

7 Securing efficient cost

7.1 Key Messages



- **Stretching and efficient plan:** Wholesale totex over £1bn lower than AMP5 and Residential Retail costs reduced by one third (£48m p.a.) since AMP5
- **Significant customer service, operational and environmental improvements:** Delivering on cost challenge even whilst achieving stretching improvements in performance commitment targets
- **Strong focus on innovation to deliver customer service and efficiency improvements:** Savings of £445m
- **Comprehensive engagement with markets, testing our whole cost base:** Savings of £359m
- **Undertaken a robust cost and needs challenge, enabling lower prices for customers:** Savings of £231m
- **Efficient cost base versus peers and other sectors:** Efficiency commitments greater than other industries
- **Effective debt management:** We deliver best practice based on external cross-sectoral benchmarks
- **Well evidenced cost adjustment claims:** Reflecting the unique operating environment in the North West, we propose five claims totalling £318m

7.2 Overview

We are committed to delivering better quality services at a lower price for our customers. This chapter highlights the efficient costs that we propose are required to deliver those services, and what we have done to demonstrate to customers that these costs are efficient.

We are proposing a very stretching plan, with substantial cost reductions in comparison with previous AMP periods, whilst also committing to meet significant improvements in service (as demonstrated in chapter 5).

Our AMP7 cost proposals are **over £1bn lower** than our costs in AMP5, [§<]

[§<]. This reduction has been achieved through:

- **£445m of savings from our committed focus on gaining benefits from innovation**, in particular our adoption of Systems Thinking as a long term strategy – this has been supported and encouraged by the opportunities provided by the outcomes and totex regime;
- **£359m of savings from better engagement with markets in procuring services.** This includes comprehensive market testing of our costs via our Market Engagement Methodology (MEM), and we have also sought to use direct procurement for customers where appropriate; and
- **£231m of savings from better challenge of costs and needs** – both internally and with quality regulators – to ensure that we only spend when needed, and on the most efficient and effective solutions.

After careful consideration, we have proposed five well evidenced cost adjustment claims which we believe may not be fully reflected in the econometric models:

- one £73m claim, which is independent of cost assessment models, for the costs of delivering one of the industry's first direct procurement projects for customers. This project relates to the resilience of water services to over two

million people in the Manchester and Pennines areas of our region whose water is provided by the Haweswater Aqueduct. [X]

[X] We propose that United Utilities incurs £73m on initial design and planning, to ensure that the solution meets the requirements of the Drinking Water Inspectorate (DWI) and other stakeholders, with construction and financing provided by a competitively appointed provider; and

- we have submitted three further claims relating to our Wholesale businesses, totalling £171m totex, to reflect higher costs of providing services in the North West (for age and number of reservoirs, surface water run-off and biosolids distance to landbank). In respect of our Residential Retail business, we have made one £74m claim relating to high levels of deprivation in the North West. If these factors are adequately reflected in Ofwat's cost assessment models then they are capable of being withdrawn.

The external benchmarking exercise, in which we tested our costs outside of the water and sewerage sector, supports our view that our plan is stretching. This has been delivered in part via our market engagement methodology (MEM) market testing process, which tested services with providers from outside of our sector, as well as through our strong innovation culture, as described in chapter 6 of this price review submission. This has driven significant cost savings into our plan and has enabled us to be at the forefront of innovation within the water sector. In addition, we have undertaken external efficiency benchmarking through Deloitte. This assessed the ranges of achievable efficiency savings in other markets and concluded that our efficiency improvements planned for AMP7 compare favourably with the delivery of further efficiencies in other sectors.

Our Wholesale totex plan of £5.4bn for AMP7, alongside our plan to reduce annual Residential Retail costs substantially to £98m by the end of AMP7, will be very stretching for us to deliver, given the efficiency savings assumed (16% reduction in Wholesale costs and a 33% reduction in Residential Retail costs since AMP5) and the significant improvement in committed performance levels (set out in detail in chapter 5). However, we believe this represents the minimum efficient cost we require to deliver these performance commitments, provide resilient services to customers and the environment, and to meet our legal and regulatory obligations to the Environment Agency (EA), DWI and other regulators.

Following Ofwat's change in approach to cost assessment at PR14 (with new totex models for Wholesale and average cost to serve models for Residential Retail), we have played an active role in better understanding the factors that drive cost through:

- conducting an independent review of the key drivers of cost in the wastewater service, culminating in two reports by Arup & Vivid Economics, and the publication of associated datasets developed within the project; and
- working with credit reference agencies to develop alternative measures of deprivation to those published by the Office for National Statistics (ONS), to provide an annual measure which ensures full, consistent coverage of England and Wales.

For Wholesale services:

- we believe that we can deliver a great service to customers, focussing on specific areas supported by our customer research (see chapter 2), through the delivery of our proposed package of performance improvements and our statutory obligations (see chapter 5) at a cost of £5.4bn totex. This represents a significant cost reduction of over £1bn compared with AMP5;
- through our approach to assessing risk and the implementation of our integrated business planning process, we believe we have balanced the short term performance improvements expected by our customers with the long term stewardship of our asset base to create lower, sustainable customer bills; and
- we have developed a balanced suite of Wholesale cost models and outlined cost adjustment claims which we propose Ofwat should utilise for cost assessment at PR19. These models indicate that a reasonable expectation of an efficient and stretching cost for United Utilities would be £5.889bn, over £450m higher than our proposed plan.

For Residential Retail:

- we believe that we can deliver a great service to customers, as indicated by our proposed package of performance improvements, whilst reducing annual costs substantially by one third from £146m, at the end of AMP5, to £98m at the end of AMP7; and
- we have developed a range of retail cost models and a related cost adjustment claim which we propose that Ofwat use for industry cost assessment at PR19. These models indicate that an upper quartile level of cost for a retailer operating in the North West is £98m per year, which aligns with our proposed cost.

This chapter is split into the following sections:

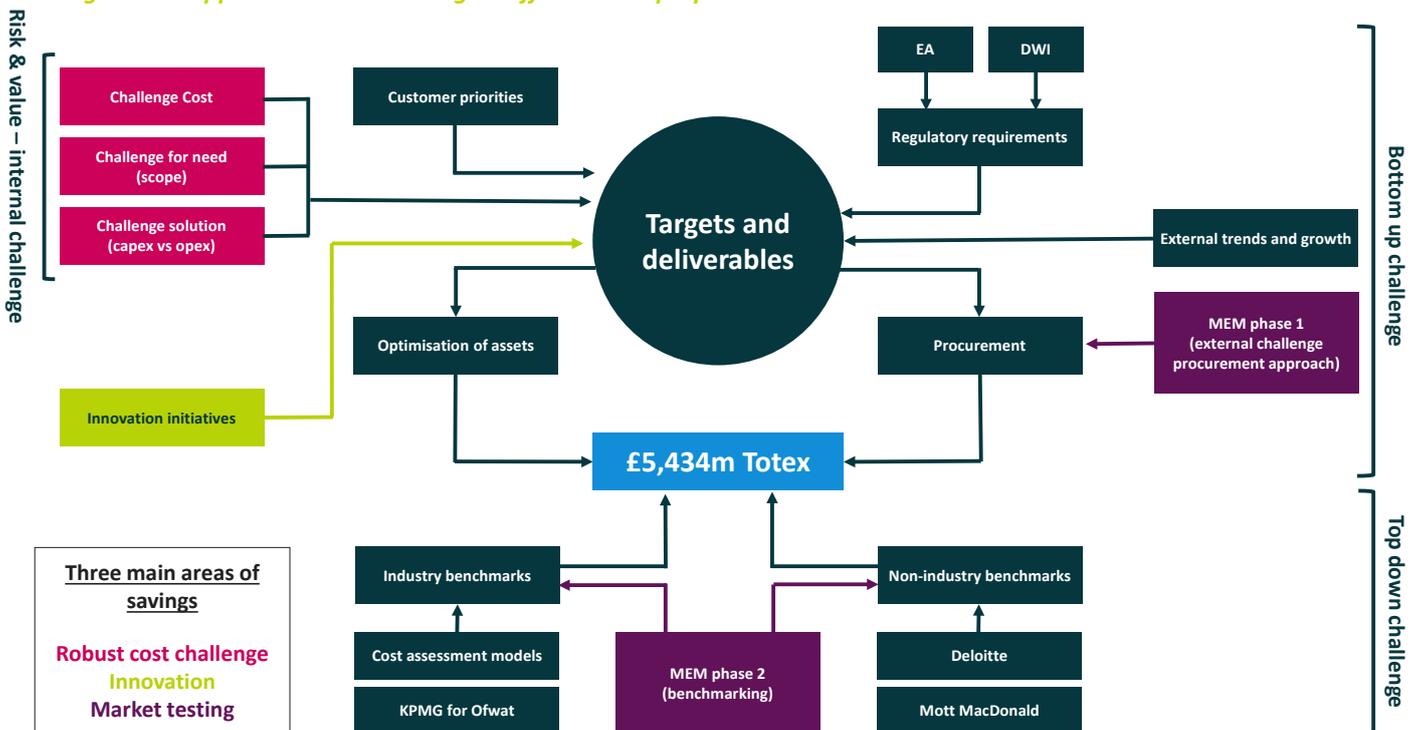
- a summary of our overall Wholesale business plan totex and efficiency (section 7.3);
- individual sections covering each Wholesale price control, including benefits for customers (sections 7.4 & 7.5);
- an overview of our approach to Wholesale cost assessment modelling and external benchmarking, which support the efficiency of our business plan submission (section 7.6);
- an outline of our Wholesale cost adjustment claims and enhancement areas (section 7.7); and
- a summary of our Residential Retail (RR) business plan costs and efficiency, along with our cost adjustment claim relating to high levels of deprivation in the North West region (section 7.8).

Additional evidence on our cost assessment proposal is provided in supplementary document S6002 – “Cost assessment proposal”.

7.3 Wholesale business plan totex and efficiency overview

This section sets out to demonstrate how we have formulated and embedded efficient cost into our proposed Wholesale totex plan for the 2020-25 regulatory period. We have developed our cost requirements through a robust and challenging bottom up process, which we have then compared against a suite of industry econometric models, taking into account static and dynamic efficiency improvements, and also benchmarked our costs externally. We believe that our cost proposals are efficient versus both our peers and other sectors. Figure 7.1 demonstrates our approach to determining our efficient cost proposal.

Figure 7.1: Approach to determining an efficient cost proposal



Bottom up challenge – our approach covers a comprehensive range of areas. The first stage is to assess our regulatory requirements, in particular with regard to the EA and the DWI, and use customers' priorities to help shape our targets and deliverables. We then undertake a robust risk and value internal challenge which involves challenging our costs, the need (scope) and the solution (opex vs capex). This generates a view as to the level of savings that can be achieved through what we term '**robust cost challenge**'. We have instilled a strong innovation culture in the business (as demonstrated in chapter 6, section 6.3) and this has led to the development of a wide-ranging number of initiatives, which enable us to deliver better customer service and at lower cost. **Innovation** forms our second main area of savings and the outputs from our innovation initiatives feed into our determination of our targets and deliverables. We have developed an industry leading innovation in procurement best practice, which we call our 'market engagement methodology' or MEM (as demonstrated in chapter 6, section 6.4). We applied our MEM process to 100% of our anticipated business needs within AMP7, which has generated significant savings. **Market testing** forms our third main area of savings. We then consider how we can optimise our asset base, taking a rigorous approach to the long term stewardship of our assets. This comprehensive process enables us to formulate our efficient cost proposal.

Top down challenge – we then test our bottom up cost proposal through a robust top down challenge. This includes considering industry benchmarks, utilising a suite of econometric models and other external assessments such as the KPMG work for Ofwat. In addition, we look at non-industry benchmarks, such as the multi-sector research undertaken by Deloitte and Mott MacDonald's work on estimating costs. This provides us with a good view as to how future costs and efficiency frontiers are likely to move in other industries. As a further check, we apply our MEM methodology to various parts of the business to provide additional assurance that our cost proposals are efficient.

We understand the need to deliver an efficient plan for customers that underpins the affordability of our services. In recent years, we have made significant progress in delivering a step change in our cost base. This step change has been achieved through our ability to embrace innovation, our improved engagement with markets to procure services in a more intelligent manner and our capability to robustly challenge our cost and requirements.

Our Wholesale expenditure requirements for AMP7 are £5.4bn and this is reflective of our efforts to ensure that our business plan is as efficient as possible. We are confident that we have achieved the right balance between a stretching cost plan and an acceptable level of risk, providing customers with more for less. We understand our risks and will proactively manage them through our internal 25 year strategy plans.

7.3.1 Totex summary

We are proposing a totex reduction in excess of £1bn since AMP5, as outlined in table 7.1:

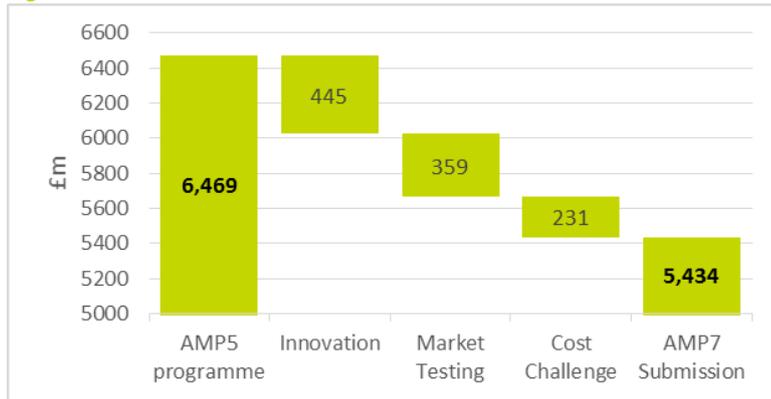
Table 7.1 Wholesale business totex

Wholesale business totex (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Water Network Plus	2,297	2,587	2,074
Water Resources	441	357	374
Wastewater Network Plus	3,187	2,851	2,614
Bioresources	544	434	372
Total	6,469	6,229	5,434

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total.

This substantial totex reduction splits as follows by our areas of innovation, market testing and cost challenge.

Figure 7.2: Totex reduction



7.3.2 Transitional investment

Of the £5.4bn, c£30m is attributable to our transitional investment programme which is required due to:

- **Wastewater Environmental Quality programme (c£10m)** to enable us to achieve early regulatory dates.
- **Manchester and Pennine Resilience project (c£20m)** to enable us to begin important activities on planning for and carrying out site investigation on the Haweswater Aqueduct.

More details on our transitional investment programme and how we have constrained this programme can be found in data tables WwS10 and WS10 and the accompanying commentaries.

7.3.3 Delivering cost efficiency

In order to meet our challenging AMP6 final determination, we needed to transform as a business so we set ourselves ambitious and stretching goals to meet and exceed customer, regulatory and shareholder expectations in our pursuit to be the best UK water and wastewater company. We have made a series of changes in how we manage our totex plan to generate savings within our programme. Some of the key examples include:

- **programme optimisation** – we utilised a number of strategic levers to achieve a fully optimised programme of work. These levers include competitive tender and batching, a more collaborative approach between our capital delivery partners and internal teams to streamline activities, innovating the way we deliver our capital programme through new processes and design for manufacture and assembly (DfMA), as well as embracing the digital world through building information modelling (BIM) – this tool has driven asset centric data into an operational world and delivered capex savings. We have delivered **c£200m of savings** through the use of these strategic levers;
- **change in delivery model** – through our continued drive towards industry best performance, we have assessed and subsequently changed our delivery model from an alliance based model to a design and build model. This change has enabled a reduction in indirect construction costs and produced **savings of £66m** across AMP6;
- **Future Concept of Operations (FCO)** – this initiative is part of our Systems Thinking programme (detailed in chapter 6, section 6.3) and we have successfully delivered this phase. Our aim is to improve the visibility of the company as a system, by identifying the interconnection between people, processes, systems and data and the creation of our integrated control centre (ICC) underpins this. This vision will enable us to optimise the way in which we operate our business. FCO has laid the foundation for further developments within our Systems Thinking programme, which will be an important component in delivering our AMP7 plan and is estimated to deliver **c£200m of savings**; and
- **challenging scope** – the introduction of a risk and value (R&V) assessment across all our major projects. R&V is a series of structured reviews which take place before and during the project lifecycle. The process we have embedded ensures that when we decide projects are necessary, we only do what we need to do, that our decisions are based on strong evidence, and the value to our business and customers is clear. This process ensures that we keep challenging and validating both the need for our projects and the way we deliver them. We have achieved **£24m of savings** over AMP6 and R&V has been a key function in formulating our AMP7 plan.

As we look towards AMP7, some of our key initiatives include:

- **Market Engagement Methodology (MEM)** – through the adoption of our MEM process (detailed in section 6.4 of chapter 6), we are able to strive for a better supply chain and procurement strategy to leverage maximum value

from the market to ensure best value for customers. Through our MEM testing, we have identified **savings of £359m;**

- **improved PR19 processes and systems** – these enable us to robustly challenge costs across our Wholesale businesses. The implementation of the R&V assessment across our major projects in AMP6 was also applied during the development of our PR19 programme. All requirements were put through this process and this has generated **£100m of savings**. Our plan includes the delivery of greater volumes of work in AMP7 than were undertaken in AMP6 for the same level of expenditure;
- **improved pricing for AMP7** – we have continued to drive down our opex costs by leveraging our buying power in key markets through the use of longer term commercial contracts and have entered into long term power purchase agreements with renewable energy suppliers to mitigate some of the electricity market pricing risk and secure supply of essential products;
- **further innovation** – we have worked hard to create and sustain an innovation culture within our Wholesale businesses and this is reflected by our recently established Innovation Lab. Based on our track record for delivering innovation benefits in AMP6, as described in the FCO narrative above, we anticipate we will deliver £358m of savings in AMP7, making a total of £445m since AMP5. This has been baked into our AMP7 cost baseline alongside the sustainable benefits delivered in AMP6. Through our innovation investment we are confident that we can improve performance levels in a number of key areas, such as leakage and sewer flooding;
- **benchmarking of support functions** – in order to validate the efficiency of our capital costs, we have undertaken benchmarking of our indirect support costs against external market data from our capital delivery partners. We believe that a 10% indirect cost allocation represents an efficient level of overhead on the capital programme. Recognising that the overall programme is smaller in size in AMP7, we have challenged our business support costs to ensure these remain appropriate for the size of the organisation and future ways of working. As such, we are forecasting £64m of support cost savings across AMP7. Despite factoring in this saving, due to the c£1bn reduction in the proposed capital programme and the relatively fixed nature of a proportion of our support costs, there remains a differential which will result in a growth in our opex costs of c£33m and we will find other cost efficiencies to offset this growth; and
- **pension contributions** – the group participates in two major funded defined benefit pension schemes, the largest by far being the United Utilities Pension Scheme (UUPS), and these schemes are closed to new employees. In order to ensure pension contributions are sustainable in the long term, during AMP6 we negotiated changes to the UUPS effective from 1st April 2018. The outcome is that the majority of active members in the defined benefit sections of the UUPS have transitioned to a hybrid section incorporating both defined benefit and defined contribution elements. This transition is a consequence of an increase in future service costs and is intended to reduce the overall costs and risk to the group, whilst balancing the interests of employees by maintaining an element of defined benefit pension provision. [X]

Assurance – we created a series of internal and external assurance checkpoints to ensure that our costs have been appropriately challenged, particularly in relation to our major capital projects. Our internal checkpoints were undertaken via the Wholesale programme management function, ensuring that all needs articulated within the plan have been thoroughly challenged through a structured governance process, and that costings are representative within the industry and have been challenged through a risk and value process designed to ensure that costs placed into the programme are robust. Our external checkpoints consist of a series of reviews designed to ensure that the process is working as intended. Specific reports included:

- Process for development of scope of works: Arcadis assurance report, T9024;
- review of the approach to estimating costs, inclusive of cost curve assurance and triangulation (Mott MacDonald) T6002, T6006 and T6007; and
- end-to-end review of the totex build approach (supplementary document T9011 – “End to end process for totex plan: Deloitte assurance report” details the key conclusions).

All of the reviews were undertaken at different points in the programme, with the Arcadis and Mott Macdonald reviews specifically being intended to identify actions which could be enacted to improve the quality of the plan. The key conclusion from the reports is that our Wholesale businesses have in place comprehensive and structured processes with clear governance which cover each of the stages of the development of the totex plan. Full detail of all assurance related to these tests is provided in supplementary document S9001.

7.3.4 Policy items

Some expenditure categories have been excluded from our econometric modelling assessment (as outlined in section 7.6 of this chapter) as we do not believe that they can be (or in some cases, should be) accurately predicted by an econometric model of any form and that they are, to a significant degree, outside of management control, thereby excluding them from an explicit efficiency adjustment. The key items are:

- **rates** – in order to evidence that our business rates charge is appropriate we have sought guidance from a number of utility sector consultants including Savills, Ernst & Young and Lambert Smith Hampton. It is expected that the cumulo business rates liability assessed for the water business will remain in line with our FY17/18 charge throughout AMP7. This is after adjusting for the 2005 appeal refund, despite the expected WACC reduction, due to the high level of uncertainty around how the Valuation Office Agency (VOA) will set rateable values in the 2021 and 2024 revaluations, and how Government will set the business rates multiplier in future. Wastewater business rates are also assumed to remain flat across AMP7, apart from growth associated with new assets built as a result of our quality programme;
- **abstraction charges** – are set nationally by the Environment Agency (EA), and there is limited management control available to influence the level of charge that is applied to us. We have reviewed our licences, and revoked those that are no longer required, whilst ensuring that we have sufficient headroom to enable us to meet periods of unusually high demand. Despite reducing the total number of licences, we have left the abstraction charge flat due to the EA charge setting mechanism which looks to recover a fixed annual amount from the population of licences in issue. There is a risk that costs may increase significantly as a result of the water abstraction management reform. The recent review of discharge consents within Wastewater will result in a substantial increase to the amount paid and a comparable increase to abstraction charges would be difficult to absorb. Given this uncertainty, we have provisionally maintained the most recent levels of charging (2017-18) within our Water Resources business plan for the AMP7 period and included this value within the baseline. Should more information regarding future charges across the industry become available, we would expect that Ofwat update this policy item (and business plan equivalent) prior to the final determination; and
- **pension deficit recovery payments (cash expenditure)** – we have for many years adopted a responsible approach to funding and hedging our pension scheme, with prudent interest rate and inflation hedging policies. As a result, our planned deficit repair contributions are scheduled to be completed by 2021 for our main UUPS scheme, and by 2024 for our other scheme, [§<]. [§<]. We are looking to fully hedge the interest rate and inflation elements of both schemes and therefore have a high level of confidence that we will not need to make substantive additional deficit repair contributions beyond these dates. The creation of the hybrid scheme, incorporating both defined benefit and defined contribution elements, will ensure long term cost sustainability.

7.3.5 Cost adjustment claims

After careful consideration, we are proposing four cost adjustment claims across our Wholesale businesses (section 7.7) which reflect our unique operating characteristics in the North West and may not be captured within the econometric models.

7.4 Wholesale Water Network Plus and Water Resources

This section covers our Water Resources and Water Network Plus price controls. Together, these cost proposals are designed to deliver efficient, reliable, clean and resilient customer-focused water services to over three million households and around 200,000 non-households in the North West of England.

7.4.1 Customer benefits

Customers will benefit from both significant price reductions and improving levels of service. We have made considerable operational performance progress since 2010, delivering substantial customer and environmental benefits, and we have plans to deliver more for customers.

The combined totex proposal of c£2.4bn is c£300m lower than AMP5, contributing to lower bills for customers. Our innovation initiatives and market testing activities provide significant efficiencies and service benefits for customers. We believe we have developed a robust, long-term, best value, sustainable plan, with water supplies to meet projected demand for the next 25 years. We are promoting efficient water use and aim to reduce leakage by a substantial 80 MI/d, or 15%, across the 2020-25 period. We have operational and service level agreements in place to ensure quality and resilience of water supplies and we are promoting and exploring potential for national water trading via our

innovative commercial strategy. Underpinning all of our activity in these areas are stretching operational targets that focus on the most valued aspects of our service.

7.4.2 Totex overview

Taking the two price controls together, we have achieved a totex reduction of c£300m since AMP5 as outlined in table 7.2. The following sections detail how this cost reduction has been achieved.

Table 7.2: Multi-AMP comparison of capex and opex within Water Network Plus and Water Resources.

Totex (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Water Network Plus	2,297	2,587	2,074
Water Resources	441	357	374
Total	2,738	2,944	2,448

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total.

7.4.3 Water Network Plus

Cost and efficiency overview

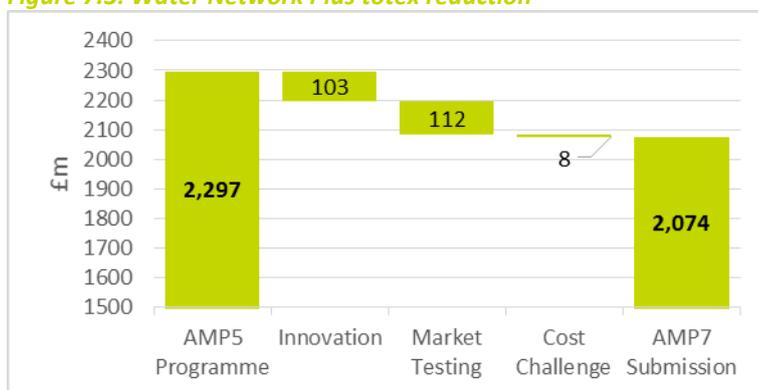
Our Water Network Plus expenditure requirements for the 2020-25 period are £2.074bn and we aim to deliver significant customer and environmental benefits, including:

- continuing to maintain existing high standards for drinking water quality and reliability and meet security and health and safety statutory obligations;
- ensuring efficient operation of our network through good operational practice and the appropriate use of technology
- reducing leakage by 15% to ensure long term supply resilience;
- significantly improving the number of supply interruptions to meet the industry upper quartile;
- delivering a major improvement of 13% in the number of customer contacts for taste and smell; and
- commencing investment in our biggest resilience risk, the Haweswater Aqueduct, and secure the long term water supply for the Pennines and Manchester.

Further detail on our business plan proposal is provided in supplementary document S6006 – “Water Network Plus: Business Plan”.

We have made significant progress in challenging our programme to formulate a very stretching plan. This is articulated in figure 7.3, which demonstrates **savings of £223m** across innovation, market testing and cost challenge. Our cost challenge number is netted off against service improvement expenditure, such as the significant 15% reduction in leakage that we are targeting by the end of AMP7.

Figure 7.3: Water Network Plus totex reduction



As detailed in supplementary document S6001 – “Our approach to totex”, we have conducted a bottom up assessment of our programmes and challenged them robustly to ensure they are as efficient as possible. We have demonstrated our continued effort to reduce expenditure, whilst improving drinking water quality and achieving a high level of compliance with relevant regulations. We have made significant progress in our performance, maintaining or improving

serviceability of all our water assets. We have managed to reduce our totex cost base by c10% between AMP5 and AMP7.

Table 7.3: Totex by cost category

Water Network Plus (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Maintenance expenditure	554	614	296
Enhancement expenditure	471	487	345
Capex Total	1,025	1,101	641
Opex Total	1,272	1,486	1,433
Totex Total	2,297	2,587	2,074

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor treatment recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total. AMP5 has also been restated to show infrastructure renewals expenditure in opex to allow consistent comparison to AMP6 and AMP7.

The failures that led to our major incidents during AMP6 caused us to re-evaluate our processes, assets, systems and skills. Our increased maintenance expenditure in AMP6 is reflective of our response to these incidents as well as our programmes of work that have delivered resilience improvements within our asset base, including reinvestment of outperformance. Whilst our AMP7 maintenance expenditure proposals show a significant reduction of almost 50% since AMP5, the increased spend in AMP6 does exacerbate this apparent reduction. Nonetheless, we believe that our cost proposals are both stretching and efficient and we are well placed to meet and exceed our customers' expectations for water quality for AMP7 and beyond.

Table 7.4 summarises how our totex maps across our levels of services within the 2020-25 business planning period. As previously articulated, the majority of our expenditure will be to maintain our high levels of service to customers.

Table 7.4: Totex by outcome

Outcome	Opex (£m)	Capex (£m)		Totex (£m)
		Maintenance	Enhancement	
Your drinking water is safe and clean	572	138	10	720
You have a reliable supply of water now and in the future	854	112	287	1,253
The natural environment is protected and improved in the way we deliver our services	2	7	0	9
You're highly satisfied with our service and find it easy to do business with us	5	39	48	92
Total	1,433	296	345	2,074

Innovation contribution

We are committed to delivering customer, environmental and economic benefits through innovation and we are implementing a number of initiatives and have a range of plans for AMP7 and beyond (as outlined in chapter 6, section 6.3). In addition to the broader Wholesale initiatives detailed earlier, Water Network Plus plans to deliver some specific technologies which contribute key efficiency savings.

An important initiative is **event detection and localisation**. In pursuit of an ambitious target of reducing leakage by 15%, we will need to find and fix many more leaks, including ones that are unlikely to be detected by human ear, hence we need to utilise technology. This initiative will enable us to accurately identify the location of leaks and help our workforce act on this information as quickly and efficiency as possible. This technology will introduce new ways of working, new processes and inevitably changes to current culture within our leakage teams. We anticipate that this technology will deliver £45m of efficiency savings across 2020-25.

Market testing contribution

We are committed to improving our engagement with markets in procuring services. This includes comprehensive market testing of our costs via our Market Engagement Methodology (MEM) and Direct Procurement where appropriate, as detailed in chapter 6 (tests 5.2 & 5.7) of this price review submission.

Our MEM approach has specifically contributed savings of £112m against the Water Network Plus price control, £50m of which is against network activities. We have also explored direct procurement options against our Manchester and Pennine Resilience project, enabling further savings to be delivered.

Robust cost challenge contribution

We are committed to delivering better service to our customers at a lower price. Beyond the Wholesale cost challenge processes detailed earlier, Water Network Plus has specifically challenged its cost base through **enhanced hazard review (Hazrev) processes**. This methodology provides a full end-to-end review of our water treatment works processes relating to chemical dosing and water quality. It is built around a core team of engineering, operational and technical experts for each WTW to understand and capture all risks on the site and also improve the team understanding of the site, improve performance and change site culture. We have implemented this approach across our estate of water treatment works.

We have found that the Hazrev approach has identified many efficiency opportunities, from small operational changes or modifications that can be done, to making our production lines more efficient, reducing our costs and ensuring our water quality is maintained throughout the product lifecycle. The process has helped create one organised and assessable source of information across all our assets, generating a prioritised risk management system which allows United Utilities to allocate funding for improvements whilst managing our regional risk profile.

As detailed previously, we ensure that all schemes are assessed on a lowest whole-life cost basis and this is evident within the Water Network Plus price control – we are spending £50k opex per annum on liaising with local farmers and land owners in partnership with the Ribble Rivers Trust to offer training and advice on reducing pesticide usage within Catchment. This has negated the need to invest approximately £5m at Wayoh water treatment works on the granular activated carbon treatment facility.

7.4.4 Water Resources

Cost and efficiency overview

Our Water Resources expenditure requirements for the 2020-25 period are £374m and we aim to deliver significant customer and environmental benefits, including:

- investment in dam safety and risk reduction;
- continued investment in our raw water infrastructure, maintaining our levels of service for supply reliability, and ensuring efficient operation of our network through good operational practice and the appropriate use of technology; and
- a programme of £136m totex to deliver environmental protection and enhancements. We have a performance commitment to deliver improvements at multiple locations, on time.

Further detail on our business plan proposal is provided in supplementary document S6007 – “Water Resources: Business Plan”.

We have already made significant progress in challenging our cost base, and will continue this approach into AMP7. Our plan reflects the lowest whole-life cost approach and we have **reduced our totex cost base by over 15%** between AMP5 and AMP7.

Figure 7.4: Water Resources totex reduction

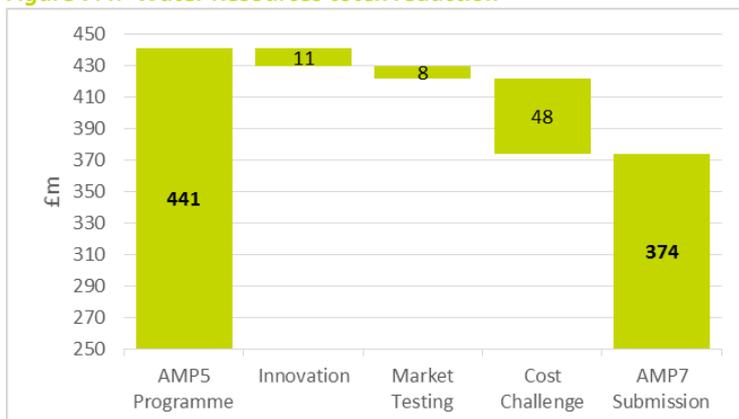


Table 7.5: Totex by cost category

Water Resources (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Maintenance expenditure	18	7	33
Enhancement expenditure	50	53	24
Capex Total	68	60	57
Opex Total	373	297	317
Totex Total	441	357	374

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor treatment recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total. AMP5 has also been restated to show infrastructure renewals expenditure in opex to allow consistent comparison to AMP6 and AMP7.

A significant proportion of our Water Resources expenditure will be used to maintain current performance levels relating to our impounding reservoirs and continual resilience of our raw water assets. We require £24m of enhancement expenditure to enable us to mitigate the environmental impact of our water assets and operation through the delivery of environmental schemes set out in the Water Industry National Environment Programme.

Table 7.6: Totex by outcome

Outcome	Opex (£m)	Capex (£m)		Totex (£m)
		Maintenance	Enhancement	
Your drinking water is safe and clean	0	3	0	3
You have a reliable supply of water now and in the future	208	27	0	235
The natural environment is protected and improved in the way we deliver our services	109	3	24	136
Total	317	33	24	374

Innovation contribution

In addition to the broader Wholesale initiatives detailed earlier, Water Resources plans to deliver some specific technologies which contribute key efficiency savings.

An important initiative is our **catchment management programme**. Our programme in 2020-2025 is stretching in terms of the scale of activity required and the efficient use of resources to deliver it. In comparison to previous periods, the investment per area represents a step change in value for money. We will be investing in the protection of water catchments covering an area of over 600,000 hectares at a lower cost than the previous programmes. Expenditure has been reduced by sharing staff and resources with partner organisations, targeted catchment and water quality monitoring, trialling nutrient trading to reduce the amount of nitrate entering the groundwater at source, thereby avoiding investment in future nitrate removal treatment, and developing an integrated catchment approach to take advantages of synergies between activities to address water quality and quantity issues across the catchment. We will achieve efficiency savings in the longer term, enabling us to keep customer bills as low as possible.

Another innovation initiative within our Water Resources business is the **masonry spillway plucking solution** associated with our impounding reservoirs. The masonry spillway plucking solution involves drilling injection holes through the masonry blocks, and injecting (under high pressure) a specially formulated grouting mixture. The 'masonry spillway plucking solution' is substantially less expensive than the traditional solution, reducing the impact on customer bills. The new solution can also be delivered much more quickly, with just a few days of construction as compared to the six months of construction time for the traditional solution, reducing the amount of out of service time. Through utilising this approach we expect to save capital expenditure of £12m across AMP6, which represents the additional expenditure we would have incurred had we used traditional solutions.

Market testing contribution

We are committed to improving our engagement with **markets** in procuring services. This includes comprehensive market testing of our costs via our Market Engagement Methodology (MEM) and Direct Procurement where appropriate, as detailed in chapter 6, sections 6.4 and 6.5, of this price review submission.

Our MEM approach has specifically contributed savings in the order of £8m within Water Resources. In addition, we have explored **water resource management plan opportunity for cheaper water resources**. We have developed a commercial strategy in order to allow other water companies, water/wastewater retailers and third parties the opportunity to put forward ideas for either managing demand or for the supply of new resources. Our approach to this market engagement activity comprises three main parts:

- water trading – through bulk supplies between water companies (neighbouring or not);
- abstraction licence trading/sharing within catchments – this provides a company with an option to purchase or sell abstraction licences to help meet its supply needs or to sell surplus water to other abstractors; and
- options provided by other water companies or by third parties – allowing others to provide demand and/or resource type options in the plan increases the scope for lower costs and innovative solutions.

We will continue to explore market opportunities to identify further efficiencies within the 2020-25 business planning period.

[X]
[X]

[X]

7.5 Wholesale Wastewater Network Plus and Bioresources

This section covers our Wastewater Network Plus and Bioresources price controls. Together, these cost proposals are designed to continue to deliver our wastewater and bioresources services safely, reliably and efficiently without customers noticing.

7.5.1 Customer benefits

Customers will benefit from both significant price reductions and improving levels of service. We have made considerable operational performance progress since 2010, delivering substantial customer and environmental benefits, and we have plans to deliver more for customers.

The combined totex proposal of c£3bn represents a substantial reduction of around 20% since AMP5, with our approach to innovation and market testing making a significant contribution, as we deliver further service benefits for customers. We have made a step change in environmental performance, holding EA industry leading 4-star status for the third consecutive year, and we aim to lead industry performance and deliver more innovative and resilient solutions. We have set stretching targets for pollution performance as we strive to move to the industry frontier. Our innovative ODIs will help us deliver catchment-wide benefits and we have plans in place to reach industry leading performance for internal sewer flooding over the next 10 years.

7.5.2 Totex overview

Taking the two price controls together, we have achieved a substantial totex reduction of c£750m since AMP5, as outlined in table 7.7:

Table 7.7: Provides a multi-AMP comparison of capex and opex within Wastewater Network Plus & Bioresources

Totex (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Wastewater Network Plus	3,187	2,851	2,614
Bioresources	544	434	372
Total	3,731	3,285	2,986

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total.

7.5.3 Wastewater Network Plus

Cost and efficiency overview

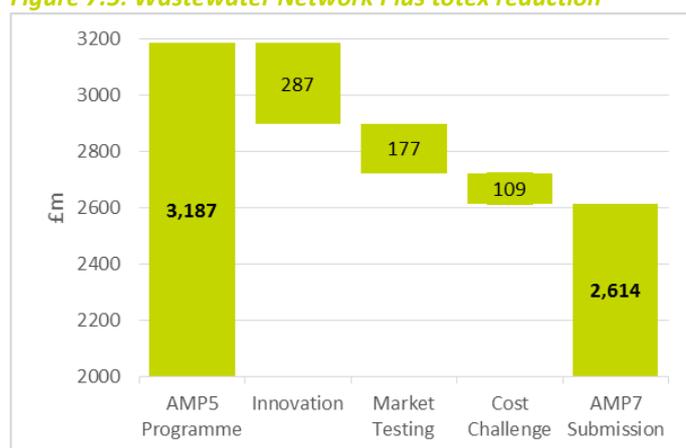
Our Wastewater Network Plus expenditure requirements for the 2020-25 period are £2.614bn and we aim to deliver significant customer and environmental benefits, including:

- continuing to work hard to deliver a stable level of environmental compliance from our wastewater treatment works, protecting the water environment in the North West;
- delivering innovative, low-cost improvements to our wastewater treatment works, pumping stations and combined sewer overflows to improve river water quality and meet our environmental obligations;
- increasing the capacity of our wastewater treatment works to accommodate increasing flows and support economic growth in the North West;
- maintaining existing sewers (including pipe bridges and rising mains), pumping stations (including last in line), combined sewer overflows and detention tanks; and
- providing additional storage in our sewer network and providing protection to individual homes.

Further detail on our business plan proposal is provided in supplementary document S6008 – “Wastewater Network Plus: Business Plan”.

We have conducted a bottom up assessment of the Wastewater Network Plus programme and challenged them robustly to ensure they are as efficient as possible. We have achieved **over £570m of efficiency savings**, split by our areas of innovation, market testing and cost challenge as detailed in figure 7.5.

Figure 7.5: Wastewater Network Plus totex reduction



We have made significant progress in our performance, maintaining serviceability across our wastewater asset base as well as improving in the areas of pollution incidents and wastewater treatment works compliance. We have achieved a reduction of c20% in our cost base between AMP5 and AMP7. Within this cost reduction, we have reduced our maintenance expenditure by c30%, whilst still maintaining higher levels of service. This is attributable to our identifying and embedding efficiency and innovation initiatives into our plan, alongside our ability to take more measured risk across the programme.

Table 7.8: Totex by cost category

Wastewater Network Plus (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Maintenance expenditure	790	882	560
Enhancement expenditure	1,266	799	815
Capex Total	2,056	1,681	1,375
Opex Total	1,131	1,170	1,239
Totex Total	3,187	2,851	2,614

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor treatment recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total. AMP5 has also been restated to show infrastructure renewals expenditure in opex to allow consistent comparison to AMP6 and AMP7.

A significant part of our expenditure (c70%) will be used to maintain current performance levels at our wastewater treatment works, as well as across our network and associated pumping stations. We have £815m of identified enhancement expenditure, which is predominately associated with the wastewater environmental programme enabling us to meet all our environmental obligations.

Table 7.9: Totex by outcome

Outcome	Opex (£m)	Capex (£m)		Totex (£m)
		Maintenance	Enhancement	
The natural environment is protected and improved	670	530	673	1873
We will reliably collect and recycle your wastewater	357	15	35	407
The risk of sewer flooding for homes and businesses is reduced	209	11	102	322
You're highly satisfied with our service and find it easy to do business with us	3	4	5	12
Total	1,239	560	815	2,614

Innovation contribution

During AMP6, a key element of the wastewater network management programme is a project to understand toilet wipe purchase, usage and flushing behaviours. We have conducted a number of experiments with detailed analysis supported by behavioural scientists to understand why people flush wipes. We then tested a range of communication techniques to see which were effective and those that did not work so well. Key findings from these studies are that customers are not particularly aware of the impacts of flushing wipes, especially given that most are labelled as 'flushable'. Then the most effective methods of communicating with customers appears to be working with schools through innovative 'Mad Science' projects, which then children take these messages home. We have also found through experiments that customers are more positively impacted by an environmental message rather than a financial one.

We will evolve our customer awareness strategy to deliver a comprehensive programme of engagement that we forecast will deliver service and efficiency benefits. In AMP7, we will be launching a series of customer engagement campaigns to influence customers using behavioural economics to change behaviour and we anticipate a c£50m cost saving across AMP7, compared with traditional approaches.

Market testing contribution

We are committed to improving our engagement with markets in procuring services. This includes comprehensive market testing of our costs via our Market Engagement Methodology (MEM) and Direct Procurement where appropriate, as detailed in chapter 6, sections 6.4 and 6.5, of this price review submission. Our MEM approach specifically contributes savings of £177m within this price control. This will principally be delivered through cost savings on our major capital programme and network management contract.

Robust cost challenge contribution

We have challenged our cost base extensively and in particular within the wastewater environmental programme. We have worked closer than ever before with the Environment Agency (EA) to shape the content of the Water Industry National Environment Plan (WINEP) for the North West in order to ensure it will deliver significant environmental improvements as efficiently as possible. Without adopting this collaborative approach our wastewater environmental programme would have been c£110m higher.

In building our plan we have followed our Integrated Catchment approach. The process is a cycle which starts by using our industry leading modelling capability to play a very active role in water quality planning with the EA. By working in partnership with the EA to do this, the WINEP reflects our customers' priorities and offers good value for money.

In addition to this, our previously described risk and value process has delivered efficiency savings. For example, some primary settlement requirements at our wastewater treatment works are required to treat all consented flows up to the 2036 growth horizon. Through our modelling expertise we have challenged the timing that a solution was required, concluding that the solution may not be needed until 2035. Although there is a risk that the growth materialises earlier than projected, there is also a possibility the growth will not occur and the investment can be deferred.

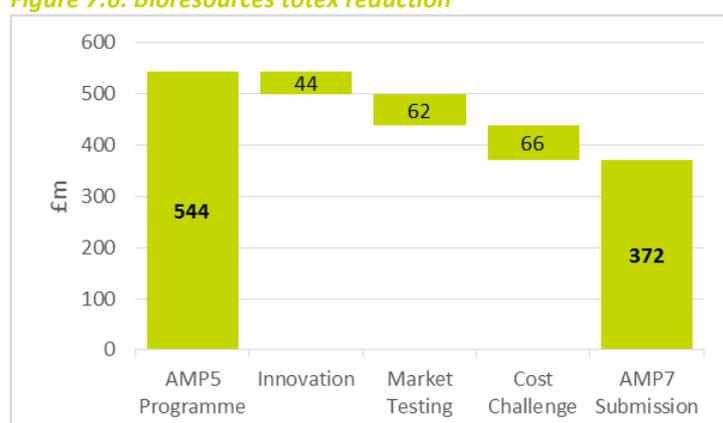
7.5.4 Bioresources

Cost and efficiency overview

Our Bioresources expenditure requirements for the 2020-25 period are £372m and we aim to deliver significant customer and environmental benefits, through ensuring we protect and improve the natural environment. For example, through our better air quality performance commitment, we will focus on reducing the nitrous oxide (NOx) emissions per unit of renewable electricity generated from bioresources. Furthermore, we will continue to make improvements to the resilience of our asset base throughout AMP7. Further detail on our business plan proposal is provided in supplementary document S6009 – “Bioresources: Business Plan”.

We have set ourselves stretching efficiency targets with a Bioresources plan of £372m, whilst remaining fully compliant with the sewage sludge regulations. We have **reduced our cost base by around a third** between AMP5 and AMP7, helping to reduce customer bills. Although this reduction is partly attributable to having no enhancement expenditure in AMP7, we have also made significant progress in reducing our opex since AMP5.

Figure 7.6: Bioresources totex reduction



It should be noted that Bioresources costs are derived from the expected sludge volumes from the Wastewater Network Plus business from the 2020-25 period.

Table 7.10: Totex by cost category

Bioresources (2017/18 prices, £m)	AMP5*	AMP6*	AMP7 proposals
Maintenance expenditure	84	159	166
Enhancement expenditure	161	41	0
Capex Total	245	200	166
Opex Total	299	234	206
Totex Total	544	434	372

* AMP5 and AMP6 have been restated to reflect the impact of principal use and sludge liquor treatment recharges introduced in AMP7. This allows a consistent comparison across AMP periods for each price control. It does not impact the overall Wholesale total. AMP5 has also been restated to show infrastructure renewals expenditure in opex to allow consistent comparison to AMP6 and AMP7.

Historical enhancement expenditure has led to an increased maintenance programme focussed on delivering best value at the lowest efficient cost, extending current resilience initiatives to improve treatment capacity and reliability. Facilities with poor asset health where the costs of refurbishment or replacement are too high are being closed and the sludge diverted to more efficient facilities. However, despite the increase in maintenance expenditure, we have substantially reduced opex and, taken together, we have still achieved a net reduction in spend since AMP5.

In response to customer and stakeholder feedback, we will make a significant move toward 100% recycling of biosolids to agriculture, conforming to the Biosolids Assurance Scheme, as the lowest cost and most sustainable disposal route. This will allow us to suspend day-to-day incineration operations. We will retain incineration capability as this enables us to efficiently manage the risk of significant periods of insufficient agricultural land availability.

Table 7.11: Totex by outcome

Outcome	Opex (£m)	Capex (£m)		Totex (£m)
		Maintenance	Enhancement	
The natural environment is protected and improved	206	166	0	372
Total	206	166	0	372

Innovation contribution

In addition to the broader Wholesale initiatives detailed earlier, our Bioresources business plans to deliver some specific technologies which contribute key efficiency savings. The narrative below provides a summary of some technologies we intend to deploy within the next business planning period.

We have been taking a system wide approach to sludge transport and treatment across all of our facilities since 2012. Our operational planning tool Regional Sludge Operational Management (RSOM) includes a central control hub, instruments and dashboards to drive targeted efficiencies and optimisation, with improved remote monitoring and control. This enables a regional view of sludge throughput and improves resilience of the system, optimises asset utilisation through improved visibility of current performance and sludge treatment centre availability for efficient logistics and energy recovery. This tool also allows us to measure sludge at the boundary, at the point of arrival from another company allowing us to manage sewage sludge as a regionally integrated system in the most efficient way. RSOM is forecast to deliver savings of £8.11m in AMP6, rising to £12.24m in AMP7.

To maximise the value from Bioresources, we set an ambition across the wastewater production line, to focus on the recovery of energy from sludge. We developed a programme with clear goals and objectives, collaborating with an external partner. This aimed to recover high quality sludge from our treatment processes, maximising the biogas we generate from our sludge and the value we get from biogas in energy markets. This is what we term our 'Energy Neutrality Programme' and this programme is forecast to deliver efficiencies of £16.89m in AMP6, rising to £24.5m in AMP7.

Market testing contribution

We are committed to improving our engagement with markets in procuring services. This includes comprehensive market testing of our costs via our MEM detailed in section 6.4 of chapter 6 of this price review submission. Our MEM approach specifically contributes savings in the order of £62m within this price control.

We have used the current business plan period to learn about the size and nature of markets for sludge and other organic waste across and outside the North West. We have identified opportunities for third parties to deliver our service and explored areas of non-appointed activity where we can work with others to generate benefit for customers. We continue to hold discussions with various third parties in the delivery of bioresources services from 2020-25 but to date have not secured any contracts.

Robust cost challenge contribution

We have challenged extensively both our cost base and the scope of work needed to be completed in AMP7. A large portion of our savings from our cost challenge stem from the fact we do not need to undertake an enhancement programme across the 2020-25 period. However, we have also challenged our base costs and the narrative below outlines some of the additional savings we have identified.

Our plan for 2020-25 is ambitious in that we plan to suspend daily operational incineration activity to focus on recycling biosolids to agriculture. We will retain incineration capability as this enables us to efficiently manage the risk of significant periods of insufficient agricultural availability in the longer term and deliver a resilient service as we transition in the longer term to a full recycling approach.

We will be required to retain and meet the requirements of Industrial Emissions Directive permits which allow the legitimate operation of our incineration site, and associated sludge treatment and intermediate thickening sites. To meet statutory requirements and to ensure critical equipment will be capable of being returned to service without excessive time and cost, essential and on-going operating and maintenance costs of £85k a year (excluding Environment Agency permitting subsistence costs) are included within our business plan.

If we are unable to secure cost effective agricultural outlets through to 2025, we will reinstate the operation of incineration. The cost to reinstate and operate incineration will be for the company to manage within its overall business plan. High level engineering estimates suggest that capital costs to reinstate are currently estimated to be £0.5m after six months, £4m after 2 years and £7m after 10 years, as assets degrade over time.

7.6 Wholesale cost assessment proposals

7.6.1 Overview

This section summarises our approach and recommendations for assessing the efficient cost of United Utilities' Wholesale businesses and demonstrates that our cost proposals are stretching and efficient.

We have been active in supporting the development of cost models for PR19, committing significant resources to conducting an independent review of the key drivers of cost in the wastewater service, culminating in two reports by Arup & Vivid Economics, and the publication of associated datasets developed within the project.

We have sought numerous ways to ensure that our cost plans are efficient, from market testing the costs to provide services (set out in detail in our MEM approach in chapter 6 section 6.4), to benchmarking our improvement in efficiency against other sectors (see Deloitte external benchmarking output in section 7.6.7). It is also important that we are measured as efficient in comparison with our water industry peers, in particular, because Ofwat also uses such comparisons as the basis of cost assessment at the price review.

We have developed a suite of wholesale cost models, along with a modest number of cost adjustment claims, which we propose that Ofwat use for industry cost assessment at PR19. Table 7.12 outlines our assessment of efficient costs, based on our proposed approach (full evidence for which is provided in supplementary document S6002), and shows that the costs proposed in our business plan are efficient in comparison with other water companies.

Table 7.12: Assessment of efficient costs

Totex (2017/18 prices, £m)	Water Network Plus	Water Resources	Wastewater Network Plus	Bioresources	Total
Modelled totex	2,254	400	2,847	388	5,889
UU business plan totex	2,074	374	2,614	372	5,434
Implied outperformance of benchmark	174	25	209	16	424

The output from the modelling assessment exercise indicates that £5.889bn would be an efficient and stretching cost for United Utilities wholesale business. This is £455m higher than our £5.434bn totex proposal, supporting our view that we have submitted a very challenging cost plan, delivering more for less for our customers.

The key principles of cost assessment in the water industry are twofold:

- **pragmatism rather than ideology** – it is not uncommon for econometricians to believe that there will be one single superior model which must be sought (and used) to the exclusion of all others. For the water industry, that is simply not feasible. The water industry consists of too few companies operating in different environments, and has too complex a relationship between its environment and the cost of service delivery to account for all differences within a single model (due to multiple variances in quality, topography, asset age, population distributions within company regions, interactions with local environments and habitats etc.). Therefore pragmatic approaches to cost assessment must be taken, to ensure that fair (yet efficient) assessments are made; and
- **cost assessment outcomes need to be unbiased for all companies individually** – it is not sufficient to assume that cost assessment is appropriate just because a model reasonably predicts efficient industry costs as a whole - it would be incorrect to assume that any distribution of cost assessment between companies is of secondary importance. Appropriate distribution between companies is arguably more important, due to the impact on financeability and financial resilience of individual companies, and fairness of cost recovery from the customers of different companies.

Cost assessment consists of more than developing appropriate benchmarking models - our proposed cost assessment approach, consistent with the above principles, consists of five main components (summarised in sections 7.6.2 to 7.6.6 below but with significantly more detail set out in supplementary document S6002).

7.6.2 Base cost (botex) assessment

We have triangulated our botex assessments using:

- **different value chain splits**, from highly aggregated (i.e. total service models) to more disaggregated sub-price control splits – this aims to reduce the bias which may be caused by different company configurations, which affect the balance of cost between different parts of the value chain;
- **multiple model formulations within each value chain split** – this aims, particularly where the service is complex and diverse, to account for the fact that no single model will be able to appropriately predict an efficient cost to each company individually (even if, in aggregate, it predicts an efficient cost for the industry overall). Different models can reflect different cost drivers, which mitigate the risk of unduly biased allocation of assumed efficiency between companies; and
- **application of “focused triangulation”** – to further avoid undue bias in cost model predictions, we have applied a form of triangulation which gives partially greater weight to value chain split assessments which minimises the undue influence from outliers. This is an approach which has been used in a number of other regulated utility markets, including the German electricity market (further details are provided in supplementary document S6002, section 1.7.1).

7.6.3 Policy items

Some areas of expenditure (rates, grants and contributions, abstraction licences, liquor treatment recharges, costs associated with the Industrial Emissions Directive, third party services, costs associated with traffic management, IFRS16 leases impact and adjustments as a result of changes to principal use) are more suited to individual assessment, rather than inclusion within a botex model. Therefore these items have been subjected to an individual assessment.

7.6.4 Models for enhancement expenditure

We have proposed a series of approaches for different types of enhancement expenditure.

We note that, in some cases, it has not been possible to produce stable models which are capable of predicting individual company expenditure, given the lack of appropriate historical data. For example, historical data relating to meeting phosphorous standards would not be appropriate for future cost predictions since the standards will become much more stringent in AMP7 and beyond. Therefore, such model outputs can only provide a preliminary or indicative view. As a result, we have proposed that each enhancement expenditure area be assessed on its own merits.

We have also provided, in supplementary document S6002, details supporting our key areas of enhancement expenditure for AMP7, as requested by Ofwat (IN 18-11).

7.6.5 Use of cost adjustment claims

Whilst we have proposed a diverse suite of appropriate benchmarking models, given the small number of companies, and the relative complexity of water industry cost requirements, it is inevitable that (relatively) simple econometric models will not be capable of predicting all efficient difference in costs between companies. Therefore, inclusion of cost adjustment claims is a necessary component of any legitimate approach to cost assessment. Our claims are summarised in section 7.7 of this chapter.

7.6.6 Future assumptions

Whilst econometric models are inherently backwards looking, so it is also necessary to make appropriate assumptions for future trends.

Explanatory factor forecasts – we have proposed future forecasts for the relevant factors which may be used in cost assessment models, which are consistent with our forecast cost proposals. It is essential, especially for bioresources (whereby the price control is an “average price” control with a volume forecasting incentive) and for the numbers of new connections, that Ofwat make use of company forecasts when assessing efficient costs.

Relative Price Effects – United Utilities, and the UK water sector more generally, is likely to face a number of future costs which are expected to rise above the rate of inflation (CPIH). Some of the more volatile cost areas include

electricity, staffing, chemicals and major capital projects where we believe the costs will rise above CPIH. Full details are included in the commentary to data table App24a.

For wholesale operating expenditure, the annual real price effect (RPE) is, on average, forecast to be 0.6% above CPIH for the AMP7 period giving rise to additional costs of £66m in AMP7. For wholesale capital expenditure, the annual real price effect (RPE) is, on average, forecast to be 0.9% above CPIH for the AMP7 period giving rise to additional costs of £89m. We are committed to offsetting these cost pressures above inflation through our range of efficiency initiatives, further supporting our view that we are proposing a stretching and efficient plan.

Dynamic efficiency (“frontier shift”) – this seeks to predict sector specific productivity trends, relative to the economy-wide productivity gains that are reflected in the main inflation measure used it index costs (CPIH).

It is important to remember that measures of inflation reflect economy-wide productivity gains – so an assumption of zero (relative to CPIH) for dynamic efficiency assumption is not the same as assuming no dynamic efficiency – it is just that no additional dynamic efficiency is assumed over and above that being delivered by the economy as a whole, as embodied within the inflation measure.

It is also important to note that by changing the main inflation measure applied to costs (from RPI to CPIH), this has indirectly applied an additional dynamic efficiency expectation of c.1% per annum (due to the differences between RPI and CPIH). At PR14, Ofwat made no explicit assumption for dynamic efficiency beyond application of RPI. If Ofwat were to make the same assumptions again (i.e. no dynamic efficiency relative to inflation applied) then that would, in effect, assume a 1% per annum dynamic efficiency challenge onto the industry relative to PR14.

Evidence produced by KPMG for Ofwat implies a range of dynamic efficiency values of -0.6% to +0.2% per annum for Wholesale (relative to CPIH). We therefore believe it is entirely rational for Ofwat to conclude that a reasonable expectation for dynamic efficiency is cost growth (as opposed to cost reductions).

7.6.7 External benchmarking

United Utilities commissioned Deloitte in June 2018 to research the efficiency savings achieved across sectors in order to help develop our evidence base and support our stretching cost proposals (please see third party report T6003 “Cross sector efficiency benchmarks - Deloitte”). The research covered gas and electricity networks, telecoms, postal services, transport (rail, airports, road), and upstream oil and gas.

The research findings concluded that United Utilities AMP7 totex proposals represented cost reductions that were in excess of those observed across the above industries. Our -4.2% movement in water totex per year and our -2.0% movement in wastewater totex per year compared with a range of -2% to +2% in the aforementioned external sectors. This external benchmarking supports our view that we are offering an efficient and stretching plan for customers, delivering more for less.

7.7 Wholesale cost adjustment claims and enhancement areas

7.7.1 Cost adjustment claims

After careful consideration, we are proposing four cost adjustment claims relating to our Wholesale businesses, to reflect the unique characteristics of operating in the North West, which we believe may not be fully captured in the econometric models. All of our claims are supported by customer research, which indicates that they can be incorporated within a plan that is affordable, financeable and acceptable.

The cost adjustment claims we submitted in May 2018 were substantially complete. We have now undertaken a number of assurance activities on the information provided, which has resulted in minor changes in the valuations and we now provide board assurance for each claim (see section 10.6.5 of chapter 10).

The claims submitted in May 2018 provide robust justification for each claim, including the need for the cost adjustment, why the cost is efficient, why it is deemed the best option for customers and how customers are protected. The changes to the claim values and the key reasons behind those changes are summarised in table 7.13 and further detail providing justification for these changes can be found in supplementary documents S6016 and S6018-20.

Table 7.13: Changes to our cost adjustment claims between draft and final submission

Claim description	May 2018 draft cost claim (£m)	Sept 2018 final cost claim (£m)	Key changes	Supplementary reference ID
Age and number of reservoirs	50.03	51.187	We have applied a different methodology to assess the claim value as this methodology can be applied to any company	Document No. S6019
Manchester and Pennines resilience	73.3	72.681	A reduction to the assumed capital overhead applied to this project has reduced the claim value	Document No. S6018
Distance to landbank	30.874	32.185	Updated forecasts for sludge production have increased, resulting in higher costs Better data on Industrial Emissions Directive (IED) costs have resulted in a small increase in claim value	Document No. S6016
Surface water run-off	96.0	87.717	We have corrected an error found in our network storage volume figure which results in a lower claim value	Document No. S6020
Wholesale total	250.204	243.770	Reduction of £6.4m between draft and final	

We have also made one cost adjustment claim in relation to our Residential Retail business, to reflect the high levels of deprivation in the North West and this is outlined in section 7.8.9 of this chapter.

7.7.2 Enhancement areas

Our Wholesale enhancement programme comprises six main areas for Water and eight main areas for Wastewater. Table 7.14 and table 7.15 provide a brief outline of the related enhancement areas and their respective values. The detail and well evidenced justification for each enhancement area can be found in supplementary documents S6004 AMP7 Totex enhancement project list, S6021-26 (Water) and S6027-34 (Wastewater) and the quantifications and associated commentaries for each area are also included in data tables WS2 and WwS2.

Table 7.14: Water enhancement areas

Enhancement area	Brief description	Value (£m)*	Supplementary reference ID
WINEP (Water Resources)	Environmental management projects to deliver the requirements of the EU Water Framework Directive, the Habitats Directive and the Eels and Elvers regulations, along with other environmental regulations.	30.872	Document No. S6021
Supply and demand (Water Network Plus)	Based on customer and stakeholder views, we are proposing a significant 15% reduction in leakage over 2020-25. This also supports our approach to promoting water trading.	51.036	Document No. S6022
Water connections and requisitions (Water Network Plus)	Investment required to meet the demand for new connections. This is 100% customer driven and Government plans to increase the number of developments will increase the number of new connections.	145.924	Document No. S6023
Metering (Water Network Plus)	Delivery of our free meter option enhancement scheme in order to meet our obligations under the Water Act.	49.066	Document No. S6024
Resilience (Water Network Plus)	Consists of three components - the Manchester and Pennines resilience DPC project, a new tunnel to support this project and investment to deliver a step change in supply interruptions.	107.933	Document No. S6025
Taste and odour (Water Network Plus)	Investment to reduce the number of contacts we receive relating to taste and smell of drinking water.	11.852	Document No. S6026
Water total		396.683	

In order to reconcile the Water enhancement totex in table 7.14 to table WS2 it is required to add back AMP6 Opex of £15m. In addition there is £14m of additional Opex enhancement costs for which we have not produced an enhancement supplementary as it relates to ongoing activity, rather than new enhancement requirements. This relates to lead pipe replacement schemes.

The enhancement areas relating to Wastewater are provided in table 7.15.

Table 7.15: Wastewater enhancement areas

Enhancement area	Brief description	Value (£m)*	Supplementary reference ID
WINEP – Phosphorous and sanitary determinants (Wastewater Network Plus)	Expenditure to meet needs included as green or amber certainty in the WINEP. The EA require us to enhance service standards in order to deliver environmental benefits, which it will enforce by varying our environmental permits.	445.093	Document No. S6027
WINEP – Storm sewer storage, increasing flow to full treatment & disinfection (Wastewater Network Plus)	Expenditure needed to address the impact of storm sewage discharges, both on the sewer network and at treatment works. A total of 41 discharges will be improved in order to meet the more onerous permit requirements as set out in the WINEP.	169.787	Document No. S6028
WINEP investigations (Wastewater Network Plus)	This relates to new requirements under the WINEP in order to support the robust identification of future needs for investment enhancement drivers and whether future investment is justified to meet legislation.	24.187	Document No. S6029
WINEP – Flow measurement and event duration monitoring for storm overflows (Wastewater Network Plus)	Our base cost allowance only covers the cost of meeting current environmental permit requirements. This enhancement expenditure relates to the need to install flow monitoring to ensure we are treating our permitted flows to full treatment, as well as event duration monitors on overflows to determine whether we are spilling flow to the environment properly.	10.511	Document No. S6030
WINEP – Conservation (Wastewater Network Plus)	This requirement is included in the WINEP with a green certainty rating and will lead to enhancement in biodiversity on previously operational land, driven by the requirements of the NERC Act 2006.	0.762	Document No. S6031
Sewerage new development (Wastewater Network Plus)	New connections are customer driven and are supported by Government drivers to increase available housing for a growing population. Over 136,000 new household properties are forecast across the 2020-25 period, which will require a wastewater connection. We are obliged to drain and treat the discharge from the new households and customers expect us to plan for and accommodate additional developments without deterioration in flooding or environmental impact.	54.173	Document No. S6032
Sewage treatment works enhancement – growth (Wastewater Network Plus)	This enhancement expenditure relates to specific locations where the increase in population and/or growth exceeds the headroom capacity of the receiving wastewater treatment works during the business plan period. Investment is required at locations where the increase in flow or load will have an impact on the treatment works ability to meet environmental requirements.	46.530	Document No. S6033
Sewer flooding (Wastewater Network Plus)	Our research tells us that an improvement in sewer flooding is a customer priority. Flooding can have a big impact on affected customers and in order to deliver an improvement in performance, we need to invest in enhancing the drainage system, both existing and transferred.	137.439	Document No. S6034
Wastewater total		888.482	

In order to reconcile the Wastewater enhancement totex in table 7.15 to table WWS2 it is required to add back AMP6 Opex of £51m.

**The enhancement values are stated gross of grants and contributions and, in certain cases, include opex as well as capex and therefore exceed the enhancement capex numbers provided in sections 7.4 and 7.5 of this chapter.*

7.8 Residential Retail

7.8.1 Customer benefits

Customers are at the heart of everything we do and we have delivered significant service improvements since 2010. This has been reflected in a considerable improvement as measured by Ofwat in its SIM rankings. We aim to deliver even more for customers at a much lower price.

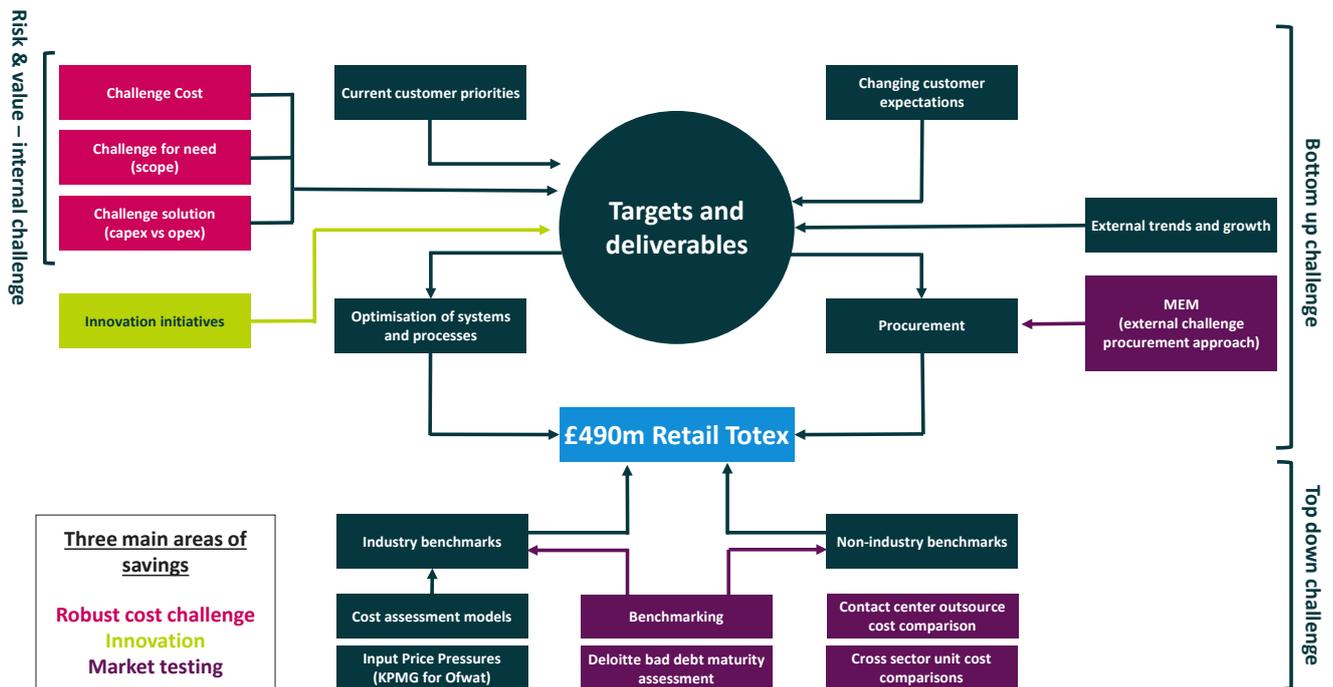
As well as the significant customer service improvements we have delivered, we have substantially reduced our annual cost to serve in AMP6 and are expecting a reduction of around one third, or £48m p.a., across the 2015-25 period. We have robustly determined an efficient retail cost level for our region and have a strong focus on effective sector leading debt management, meeting externally benchmarked best practice from other sectors, to ensure that we are proposing a very stretching plan to help minimise customer bills. At the same time, we have plans in place to improve customer service further.

Further detail on our business plan proposal is provided in supplementary document S6010 – “Residential Retail: Business Plan”.

7.8.2 Cost and efficiency overview

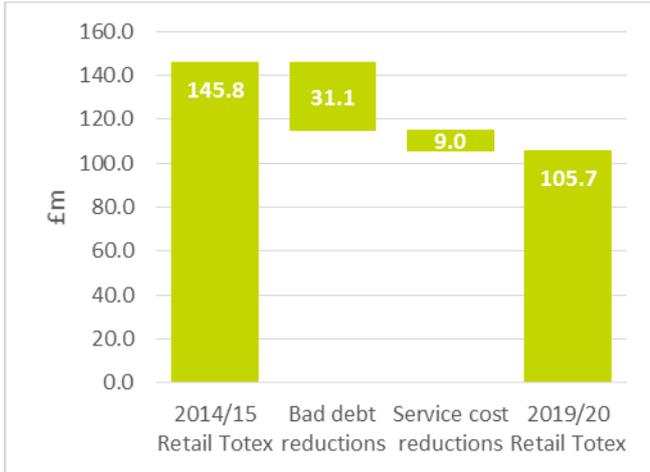
We have adopted a similar approach to the Wholesale business to formulate and embed efficient cost into our proposed Residential Retail totex plan for the 2020-25 regulatory period. We have developed our cost requirements through a robust and challenging bottom up process, with particular focus on customer priorities/ expectations and managing bad debt. We have then compared our cost requirements against econometric models and also benchmarked our costs externally. Figure 7.7 demonstrates our approach to determining our efficient cost proposal.

Figure 7.7: Approach to determining an efficient cost proposal



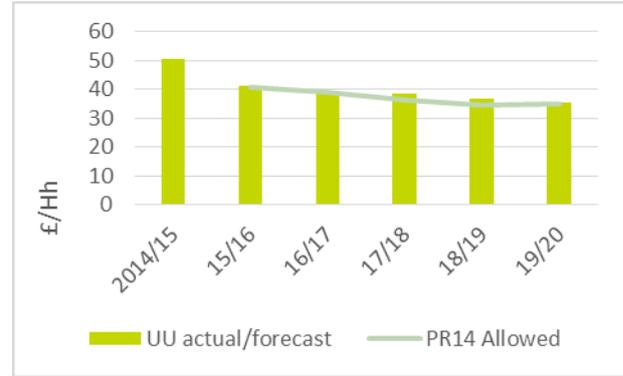
Overall we plan to reduce annual average Residential Retail totex by £40m (nominal) by 2019/20, from the AMP5 closing position. This represents a substantial reduction of over a quarter during this period, as outlined figure 7.8, whilst simultaneously improving levels of customer service. This has been achieved through realising £61m of annual cost savings, offset partially by £21m of input price pressures.

Figure 7.8: Retail totex reduction



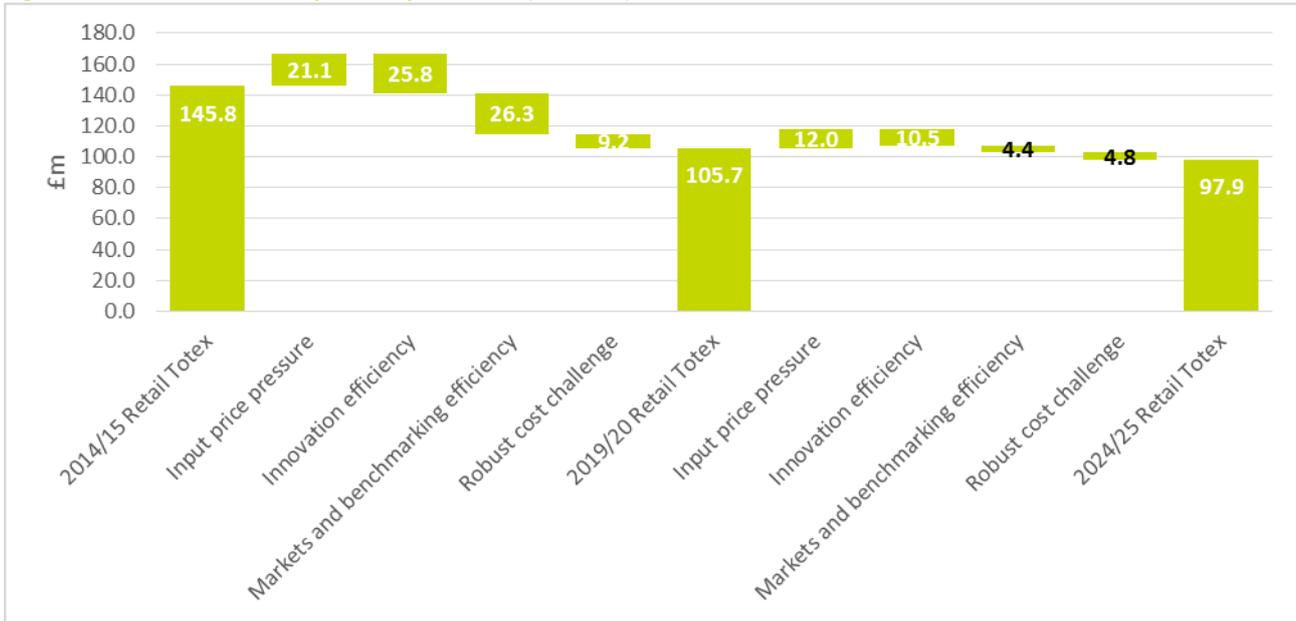
We also expect to meet Ofwat’s cost to serve allowance for AMP6, as shown in figure 7.9.

Figure 7.9: Performance vs Ofwat’s cost to serve allowance



We will continue to significantly reduce costs in AMP7, with plans for a further reduction in cost to serve of £8m p.a. by 2020/25, from the 2019/20 base, as detailed in figure 7.10. Our cost plan will more than absorb input price pressures over this period. Taken together with our AMP6 improvements, this means we will have reduced costs by a very substantial one third since the end of the AMP5.

Figure 7.10: Retail annual opex + depreciation (nominal) AMP5 to AMP7



Our cost reduction plans in AMP7 reflect our continued commitment to seeking out better ways of working, whilst recognising that efficiency opportunities become increasingly difficult to realise as we close the efficiency gap to the best performing companies. The largest segment of cost efficiencies delivered in AMP6 were associated with markets and benchmarking efficiencies as a result of efforts to align our operational practises with cross sector best practice benchmarks. In contrast, AMP7 efficiency proposals are predominantly linked to delivering new, stretching innovations. This type of efficiency is naturally harder to realise and, as a result, the absolute scale of cost reduction in AMP7 is anticipated to be smaller than the rapid catch-up efficiencies realised in AMP6.

Our plan meets the efficient cost challenge

We have taken substantial steps since AMP5 to reduce costs and improve debt collection. This has resulted in our annual retail totex coming into line with assessed industry averages. The substantial further cost reductions in our business plan represent a material commitment to achieving future operational efficiencies and bad debt reduction. This additional cost reduction will help United Utilities move beyond an average cost position, and instead allow us to

state that our proposed level of expenditure in AMP7 is efficient, as verified by extensive benchmarking and market testing.

As an additional cross check we have used our understanding of Ofwat’s retail cost models to validate that our AMP7 cost proposals are at an efficient benchmark. Our totex plans for AMP7 Residential Retail operations are within £1m/year of our best view of industry upper quartile costs, based on our preferred cost model specifications (as set out in supplementary document S6002). This is before application of frontier shifts and input price pressures (details of the approach we have taken to assessing an efficient industry upper quartile cost base are set out in section 7.8.8) and include recognition of the small bad debt benefits realised from c1% reduction in nominal average household bills. This provides additional validation that we have developed a cost plan which is stretching but achievable. As a result, we can state that our proposals offer customers real value for money.

7.8.3 Bad debt

The North West of England faces some of the toughest economic challenges across England and Wales. This drives both levels of bad debt but also debt management and wider customer service costs.

Like others in the water industry, we are being challenged to improve the scale and effectiveness of the support we offer against a background of rising household costs, economic uncertainty, and a decrease in the percentage of people of working age. How we respond to this challenge will be crucial to securing and maintaining customers’ trust and confidence in the sector in the years ahead.

In the North West



Four in ten of the most deprived neighbourhoods are in the North West¹

27% of North West households earn less than £21,000 a year²

18% of households are in water poverty, 20% more than national averages³

As set-out in section 2 of S2001 - “The affordability and vulnerability challenge”, the North West has the largest population of economically deprived households in the country⁴. According to data compiled by Public Health England, the North West is below national averages for several other key indicators of deprivation, spanning not just financial, but also educational, physical and mental health indicators⁵.

Building on government assessments of deprivation we have identified that United Utilities has some of the highest level of deprivation in England in our region.

Table 7.16: Percentage of most deprived LSOAs (neighbourhoods) by service area and decile

	1% most deprived	5% most deprived	10% most deprived	20% most deprived
United Utilities	41%	32%	27%	21%

Source: United Utilities analysis of Indices of Multiple Deprivation 2015 <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

Against this challenging backdrop, we have substantially reduced our Residential Retail cost to serve per customer in AMP6. Our bad costs and other retail costs will by 2019/20 be close to those estimated from the benchmarking analysis for a hypothetical efficient household retailer that faces the same degree of economic deprivation as seen in the North West of England.

A substantial reduction in bad debt costs has driven the majority of retail cost reduction since 2014/15. Through a number of key initiatives we have reduced annual bad debt and debt management costs from £75m in 2014/15 to £50m in 2017/18. We anticipate further reductions in 2018/19 and 2019/20 such that by the end of the AMP our

¹ 41% of the one per cent most deprived LSOAs in England are in the North West region. United Utilities analysis of Indices of Multiple Deprivation 2015 <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

² ONS National Statistics, “Households below average income: an analysis of the income distribution 1994/95 to 2015/16”

³ UU calibrated version of NERA Water Bills Projection Model (Upgraded on behalf of Defra -July 2017)

⁴ United Utilities analysis of Indices of Multiple Deprivation 2015 <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

⁵ Public Health England, Public Health Profiles Fingertips <https://fingertips.phe.org.uk/>

Figure 7.11: Bad debt charges are anticipated to drop substantially across AMP6

annual bad debt and debt management costs will be at £43m. This represents a substantial achievement, even after considering the bad debt benefits that stem from the c.1% reduction in nominal average household bills in AMP7. This cost reduction has been achieved by engaging in a major debt management transformation programme. Adopting a full range

of leading debt management practice has helped deliver an award winning debt management process. Some of the key initiatives adopted include:

- enhanced analytics and customer segmentation, leading to improved understanding of in debt customers;
- use of a full data share solution with an external CRA, enabling us to access full credit histories for our customers;
- customer data improvement programme, using third party data to improve the quality of customer records for billing;
- leading suite of assistance schemes helping to reduce bad debt and improve customer affordability;
- market driven Debt Collection Agency panel process, using the power of markets to drive supplier efficiencies; and
- improved collections processes, focussed on the effective use of the full range of debt collection techniques, including improved early collections, registering defaults and the full suite of court options.

A fuller description of these initiatives and how they have enabled us to reduce the retail cost base can be found in sections 2 to 6 of “S6013 - Debt management capabilities”. A further description of our approach to supporting customers who can’t readily afford their annual water charges can be found in section 4.1.3 of supplementary document, S2001.

Strong focus on effective debt management, externally benchmarked

We are effectively addressing doubtful debt in a difficult operating environment, adopting a range of approaches to support those that ‘can’t pay’ whilst effectively utilising a variety of prompts and sanctions for those customers that ‘won’t pay’. In their 2017 audit of our debt support schemes, processes, and practices CCWater gave United Utilities a score of 24 out of 25 (source: CCWater “United Utilities debt assessment 2017”). The report commented:

“The assessment panel was impressed with how the company dealt with its customers in arrears, showing both effectiveness and sensitivity.”

We have benchmarked our debt management activities against leading approaches from outside the water sector. Working with external debt management experts over a number of years we have made a step change improvement in the way we manage outstanding household debts. We have adopted a continual improvement approach to debt collection. In summer 2016 and again in June 2018, we benchmarked our operational processes against the very best debt management practice⁶. Helped by leading debt management consultants we understand where we have effective debt management practices, and where we are behind the very best debt management companies from beyond the water sector. Our areas of best practice and opportunities for improvement are set out in supplementary document, S6013.

Challenging targets for further reductions in bad debt and operating costs across 2020-25

We have benchmarked our debt management processes against best practice and identified a number of opportunities for further efficiencies, specifically:

- introducing a new “Lowest Bill Guarantee” to help boost confidence amongst key customer segments that could benefit from choosing to take up a Free Meter Option (FMO)
- new payment break scheme to support customers facing a short-term financial shock
- earlier interventions, utilising customer data, including CRA data to engage with at risk customers more quickly
- earlier billing, helping customers manage their water charges more effectively, and helping to avoid otherwise good payers falling behind on payments

A fuller description of our debt benchmarking activities can be found in supplementary document, S6013.

⁶ T6008 – “Bad debt management maturity assessment: Deloitte”

Our latest maturity assessment has identified additional efficiency opportunities that will help us reduce annual bad debt charges by a further £8m/year by 2025. This is over and above the c.£31m annual bad debt reduction planned to be achieved in AMP6. To achieve these substantial bad debt reductions we will also need to invest further in enhanced debt management activities and capabilities. As a result we anticipate that debt management cost will increase in nominal terms between 2019/20 and 2024/25 by £2.5m.

Our debt reduction plans in AMP7 reflect our continued commitment to seeking out better ways of working, whilst recognising that opportunities become increasingly difficult to realise as we close the efficiency gap to the best performing companies. In AMP6 around £20.7m of final year bad debt charge reduction is associated with adoption of industry best practice processes and systems. In AMP7 we expect this to fall to only around £2.5m reflecting the fact that the majority of learning from others will have already been embedded in our processes. In contrast AMP7 efficiency proposals linked to innovations are planned at £8.7m. This type of efficiency is naturally harder to realise and as a result the absolute scale of debt reduction in AMP7 is anticipated to be smaller than the rapid catch-up realised in AMP6.

Figure 7.12: Bad debt charges are anticipated to drop further across AMP7



7.8.4 Innovation contribution

We are committed to delivering customer, environmental and economic benefits through innovation and we are implementing a number of initiatives and have a range of plans for AMP7, as outlined in section 6.3 in chapter 6 of the price control submission.

In AMP6 innovation initiatives have helped deliver £81.0m of cost efficiency, with £25.8m planned to be delivered in 2020 alone. This has been achieved through a range of innovative changes to operating practices:

- **enhanced analytics** and customer segmentation leading to improved understanding of in debt customers. We are seeking to take a more proactive approach to providing help and support to those customers that need it. This is why over the last few years we have sought to enhance substantially our debt management systems, data, processes and in house capabilities. We have made extensive improvements in the sharing, matching and use of Credit Reference Agency data, and have used this information to better understand our customers. This has enabled a tailored approach to engaging customers in debt, matching individual customer circumstances with the various support options we have available;
- **leading set of support tariffs** helping to reduce bad debt and improve customer affordability. A full description of discount tariffs and other financial support we offer is set out in section 4.1.3 of supplementary document S2001. This includes a cost benefit assessment demonstrating how these schemes are supporting customers with affordability challenges and simultaneously helping to deliver reductions in bad debt charges; and
- **new Customer Experience Programme investments** in systems and processes has helped boost customer satisfaction whilst reducing Cost to Serve. The programme is a transformational programme delivering new capabilities for the retail operations. Systems already in use include:
 - new web contact management system including delivery of the new United Utilities Mobile Application and a mobile friendly website replatform – boosting digital interactions to c.50% of total customer contacts

- advanced analytics capabilities enabling segmented views of customers and analytics on customer behaviours to drive decision making
- updated workforce optimisation systems enabling increased agent productivity
- multi-channel routing delivering advances such as a 10% improvement in automated payment success rates

By March 2019 we will also deliver an improved and updated debt management system. This new system will enable many of the debt reduction strategies that underpin the substantial bad debt reduction plans for AMP7. Further details of the Customer Experience Programme investment and benefits is set out in section 7.8.7.

In AMP7 we have identified a range of additional innovative developments that will support delivering a further £30m of efficiencies over the period. Further details of our debt management strategies and improvement plans are set out in supplementary document S6013. Some of the main initiatives which relate to residential retail include:

- **bad debt early interventions** by utilising customer data, including CRA data to engage with at risk customers more quickly. We are increasingly taking a proactive approach to providing financial help to those customers that need it. Over the last few years we have sought to enhance substantially our debt management systems, data, and processes. This is providing a platform for more extensive improvements in the sharing and use of Credit Reference Agency data, and we are increasingly use this information to better understand our customers. This will enable preventative interventions, engaging at risk customers before they fall into debt, helping to reduce bad debt charges whilst simultaneously improving customers' experience;
- **introducing a new "Lowest Bill Guarantee"** to help boost confidence amongst customer segments that could benefit from a choosing to take up a Free Meter Option (FMO). Over the last year we have been trialling our 'lowest bill guarantee'. The guarantee makes a promise to customers that if they elect to take up a Free Meter Option (FMO) we will monitor their charges, and will charge them the lesser of their new measured charge or their old rateable value based unmeasured charge. The scheme has been developed in direct response to customer research which indicated that one of the biggest barriers for customers taking up an FMO is the fear of larger future charges (see supplementary documents T1033 (qualitative research) and T1034 (quantitative research) – "Water efficiency behaviour change"). By introducing a capped charge we hope to help customers overcome this loss aversion, nudging them into a choice which is better for their household, and thereby open up metered charging to a larger group of customers. In AMP7 we plan to offer the lowest bill guarantee more widely, and will target promotion of the scheme to those customers who our information indicates are both likely to be facing affordability challenges and would likely experience lower bills when on measured charges. This should act to both boost customer affordability levels and reduce bad debt charges. A fuller description of our Lowest Bill Guarantee scheme can be found in section 3.6 of chapter 3 and section 4.2.1 of supplementary document S2001;
- **new Payment Break scheme** to support customers facing a short-term financial shock. We currently offer a Payment Break Scheme as a key support option for helping customers who move onto Universal Credit to manage the short-term pressures to day to day finances this can cause, but have plans to increase the flexibility and accessibility of the Payment Break scheme to enable more customers to benefit from it. By enabling customers to stay out of debt long term, payment rates can be improved and bad debt avoided. A fuller description of our payment break scheme can be found in section 3.6 of chapter 3 and section 4.2.3 of supplementary document S2001;
- **water usage reports** enabling customers to access data on their consumption in an easy to use and informative way has the potential to unlock substantial water efficiency benefits at a much reduced cost compared to established water efficiency interventions. We anticipate that the online consumption portal should deliver in excess of 4Ml/d of water efficiency benefit whilst simultaneously reducing costs; and
- **the changing digital landscape** is having an impact on customer expectations. Adapting to this will be crucial to meeting customer demands and to reducing our Cost to Serve. Our digital strategy for AMP7 recognises the pace and frequency of change and recognises that we will have to lay foundations that allow us to adapt rapidly.

We believe the contribution from innovation related activities to our overall efficiency plan will be as follows in table 7.17.

Table 7.17: Savings from innovation

Innovation contributions to overall efficiency plan (£m)	2014-15 to 2019-20 Final year efficiency	2019-20 to 2024-25 Final year efficiency		AMP6 2015-20 Total efficiency	AMP7 2020-25 Total efficiency
Bad debt	16.6	8.7		60.1	30.0
Service costs	9.2	1.8		20.9	1.9
TOTAL	25.8	10.5		81.0	31.9

7.8.5 Market testing contribution

Market tests and external benchmarking are powerful mechanisms for identifying and delivering cost efficiencies. We have implemented a number of initiatives in AMP6 and have plans for further use of market tests and benchmarks in AMP7. Our wider approach in this area is outlined in section 6.4 of chapter 6.

In AMP6 market tests and benchmarking have helped deliver £93.8m of cost efficiency, with £26.3m planned to be delivered in 2020 alone. This has been achieved through a range of innovative changes to operating practices:

- **Adopting leading debt management practice** – we have developed award winning debt management processes, by engaging in a major debt management transformation programme. This programme has been fully informed by a series of wide ranging benchmarking exercises. Throughout AMP6 we have repeatedly benchmarked our internal debt management practices against leading companies both in and outside of the water sector. For example we asked Deloitte to benchmark the quality of our debt management practices⁷ against the debt management framework set out by PwC⁸. We have looked beyond the water sector, considering leading practices in energy, local authorities and the financial sector.

As we have identified gaps and limitations in our current processes and capabilities we have sought to swiftly implement improvements. Where necessary we have used external experts to support rapid delivery of new capabilities. For example benchmarking exercises in 2016 identified that debt analytics capabilities were not as advanced as those used by leading companies outside the water sector. In response we have been working closely with external data and analytics specialists with a focus on utility sector, whilst simultaneously recruiting and developing our own analytics team. This has enabled us to test and realise the benefits of improved capabilities quickly, whilst simultaneously building the foundations for more cost effective delivery in the longer term.

As a result of our efforts in this area we are being recognised as having a leading debt management capability, within both the water industry and the wider debt management sector. Recognition includes:

- we scored 24/25 in CCWater’s debt assessment audit;
- our debt management team won the 2017 “Water Team of the Year” at the multi sector Utilities & Telecoms Awards, as well as being finalists in the “Best Vulnerable Customer Support Team” category;
- we won the 2017 award for “Excellence in Treating Customer Vulnerability” from the prestigious multi sector ‘Credit Awards’; and
- we were also highly commended for the “Vulnerable Customer Team of the Year” at the cross sector 2018 Credit Strategy awards.

Achieving these awards helps us understand our current areas of strength as well as identifying areas where further learning from others is possible:

- **market driven Debt Collection Agency panel process** – as part of our operational debt management strategy, we use a panel of external Debt Collection Agencies (DCAs). We use market mechanisms to help drive efficiency and effectiveness by creating an internal market incentive. DCA panel members operate under a regime in which past performance impacts the future levels of work that an agency receives from us. We rank all DCA panel members

⁷ S6014 - Bad debt management maturity assessment: Deloitte

⁸ PwC report for Ofwat – Retail Services Efficiency Benchmarking, September 2017 <https://www.ofwat.gov.uk/wp-content/uploads/2017/10/250717-Ofwat-Retail-Services-Efficiency-12.pdf>

against a quarterly scorecard, with higher ranking companies being allocated more work in the next round. As set out in section 6.4.8 of chapter 6, the scorecard incentivises both cash collection and customer experience, ensuring that DCAs deliver the balanced outcomes that we need. In the last 4 years this market driven mechanism has helped DCAs working on our behalf increase cash collection rates by 50% and the number of complaints relating to the conduct of a DCA has decreased from 2.4 to 0.8 per 1,000 customer accounts placed; and

- **data matching for property management** – matching our billing records with third party data, particularly information sets held by credit reference agencies, the post office, and land registry has helped reduce the costs of identifying gap sites and property occupier details. Traditional approaches to managing property data remain important, and activities such as void visits will continue, but third party data matching techniques are proving highly effective as a first step, and supporting an improvement in household data quality.

We are committed to continuing to improve our engagement with markets and benchmarking performance against leading sectors. This includes comprehensive market testing of our costs via our Market Engagement Methodology (MEM), as detailed in section 6.4 of chapter 6, of this price review submission. Market tests have provided reassurance that the majority of our planned 2019/20 retail cost base is at least in line with sector upper quartile costs, however there are a number of opportunities identified which we will pursue in AMP7. Our plans anticipate that savings of £17.1m can be achieved across the next AMP. Some of the main initiatives which relate to Residential Retail include:

- **embedding debt management best practice** – as set out above we have transformed our debt management practices to catch-up with leading practice. We believe that this transformation activity has delivered substantial improvements, but there is always more that we can do. As set out in in supplementary document, S6013, there are a number of areas where further improvements can be made to operational practices. These are mostly focussed on embedding and streamlining the changes we have already made, getting even better at delivering the new capabilities that we have installed into our operations; and
- **reducing meter reading and lease costs** – we have identified through a series of benchmarking exercises some indicators that our current meter reading costs are not at upper quartile industry performance. As we currently use an external supplier to deliver meter reading services we believe this benchmarked cross industry information will help us to negotiate a more competitive meter reading service contract. Similarly we have reviewed current property lease costs and believe more competitive rates can be realised as we enter AMP7.

We believe the contribution to our overall efficiency plan from better engagement with markets will be as follows:

Table 7.18: Savings from market engagement

Engagement with markets contributions to overall efficiency plan (£m)	2014-15 to 2019-20 Final year efficiency	2019-20 to 2024-25 Final year efficiency		AMP6 2015-20 Total efficiency	AMP7 2020-25 Total efficiency
Bad debt	20.7	2.5		75.2	8.6
Service costs	5.6	1.9		18.6	8.5
TOTAL	26.3	4.4		93.8	17.1

7.8.6 Robust cost challenge contribution

We are committed to delivering better service to our customers at a lower price. As part of this commitment, we have robustly challenged our cost base to ensure that we only spend when needed, and on the most efficient and effective solutions.

In AMP6 a stronger focus on underlying systems and processes is helping to deliver £34.2m of cost efficiency, with £9.2m planned to be delivered in 2020 alone. This has been achieved through a range of innovative changes to operating practices:

- **improved our collections processes** – we have focussed on the effective use of the full suite of debt collection techniques, including improved early collections, registering defaults and the full suite of court options. A fuller description of our collections activities is set out in S6013. During AMP6 we have focussed on improving the effective utilisation of as full a range of debt collection activities as possible. For example redesigning and tailoring reminder letters has driven improvements (see section 2.6.1 of chapter 2). We have also found that greater use of default notices, and improving the ways in which we inform customers of the consequences of default has proved effective in prompting payment;

- **enhanced customer data quality leading to better billing** – we have invested heavily in improving the quality of the customer data that we hold. Through better utilisation of Credit Reference Agency data via full data share arrangements and other third party information we have made major steps in cleaning our customer datasets. One benefit of this exercise has been the vastly improved accuracy of domestic bills, preventing bills with incorrect details being issued. As a result we have seen material increases in cash collection rates, as customers are far more likely to engage with bills that carry correct address and occupier details; and
- **improvement of organisational structures and processes** – a range of performance initiatives have been instrumental in boosting workforce effectiveness and productivity. Changes have included better performance metrics, quicker feedback on performance for front line agents, and providing front line staff with the authority to do what they believe will best deliver for customers. The changes ensure that staff can learn best practice from one another and also understand on a daily basis what is working well and areas that they need to individually improve. Optimising team manager to staff and front office to back office ratios has also helped control costs. The initiative's focus on performance metrics also means management can more quickly understand where teams and individuals are performing well, and where efforts to improve should be focussed. Since the launch of the initiatives we have seen a 35% boost in productivity, the elimination of unworked back office items, improvements to sickness levels, and a step change in employee satisfaction. This has supported material cost reductions whilst simultaneously boosting customer satisfaction levels.

A continued focus on effective implementation of business processes, maximising productivity and a close management of cost pressures will continue to enable cost reductions. Our plans anticipate that savings of £22.6m can be achieved across the next AMP from robust cost challenges. Some of the main initiatives which relate to residential retail include:

- **earlier billing initiatives** will help customers manage their water charges more effectively, and help avoid otherwise good payers falling behind on payments. Currently United Utilities applies standard industry billing practices for metered customers. Typically this involves a first meter read up to 6 months after a customer first moves into a property or onto a new meter. Up until the first meter read consumption, and payment plans are based on estimated consumption. For those customers that have above average consumption levels this can mean initial payment plans are insufficient to cover future charges. This can mean customers fall into arrears and may find it difficult to afford catch-up payments. Identifying customers that are at risk of affordability challenges early will enable first meter reads to be prioritised, cutting the amount of time that customers are charged based on estimated reads. This will help avoid bill shocks, and the bad debt that can result;
- **further process and organisational improvements** – we anticipate that a continued focus on management challenge of organisational structure and processes will continue to deliver cost reductions. Although the large step change improvements seen in AMP6 may not be repeated there remain opportunities to further improve established business activities. Additionally embedding and automating some improvements will also deliver benefits. For example working hard to resolve customer contacts at the first opportunity helps to reduce rework, reduces repeat contacts and helps to boost customer satisfaction. New capabilities in areas such as machine learning and AI help achieve this; and
- **right sized support costs** – in line with wider United Utilities planned cost reductions for support services we will see a reduction in central support costs in AMP7. These reductions will help reduce central cost recharges to the Residential Retail price control, leading to a reduced Cost to Serve.

We believe the contribution to our overall efficiency plan from our robust cost challenge will be as follows:

Table 7.19: Savings from our robust cost challenge

Robust cost challenge contributions to overall efficiency plan (£m)	2014-15 to 2019-20 Final year efficiency	2019-20 to 2024-25 Final year efficiency		AMP6 2015-20 Total efficiency	AMP7 2020-25 Total efficiency
Bad debt	4.2	1.2		15.0	4.3
Service costs	5.0	3.6		19.2	18.3
TOTAL	9.2	4.8		34.2	22.6

7.8.7 Residential Retail capital investment

We have delivered significant improvements in our SIM scores since 2010 and we will adopt more innovative solutions and deliver models to improve customer service further. Investment during AMP6 has put our systems in a good position to support additional service improvements and cost efficiency into AMP7.

What we've delivered in AMP6

As part of the AMP6 Final Determination Ofwat approved an increased depreciation allowance to support investment in the Customer Experience Programme (CEP). This innovative, IT driven investment programme has enabled both improvements in customer experience and reductions in Cost to Serve. The determination also included an associated ODI to protect customers by returning any monies either not spent or not delivered. Performance against the ODI is reported in supplementary document, UUW_003_AFPD_ES – “Accounting for past delivery early submission”.

CEP is a transformational programme delivering new capabilities for the retail operations. Systems already in use include:

- **new web contact management system** – the re-platform of the United Utilities' company website to a mobile friendly and content manageable site including a webchat tool upgrade. We have also delivered the United Utilities Mobile Application and the delivery of online self-service portal. Having an improved digital presence and self-serve options for our customers has been a significant outcome from this technology, with 43% of customer transactions now managed through self-serve;
- **advanced analytic capabilities** – we have deployed a suite of data management and analytics tools providing an information centre of customer and performance data that is accessible to operational functions and management. Amongst other capabilities the new tools allow us to provide segmented views of customers such as the Priority Services dashboard, and is used extensively to gain insight into customer behaviour and drive decision making;
- **updated workforce optimisation systems** – deployment of a new workforce management tool used for forecasting and scheduling agents to work on inbound and outbound calls and back office work. We now have a single view of agents and workload, enabling increased agent productivity; and
- **multi-channel routing** – upgrade of our main telephony lines with new automated self-service telephony application with caller recognition and customer flags presented to our agents to identify key customer groups such as Priority Services. Our automated telephony line is an important channel for customers with over 435k transactions per year. The new system delivering improvements such as a 10% improvement in automated payment success rates.

These new systems have made a significant contribution to the substantial improvements in customer service levels, as evidenced by measures such as improved SIM scores and reduced complaint levels. They have also formed an important part of the substantial reduction in cost to serve realised in AMP6.

By March 2019 we will also deliver an improved and updated debt management system. This new system will enable many of the debt reduction strategies that underpin the substantial bad debt reduction plans contained within our Residential Retail business plan.

At PR14 we also proposed to invest in a CRM system which would provide visibility of both billing and operational (Wholesale) activities. In August 2016 we took the decision not to invest in an integrated Retail/Wholesale CRM as there was significant uncertainty as to the near term future shape of residential retail activities in the water sector. If a competitive retail market were to be introduced it would be no longer possible to operate such a closely integrated CRM. We believe that it would not be in customers' interests to invest in technology that at the time seemed likely to be aborted. As set out in the Customer Experience Programme ODI we propose to return to customers depreciation allowances associated with the CRM investment.

What we're delivering in AMP7

Investment during AMP6 has put our systems in a good position to support additional service improvements and cost efficiency into AMP7. The continuation of Ofwat's retail totex incentives and outcomes based regulation allows us to take a more dynamic and commercially informed approach to delivering customer services. We have benchmarked capital investment costs associated with our IT maintenance requirements. This indicates that our current costs for IT investment are close to, but not yet at leading efficient levels (see supplementary document, S5002 – “Market engagement methodology”).

Maintain existing systems – based on current programme expectations around £15m will be invested in maintaining our existing residential retail IT system infrastructure. Primary investment requirements will include updating software where current systems move out of extended supplier support, and refreshing hardware where the age of the systems means basic maintenance becomes increasingly difficult and risky. We take a risk based approach to system and hardware renewal investment, seeking to maintain system resilience and functionality whilst minimising cost. As would be expected we implement more stringent risk maintenance standards for systems which are absolutely core to service continuity (such as core billing and payment systems) and are more risk tolerant where a system provides non-core or non-time critical services.

Channel enhancement – we plan to provide a range of new channel capabilities in AMP7 to support changing customer expectations. Around £2m of capital investment in new IT capabilities has been identified to put in place capabilities to support new channel offerings. By 2025 technologies such as AI driven Chatbots, or new social media channels are likely to be common place. The general customer trend to accessing services via mobile devices is also being observed in the water sector. We will need to investment in our systems and processes to meet these new customer expectations.

Enhanced data and analytics capability – our plans for AMP7 call for a range of new affordability and digital focussed propositions for a range of customer segments (see section 7.8.4). To enable some of these new offers we will need to enhance our back office data capture and analytics capabilities. For example we will need to continue the improvement of our analytic capabilities to become ever more effective at targeting new affordability offers (such as the ‘Lowest bill Guarantee’) at those customers most in need. We already have in place substantial capabilities in this area, but believe a further investment of around £1m in AMP7 will enable us to keep pace with rapid technological advancements. This investment will not be directly visible to customers, but will further improve our ability to design and target new propositions at those mostly likely to be engaged by and benefit from them. For example new analytics is already helping us promote our new Mobile App to customer groups that make small manual payments and are more likely to be interested in paying via their smartphone.

7.8.8 Residential Retail cost assessment

We have robustly determined an efficient cost level for residential retail costs in the United Utilities region.

We have tested our future retail cost projections and efficiency plans against other water companies, and also against external benchmarks. A full description of our core cost assessment model, and the approach we used to generate average and efficient cost benchmarks can be found in supplementary document S6002.

We have used water sector retail costs across England and Wales to produce cost benchmark models, adjusting for the impacts of extreme deprivation, levels of meter penetration and differences in wholesale average bills. Our primary retail cost models forecast that in AMP7 an averagely efficient residential retailer operating in the North West region would need £107m/year over the course of AMP7. Once adjustments for upper quartile efficiency (-£9m/year) and movements in frontier dynamic efficiencies (+£11m/year) are allowed for we have produced a benchmark cost of £109m/year.

This is £11m/year more than our average AMP7 residential retail totex plan, providing additional confidence that our cost plans are stretching but deliverable, offering customers confidence that our plan represents value for money.

These results have been further strengthened and validated through cross comparison with retailers operating in other sectors. There are limitations to such comparisons, but as set out in supplementary document, U UW_HR1_M – “Impact of Extreme Deprivation and Average Bills on Retail Costs”, market testing and unit cost comparisons show that our models accurately estimate the cost of a water retailer operating in the North West of England, and so support that our AMP7 cost plans are set at an efficient level.

Input price pressures – United Utilities, and the Retail sector more generally, are likely to face a number of future costs which are expected to rise above the rate of inflation (CPIH). In particular we forecast that people costs are likely to rise more quickly than CPIH. Full details are included in the commentary to data table App24a.

For retail operating expenditure, the annual input price pressure (IPP) is, on average, forecast to be 2.6%, which is above CPIH for the AMP7 period, giving rise to additional operating costs of £12m in AMP7. For capital expenditure, the annual IPP is, on average, forecast to be 2.2%, again above CPIH for the AMP7 period. This could add additional costs of £0.4m. We are committed to offsetting these cost pressures above inflation through our range of efficiency initiatives, further supporting our view that we are proposing a stretching and efficient plan.

Dynamic efficiency (“frontier shift”) – this seeks to predict sector specific productivity trends, relative to the economy-wide productivity gains that are reflected in the main inflation measure used it index costs (CPIH).

It is important to remember that measures of inflation reflect economy-wide productivity gains – so an assumption of zero (relative to CPIH) for dynamic efficiency assumption is not the same as assuming no dynamic efficiency – it is just that no additional dynamic efficiency is assumed over and above that being delivered by the economy as a whole, as embodied within the inflation measure.

Evidence produced by KPMG for Ofwat imply a range of dynamic efficiency values of -0.8% to -1.8% per annum for Retail activities (relative to RPI), which equates to +2.2% to +1.1% cost inflation on a nominal basis (given UU AMP7 RPI forecasts). We therefore believe it is entirely rational for Ofwat to conclude that a reasonable expectation for dynamic efficiency is nominal cost growth (as opposed to cost reductions).

7.8.9 Deprivation cost adjustment claim

Extreme deprivation and bill size are important drivers of residential retail costs. They have been an important consideration in building our retail totex plans. They have also proved to be important explanatory variables when developing retail cost models, which we have used to cross check our cost plans.

Ofwat has stated that it will consider the use of deprivation and bill size in its final retail cost assessment/allowance models for PR19. However, there has, as of yet, been no publication of final model design. If these models do not include an adjustment for extreme deprivation or bill size, or if they do make an adjustment but do so using adjustment factors that do not fully recognise the impact of North West specific regional factors there is a risk that an insufficient cost allowance for United Utilities is made.

Therefore we have chosen to raise a cost adjustment claim as detailed in supplementary document UUW_HR1_M “Impact of extreme deprivation and average bills on retail costs” and the associated addendum “S6017”. The value of the cost adjustment claim is dependent on the degree to which Ofwat’s final cost assessment models take account of the impact of extreme deprivation and bill size before applying any adjustments for efficient cost challenges or input price pressures.

As set out in the cost adjustment claim, the total value of our claim is:

£107m/year less Ofwat retail household cost assessment

Where the “Ofwat retail household cost assessment” is the AMP7 forecast value of retail costs from cost assessment models before application of ‘efficient’ cost challenges, frontier shifts, or input price pressures.

This is equivalent to a nominal value of £74m, which is £1m lower than our draft submission in May 2018 to reflect the latest CPIH forecasts. The cost adjustment claim also details our proposal to withdraw the cost adjustment claim in the event that the final Ofwat cost allowance is not materially different from our own assessment of an appropriate retail cost allowance.