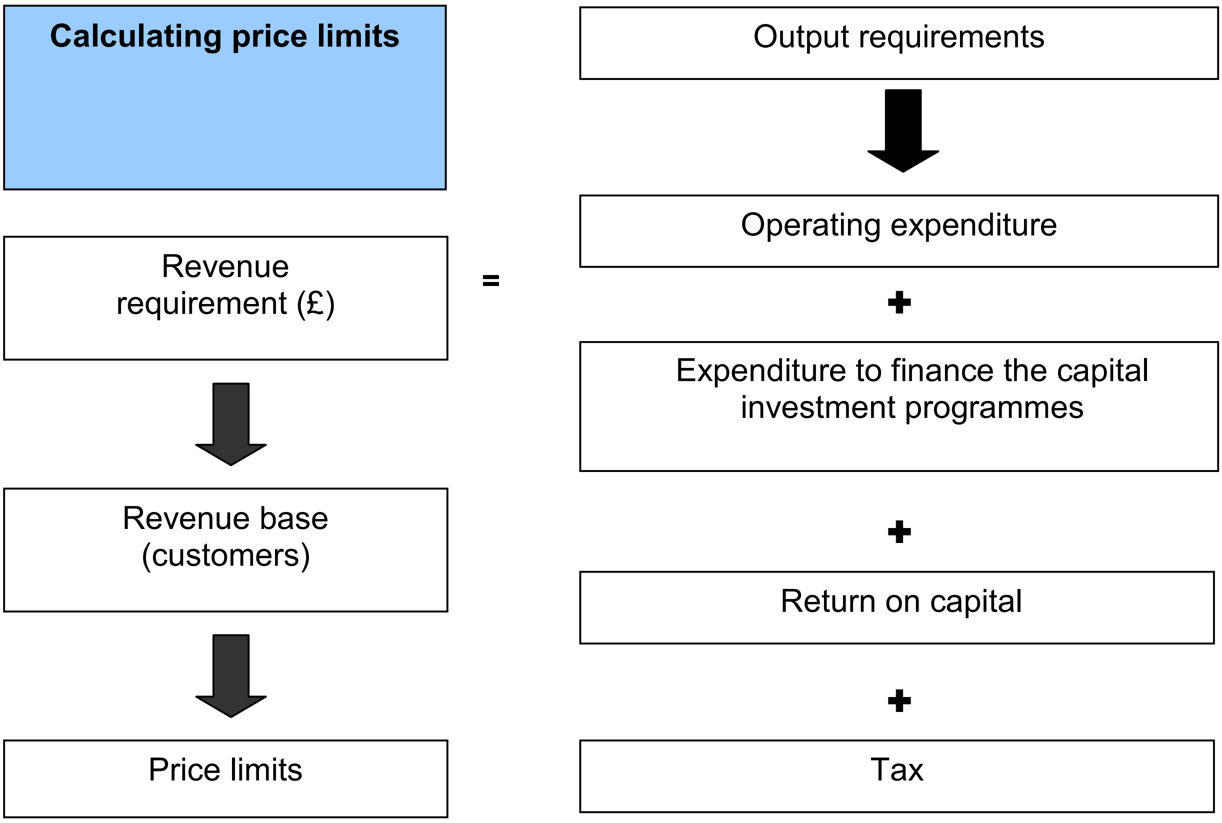
Capital expenditure includes new costs arising from the Traffic Management Act.

Enhanced service levels

Climate change impacts on sewerage systems from 2015. Affordability constrains investment on alleviating sewer flooding problems. The frequency of internal sewer flooding reaches its economic level by 2010 and is maintained at that level. Only extreme external incidents are dealt with.

The 'building block' approach to setting price limits

Our broad approach to setting price limits is illustrated in the diagram below. It is a simple representation of the financial model that we use to set price limits.



Each company needs to collect sufficient revenue to finance its operating expenditure and the capital investment programme. It also needs to be able to finance previous capital investment through the return the company earns on its regulatory capital value. The regulatory capital value is the value of the regulated business. In addition, the water industry pays tax. We also allow for any incentive allowance for outperformance in the previous five-year period. The sum of these costs is called the revenue requirement.

Changes to the number and mix of metered/unmetered customers affect the revenue received. Rising bills may prompt more customers to seek a meter to save money; unmetered bills may rise as a result to make sure that the company has sufficient revenue to meet its obligations.

The percentage change between the revenue requirement and the revenue expected from customers is the price limit. Finally, we check that the outcome of this calculation provides price limits that will enable the company to be financeable.

Economic/financial assumptions

Cost of capital:

- unchanged from 2004 price review assumption;
- 5.1% fully post-tax (equivalent to 5.8% on pre-tax debt post-tax equity basis); and
- same in all four scenarios.

RPI inflation:

- benign economy – continuation of the 2004 price review assumption 2.5% per annum; and
- harsh economy – stable at 2.5% per annum to 2010, faster inflation peaking in 2018, falling back to stable level by 2025.

Construction cost inflation:

- benign economy – runs ahead of RPI reflecting the pressures from 2012 Olympics before returning to a rate of change matching RPI; and
- harsh economy – matches RPI inflation throughout.

Nominal interest rate:

- benign economy – continuation of the 2004 price review assumption 6.8%; and
- harsh economy – increase in response to rising inflation but not by as much as the change in inflation. They are unaffected to 2013 then rates rise to 2020 and fall back to 2010 rates by 2030. Companies maintain an element of fixed rate debt in their portfolios to limit exposure to changing interest rates therefore assumed 20% of fixed debt is refinanced at the prevailing rates in year three of each five-year period.

Financing approaches

We used a revenue uplift to achieve financeability in the 2004 price review and we believe that was the appropriate way given the circumstances at the time. Our decision to increase companies' revenues in certain cases came with a warning that we would expect prudent companies to retain an appropriate proportion of earnings to alleviate the financial strain caused by heavy capital programmes, both in the current period and beyond 2010. This forward look exercise has reinforced the view that a large capital programme beyond 2010 is likely and companies need to retain ready access to capital markets.

Ofwat and Ofgem, the energy regulator, published a joint discussion paper looking at ideas for regulating the efficient financing of utility companies' capital investment programmes. 'Financing networks' looks at ways these companies and the regulators could deal with the financial constraints arising from the need to deliver large capital programmes. It points up the potential of the increased capacity of the index linked debt market, improved conditions for equity injections and rights issues or a more flexible interpretation of financial indicators as ways of mitigating or removing completely financeability issues.

For the purposes of the forward look we have tackled financeability in two ways. First, by applying the same approach as in the 2004 price review to test financial projections against the package of financial indicators. Second, we have explored whether an equity injection in 2010 would help to reduce the impact of financeability on price limits.

We have modelled two levels of rights issues in 2010 to examine the impact of a rights issue reducing industry gearing at the start of the 2010-15 period from 59% (debt: RCV) down to 55% and to 50%.

- 55% - assumes a gross rights issue of £1,500 million with 5% for issuance costs giving net proceeds of £1,425 million. Issuance costs are also reflected in the cost of capital increasing the WACC in 2010-11 onwards from 5.84% (the industry weighted average) to 5.98%.
- 50% - assumes a gross rights issue of £3,500 million with 5% for issuance costs giving net proceeds of £3,325 million. The WACC has been recalculated to reflect 50% gearing and the issuance cost of the new equity.

With a rights issue that produces 55% gearing, revenue for financeability over 20 years can be reduced by around £2 billion for both scenarios A and B. The peak five-year requirement remains in 2015-20 but is reduced from £2 billion to around £1.2 billion in scenario A and £1.4 billion in scenario B.

For the higher level of rights issue (producing 50% gearing), financeability revenue is much lower in all periods. The revenue for financeability over 20 years is reduced by over £3 billion for both scenarios A and B. In all of the five-year periods except 2015-20 the financeability requirement could be reduced to less than £300 million.

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20 March 2006