A11: Aligning risk and return

Supporting material

OVERVIEW

This appendix provides additional material in support of the Risk and Return section of our plan. In particular, it provides some additional explanation and detail on why and how the approaches presented in that section have been adopted. This appendix is organised in line with the structure of the Aligning Risk and Return section, but includes additional material on financial resilience, and:

- Sets out the price reduction provided for by our plan.
- Describes our approach to providing for a fair balance of charges over time.
- Sets out the key financial assumptions and targets we have used to maintain a robust and sustainable framework for financing.
- Describes our PAYG and RCV run-off rates.
- Presents evidence that our plan is financeable on a notional and actual company basis.
- Provides further information on our assessment of financial resilience.
- Describes the RORE analysis that we used to ensure our plan provides for a fair and appropriate balance of risk and reward.

Where the Aligning Risk and Return section of our plan already includes a thorough description of the approach we have adopted, we only include a brief recap in order to limit repetition and to focus attention on the provision of additional material.

Contents

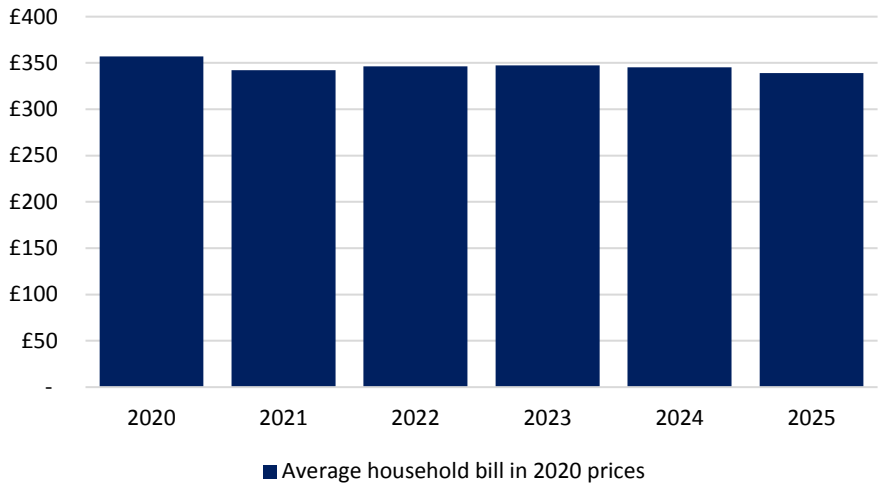
1.0 OUR PLAN PROVIDES FOR A 5% REDUCTION IN BILLS BEFORE INFLATION

Our plan provides for a 5% reduction in average household bills in 2020-25 before inflation. This reduction is shown below, and is after account has been taken of rewards that we are due to receive for exceeding some of our performance commitments for 2015-20.

Our plan provides for a larger 5.5% reduction in bills before these rewards are considered, but we focus on the 5% reduction here as that is the change we expect our customers to experience. Under the plan, our customers will continue to enjoy the lowest average combined bills in England. Our bills are on average £57 lower than the average in the sector based on 2018/19 combined bills, and we expect this difference to be even larger by 2025.

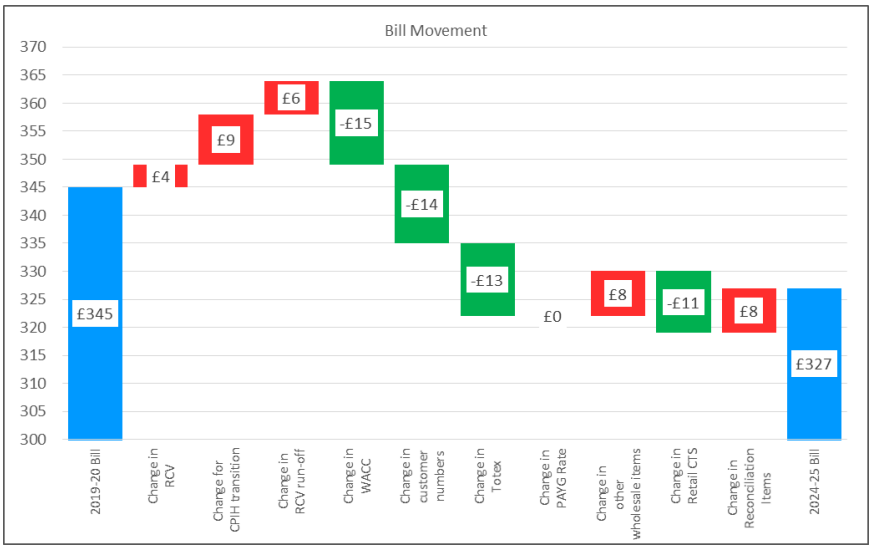
We have balanced the price changes across AMP7 in order to ensure that the prices our customers will actually face, after account is taken of inflation, will have a smoothed profile. Our forecast of nominal (i.e. after inflation) bills until 2030 is included in the Aligning Risk and Return section.

Average household bills go down by 5% in real terms under our plan



The average bills shown in the graph have been calculated using the conventional method of dividing total household revenue for each service by the number of customers billed for that service. The method now used in the Ofwat financial model (wholesale revenue/billed services + allowance for combined services) lowers the average bill in each year by £3 for Severn Trent. For WaSCs with more single service customers, the impact is much larger.

Factors driving the movement in bills



The key factors driving a significant reduction in bills include the efficiency challenge we have set ourselves, the reduction in allowance for financing costs (i.e. the WACC) and population growth. The transition to CPIH from 2020, and some use of RCV run-off tools to support a stable, low cost funding platform under our notional and actual structure offset these downward effects to a small extent, but were strongly supported by 88% our customers as providing for fair charging over time, including for customers in the longer term. The implication of this approach is that our customers will continue to enjoy the lowest average combined bills in England. Our bills are on average £57 lower than the average in the sector based on 2018/19 combined bills and we expect this difference to increase by 2025.

2.0 OUR PLAN PROVIDES FOR A FAIR BALANCE OF CHARGES OVER TIME

Our approach to the balance of charge over time has been guided by three core principles, which were strongly supported by our customers during our deliberative research:

- Each generation of customers should pay its fair share.
- Bills should be stable over time, where possible, avoiding big fluctuations up or down.
- The balance of charges over time should enable us to maintain a stable and low cost funding platform for investment.

These principles informed our approach of applying a CPIH-based approach from 2020. As we set out in the section of the plan on Aligning Risk and Return, the Retail Price Index (RPI) has been found to overstate inflation, and for water sector price controls it is being replaced by CPIH, which is a more reliable index. Our plan involves moving to a CPIH-based approach from 2020, consistent with the views of our customers.

The principles also informed our approach to considering the balance of financing costs paid by current and future customers, given the impact this can have on our ability to maintain an appropriate credit rating, and a stable, low cost funding platform for investment. As noted below, both of these factors affected our approach to setting RCV run-off rates.

3.0 OUR FINANCIAL ASSUMPTIONS AND TARGETS ARE APPROPRIATE TO MAINTAINING A ROBUST AND SUSTAINABLE FRAMEWORK FOR FINANCING

Our approach to gearing, the WACC and retail margins, and our base dividend policy was set out in the Aligning Risk and Return section of our plan. As we noted, while we have used Ofwat's early view of the WACC in our plan, the assumption that 30% of all debt on average in 2020-25 will be new is a marked change from PR14 and earlier controls – when 25% was assumed – and does not fit with our new debt profile (which implies a level of slightly less than 25%). We do not expect the percentage of new debt to be higher now, given that the total stock of new debt within the industry has risen at each successive review, unless:

- New borrowing requirements are greater than at previous reviews: this does not appear to be a reasonable explanation.
- Future gearing is expected to increase for the notional company: the opposite is true.
- More existing debt is due to be refinanced than in previous periods: while this may be possible for some companies, our debt profile does not imply a lower percentage assumption than at PR14 (and earlier reviews).

In the Aligning Risk and Return section, we also explained that for our PR19 plan, our target credit rating is BBB+/Baa1, consistent with Ofwat's approach to the notional company and how it is setting the cost of new debt (using a 50:50 mix of A and BBB iBoxx indices for non-financial companies).

4.0 PAYG AND RCV RUN-OFF RATE

Pay as you go (PAYG) rates

As we set out in the Risk and Return section, our assessment of PAYG rates (in line with our approach at PR14) is based on the extent to which totex can be expected to be accounted for by:

- Operating expenditure (Opex): the day-to-day costs that we incur when delivering water and wastewater services; and,
- Infrastructure Renewals Expenditure (IRE): the costs of maintaining our underground assets to an appropriate level to underpin service provision.

In arriving at our view of an appropriate PAYG rate for this plan, we started by considering our PAYG rates for PR14, and by examining how the proportion of totex accounted for by Opex + IRE over time has compared with those rates over time. This reflected that we would expect PAYG rates to broadly reflect the structure of costs over time, but to remain relatively stable, and to be adjusted only in response to relatively clear and significant changes to that structure.

As we set out in the Risk and Return section, on reviewing this evidence we concluded that it was appropriate to apply PAYG rates for AMP7 that are in line with those applied at AMP6. The average PAYG rates that we use in our plan are shown below by price control. These price control level PAYG rates were set so that the weighted average PAYG rates for wholesale water and wholesale wastewater were consistent with PR14 levels, with the balance between water resources and water network plus, and between wastewater network plus and bioresources, determined on the basis of a PR19 forecast of the percentage of totex accounted for by Opex + IRE. This approached allowed account to be taken of this more disaggregated data, while at the same time also reflecting longer term data on the structure of costs that is available at the wholesale level for water and wastewater.

The table below shows the average PAYG levels used for AMP7. The levels used were varied to an extent between years in order to assist with delivering a smoothed bill profile.

Average PAYG rates in our plan by price control

	Average PAYG Rate
Wholesale Water Network	61.2%
Wholesale Water resources	71.4%
Wholesale Wastewater network	57.0%
Wholesale Bioresources	38.8%

RCV Run-off

Our approach to RCV run-off rates involved considering three key questions:

- What should be understood as the 'natural rate' for RCV run-off?;
- How should our approach of applying CPIH from 2020 affect RCV run-off rates?; and
- Are other adjustments to RCV run-off rates appropriate in order to address financeability issues that would otherwise be likely to arise?

Our assessment of natural RCV run-off rates

The basis for, and outputs from our assessment of natural rates was summarised in the Aligning Risk and Return chapter by reference to CCD-based evidence over time. We consider it important to take a long-term view when assessing appropriate CCD levels, and in particular to be cautious when taking decisions that might reduce CCD provisions. In part, that reflects our expectations that average assets lives can be expected to reduce to some extent over time as we increasingly put more value on developing innovative and flexible models of service delivery.

We also note that a CCD-based assessment of the natural rate effectively treats the RCV as a physical asset. However, in practice, the level of the RCV over time is also affected by a range of financial adjustments that do not relate directly to any particular physical asset or set of assets. This raises the question of whether an approach to setting RCV run-off rates that only considers the depreciation/maintenance of physical assets is appropriate.

This is particularly relevant when the RCV has effectively been over-inflated in recent years through the use of RPI (given its recognised over-statement of the extent of inflation). If run-off rates in the past have been set such that the level of the RCV would be expected to remain stable, other than to reflect enhancements, then the over-statement of inflation will have been crystallised within the RCV at the point of transition to the CPIH index. A physical asset-only approach to setting run-off rates, then, effectively treats the over-inflation of the RCV in recent years as though it were some form of enhancement that provides ongoing benefits to future generations of customers, rather than as a financial dis-benefit that should be paid down within a reasonable period and then not passed on.

While run-off allowances are also indexed by RPI (as they are in AMP6), there will be some off-setting effect, as the £m amount of run-off will be higher than if a more accurate measure of inflation had been used. An effect of moving to CPIH is that – other things equal – the £m amount of run-off provided over the control will be lower, and the appropriateness of this is questionable. Put differently, with CPIH indexation a higher run off rate would be required to generate the same £m amount of run-off.

This issue here is not that RPI is the 'right' measure – as has been recognised it is a flawed measure – but rather that both RPI and CPIH are intended to capture general inflation, and neither has much directly to do with how the amounts of CCD would be expected to vary over time. This suggests that particular caution is likely to be merited when considering the potential effect of lower run-off rates in a context where the overall £m depreciation allowance would be likely to reduce even if rates remain level.

Transition to CPIH indexation

In order to apply CPIH indexation from 2020, we have included an uplift to the run-off rates that we apply to the RPI-linked RCV post-2020. This is intended to off-set the upward effect that using RPI would have on that part of the RCV each year as a result of it being consistently higher than CPIH. That is, we have included an uplift to the RPI-linked RCV run-off rate to unwind the RPI-CPIH wedge that would otherwise apply.

We have set the value of the CPIH transition uplift each year on the basis of RPI and CPIH forecasts provided by Oxford Economics, that we have used throughout the development of our plan. These forecasts are in the table below and show an expected wedge of around 1.4% on average across the AMP. We note that Ofwat has previously identified a forecast wedge of 100 basis points in its assessments. We consider the Oxford Economics forecasts provide a reliable, consistent (within our plan) and appropriate basis for making an adjustment that is strongly supported by our customers.

RPI and CPIH inflation forecasts used in the development of our plan

	2021	2022	2023	2024	2025
RPI: Financial Year Average Increase	3.18%	3.45%	3.51%	3.38%	3.12%
CPIH: Financial Year Average Increase	1.74%	1.80%	1.86%	1.93%	1.98%
Difference	1.44%	1.64%	1.64%	1.45%	1.15%

Source: Oxford Economics

Notional financeability and RCV run-off

As we set out in the Aligning Risk and Return section, the RCV run-off rates in our plan are higher than levels implied by the 'natural rate' and CPIH assessments referred to above. Specifically, we have applied an uplift of 0.14 percentage points to run-off rates to allow us to be able to maintain an appropriate credit rating of BBB+/Baa1 (consistent with the cost of new debt being set on the basis of A/BBB).

The need for these higher run-off rates is driven by what are referred to as 'notional' company financeability constraints. These are financeability constraints that are not driven by our planned capital structure and dividend policy, as they also arise when our capital structure and dividend policy is assumed to be in line with that of the 'notional' company structure and dividend policy that Ofwat has identified as appropriate to use as a benchmark.

In line with Ofwat's Final Methodology, we consider it important to assess notional financeability before legacy adjustments are made, so that the financeability position is not affected unduly by under- or out-performance in AMP6 (as this could have adverse effects on incentives). Our assessment of financeability on this pre-legacy adjustments notional basis shows that we would need an uplift in the RCV run-off rates of 3.9% (i.e. 3.9 percentage points) in order to be able to maintain an appropriate credit rating.

Our plan includes a much lower uplift in run-off rates that this: 0.14%. This approach is enabled by the ODI rewards from PR14 that we will be receiving during AMP7. By taking account of the impact that the rewards have on our cash position during AMP7, we have been able to reduce the extent to which run-off needs to be increased in order to maintain appropriate credit metric levels. This allows us to deliver a substantial real terms price reduction for our customers in AMP7 while maintaining appropriate credit metrics. We believe that this provides a balanced approach that dampens the extent to which it necessary to use financeability levers to address the constraint.

Our use of some level of financeability uplift to run-off rates is consistent with the principles for providing a fair balance of charges over time that we set out above, and has been strongly supported by our customers in our PR19 research. These principles explicitly recognise the importance of maintaining a stable, low cost funding platform for investment.

5.0 OUR PLAN IS FINANCEABLE AND MAINTAINS A STABLE PLATFORM FOR INVESTMENT

As was shown in the Aligning Risk and Return chapter, our plan is financeable at the appointee level on a notional company basis after account is taken of our ODI rewards from AMP6, and on the basis of our actual structure. The tables below show our assessment of credit metrics on a notional basis by price control. We identified a number of difficulties when seeking to apply the Ofwat model in order to assess these metrics (in particular for adjusted interest cover calculations). The figures shown below follow from a number of adjustments that we considered necessary to make in order to generate reliable figures. These adjustments are explained in our data table commentary.

Although financeability is critical at the appointee level, given that is how finance is raised, assessment at the control level can help reveal the extent to which charges are balanced between controls. We have reviewed the outputs for the separate controls within Ofwat's financial model and believe that there is a reasonable balance between the ratios for each control.

Wholesale water resources	2021	2022	2023	2024	2025
Gearing	61%	61%	62%	63%	64%
Adjusted cash interest cover	1.20	1.19	1.26	1.37	1.35
FFO/debt	8.8%	9.0%	9.2%	9.5%	9.2%
Adjusted cash interest cover (alternative)	1.20	0.98	1.05	1.15	1.12
FFO/debt (alternative)	8.0%	7.9%	8.1%	8.4%	8.3%

Wholesale water network	2021	2022	2023	2024	2025
Gearing	61%	61%	62%	62%	63%
Adjusted cash interest cover	1.20	1.20	1.27	1.36	1.31
FFO/debt	8.6%	8.6%	8.7%	8.9%	8.6%
Adjusted cash interest cover (alternative)	1.04	1.05	1.12	1.22	1.18
FFO/debt (alternative)	7.8%	7.5%	7.6%	7.9%	7.6%

Wholesale wastewater	2021	2022	2023	2024	2025
Gearing	60%	60%	61%	61%	60%
Adjusted cash interest cover	1.67	1.69	1.74	1.83	1.84
FFO/debt	11.6%	11.6%	11.6%	11.7%	11.6%
Adjusted cash interest cover (alternative)	1.28	1.30	1.37	1.46	1.47
FFO/debt (alternative)	10.7%	10.5%	10.5%	10.6%	10.6%

Bio resources	2021	2022	2023	2024	2025
Gearing	61%	62%	63%	63%	64%
Adjusted cash interest cover	1.44	1.40	1.43	1.48	1.48
FFO/debt	13.3%	12.9%	12.7%	12.5%	12.3%
Adjusted cash interest cover (alternative)	1.03	1.04	1.09	1.16	1.17
FFO/debt (alternative)	12.5%	11.9%	11.6%	11.5%	11.3%

6.0 LONG TERM FINANCIAL VIABILITY AND PLANNING

As part of our process for financial viability statement testing for the 2017/18 financial year, we have modelled the scenarios set out in the Ofwat consultation paper published in April 2018 ('Putting the sector back in balance: Consultation on proposals for PR19 business plans'), along with further scenarios developed from the principal risks included in our Enterprise Risk Management (ERM) process. The period of assessment for the stress testing was 7 years through to the end of 2025.

We have detailed below the scenarios we modelled and the link to our principal risks.

Ofwat consultation:

	Scenario tested	Related principal risk
A.	Totex underperformance (15% of totex).	Risk 2: changes in the regulatory environment for the UK water industry
B.	ODI penalty (3% of RORE) in one year.	Risk 1: Failure to deliver what our customers want
C.	Inflation set 3% above the independent forecasts in one year for the UK economy as published by Treasury.	N/A – key assumption in financial model
D.	Inflation set 3% below the independent forecasts in one year for the UK economy as published by Treasury.	N/A – key assumption in financial model
E.	Increase in level of bad debt (20%).	N/A – key assumption in financial model
F.	Debt refinanced as it matures, and new debt financed as required at 2% above the forward projections.	Risk 10: Inability to fund the business sufficiently
G.	Financial penalty – equivalent to 3% of one year Appointee turnover.	Risk 3: Failure to comply with legislation
H.	Combined scenario – cost underperformance in both totex and retail expenditure of 10% in each year of the price control along with an ODI penalty equivalent to 1.5% of RORE in each year and a financial penalty equivalent to 1% of revenue in one year.	See above

Additional scenarios relating to our principal risks:

	Scenario tested	Related principal risk
I.	An increase in the funding deficit of the Group's defined benefit pension schemes.	Risk 9: Increased funding for pension schemes
J.	A severe climate event, operational failure or other exceptional event with a very significant financial impact.	Risk 4: Cyber security Risk 6: Failure of key assets Risk 7: Health and safety and environmental impact Risk 8: Impact of extreme weather/climate change

Scenarios with a one year impact were modelled in the year with lowest headroom and we assumed that extreme events occurring within other Group subsidiaries would be immaterial to Severn Trent Water Limited.

Mitigating actions

We identified actions, including reducing discretionary outflows of funds and working with providers of finance, that would mitigate the effects of adverse outcomes. None of the scenarios tested resulted in an impact to the Group's expected liquidity, solvency or credit metrics that could not be addressed by mitigating action and hence were not considered to be threats to the Group or Severn Trent Water's viability. The results of the scenario modelling and the mitigating actions is further described in the section below in the 'Results of scenario testing'.

Further modelling

Following Ofwat's publication of their summary of decisions on the 'Putting the sector back in balance' consultation on 3 July 2018, we have also modelled the following revised scenarios:

- Totex underperformance (10% of totex).
- Inflation scenario (high inflation scenario RPI 4%, CPIH 3%; low inflation scenario RPI 2%, CPIH 1% for each of the five years of the price control.
- Increase in the level of bad debt (5%) over current bad debt levels.

Taking into consideration the mitigating actions identified as part of the viability statement stress testing, none of these additional scenarios resulted in an impact to the expected liquidity, solvency or credit metrics that could not be addressed and hence were not considered to be threats to the Group or Severn Trent Water's viability.

Governance and assurance

As noted in the Viability Statement in the Group's Annual Report & Accounts, the Board has reviewed and approved the medium term plan on which the statement is based. The Board also considers the period over which the assessment of prospects and viability statement should be made. The Audit Committee supports the Board in performing this review. This statement is subject to review by Deloitte, our External Auditor.

Results of stress testing

We have summarised the impact of our stress tests on the ability to maintain financial metrics (including gearing and profit after tax), credit ratings and the ability to service debt in the table below.

We have shown the potential mitigating actions we could take and both the impact pre and post implementation of those actions on the metrics, ratings and covenants.

Scenario	Impact (pre-mit. actions)			Potential mitigation actions					Impact (post mit. actions)		
	Key financial metrics	Credit Metrics	Debt Covenants	Short term waivers of covenants	Re-profile capital investment programme	Significant cost reduction	Reducing discretionary outflows of funds	Securing additional sources of finance	Key financial metrics	Credit Metrics	Debt Covenants
A. Totex underperformance (10%)				✓		✓	✓	✓			
B. ODI penalty in one year (3% of RORE)				✓		✓	✓				
C. Inflation high scenario (RPI 4%; CPIH 3%)											
D. Inflation low scenario (RPI 2%; CPIH 1%)						✓	✓				
E. Increase in level of bad debt (5%)											
F. New debt financed 2% above forward projections				✓		✓	✓				
G. Financial penalty (3% of appointee turnover)						✓	✓				
H. Combined scenario				✓	✓	✓	✓	✓			
I. Increase in the deficit of DB pension schemes						✓					
J. Extreme one-off event in one year				✓	✓		✓	✓			

Key

Green – limited impact on financial metrics, credit ratings and covenants

Amber – pressure on financial metrics, credit ratings and covenants

Red – potential breach of covenant or downgrade to below investment grade

In the table below, we have provided further detail of the mitigating actions we would take in each scenario.

Scenario tested	Mitigating actions
A. Totex underperformance (10%)	As the scenario considers underperformance over a prolonged period, we would look to reduce discretionary outflows of funds over the period (e.g., dividends) and implement a significant cost reduction programme. In order to protect our credit metrics we would also consider using hybrid debt. We could also seek to secure a waiver of our covenants where there is a specific risk of breach. However, we would have to implement some form of long term restructuring as lenders would not waive covenant breaches unless short term in nature.
B. ODI penalty in one year (3% of RORE)	In the year of impact, we would look to reduce costs and working capital to manage the short term cash impact.

	Scenario tested	Mitigating actions
		In addition, we would seek to secure a short term waiver of our covenants and potentially reduce other discretionary outflows of funds.
C.	Inflation high scenario (RPI 4%; CPIH 3%)	Although metrics, ratings and covenants would not be significantly impacted in this scenario, we would look to manage our cost base closely over the period.
D.	Inflation low scenario (RPI 2%; CPIH 1%)	We would look to reduce costs and working capital to manage the cash impact across the period. We may also consider reducing other discretionary outflows of funds.
E.	Increase in level of bad debt (5%)	Although metrics, ratings and covenants would not be significantly impacted in this scenario, we would look to manage this situation closely and offer support to our customers who are unable to pay over the period.
F.	New debt financed 2% above forward projections	In this scenario we would seek efficiencies in our cost base over the period and look to reduce our working capital. We would also look to reduce other discretionary outflows of funds to reduce borrowing requirements. We could also seek to secure a waiver of our covenants where there is a specific risk of breach. However, we would have to implement some form of long term restructuring as lenders would not waive covenant breaches unless short term in nature.
G.	Financial penalty (3% of appointee turnover)	As with scenario B, we would look to reduce costs and working capital to manage the short term cash impact. We may also consider reducing other discretionary outflows of funds.
H.	Combined scenario	As with scenario A, we would look to reduce discretionary outflows of funds over the period, implement a significant cost reduction programme and re-profile our capital programme. In order to protect our credit metrics we would also consider using hybrid debt. We would also seek to secure a waiver of our covenants in the year of the financial penalty.
I.	Increase in the deficit of DB pension schemes	To provide sufficient headroom, we would look to secure a waiver of our covenants where there is a specific risk of breach. We would also look to reduce cash outflows and consider reducing working capital to support cash flow. We would also consider using hybrid debt.
J.	Extreme one-off event in one year	In the year of impact, we would look to reduce discretionary outflows of funds and consider re-profiling our capital programme. In order to protect our credit metrics, we would consider using hybrid debt and we would also seek to secure a short term waiver of our covenants.

Summary

In support of our overall assessment of financial resilience of the company, we have considered the principal short and longer term risks relevant to the company and modelled scenarios to stress test the business plan for the period through to 2025. Specifically, we have:

- Modelled the impact of the scenarios proposed in the 'Putting the sector back in balance' consultation on our key financial metrics, credit ratings and debt covenants;
- Confirmed the relevance of those scenarios to the company through linking to the principal risks in our ERM process;

- Identified and modelled the impact of additional scenarios for those principal risks not covered by the minimum suite of scenarios;
- Explained the impact of the scenarios and identified realistic mitigating actions for each scenario that we would be able to take; and
- Concluded that under each of the scenarios, the mitigating actions would allow the company to remain viable for the 7 year period under review.

7.0 OUR PLAN PROVIDES FOR A FAIR AND APPROPRIATE BALANCE OF RISK AND REWARD

Our plan provides for a fair and appropriate balance of risk and reward across our shareholders, our employees and our customers. This is provided in two main ways:

- By establishing stretching but realistic service provision and cost targets in our 'base' plan: it is these challenging base commitments that enable us to deliver a 5% reduction in bills before inflation.
- By having appropriate mechanisms in place to manage the implications of service provision and/or cost levels differing materially from those in our base plan.

This second aspect is central to providing for a fair balance of risk and reward. We strongly believe in the benefits that can result from rewarding performance improvements, and have been a leading advocate for the establishment and development of the Outcome Delivery Incentive arrangements that all companies now put in place. To be effective and legitimate, however, these kinds of incentive arrangements need be applied in ways that strike a fair balance between customers, shareholders and employees. Our track record shows the priority we have consistently given to this issue over time. For example:

- In AMP 5 to 2012, we benefitted financially from inflation levels being higher than had been anticipated in our base plan. Rather than simply distributing the gain fully to shareholders, we shared the benefit evenly between shareholders and customers: a special dividend of £150m was paid, and we invested an additional £150m in improving services for customers.
- In this AMP we have reinvested £220m of totex efficiencies as part of a share buyback to adjust our gearing, whilst also creating a new Care and Assistance team to support our most vulnerable customers.

For our PR19 plan we have gone even further and formalised our approach to sharing in our dividend principles along with the introduction of a new community dividend (see Chapter 18).

Ofwat provides a standard framework for assessing the balance of risk and reward that involves identifying the extent to which changes to base assumptions can affect the Return of Regulatory Equity (RORE). This provides a means of taking stock of the overall balance of risk and reward provided for by our plan. The RORE analysis focuses on identifying what is referred to as a P10 to P90 range, in order to investigate how returns would be affected by relative typical types of deviations, with the range excluding the more extreme top and bottom 10% of potential outcomes.

We have calculated RORE ranges for the following:

I. Totex levels;

II. Costs of new debt;

III. Outcome Delivery Incentive performance

IV. Revenue levels

The management and mitigation of risks associated with (i) – (iv) forms an integral part our ongoing risk management processes, and this affects the likely implications of risks in different areas for our shareholders, employees and customers. We set out how we have identified our RORE ranges for each of the key risk areas below, together with some explanation of how we manage and mitigate relevant risks.

Read more: Chapter 8 securing long-term resilience provides more details on monitoring and risk management processes.

Totex levels

The actual level of totex we spend may be higher or lower than the level forecast in our plan because of a number of factors, including in particular:

- Input price movements (energy, materials, labour).
- Weather, including the extent and effects of severe weather events.
- Economic conditions (which can affect activity levels, bad debt, etc.).
- Output/outcome requirements: for example, required outcomes may depend on regulatory decisions that have not as yet been settled.
- Input requirements: forecasting totex requirements for future projects can involve tackling inevitable uncertainties over what inputs may be required to deliver a given outcome (before efficiency issues are considered). For example, there have been significant costs to address cyber risks beyond what was anticipated in our PR14 plan.
- The efficiency of our operations.

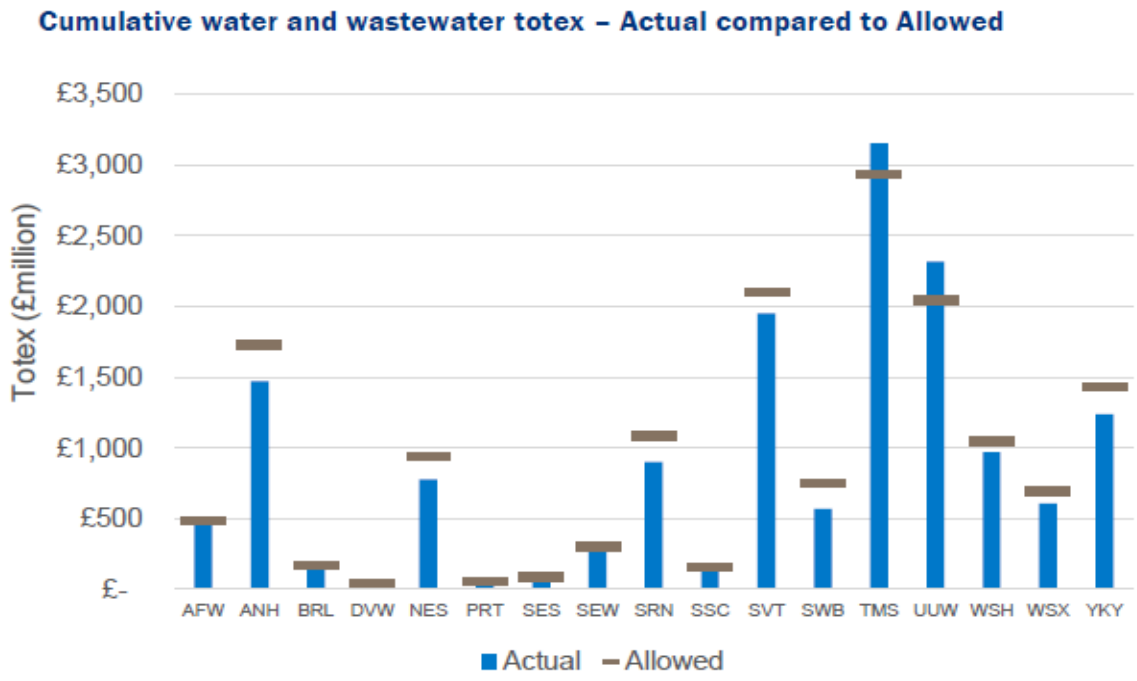
We manage these underlying totex risks in a wide range of different ways (and further detail on the processes through which we manage these risks is included in Chapter 8: Securing long-term resilience). For example:

- We actively monitor and manage our energy price risks as part of broader framework for managing finance cost risks (described below), and carefully monitor broader economic conditions within this framework.
- We manage labour cost risks through a wide range approaches related to skills development, pay (and bonus structure), and effective relationship building (including with appropriate external partners).
- We have extensive and well-practiced plans and procedures to enable timely, appropriate and cost effective responses to different weather circumstances.
- Our project management practices involve the careful identification of risks - including in relation to input requirements - and developing and putting in place appropriate mitigation tools.
- A drive to innovate and improve efficiency is a core part of our strategy and practice across the business, and our performance monitoring arrangements and associated internal incentive arrangements promote continuous improvement.

The processes referred to above demonstrate that we have some controllability over the consequences that most of the risks we face would have, should they materialise, and therefore finding effective ways of managing and mitigating those risks is core to what is means to operate efficiently. At the same time, to some extent the consequences of some different risks eventuating will be driven by external factors that we are unable to control (such as the extent of severe weather). The part-controllability that we have over totex risks is reflected in the use of sharing factors for totex under- and over-spend. These sharing factors mean that shareholders and customers will benefit from totex savings, and both groups will also bear some of the risk of totex levels ending up higher than expected.

For some totex risks - where there is material uncertainty over what outcomes will be required - we have adopted a different risk management approach following engagement with our customers. In particular, in circumstances where there is material uncertainty over the need for new investment (or over what might be needed) we have looked to adopt an approach that takes account of real option values. Our use of this type of approach was strongly supported by our customer research and is described in Appendix A8: Securing cost efficiency.

Given the range of sources of totex risk highlighted above, we have formed a top-down view of what a reasonable P10 to P90 range is for overall totex spend. This has drawn on the scenarios we have developed and assessed as part of our financial resilience work, as well as broader evidence on totex performance. Evidence from AMP6 to date (as illustrated in the graph below) provides some indication of the potential for totex out- and under-performance. However, out-performance in AMP6 will feed into a tougher efficiency challenge for AMP7.



Source: Ofwat service delivery report, 2016-17 (January 2018)

The totex challenge in our plan goes significantly further than identifying a level of totex that we think there is a 50% likelihood of out-performing against. It also sits alongside much more stretching commitments concerning the outcomes we will deliver. In line with this, we have identified a P10 to P90 range as follows:

- Planned totex -5% for wastewater, -2% for water (i.e. totex out-performance of 5% and 2%)
- Planned totex +10% (i.e. totex under-performance of 10%).

We have assumed less scope for out-performance on wholesale water totex as we think this is a realistic reflection of how much we are committing to improve our performance and meet the service and ODI targets we have set. That is, we think a large portion of the P90 range is already reflected within our plan.

Finance costs

RORE effects can arise in relation to the cost of new debt primarily because of the following:

- Differences between our cost of new debt and the iBoxx measure that Ofwat is using. These differences could arise from a number of sources:
    I. The rate we secure is different from the iBoxx: there is a risk that we will have to raise debt at a BBB credit rating, whereas Ofwat's use of the iBoxx assumes average A/BBB.
    II. The overall amount of new debt that we secure is different from that assumed by Ofwat: As highlighted above, Ofwat has so far used an average figure of 30% for the proportion of new debt over the AMP, but our profile shows average new debt at less than 25%.
    III. The timing of the new debt we secure is different from that assumed by Ofwat when using the iBoxx: the use of the iBoxx effectively assumes a smooth profile, whereas in practice our borrowing will be more lumpy than this.
- Differences between the iBoxx and the allowance that Ofwat has provided during 2020-25: This will be trued up at the end of the AMP, but could have credit rating implications ahead of then, and as a result could have a feedback impact on our costs of raising finance (as set out in (a) above). Uncertainty over when and how the true-up will occur may amplify the potential for this kind of indirect effect.

Embedded debt performance can also affect returns because of the following:

- Differences between our base view of embedded debt costs and the allowance provided for.
- The effect that interest rate movements can have on our embedded debt costs (given that a portion of our embedded debt is subject to variable interest rates).

- The effect that inflation measures have on the effective allowance for embedded debt costs, and on the costs of index linked debt: e.g. if inflation falls below the level used to deflate Ofwat's view of embedded debt costs, then the allowance will effectively reduce (and vice versa).

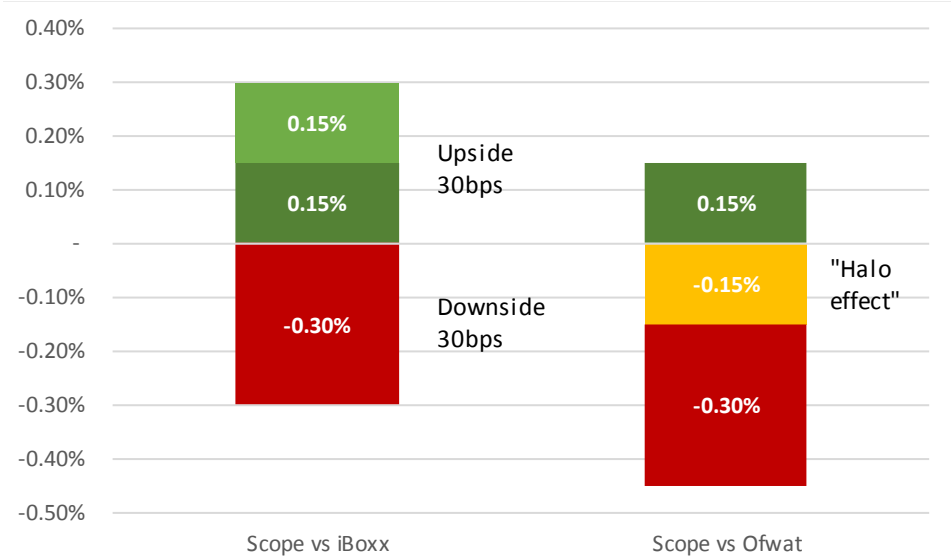
Because the RORE assessment is based on the notional company structure, the potential for these embedded debt effects is not considered in our RORE analysis. In practice, we do not expect significant out- or under-performance in relation to embedded debt (although note that some other companies are likely to).

As described in Chapter 8 (on financial resilience), our finance cost risks are managed dynamically by our Treasury Committee. The Treasury Committee meets to review our financial and our energy hedging policy at least once a quarter, in the light of the latest inflation and interest rate assessments, and has flexibility to adjust our approach accordingly. Recent actions have included entering into RPI to CPIH swaps, and acting to reduce refinancing risk for some of our larger debt tranches, in order to make future refinancing smaller and more frequent (and so less exposed to potential shocks).

We think that the potential range of performance against the IBoxx could be up to around 30bps on the upside. This is around double the average "halo effect" which Ofwat observes from industry performance relative the index in prior periods. We have identified the potential for this level of upside as we put considerable effort into seeking out new sources of debt both to diversify our overall mix of sources, and to reduce our finance costs. The benefits of this flow through to all customers over time through Ofwat's embedded debt benchmarking.

If Ofwat adjusts the index to capture the level of average outperformance identified as the 'halo effect' up-front, then the potential upside reduces to 15bps. On the downside, the range would again be around 30bps for a company that manages to maintain an A / BBB+ credit rating – i.e. within the bounds Ofwat has assumed for the iBoxx index. Among other things, this takes account of the incremental cost of securing CPIH-linked debt, for which the market is still quite illiquid. . If pressures on our credit metrics resulted in a downgrade, further under-performance by more than 30 basis points could easily result.

Potential range of performance against the iBoxx



These ranges are illustrated in the figure. If a company suffered a downgrade to a credit rating lower than BBB+/Baa1, the extent of underperformance would be likely to be greater than the downside considered here, and could be around a further 30 basis points. Given that there will be indexation for the cost of new debt, and a true-up applied, the range of RORE outperformance available from financing will be much smaller than at previous reviews; we think a fair calculation is +0.07% to -0.22% on RORE.

Outcome Delivery Incentives (ODIs)

ODIs provide a means of allocating risk in relation to service provision performance. We have designed and calibrated our ODIs in order to strike an appropriate balance of risk and reward, such that ODI rewards arise only when we have exceeded stretching performance targets, and that if we fail to deliver those targets we face penalties. ODIs, therefore, provide an important means of helping to align customer and company interests, as rewards will only be earned when customers are also benefitting from improved service levels.

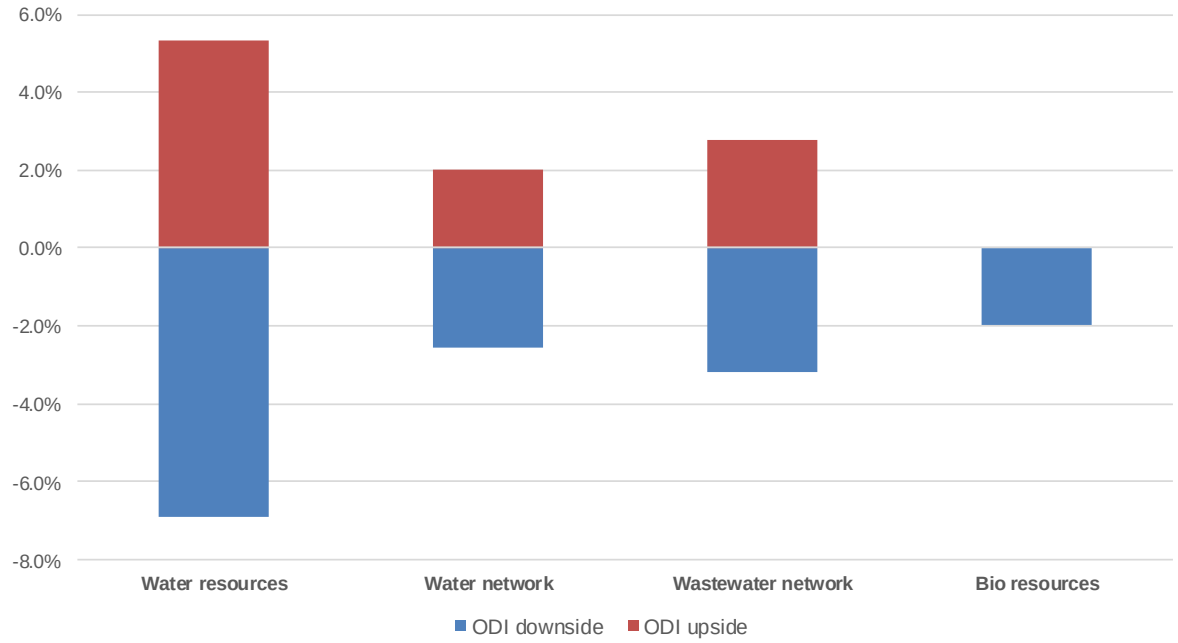
We have well-established and defined processes for managing and mitigating ODI performance risks, and identifying improvement opportunities. Each ODI has an owner, and we currently hold fortnightly communication cells with every owner, led by our CEO. These cells track current and projected performance. Where we are identified as under-performing, our first step is to introduce additional monitoring. For example we have introduced weekly communication cells for our supply interruptions measure led by the CEO, due to poor performance.

Where performance remains weak we will undertake root cause analysis either internally, or through external review. This will inform an action plan for addressing the identified problems and securing additional investment as necessary (for example, as with the installation of new data loggers to support improvements in leakage performance).

To understand the potential revenue impact of our package of PCs and ODIs we have undertaken monte carlo simulation modelling. This approach allows us to consider the potential rewards and penalties in a more sophisticated manner than simply adding up all the potential rewards and comparing that to the total potential penalties. From this modelling we have estimated a P10 and P90 range of -3% and +2.6%. The downside weighting is consistent with the fact that before any reward can be earned, stretching performance needs to be delivered. It also marks significant change from PR14: ODI under-performance could result in a RORE impact of -2.98% during AMP7, compared with a potential downside of 0.9% in AMP6.

The figure below shows how our ODI RORE ranges vary by price control. As can be seen, our Bioresources ODIs are penalty only. The relatively large RORE range identified for Water Resources partly reflects the relatively low level of RCV (and therefore of Regulatory Equity) that has been allocated to the Water Resources control, with this making RORE levels relatively more sensitive to ODI rewards and penalties.

Our Outcome Delivery Incentives (ODIs) RORE range by price control



Revenue

In 2015, we established a monthly revenue group that is led by our CFO and with membership from across the business. This group is responsible for tracking revenues, analysing any variances and enacting resolutions where relevant. In practice, the scope for RORE impacts to arise as a result of revenue variations under the water and wastewater Network+ controls is relatively limited because the neutral way in which revenue imbalances are addressed through the WRFIM.

Overall, there is a limited RORE effect under most of the wholesale controls because an interest penalty is applied where revenues diverge from target levels by more than 2%. Based on our performance over AMP6, the worst divergence from target (c3%) was on one service in 2015-16 when our forecasting was less mature. As there is a penalty on over-collection there is no RORE upside as such and we have set this to zero in line with the guidance.

There is scope for a RORE impact in relation to Bioresources, as revenues can vary with volumes. However, the volume correction reflects the variable costs; as long as the control reflects the company's mix of costs accurately, this ought to be neutral within the +/- 6% range. Beyond this in either direction there is a 10% penalty on the incremental volume which will have an impact on RORE. We consider the potential range in production of dry solids to be -10% to +13% relative to forecast as measurement still needs to be refined; the further out the forecast is made, the more variable it will become.

There is of course scope for the business to earn non-appointed income by processing sludge from other companies, and for the appointed business to receive some contributions to cost as a result. Likewise, there is scope for making cost savings under the bio-resources control by exporting sludge to other companies if they can process it at lower cost than our more expensive sites. The potential for these savings is included within our overall assumptions on the scope for totex efficiency rather than through the revenue line.

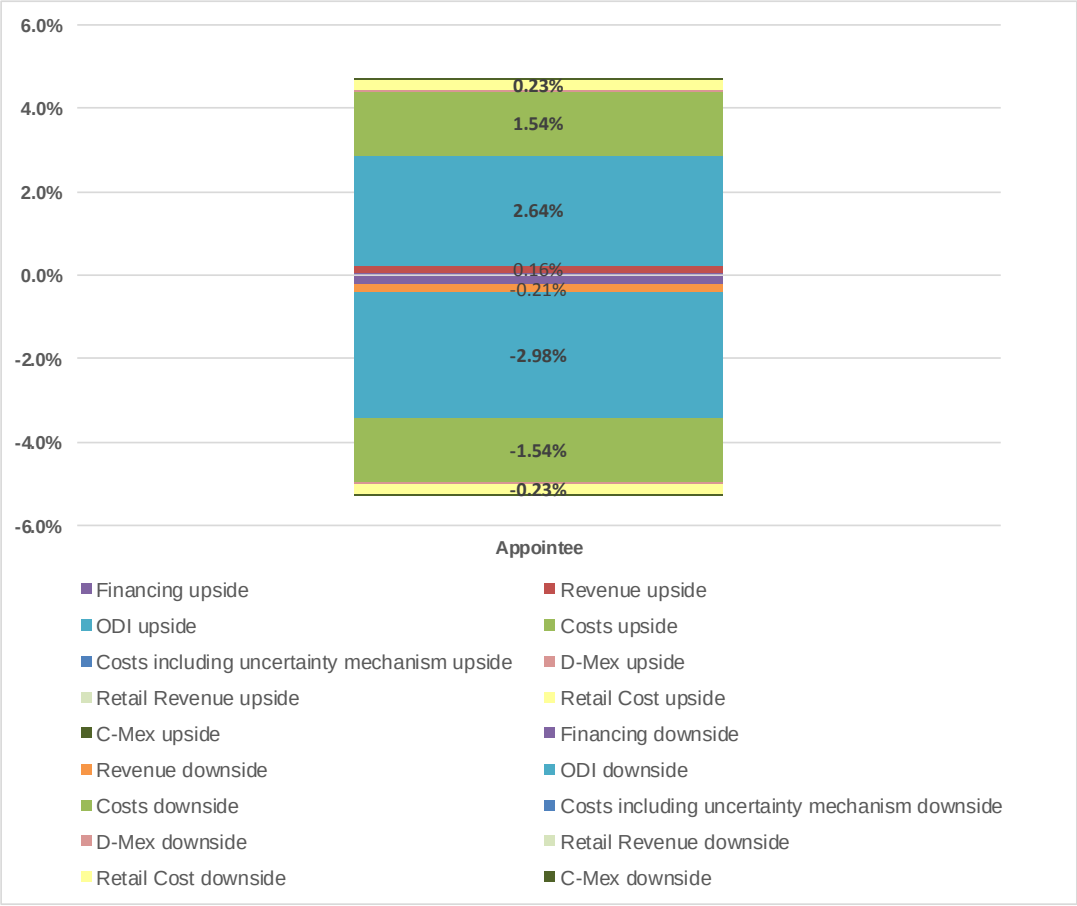
Variations in the number and composition of households will have a RORE effect, as these drive changes in allowed retail revenues. The control provides for a variation based on the average cost to serve and the short run marginal cost of serving additional customers is far lower. When more customers switch to meters (or are selectively metered) there is also an impact on revenue, but we think this is much more closely related to the incremental cost to serve (i.e. additional meter reading and account management costs). We considered this when looking at the impact of our proposed uncertainty mechanism on selective metering and restricted it to wholesale costs only, as we think the retail control is already self-adjusting.

Having considered these revenue risks, we have identified a P10 to P90 range of +0.16% to -0.21% of RORE.

Overall RORE range in our plan

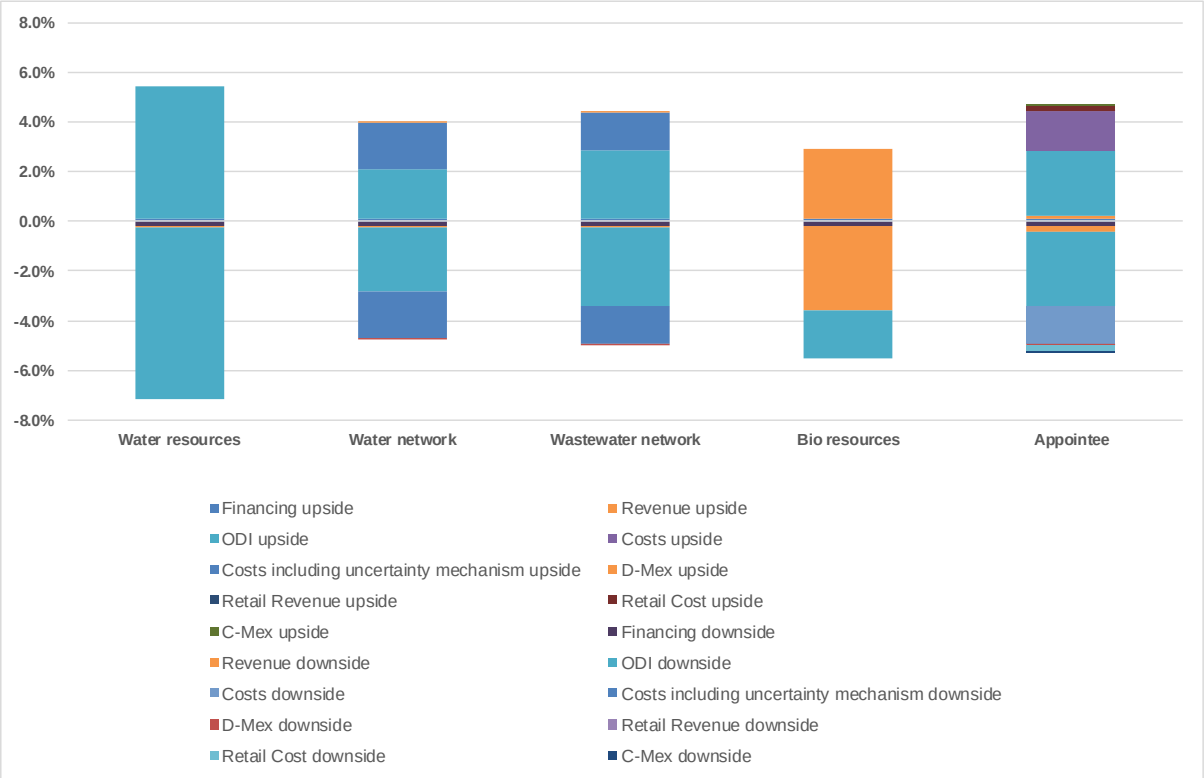
The overall RORE range for our plan is -5.3% to +4.7% and is shown below. The range is calculated by adding together the ranges for totex, finance costs, ODIs and revenue, and so assume that the highest, or lowest, levels of all the component ranges could be achieved simultaneously.

Our overall RORE range (Appointee level)



The figure below shows the RORE ranges by price control. As was noted above, the relatively large RORE range identified for Water Resources partly reflects the relatively low level of RCV (and therefore of Regulatory Equity) that has been allocated to the Water Resources control, with this making RORE levels relatively more sensitive ODI rewards and penalties.

Overall RORE ranges by price control



We think our plan provides a fair and appropriate balance of risk and reward and aligns our interests with those of our customers in an effective manner. Earning a RORE above Ofwat's base return on equity allowance would require us to out-perform what are already very challenging targets. Our customers would share in the benefits of that out-performance: Totex savings would be directly shared with customers; the earning of ODI rewards would only be possible if customers are benefitting from service improvements that have been identified through extensive engagement as being important; and, as our track record clearly shows, when there are other material levels of unexpected out-performance, we look to go further than this in providing additional benefits to our customers.

At the same time, our customers are protected if our performance falls short. This includes the scope for a much larger negative RORE effect than at PR14 if we fail to meet our stretching performance commitments: ODI under-performance could result in a RORE impact of -2.98% during AMP7, compared with a potential downside of 0.9% in AMP6.

We think the RORE ranges are appropriate, because they reflects risks that we are best placed to manage. They reflect a balance of risk and reward that provides us with strong incentives to continuously improve our performance in ways that will benefit our customers now and in the future.