



South Staffs Water

incorporating



Full Business Plan

Incorporating Wholesale and Retail Plans

December 2013

Context

In April 2013 South Staffs Water and Cambridge Water merged as one business. This plan covers proposals for the combined Company. Customers in both regions wanted similar Outcomes and the two businesses that merged have similar attributes, namely, low bills and high service. The merged business is stronger together and this plan shows how customers in both regions will benefit from the more resilient and efficient business that has been created.

The purpose of this document is to support the [Business Plan Summary](#) document by providing more detail on the Company's Business Plan for the period 2015-20. This document sets the AMP6 submission in the context of historical service delivery and expenditure, focusing specifically on the key successes and challenges experienced during AMP5 and the resulting outcomes to be delivered over the 5 year period.

A key section of this document defines the approach that the Company has taken to identify its investment plan. The process of investment optimisation and its subsequent review has undergone challenge by the Board, the Customer Challenge Group (CCG) and Monson, their independent reviewer. It has drawn heavily on feedback from the [Customer Engagement](#) strategy therefore ensuring that the capital investment plan delivers the Outcomes our customers have told us are vital to them, both now and in the future.

The document then splits into specific Wholesale and Retail business plans. Further background/detail to our specific business strategies and proposed expenditure requirements to deliver the service expectations and outcomes of our customers is provided in the detailed business cases. These documents are signposted where appropriate should further detail be required.

The document then concludes with overall impact on bill, affordability and financeability.

Headlines

The key proposals in this plan are a package of measures to support current and future customers. The package includes:

- Stable water bills, rising with inflation only.
- Outcomes and investment proposals that reflect extensive customer engagement.
- A social package to support affordability, local communities and the environment.
- Additional investment to strengthen the resilience of assets.

The above is made possible with flat bills through efficiency savings and lower profits.

The Board of the Company has considered carefully the key decisions of its business strategy so that customers are the beneficiaries. These proposals balance the views of different stakeholders. The Board believes it has taken a balanced view of managing the risks it faces and a robust view of the future costs we will incur in addressing these risks. The plan is built on the five Outcomes that have been identified as customers' priorities based on extensive customer research and in conjunction with the CCG. Proposals for dealing with affordability are also developed.

The key headlines from the plan include:

- 82% Customer Acceptability from research of 1,000 customers. This was based on a real price change of +2% that formed our initial draft proposals in the summer. The final position is a real change of zero, suggesting even more customers will now find this plan acceptable.
- An increase in total expenditure of 6%, principally arising from higher power costs (opex) and higher investment to ensure assets are resilient (capex), consistent with customers' expectations. Major investment is planned to replace critical assets such as some of its storage reservoirs and to refurbish nitrate removal plants.
- A cost of capital of 4.5% (compared to 5.5% at PR09).
- An efficiency projection that is three times the target set by Ofwat at PR09.
- A set of performance commitments including proposals to lower customer bills should some key service measures not be achieved, together with some rewards for certain measures where customers want to see an improvement.
- A commitment to share with customers future external financial windfalls should they arise.
- A new discretionary fund of £1.5m to tackle debt, affordability and local community projects including those with an environmental focus.

The Company will build on its track record of providing low bills and high service standards.

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1. AMP5 Performance

Key Points – AMP5 Performance

| | |
|-------------|---|
| Service: | Top performer across the industry for SIM Deliver stable asset serviceability across two regions |
| Investment: | On target to deliver determination across both regions |

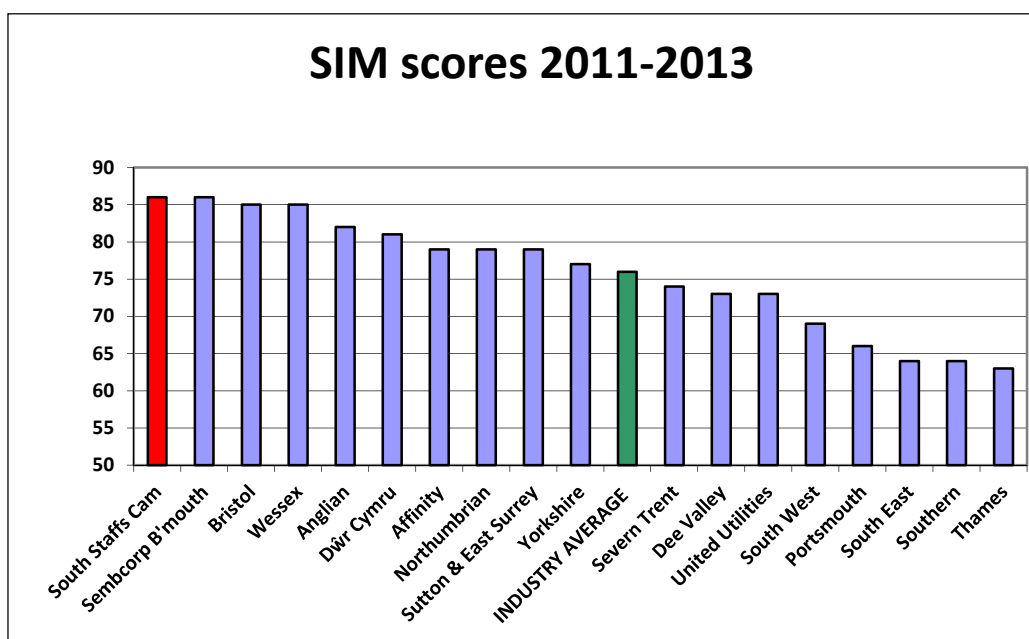
The Board is confident that it can continue to deliver excellent service to customers at a price that is much lower than other water companies due to the efficiency of its operations. The Company has an excellent track record that provides a strong foundation for customers to benefit from future successful performance.

Many companies will aspire to perform well but South Staffs Water can demonstrate this is already being delivered to our customers' benefit.

1.1 Service Performance

Prior to the introduction of the Service Incentive Mechanism (SIM), both South Staffs and Cambridge excelled with the overall performance assessment (OPA). Both regions were rewarded at the last price review, PR09. This performance has continued with the introduction of the SIM, where the Company's performance to date is 1st in the sector. Hence the Company has a long standing track record of excellent delivery that is recognised as expectations and measurement of performance develop. This excellent service to customers is driven by an approach which:

- Listens to what customers want from the Company and learns from their feedback so we can be responsive to their needs.
- Keeps the customers informed during operational activity. Customers welcome this approach keeping them up to date with progress on work and explaining why it is necessary.
- Champions service excellence right across the business, from the top to all business areas, not just the core customer service function.





The Company knows that customer demands are changing and that the service interface will change as technology advances. The Board is confident that its business plan proposals, with modest investment levels, are well targeted to maintain the excellent service that customers appreciate. This is in line with customers' expectations as demonstrated through results of the customer engagement programme. In the Acceptability Testing the level of current customer satisfaction was 96%.

1.2 Regulatory and Statutory Compliance

The Board takes its regulatory and statutory compliance extremely seriously and monitors performance carefully each month to ensure the Company is on track to meet key performance indicators (KPIs) and quality / environmental obligations.

The Company is on course to meet all of its AMP5 statutory obligations as agreed at PR09 with Ofwat, the Drinking Water Inspectorate (DWI) and the Environment Agency (EA). Capital spend will be in line with the PR09 Determination and there are no logging up or down proposals.

In terms of compliance, in both regions the Company has shown complete compliance in the form of green KPIs as shown in the table below (source: Ofwat website) for the three years to date and expect this to continue for the final two years of this regulatory period.

| | |
|---------------------------------|---|
| South Staffs |  |
| South Staffs (Cambridge) |  |

Source: Ofwat website showing full regulatory compliance across all 8 measures

1.3 Performance Levels Mapped to Future Outcomes

The Company proposes five Outcomes for the period 2015-20 (AMP6 period). Each of these Outcomes have some measures of success assigned to them. Whilst these Outcomes are for the future and they were not determined at PR09, it is still useful to review performance by the Company in the current period against the proposed measures of success.

This analysis is also a reminder that some of the AMP6 performance commitments are demanding, for example the poor water quality performance in 2012 would trigger a penalty if this occurs again after 2015.

Please note that the values in the table are a weighted average of performance across the two companies that have now merged (South Staffs and Cambridge), except for leakage where regional targets will continue.

| Outcome | Measure of success | SSC Historical Performance* | | | | | AMP6 Performance Commitment |
|---|--|--|----------|----------|----------|------------------|-----------------------------|
| | | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Forecast 2013/14 | |
| Excellent water quality now and in the future | MZC | 99.99% | 99.98% | 99.96% | 99.92% | 99.98% | 99.96% |
| | Acceptability of water to customers (Number of negative water quality contact/complaints per 1,000 population) | 2.01 | 1.89 | 1.94 | 1.82 | 1.69 | 1.90 |
| | Catchment management | Completion of existing commitments | | | | | Agreed programme |
| Secure and reliable supplies now and in the future | Interruptions to supply (property minutes) | 00:10:25 | 00:11:40 | 00:07:28 | 00:10:18 | 00:09:10 | 00:15:00 |
| | Asset serviceability (infrastructure) | Stable | Stable | Stable | Stable | Stable | Stable |
| | Asset serviceability (non-infrastructure) | Stable | Stable | Stable | Stable | Stable | Stable |
| | Water re-use in the Cambridge region | Completion of existing commitments | | | | | Agreed programme |
| An excellent customer experience to customers and the community | Customer satisfaction from independent surveys (not SIM) | n/a | 4.21 | 4.44 | 4.66 | | 4.50 |
| | Customer complaint levels per 1,000 customers | 4.93 | 4.54 | 3.98 | 2.71 | | 2.8 |
| | Community activity and engagement with customers | Completion of strong customer engagement programme in AMP5 | | | | | Agreed programme |

| | | | | | | | | |
|---|---|--|--------|--------|--------|------|-----------------------------------|------------------|
| | SIM | n/a | 75 | 83 | 88 | | Upper quartile | |
| Operations that are environmentally sustainable | Water efficiency programme – Household Per Capita Consumption (l/h/d) | 137.76 | 136.91 | 136.57 | 128.61 | | Downward trend (Weather adjusted) | |
| | Power and Carbon usage (t CO ₂ e/MI) | 0.49 | 0.50 | 0.51 | 0.48 | | Downward trend (Weather adjusted) | |
| | Leakage (MI/d) - SST (3 year rolling average values) | 73.9 | 73.8 | 71.8 | 68.8 | 68.0 | 70.54 | |
| | Leakage (MI/d) - CAM (3 year rolling average values) | 13.9 | 14.0 | 13.4 | 12.8 | 12.7 | 14.0 | |
| | Biodiversity activity | Completion of existing commitments | | | | | | Agreed programme |
| Fair customer bills and fair investor returns | Application of profit sharing mechanisms if external benefits arise (windfalls) | n/a (based on future issues like inflation interest rates, tax changes - significant windfalls outside of our control) | | | | | | Windfall sharing |
| | Independent customer surveys of value for money, affordability and fairness | n/a | | | | | | Improving Trend |
| | Support for customers in debt | n/a (metrics to be explored - payment options, watersure, charitable trust etc. | | | | | | Agreed programme |

***All SSC combined figures are weighted using property numbers**

The above table confirms strong Company performance in AMP5. Highlights include:

- Rising customer satisfaction and falling complaint levels
- Stable asset serviceability
- All AMP5 leakage targets achieved
- No hosepipe bans, despite the other companies in the east and south imposing these
- Very low supply interruptions

- A downward trend in customer usage

1.4 Efficiency

The Company has for a long time had a considerable focus on delivering efficient operations. This benefits customers in the form of low bills and also it benefits investors from the ability to outperform the regulatory targets that have been set for the leading companies. The Company has been in Band A for efficiency since 2002/03. The impact upon this of the merger with Cambridge Water was assessed at the *Competition Commission* and the analysis by *Oxera* confirmed the Company would remain Band A. This position was demonstrated for two further years after Ofwat’s comparative efficiency modelling ended in 2008/09. The following table shows the Company’s historic performance on comparative opex efficiency (including Cambridge in final two years):

| | | | | | | | | |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 |
| Band A | Band A | Band A | Band A | Band A | A lower | A upper | A lower | A upper |
| Rank 2nd | Rank 2nd | Rank 2nd | Rank 5th | Rank 4th | Rank 5th | Rank 3rd | Rank 5th | Rank 3rd |

The data for the last two years in this table is based on *Oxera* modelling with the merged Company . Cambridge Water was assessed as being less efficient at PR09, however since this point they have made significant efficiencies, which are being returned to customers at this review. Previous data is as published by Ofwat for South Staffs Water.

At PR09 Ofwat set the Company an efficiency target to reduce its operating costs by 0.25% per annum, which was a lower target than others due to the high efficiency already achieved by the Company at 2008/09. The Company has outperformed this – a position that benefits both investors in the short term and customers for the next five years with lower charges than there would otherwise have been. This business plan projects further efficiencies at a forecast level of 0.75% per annum – three times that of the last regulatory target. AMP5 opex outperformance is expected to be 5%, which reduces customer bills from 2015/16 relative to what they would have been.

The CIS score for both South Staffs and Cambridge at PR09 was only just above 100 reflecting the strength of asset maintenance and planning in both businesses. The PR09 capital allowance will be spent.

In terms of capital efficiency, the Company was also “Band A” when this was last assessed by Ofwat. At PR09 the Company’s position on the Cost Base was strong and the level of spend in AMP5 is 40% lower than the industry average (based on capex per property). This suggests the Company’s relative position on any new capex efficiency assessment or totex models is likely to be favourable. The Company has made significant capital efficiencies in AMP5 through its procurement and contracting strategy, ensuring that competitive forces are strong for the capital projects delivered each year. These capital efficiencies are then re-invested for the benefit of customers rather than used to target a capital under-spend. The Board believes that this is appropriate where the longer term capex trends are rising.

If this policy had not been followed the AMP6 needs would have been higher. The Company also continues to work with its partners to ensure service is high to customers, as they contribute to both efficiency and SIM performance.

1.5 AMP5 Financial Performance

The financial performance in terms of post-tax return on capital has been and is projected for the remainder of AMP5 as follows:

| | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 |
|-------------------------------------|---------|---------|---------|---------|---------|
| SST region – Ofwat FD | 6.0% | 5.6% | 5.7% | 5.7% | 5.7% |
| SST region – actual/forecast | 5.8% | 6.1% | 6.0% | 5.5% | 5.5% |
| CAM region – Ofwat FD | 6.2% | 5.4% | 5.5% | 5.5% | 5.5% |
| CAM region – actual/forecast | 7.2% | 6.7% | 6.2% | 6.5% | 6.7% |

The outperformance largely arises from opex efficiency outperformance, particularly in the Cambridge region, which will be passed back to customers at this Price Review. The deterioration in financial performance in the South Staffs region in the next 2 years reflects:

- lower income from new connections
- higher depreciation from short life assets
- reduced efficiency scope

The Final Determination figures from PR09 are higher than the headline of 4.9% due to the different gearing/cost of capital assumptions and the incentive rewards earned by the Company for OPA standards and efficiency.

1.6 AMP5 Challenges Experienced and Lessons for AMP6

Whilst the overall performance of the Company has been strong, there have been some significant operational events that have disrupted customers and the public. Further, whilst there is high customer satisfaction, some of the customer research findings need to be addressed. The Company's future plans take account of these experiences and customer concerns, including initiatives within Retail to improve communications to customers around future major events.

In terms of operational events, the most notable have been:

- Streetly flooding: an emergency event following a mains burst close to a service reservoir was experienced in 2011. Around 100 properties were flooded, with some properties experiencing severe damage.
- Large diameter mains bursts on strategic highways: on several occasions mains bursts have led to severe traffic disruption on strategic highways, closing the carriageway or reducing the capacity on the A38 (Midlands) and A14 (East Anglia) trunk roads.
- Water quality problems: in 2012 there was a series of water quality problems at our second largest water treatment works, Seedy Mill, this coincided with a general poor level of water quality performance and as a result the Mean Zonal Compliance (MZC) fell to 99.92%. This is not acceptable to us or our customers and actions have been taken to restore water quality performance. The various problems at Seedy Mill Treatment Works, and similar problems at Cambridge's Croydon works are, however

a reminder of the importance of targeted maintenance to ensure that the risks to service are managed appropriately.

The AMP6 plans reflect the need for targeted maintenance of critical assets and the risk of trunk main failures. The trunk mains maintenance strategy is expanded upon in section 9 of this document and can be found in the [Maintaining the Serviceability of Network Assets Investment Strategy](#)

In terms of the customer research findings, there has been strong feedback that the communications with customers could be more effective. Customers have expressed a desire for advice and information on saving water to help reduce their bill and on water hardness, as examples. They also have a desire for more information on our performance and how their bill finances our investment activities so they can see where their money goes.

So, whilst SIM performance is strong and satisfaction levels are high we can identify that there is more that can be done for our customers and the Company will work hard to improve its communications with customers following this feedback.

1.7 Customer Bills

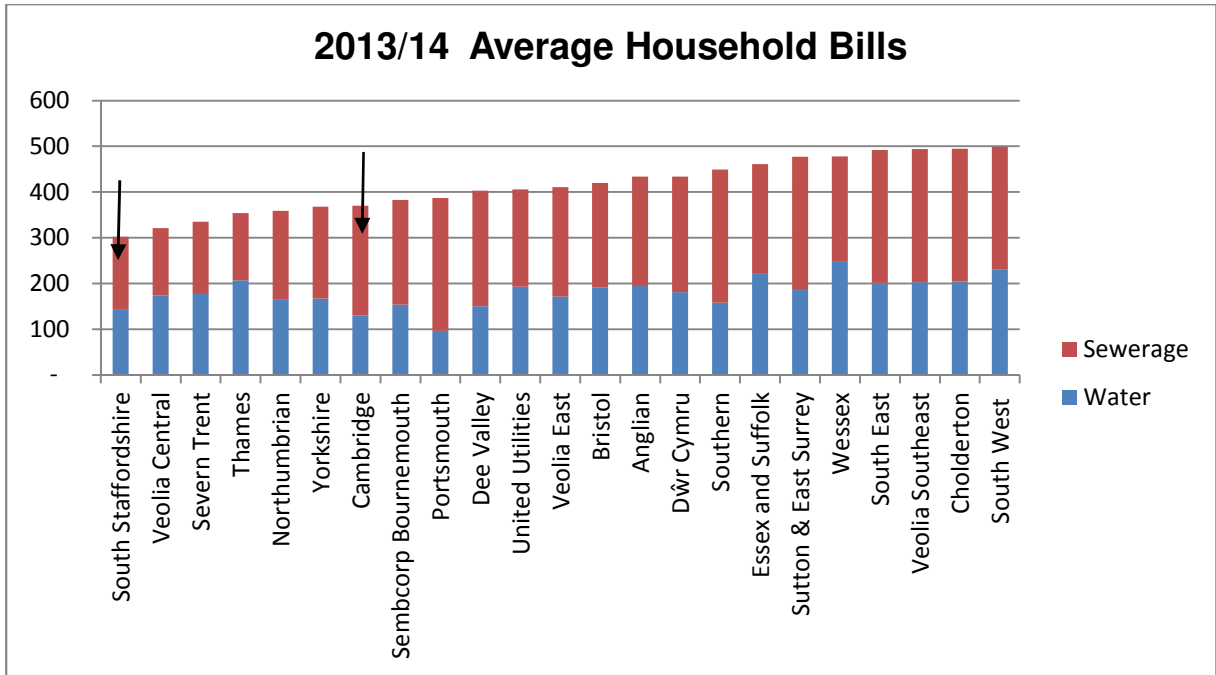
The customers of South Staffs Water receive low bill levels and high service standards. In many industries a cheap product may be associated with poor service but this trend is defied by the Company as it offers a combination of low bills and high service, representing excellent value to our customers. The Company is determined that this will continue for the benefit of current and future customers.

The Company operates with the same regional challenges as the two neighbouring WASCs. In the South Staffs region the water bill is £23 lower and in the Cambridge region it is £64 lower than our respective neighbours.

Nationally, the Company's household water bill is 25% lower than the national average, which in absolute terms is £46. This is based on an average water bill of £140 for the overall merged business.

This low bill level is very important, particularly in the South Staffs region where there are high levels of social deprivation. In the current economic climate the Company has been able to control debt levels and costs. At the same time the Company is conscious of affordability and the drive to minimise water bills.

The Company bills on behalf of both Severn Trent and Anglian for sewerage services. Many customers focus on the total bill as opposed to just the water bill. In preparing this plan we have worked with both sewerage providers to understand the impact their plans are likely to have on the total bill. Similar price profiles are expected for both Severn Trent and Anglian in the next period. The following chart shows the current levels of overall water and sewerage household bills in each company area.



Source: Ofwat Press Notice PN 03/13, 5 February 2013

2. Our Company

Part of South Staffordshire plc.

South Staffordshire Water is part of South Staffordshire Plc., which is a leading operator in the UK water sector.

As well as South Staffordshire Water, it also owns SSI Services and Echo which provide non-regulated specialist services to the water industry.

Merger

The group acquired Cambridge Water on 3 October 2011, with a view to merging it with South Staffordshire Water. The Office of Fair Trading referred the potential merger to the Competition Commission in January 2012. Following an investigation, the Competition Commission cleared the merger in May 2012 with no conditions. Ofwat then issued a unified licence on 25 March 2013 which came into effect on 1 April 2013. South Staffordshire Water is now one business operating in two separate regions, although it has kept the Cambridge Water trading name and local brand.

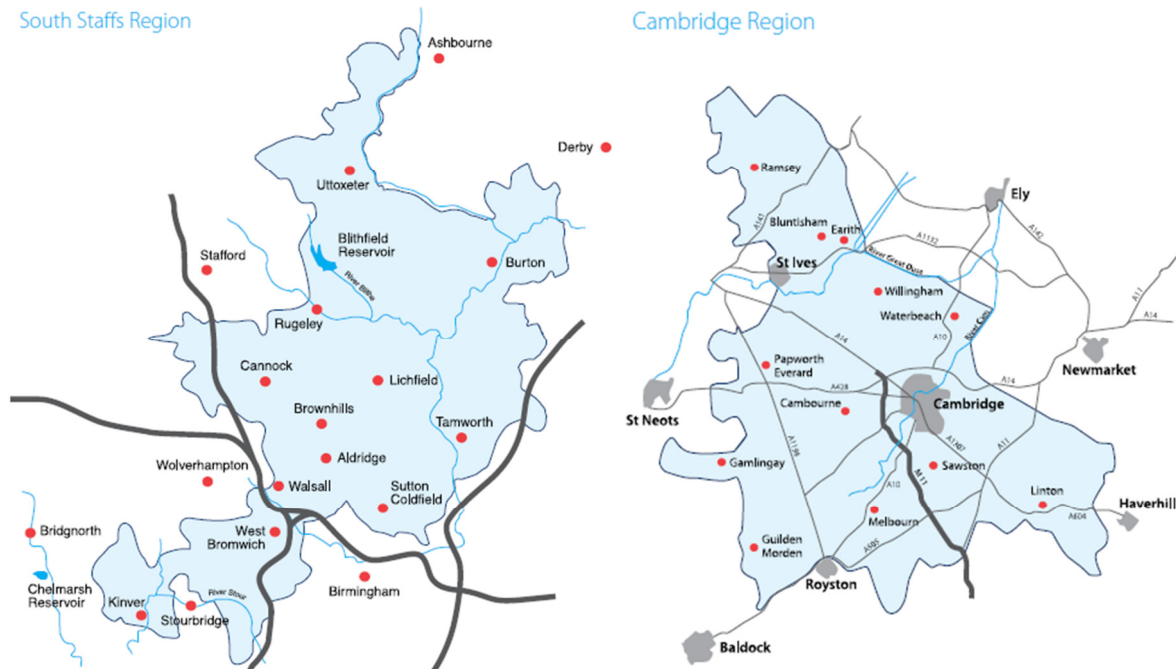
South Staffordshire Water and Cambridge Water were both founded in 1853 to supply fresh water services to their local communities. Over the past 160 years both have earned themselves a reputation for delivering high levels of customer service, coupled with low charges. This remains the ethos of the new larger business, which will operate as follows:

1. There will be a single business plan, encompassing both regions.
2. The Company will retain the existing price differential in the two regions. This year (2013) the average bill in the South Staffordshire region is £144 and in the Cambridge region it is £130. The weighted average is £140 – the second lowest in the country.
3. Any future price changes will reflect cost pressures. The intention is to apply the same percentage change across both regions in accordance with the new combined licence.
4. Most performance and financial data the company reports from 2015 onwards will reflect the overall business; however, some regional performance information such as the leakage levels in each of the two regions will still be available.

Ultimate Ownership

In July 2013, South Staffordshire Plc. was acquired by the global investment fund firm Kohlberg Kravis Roberts & Co L.P. (KKR). The acquisition has not affected the Group's operation or employees and the current high levels of service will continue to be provided to the customers of each of its businesses.

2.1 The Regions



| Attribute | SST Region | CAM Region |
|--------------------------------|-----------------------|-----------------------|
| Size | 1,500 km ² | 1,170 km ² |
| Population | 1,200,000 | 313,000 |
| Number of household customers | 535,000 | 120,000 |
| Number of commercial customers | 34,000 | 10,000 |
| Average daily demand | 331 MI/d | 76 MI/d |
| Bordered by | Severn Trent | Anglian & Affinity |

2.2 The South Staffs (SST) Region

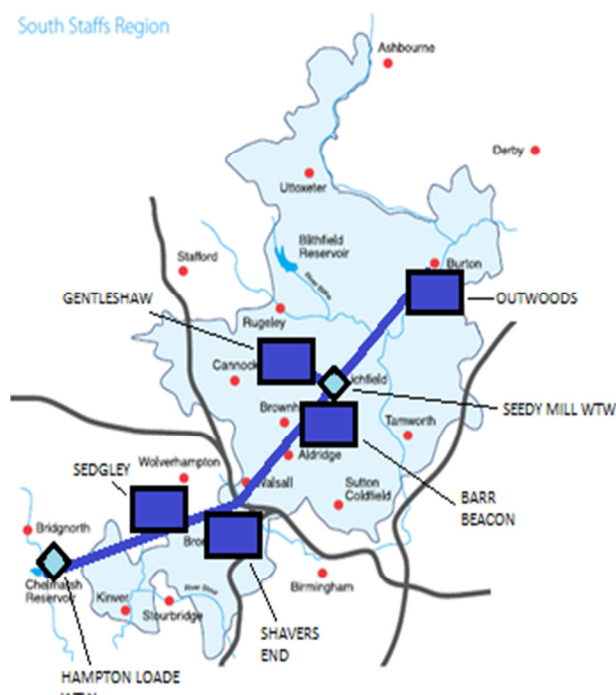
The SST region operates with a highly interconnected distribution network, the infrastructure which was predominantly built and laid from the late 1800's through to the 1960's. This infrastructure was developed around the area known as the 'Black Country' which encompasses the major towns of Dudley, Tipton, West Bromwich, Oldbury and Walsall. Infrastructure was initially designed to bring water south from the Lichfield area into the Black Country, although around the turn of the twentieth century additional ground water sources were constructed in the south which were much closer to the demand areas.

Sources were also developed north of the Black Country to supply growing towns such as Lichfield and Cannock, and then later, Uttoxeter and Burton upon Trent. During the early to middle twentieth century some local water authorities were integrated into South Staffs Water, particularly in areas such as Uttoxeter and Tamworth. South Staffs Water inherited

the assets supplying these areas but also added additional infrastructure to integrate these discrete areas with its own existing network.

Essentially, the SST region centres its operation around a trunk mains and service reservoir system which runs through the centre of the region, acting like a spine. The bulk of water production lays in the south west of the SST region, from the Hampton Loade Water Treatment Works on the River Severn and from the Smestow Valley ground water sources; and is transferred north east along this spine of storage reservoirs and trunk mains. There is also a significant volume of water produced in the central area of the SST region from the Seedy Mill Water Treatment Works which is supplied from an impounding reservoir at Blithfield, and there are a number of ground water sources located centrally.

To the north of the region there is a small volume of ground water production supported by bulk transfers from south to north through the distribution network.



This diagram shows a simplified view of the trunk main spine running from south west to north east and the location of the two surface water treatment works at Hampton Loade and Seedy Mill.

The five strategic reservoir sites are also shown.

The two treatment works alone provide 60% of the daily supply volume, and the five strategic storage reservoir sites provide over 70% of the total storage capacity for the region.

The majority of the ground water sources feed into this trunk system either in the south west or around the central area, with a small number of ground water sources located in remote areas in the north and north east.

The potable distribution network is 5,969km in length with an average age of 47 years. This includes 830km of trunk mains, which have an average age of 58 years.

The SST region is very hilly, and as a result SST has the highest average pumping head in the industry. Technically speaking, some of the large service reservoir sites are not ideally located to maximise energy efficiency. Between 2009 and 2011 the Company embarked on an internal project, named *Aquarius*, to undertake comprehensive investigations into how the trunk mains network is configured to determine if it was economically viable to undertake significant redesign to achieve reductions in energy use and carbon emissions. Amongst the options considered was the relocation of large storage reservoirs to lower elevations, in order to reduce the pumping costs and carbon emissions associated with pumping to high elevations. Extensive investigations and modelling proved the options to be too costly to implement primarily due to the very high capital cost associated with relocating service reservoirs and trunk mains. The trunk mains network currently in place has developed and grown through more than a century of investment, and it is unlikely that large scale projects such as these will ever become cost beneficial. Even with a cost beneficial business case, the impact on customer bills in the short term would have been significant to fund the capital

investment necessary to implement the changes. This would have been difficult to justify to customers in any economic climate, let alone the current one of austerity.

It is for this reason that the Company policy is to maintain the existing network configuration indefinitely, which means the Company must be committed to maintenance of the individual assets making up this network configuration over the long term. This allows the Company to plan proactively, holistically and most importantly cost effectively for the future of these assets operating within the network. Smaller network reconfiguration options will continue to be explored where these are cost beneficial and do not adversely impact on customer bills.

2.3 The Cambridge (CAM) Region

The CAM region also operates with a highly integrated network.

All of the water in the CAM region is supplied by ground water pumping stations predominantly in chalk aquifers. The vast majority of these sources are located in the south and south east of the region with exception of a large source situated 54km away to the north east in the Anglian Water area in the Thetford forest.

Cambridge Region



This diagram shows a simplified view of the distribution system in the CAM region.

The ground water sources predominantly pump directly into supply, these are supplemented at daily peaks by a large reservoir system (4 independent interconnected structures with a capacity of 59MI) at Cherry Hinton which fills at times of low demand from the ground water sources.

Water migrates from the ground water sources and the Cherry Hinton reservoirs across Cambridge via the trunk main network to a storage site at Coton, it is then transferred to further storage sites in the north and west of the area to supply the demand in those regions.

The potable network is 2,350km in length, with an average age of 48 years. The trunk mains network is 652km.

3. Outcomes

| Key Points – Outcomes | |
|-----------------------|--|
| Selection | 5 Outcomes based on extensive customer engagement |
| Measures | The Outcomes, performance measures and incentives have been challenged and reviewed and subsequently accepted by the CCG. Reward and Penalty mechanism have been assigned to 5 performance measures to drive service improvement |






The five Outcomes, established through extensive research, are those most important to the Company's customers. Once research was complete and the five draft Outcomes were compiled, consultation was carried out with the CCGs who endorsed their selection but encouraged a bolder approach to environmental commitments and to reflect the role of the Company in the local community. These challenges led to revisions of the Outcomes and the development of the [Outcome Delivery Incentives](#) business strategy. The emphasis made on the long term is deliberate since this is important to customers. The five Outcomes featured in the draft Business Plan and in the [Long Term Strategy](#) consultations to provide further reassurance from customers that the right ones were selected.

Following the consultations, the Company adapted the five Outcomes accordingly to form the final five which were carefully worded by the Board:

-  **1** Excellent water quality
(now and in the future)
-  **2** Secure and reliable supplies
(now and in the future)
-  **3** An excellent customer experience
to customers and the community
-  **4** Operations which are
environmentally
Sustainable
-  **5** Fair customer bills and fair
investor returns

3.1 Outcomes Success Criteria

Once the Outcomes were signed off by both the CCG and the Board, appropriate success criteria were developed to ensure that achievement of the outcomes was demonstrable. Again these were challenged by both the CCG and also by the Board.

| The Outcomes | What does this mean for customers? | What will be measured? |
|---|---|---|
| <p>Excellent water quality (now and in the future)</p>  | <ul style="list-style-type: none"> • Is the water safe to drink? • Are customers happy with the water? | <ul style="list-style-type: none"> • How well the water meets standards set by the Drinking Water Inspectorate • The number of complaints about the water - the DWI refer to this as “acceptability of water to consumers (per 1,000 population)” • Working with farmers and other landowners to improve the water draining into watercourses |
| <p>Secure and reliable supplies (now and in the future)</p>  | <ul style="list-style-type: none"> • How often are customers without water? • Will there always be enough water? | <ul style="list-style-type: none"> • How often and for how long customers are without water • How serviceable and resilient our assets are (e.g. reservoirs, treatment works and water pipes) • How we work with house builders to promote the installation of water efficient devices (e.g. for collecting rainwater and recycling household water) |
| <p>An excellent customer experience to customers and the community</p>  | <ul style="list-style-type: none"> • Are customers satisfied with service? • Are we getting involved in the community? • How do our activities affect the community? | <ul style="list-style-type: none"> • How satisfied customers are, using independent surveys • The number of customer written complaints about our service • The Company’s involvement with the local community (e.g. as an employer, supporting local activities, engaging with customers, local stakeholders and businesses) |
| <p>Operations that are environmentally sustainable</p>  | <ul style="list-style-type: none"> • Do we help customers save water, and do we save it ourselves by reducing leaks? • How “green” are we? • Are we making a positive contribution to the environment? | <ul style="list-style-type: none"> • How the Company helps customers to use water wisely, particularly in drought situations (e.g. a continued commitment to metering, trials of water-efficient devices, customer research into how much water people use, more education and information about wise water use) • How much the Company reduces its carbon footprint (e.g. using alternative energy sources for treating and pumping water, measuring units of carbon produced in relation to volume of water delivered, reducing emissions from vehicles) • How well the Company works to reduce leaks • The Company’s biodiversity activity (e.g. providing wildlife habitats on our land, reducing the effects our activities have on the environment) |
| <p>Fair customer bills and a fair return for our investors</p>  | <ul style="list-style-type: none"> • Are we keeping bills low enough? • Are we supporting people in genuine hardship? • Do our investors receive a fair return? | <ul style="list-style-type: none"> • How affordable bills are, and how effectively the Company supports customers in debt (e.g. how many such customers we are working with or the amount of money recovered from them) • The extent to which customers are able to benefit from any significant Company windfall profits (e.g. by a future reduction in bills, or spending the money on assets without increasing bills). Financial windfalls will be shared with customers. |

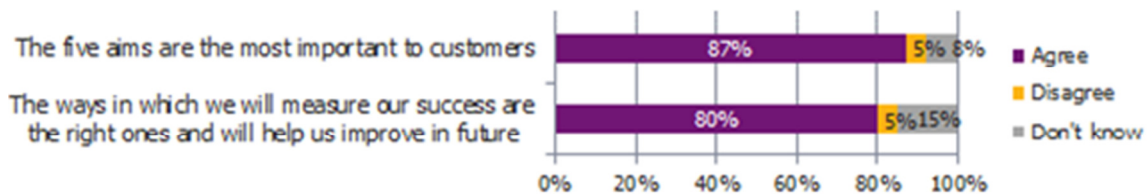
3.2 Performance Measures

The performance measures that will be used to measure the outcomes were initially developed after the first piece of major customer research where customer priorities and service valuations were attained. This research allowed the Company to develop measures that were important to customers.

The key principles adopted by the Board in defining these measures were:

- The measures selected are stretching and reflect the standards customers and stakeholders expect from a high performing company.
- They have been discussed and challenged by the CCG and developed accordingly. The likelihood of rewards and penalties being triggered is realistic against real measures of service failure or improvement.
- The Board was keen to reassure customers that the high standards achieved will be maintained for the long term.
- The majority of measures are set as a Company-wide target. The exception is the leakage measure that has a regional split due to different resource zones, historic position and resource challenges.

The Company, through its draft Business Plan consultation, sought customer views on outcomes and performance measures. The following extract from that research shows that customers have a high acceptability for both the outcomes and performance measures:



The Board selected six measures for a potential penalty and three for a reward (including Ofwat's SIM). The remaining measures were either long term or reputational in nature. The Board considered this is an appropriate balance, reflecting customer priorities and showing commitments to both customers and stakeholders on important service metrics whilst offering an incentive for improvements to be encouraged in the future.

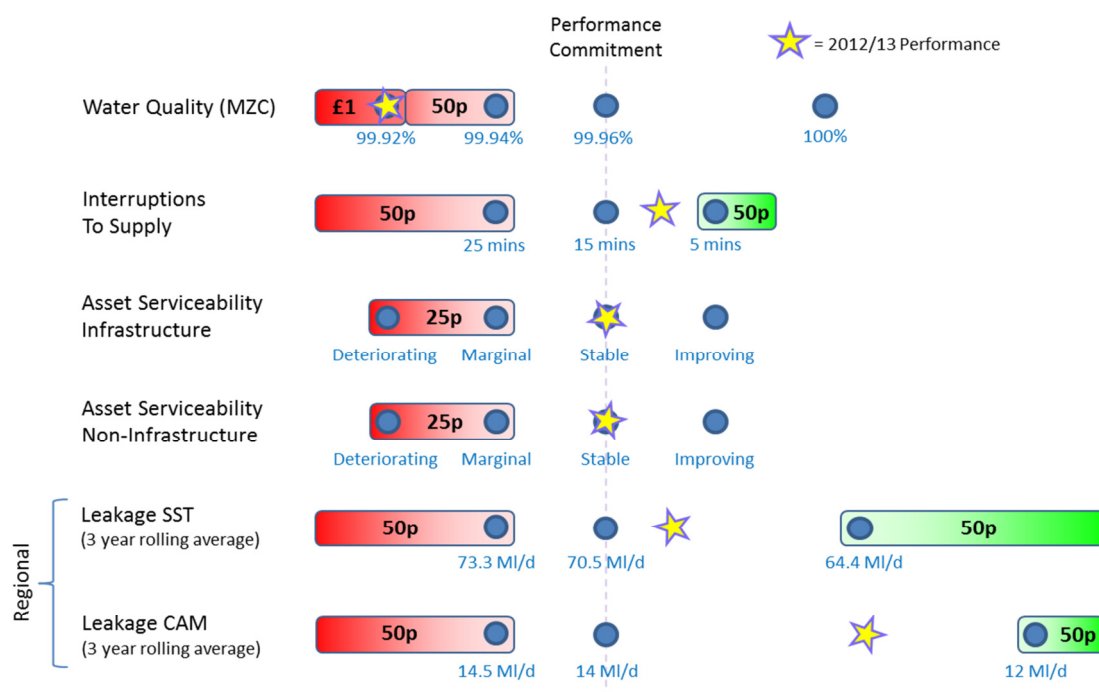
The joint CCG considered the rewards and penalties. They were less keen on the principle of rewards. In terms of the penalties, they encouraged the Company to base these on targets that offered a realistic chance of being breached; even if that meant that the financial valuation of the penalty was less significant. They preferred this to a scenario whereby the financial penalty was high but the probability of it being paid was very low. This engagement was considered and the Board re-assessed the performance commitments and the trigger levels of the rewards and penalties proposed. The CCG also wished to see any penalties and rewards applied at the next price review when all were known, rather than the possibility for bills to vary each year.

In response to representations from the CCG, the Company made two penalties more likely to be triggered, one reward harder to achieve and another initial proposal for a reward was dropped.

In setting the incentives for the agreed performance measures, the Company has utilised both the quantitative and qualitative elements of its willingness to pay research. In addition to this, the Company has consulted through other customer engagement processes, including its CCG, in the design of the outcomes, performance measures and incentives for the PR14 business plan. A full commentary of the customer engagement journey followed by the Company for this price review can be found in the [Customer Engagement](#) accompanying document.






The overall package of Outcomes, performance measures and reward and penalty incentives were presented to the CCG task group and to the final CCG at the meeting before submission. The package was accepted with no further challenges presented. For more detail on the setting of Outcomes, performance measures and rewards and penalties see the [Outcome Delivery Incentives](#) business strategy document.

The following diagram shows the overall package of reward and penalty incentives, excluding SIM which Ofwat will determine:



The Company proposes that the rewards and penalties are ‘stored up’ until the next Price Review and an adjustment made at that point, this is aligned with the preference of the CCG. This avoids uncertainty in bill profiles and addresses the complication of timing insofar as year-end performance is not known when charges for the subsequent year are determined. The Board recognises it has the discretion to pass back to customers sooner for significant deterioration in service or from financial windfalls, depending on the prevailing specific circumstances.

In addition to the above measures that will have financial incentives, the Company has set a number of non-financial, reputational, incentives that will be reported in a transparent manner, measuring future performance. These are summarised as follows:

| Outcome | Measure of Success | Performance Commitment |
|---|---|--|
| Excellent water quality (now and in the future)  | Acceptability of water to customers | 1.9 contacts per thousand population when averaged over both SST and CAM regions. |
| | Catchment Management | Completion of a £1 million agreed programme within AMP6 otherwise the funding received from customers to implement these catchment management projects will be logged down at the next price review. |
| Secure and reliable supplies (now and in the future)  | Water re use in the Cambridge region | Completion of the agreed programme in the CAM region. |
| An excellent customer experience to customers and the community  | Customer satisfaction from independent surveys (not SIM) | A score of 4.5 out of 5 when averaged over both SST and CAM regions. |
| | Customer written complaint levels per 1000 customers | 2.8 written complaints per thousand customers when averaged over both SST and CAM regions. |
| | Community activity and engagement with customers | Completion of the agreed programme of community activity and customer engagement. |
| Operations that are environmentally sustainable  | Water efficiency programme – household per capita consumption | A downward trend (weather adjusted) when averaged over both SST and CAM regions. |
| | Biodiversity activity | Completion of the agreed programme of biodiversity activity. |
| | Power and carbon use (t CO ₂ e/MI) | A downward trend (weather adjusted) when averaged over both SST and CAM regions. |
| Fair customer bills and fair investor returns  | Independent customer surveys of value for money, affordability and fairness | A rising trend in customer's views of value for money, affordability and fairness. |
| | Support for customers in debt | Completion of the agreed programme of assistance for customers in debt. |

Full details of the package of performance measures and financial incentives can be found in the [Outcome Delivery Incentives](#) accompanying document.

4. Our Customers

South Staffs Water is committed to putting customers at the heart of its business and in 2012/13 set about undertaking its largest ever customer engagement exercise.

The Company regularly carries out surveys among its customers and has achieved a repeatedly high SIM score. However, this was the first time it had undertaken such large quantity of independent research. In total it engaged with almost 4,500 customers, including 800 non-household customers, which is equivalent to seven in every one thousand of its customer base. The results from this research have been fundamental in shaping every element of this business plan, from identifying what the outcomes and associated measures of success should be, to helping ascertain at what level and where future investment should be made. The findings will also be instrumental in shaping future business strategies, for example those based around leakage or metering, as well as influencing how and what information is communicated to customers.

The Company's ambition is to continue to deliver the highest possible levels of customer service. It will achieve this by putting customers at the very heart of its business and using their comments and feedback to ensure it exceeds its objectives wherever possible while keeping bills low.

South Staffs Water is committed to continuing to engage with all of its customers and build on its existing relationships with stakeholders to ensure it not only listens to what they want but is flexible enough to adapt its policies and processes to accommodate requests.

4.1 Customer Engagement

South Staffs Water has proactively engaged with its customer base throughout the consultation process. Both regions actively promoted the process on their websites and invited customers to get in touch to air their views, via its Your CH₂Oice campaign.

In the South Staffs region information about the customer engagement process was promoted via a recorded message played to customers who contacted the Company by telephone. A number of proactive tweets were also made via its new Twitter account. In the Cambridge region awareness was via an advert on customer bills, an article in its customer newsletter, Reflections, and a comprehensive email campaign.

A broad range of stakeholders have also be contacted, ranging from councillors, MEPs, representatives of hard to reach groups, environmental organisations, community groups, charities, health care providers, businesses and the media.

In summary, the Company is confident it has engaged with its customers and stakeholders, including the Customer Challenge Group (CCG) via its website, social media channels, emails and customer bills. This activity resulted in the Company receiving more than 4,500 responses, which as stated previously, is equal to contact with seven in every thousand customers. The table below shows the breakdown of the research with more detail be found within the Customer Engagement Strategy document

Breakdown of the research carried out as part of PR14


| Type of research | Type of customer | Number of responses |
|--|-----------------------------------|---------------------|
| Customer feedback To inform outcomes and the Long Term Strategy | Household | 853 |
| | Non-household | 129 |
| Willingness to pay To ensure investment reflects customer valuations | Household | 984 |
| | Non-household | 422 |
| Consultation on the business plan To test proposals, investment choices and outcomes | Household | 1,033 |
| | Non-household | 14 |
| Acceptability testing To test how acceptable customers find the business plan | Household | 841 |
| | Non-household | 203 |
| Total (768) | Household (3,711) / Non-household | 4,479 |

4.2 How Customer and Stakeholder feedback has influenced the Business Plan

Customers and stakeholders have been instrumental in determining the Company's five outcomes. Customer engagement studies, which are detailed within the [Customer Engagement](#) Strategy, alongside the views of both regions' CCG groups, have helped to shape the draft proposals and two further studies measured the acceptability of those proposals prior to the publication of the final business plan.

In addition to the engagement undertaken as part of PR14 planning, the Company also pays close attention to customer opinion gathered during day-to-day activities, such as causes of customer complaints, customer feedback gathered as part of regular customer service standards monitoring and any other activities that might involve customer engagement. This customer opinion has also been taken into consideration in support of, and in many cases to inform the direction of the dedicated PR14 engagement.

The following information provides a summary of customer and stakeholder views, and how these views have impacted upon the Company's plan.

| | |
|--|--|
|  | <p>Supporting outcome 1 (Excellent water quality – now and in the future)</p> |
| <p>Customers and stakeholders told the Company:</p> <ul style="list-style-type: none"> • They are used to receiving high quality water through their taps and wanted to see this maintained or even improved upon. • They are happy for South Staffs Water to engage with farmers and landowners in order to ensure water quality is maintained at a high level and, water treatment costs are reduced. • Customers were concerned about water hardness. | |

As a result:

The Company has proposed investment to replace three nitrate removal stations with more modern and efficient ones, and to develop one new station, which will help to ensure that water quality standards continue to be met.

In addition, major investment on up to four storage reservoirs will help to significantly reduce current or future potential water quality risks.

The Company will also invest long-term in work with farmers and other landowners to improve the quality of water draining into watercourses, in order to reduce the quantity of the water it has to treat.

The Company will not heavily invest in reducing water hardness because of the significant financial and environmental cost, however, it has committed to educating customers about how the effects of hard water on plumbing and household appliances can be reduced.



Supporting outcome 2 (Secure and reliable supplies – now and in the future)

Customers and stakeholders told the Company:

- Good service is valued and they wanted to see the service remain so deterioration is not acceptable.
- The number of supply interruptions should be reduced, and in the event of a burst, the response time should be shorter and flooding as a result of bursts should also be reduced.
- Non-household customers were particularly concerned about supply restrictions or interruptions, in order to avoid disruptions to their own activities.
- They wanted assurances that the Company's infrastructure is good enough to cope with further housing developments.
- To ensure water availability is sufficient to cover drought periods.

As a result:

The Company will spend about the same on underground pipes as it does now, but with a shift towards the increased maintenance of larger trunk mains. To offset this, less will be spent on renewing smaller mains pipes as the Company is already seeing the benefits of work previously done in this area. This change of focus should reduce the risk of large supply interruptions and the accompanying disruption they can bring while maintaining the service as before.

The Company will work with house builders to promote the installation of water efficient devices, and consult with local planning authorities as part of its water resources planning in order to manage the risk of housing development. With dedicated business account management, a strategy will be implemented outlining services available to non-household customers.

As outlined above, investing in up to four storage reservoirs will not only help to significantly reduce current or future water quality risks, but will also help to ensure the reliability of the supply in those areas. In addition to this, there will be increased awareness of water

efficiency through increased communication and education.



Supporting outcome 3 (Delivering an excellent customer experience)

Customers and stakeholders told the Company:

- Stakeholders wanted the Company to maintain its close links with the community.
- They wished to see contact with the Company made easier.
- Non-household customers wanted a dedicated point of contact within the Company.
- Non-household customers wanted help from the Company, for example water audits.
- They wanted to hear more from the Company about environmental issues to help customers understand what the Company does around environmental activities, water hardness awareness, lead and water efficiency.

As a result:

The Company intends to continue to use independent surveys and customer complaint levels as a way to monitor customer satisfaction and ensure that its provision for customers remains at a high standard. It also continues to be involved in the local community in both regions not only as an employer but also by supporting local activities such as education, and engaging with customers, stakeholders and businesses within the supply area.

The Company will further develop its customer contact channels by investing in improved online facilities, social media engagement and also telephone self-service. This will allow customers to complete simple transactions quicker and easier at any time of the day, and also free contact centre capacity to allow for a better, less congested, service for customers who choose to use that channel.

The Company is committed to offering a dedicated account management service, providing business customers with a single point of contact for all aspects of business. The Key Account Manager's (KAM) role is to fully understand the business and operational needs of its non-household customers, offering effective solutions and improving the customer journey.

The Company will implement a strategy of further informing customers about its activities to preserve biodiversity and reduce its carbon footprint as well as other environmental issues.



Supporting outcome 4 (Operations that are environmentally sustainable)

Customers and stakeholders told the Company:

- They would like to see more promotion of water efficiency, with water efficiency audits offered to non-household customers.
- Leakage levels, which have fallen in recent years, should be reduced further.
- Less water should be taken from rivers.
- Pollution levels should be cut.
- Metering levels should be increased, as they see meters as a fair way to pay, while encouraging reduced consumption.

As a result:

Water efficiency promotion will be enhanced, continuing to provide free water saving devices to customers, as part of the strategy for non-household customers.

The Company will carry out schemes or trials to put water back into the environment at four areas and to work on biodiversity schemes to improve the water in rivers we abstract from and in some boreholes. In addition, it will investigate improving fish and eel passages at surface water works, as well as other work to comply with legal obligations on the environment. It is also continuing to work hard to reduce its carbon footprint, by looking into alternative energy sources for treating and pumping water.

Regarding meters, the Company intends to continue with its policy of installing meters upon a change of occupier, with these seen as the best way to fairly increase metering and ensure water efficiency.

Leakage targets will remain a priority, with a lower target being proposed for the South Staffs region. Work focusing on large trunk mains in order to prevent large bursts and disruption is proposed.



Supporting outcome 5 (Fair customer bills and fair investor returns)

Customers and stakeholders told the Company:

- With bills already among the lowest in the country, they want them to remain affordable, and the majority expressed that the proposed rise was acceptable.
- Non-household and household customers wanted to maintain the current low bill, with service levels staying at the accustomed high level.
- They wanted investment kept low, but agreed that small increases were acceptable as this would help to avoid future problems and sudden bill increases to pay for large investment.
- Less than half agreed that the money saved by merging South Staffs Water and Cambridge Water should be used to support customers facing difficulties with paying their bill. Most would prefer it to be handed back to customers in the form of lower bills.

As a result:

The Company wishes to continue to offer low bills, but in order to cover its investment plans and energy costs is proposing to keep the bills flat in real terms over the course of 2015-2020. The change from 2% at the draft stage to flat has largely been secured through a lower cost of capital. It has not been progressed by lowering proposals or compromising service commitments. In addition the Company has further responded to those not finding the initial proposals acceptable. The Company will extend the Charitable Trust into the Cambridge regions, a discretionary fund will be made available to;

- Further boost the charitable trust allowing more grant support to customers in need
- Commence activities to offer debt advice to customers, working with specialist independent agencies

Also the Company will undertake further research in early 2014 regarding social tariffs.

5. Asset Management and its role in defining the Optimum

Investment Plan

| Key Points – Asset Management & Optimisation | |
|--|--|
| Process | Asset Management processes following best practice and reviewed by independent consultants |
| Range | Over 900 investment schemes were analysed as part of the optimisation process |
| Scenarios | Up to 5 investment scenarios for each scheme identified, with Cost Benefit Analysis (CBA) applied utilising defined performance measures and time period, to provide the basis of optimisation |
| Functionality | Ability to apply both performance and financial constraints Monetised Output Performance Measures (OPMs) derived from customer's willingness to pay and used to assess benefits of investment scenarios |

5.1 Asset Management

The Company has followed a risk based asset management approach aligned with PAS-55, encompassing the Common Framework and the principles of Ofwat's previous AMA process.

Overall, the Company has utilised a combination of bottom up risk assessments, top down twenty five year planning and deterioration modelling to determine the appropriate investment needs. In house expertise has been supplemented with external consultant support where necessary. The processes followed to determine these investment needs, whilst inevitably geared around the five year regulatory cycle, remain integral to day to day asset management activities. The Company has utilised asset managers from across the Company that are involved with the daily operation of business activities and assets who possess detailed knowledge of asset risks and potential investment needs. These asset managers have been involved from the inception of the Company [Asset Management](#) strategy, forming base investment requirements that have evolved and developed to form the proposals that are detailed in the final business plan. Both regions of South Staffs Water (SSC) also have full network coverage within the Geographic Information System (GIS), providing an effective asset database for analysis purposes. Each region has also collected and maintained a significant amount of data for historic failures and measures of service; as one example, the Cambridge and South Staffs region have 17 and 16 years of recorded bursts data respectively, with maintained links to network assets. This asset and failure data is the foundation for many of the business cases described within this plan.

The Investment Optimisation process is the framework by which the Company has scored all of its risks and investment proposals. The framework consists of a number of *Output Performance Measures* (OPM's) which allow the scoring of various elements of service provision, including (but not limited to) supply interruptions, water pressure, water quality, health and safety and energy use. Every identified risk has been scored using the framework and incorporated into a full portfolio analysis along with the risks and needs from other areas of the business. This approach is explored in more detail later on in this section.

The Governance processes which exist for capital maintenance expenditure within the planning period have been applied to the AMP6 plan to ensure that the proposals are affordable, fit with the Company's overall strategy, are aligned with customer views and are deliverable from an engineering point of view within the timeframe. The process includes a substantial degree of internal and external challenge. External challenge has been undertaken by the Customer Challenge Group (CCG) utilising Monson for engineering expertise.

Internal validation has consisted of several concurrent processes including:

- Validation of the risks identified from the bottom up and top down processes by internal engineers, departmental managers and directors.
- Validation of the assumptions used in scoring those risks within the IO framework, again by internal engineers, departmental managers and directors.
- Validation of risk appraisal for network assets. Including a modelled trunk mains risk register, ratified by internal stakeholders with local knowledge.
- Consultant support for the large projects such as the reservoir rebuilds and the nitrate plant refurbishments to ensure the engineering judgements and cost estimates are robust.
- Validation of the portfolio optimisation scenarios (separately for both the SST and CAM regions), to ensure that the capital maintenance proposals deliver the required level of service at an acceptable level of risk and within the affordability constraints set by the business.
- Zonal level appraisal of investment options to ensure synergies are identified and built upon.

In addition to internal validation, several key asset management approaches have been subject to external third party challenge

- In house models scrutinised by leading asset management consultants, not only reviewed and challenged approach, but also recommended areas of potential future development. These include ICS, Seams and Motts

There have been several iterations of all of the above challenge activities. The Company has utilised consultant support from Mott MacDonald for its overall asset management activity and development of deterioration models; and from SGS UK Ltd to provide guidance for the Company's PAS-55 implementation which is on-going. Both consultants have been utilised to provide guidance and support for the asset management activities carried out internally, not to provide asset management outsourcing. The Company is 'close to its assets' at all levels within the business and believes that this high level of internal ownership is key to achieving robust levels of service today and in the future whilst retaining the ability to be flexible and efficient for continued low bills compared to the rest of the industry.

Further information on the high level asset management approach is documented in the [Asset Management](#) business strategy.

5.2 Investment Optimisation

The Company's approach to identifying its AMP6 capital investment plan was to carry out a detailed bottom up appraisal of need; this has been collated over two years. Due to the size of the two regions of the Company, asset management requirements can be reviewed at

individual assets level. This bottom up review of identification of need was supported, where required, with sophisticated asset deterioration modelling to enable forecasts of future performance to be predicted. In house expertise also supported this process.

The capital programme identified to be delivered in AMP6 reflects an overall increase in expenditure of 13%, this is to ensure that the maintenance of existing customer service and the future resilience of the assets is delivered. In addition to this, there are some large expenditure items, where comparable schemes are not currently included within the AMP5 programme. The programme has strong customer and CCG support and has been independently reviewed by Monson as part of the CCG engineering scrutiny report.

The plan was identified through a scenario based approach, whereby current and future needs were identified and investment scenarios, ranging from minimum through to premium, were produced to address this need. A minimum level of spend potentially increases the risk of that assets performance deteriorating and puts greater risk on future resilience through to a premium level of spend that improves current service. This granular approach to investment identification was reviewed and challenged by Mott MacDonald to ensure that the analysis undertaken could transparently demonstrate that a balance of both risk and affordability could be presented.

The Investment Optimisation (IO) Tool is used to define an investment programme that delivers the customer agreed Outcomes, whilst helping to manage affordability. The Investment Optimisation methodology and strategy adopted by the Company is a key element in enabling the business to demonstrate that it has used a balanced, transparent approach in the formulation and identification of the Final Business Plan. This enables the balance of risk and costs of each investment option to be conveyed. Proposed investment at PR14 has been visibly and consistently linked to both customer and business requirements using an approach which balances service and cost, maximises synergy benefits from investment across the business and ultimately increases the effectiveness of decision-making throughout the process. In aligning serviceability improvements with customers' willingness to pay for them, the process adheres to the UKWIR common framework best practice for capital maintenance planning in justifying funding requirements based upon sound economic principles.

The IO Tool utilises output performance measures (OPMs) to quantify the benefits of each of the investment options identified. The Company utilised a total of fifteen OPMs in appraising the benefits of investment, which the CCG and the Board discussed and agreed upon to ensure their relevance and transparency in the exact definition and how they would be measured. Typical OPM's relate to water quality, supply interruption, pressure, customer contact, flooding and HSE parameters, while less tangible measures are also included relating to such things as environmental impacts. The OPM's have a clear correlation back to the Company agreed outcomes, therefore enabling the capital expenditure associated with delivering each outcome to be easily identified.

A valuation set is required to ensure that each OPM is valued in monetary terms, thereby providing a common platform upon which to compare investment. As costs of an investment have already been scoped prior to optimisation, it is the benefit of an investment, i.e. the service improvement delivered, which is evaluated against one or many of the OPMs for each solution. Having defined this predicted improvement level from a 'reactive-only' or 'no spend' position through to one of the investment scenarios post performance position, the monetary value used by the IO Tool comes from the following:

- Customer Willingness to pay (WtP) - the value that customers place on that service improvement.

- Private (cost of failure) values – those costs avoided by the business due to the mitigation of service failures i.e. savings, avoided costs and/or increased revenue.
- Socio-environmental value – the value to society or to the environment of that service improvement.

As the private and socio-environmental values were able to be sourced internally and via existing academic and government literature respectively, the Company appointed ICS Consulting in order to produce the Willingness to Pay values for use within the IO Tool at PR14, drawing on industry best practice techniques to:

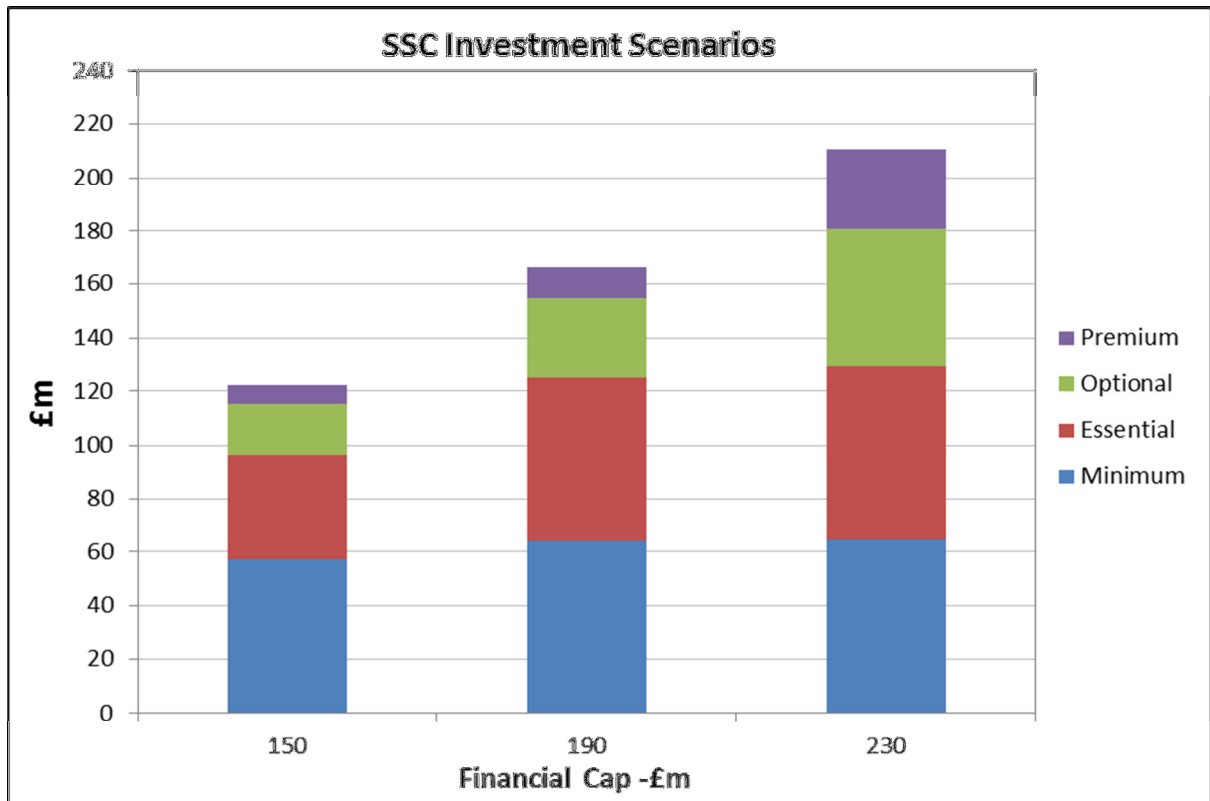
- Estimate the value to customers, in monetary terms, of the impact of changes in service levels
- Determine customer priorities for different aspects of service.
- To ensure that the values are appropriate for use in CBA via the IO Tool; and
- To build on work from the outputs of recent UKWIR studies concerning the application of WTP studies and CBA.

Results from the WtP study demonstrate the inclusion of customer preference that has directly informed our investment proposals via the IO process.

In its bottom up approach to the identification of investment need, the Company has ensured that the range of scenarios around each proposed investment scheme reflect realistic proposals both in terms of their impact upon the defined OPMs but also in terms of their increased costs as the scenario develops from a minimum spend towards a more premium and improved risk position.

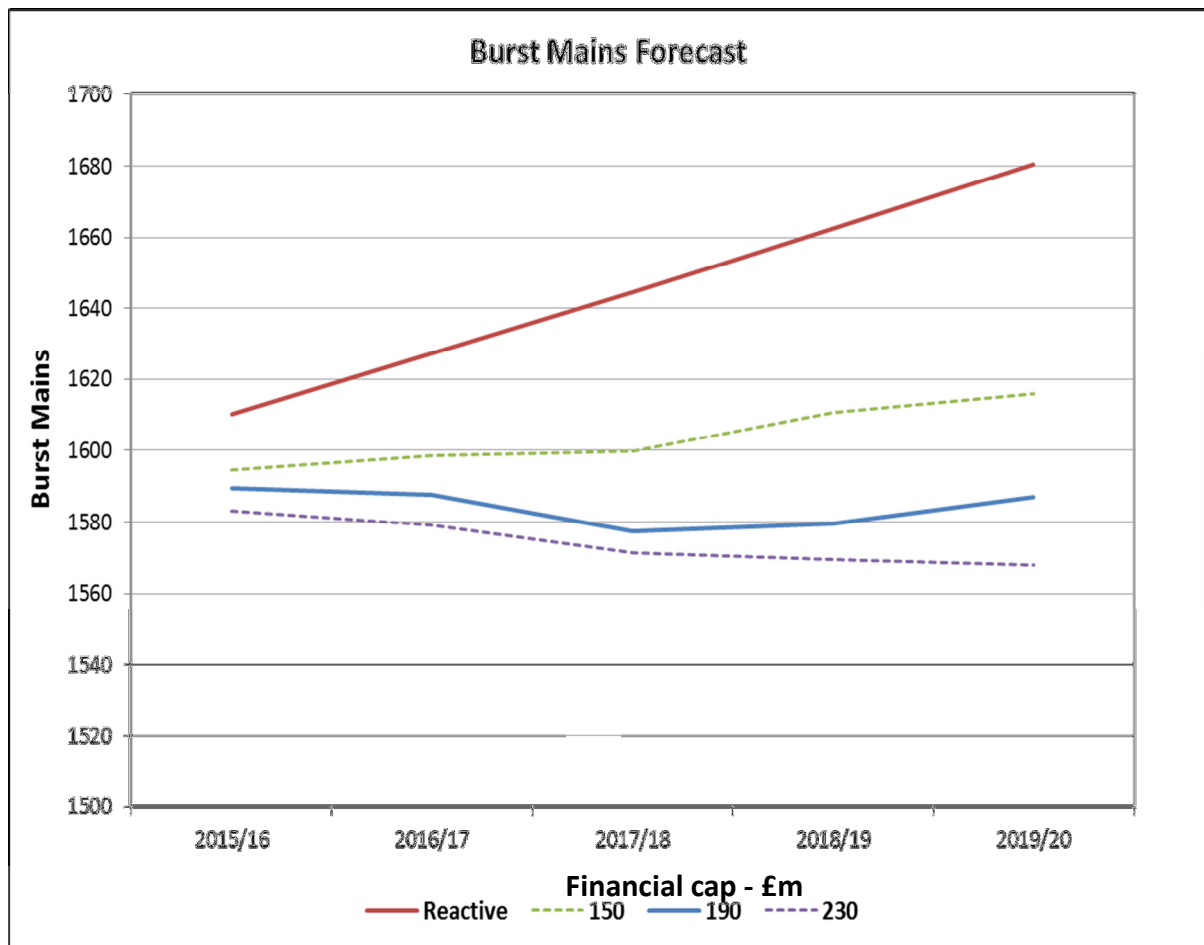
Development of scenario ranges around investment schemes has been encouraged to incorporate both innovative and deliverable variations around investment that show defined step changes across the range and that can be assessed on relative merit within the IO Tool software, ultimately informing decision-making.

The Company has performed many different optimisation analyses using both financial and performance constraints upon the capital investment scheme portfolio, with the nature of the constraints driven by both customer and business need. The 'SSC Investment Scenarios' graph below shows the results of optimising over 900 schemes across three different financial constraints, in terms of the chosen scenario types from minimum through to premium. While not shown in the graph, each financially-capped plan has also been subject to the restrictions of further performance constraints, namely; to maintain stable mains bursts and DG2 occurrences and also to maintain the SELL. These three snapshots are useful to show the different compositions of investment scheme scenarios varying across the changing total spend, including costs to deliver. Many iterations have been carried out, to gain a greater understanding of where the sensitivities lie within the IO Tool components that are having the greatest impact on the final mix of scenarios for each plan.



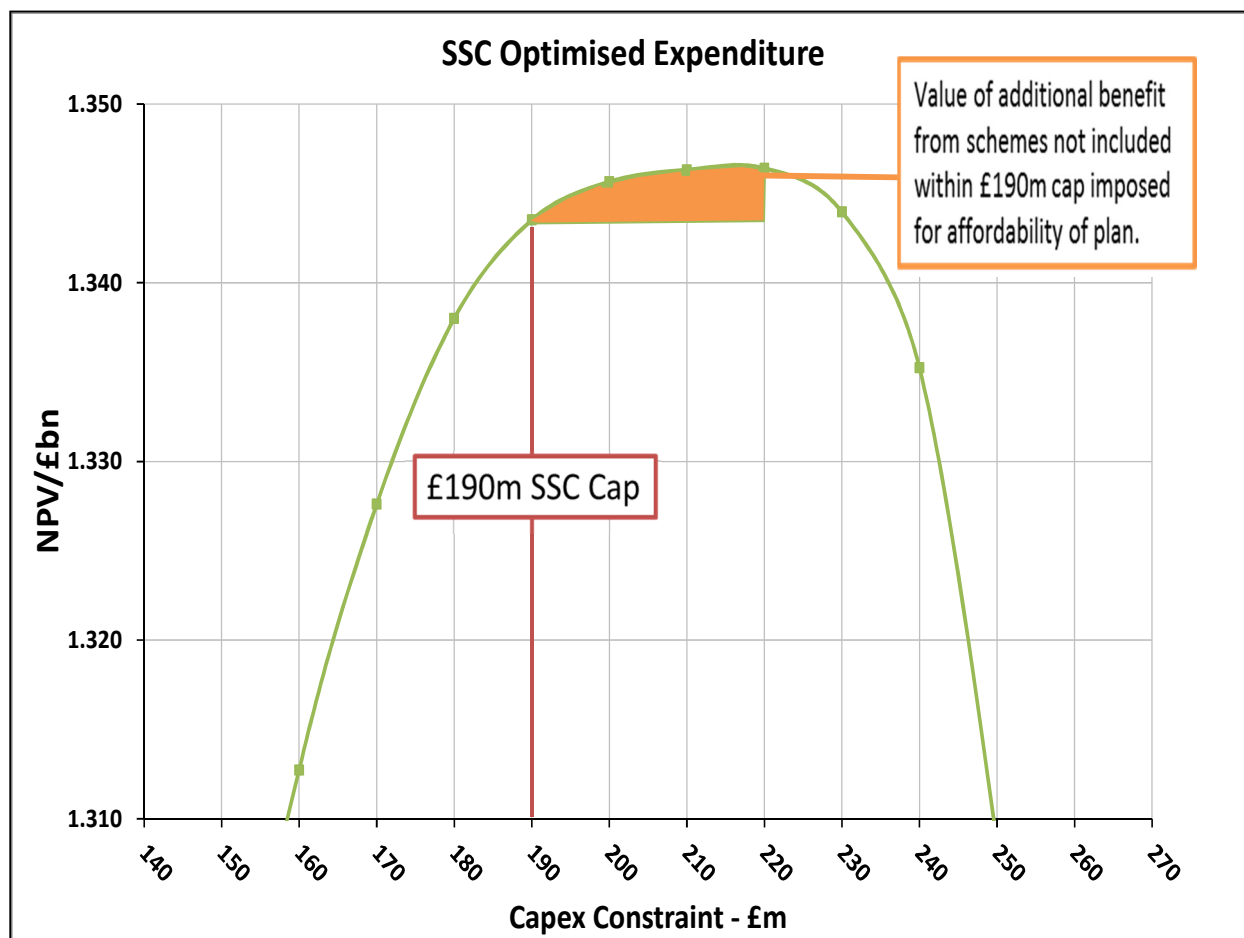
As an output from the IO Tool, the Company are able to define the impact of each optimised plan upon the suite of OPMs. This allows a clear comparison between investment plans in terms of how they are predicted to impact upon key OPMs across the AMP.

The graph, 'Burst Mains Forecast,' below demonstrates the relative improvement associated with burst mains for each of the three optimised investment plans highlighted in 'SSC Investment Scenarios' above, moving from a purely reactive spend through towards stable serviceability at £190m spend and a service improvement with a decrease in the number of bursts at the highest level of spend of £230m.



CBA carried out within the IO Tool produces a Net Present Value (NPV) associated with each scheme, either positive (where the value of the benefits are greater than the delivery costs) or negative (where the value of the benefit isn't sufficient to match the cost of delivery), with the IO Tool working to select a combination of investment schemes that produces a plan with the highest net benefit. Prior to implementing constraints, the Company analysed the production of unconstrained plans to identify not only which investments are purely cost-beneficial and should be undertaken, but also which are deemed to be generating unrealistic benefits or incurring inordinately high negative values. This review provided an initial sense check of the assumptions being made within the CBA, enabling further investigation to subject these assumptions to greater scrutiny and provide governance across the whole process. This is defined in the IO Process diagram below and ensures their validity. For more detail on this approach please refer to the [Asset Management](#) business strategy

Through analysing a range of optimised portfolios, the Company has defined an 'Optimum Frontier' profile, based on the value of the benefit associated with investment plans defined by both financial and performance constraints. The profile below shows the associated NPV of investment plans that have been financially capped across a range, rising in £10m increments. Performance constraints imposed have remained consistent across the changing capex constraints, to maintain stable mains bursts and DG2 occurrences and also to maintain the SELL.

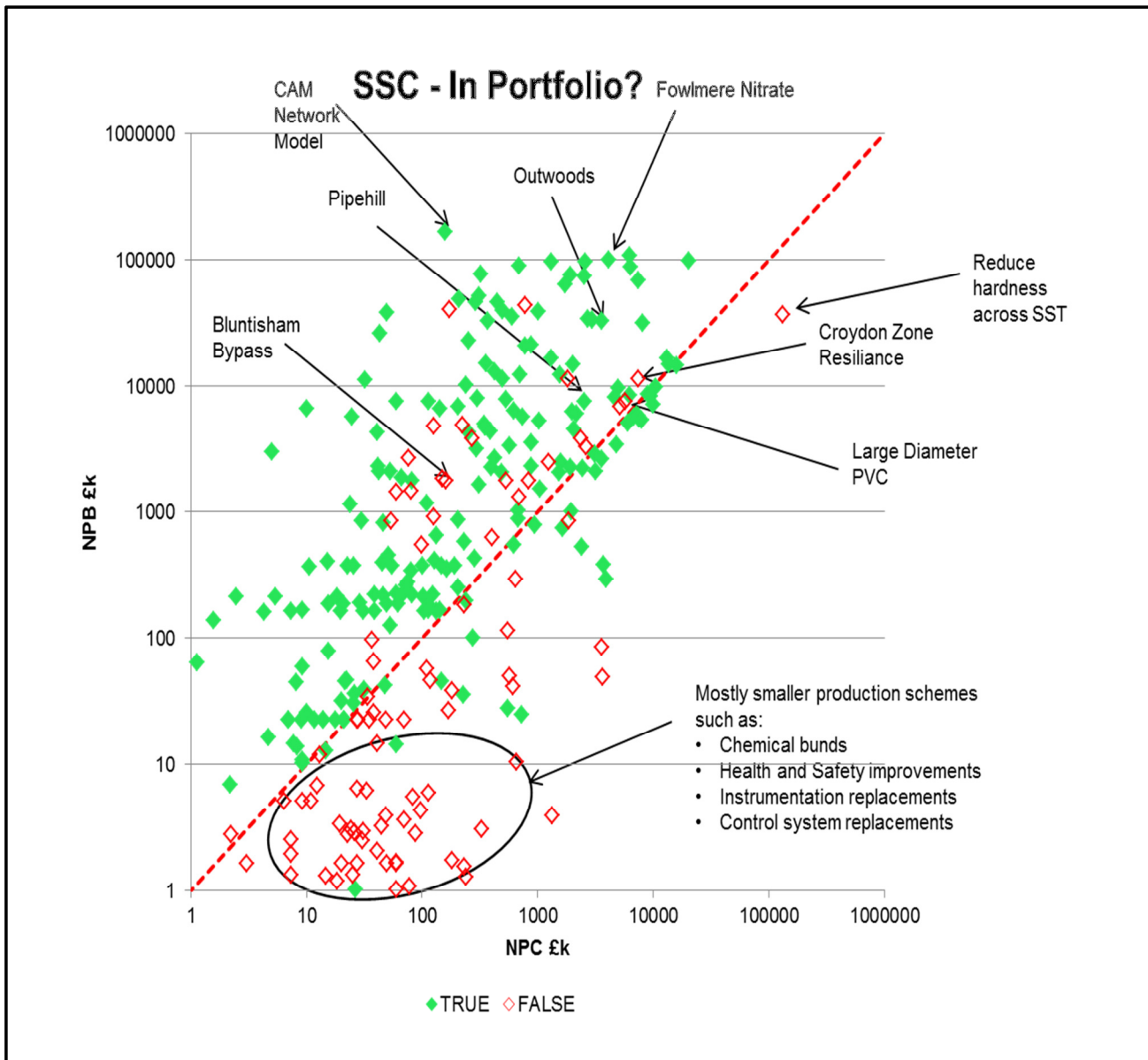


Marginal returns from the increasing capex spend, in terms of the increasing NPV of each portfolio, are shown to rise rapidly up to the £180m financial cap. This is indicative of those schemes that generate large benefits in relation to their costs, and as such, are the first to be selected by the IO Tool during the optimisation process. As the capex constraint moves up to £190m, the marginal return from the additional spend begins to plateau as the benefit being generated by the remaining schemes decreases. Once the frontier begins its descent at £230m, the IO Tool is being forced to select schemes that have been assessed as having negative benefit. By carrying out this analysis, the Company was able to clearly identify the point at which the level of capital expenditure is not economically viable, based on CBA.

The Company has identified a £190m financial cap as being optimum in terms of its affordability. While the frontier graph indicates marginal return on investment begins to slow down at this point, the shaded orange section highlights that it is not the optimum point at which to invest, and that there would be additional benefit achievable from increasing the overall spend to £220m. Examples of what this additional spend would deliver are; increased Trunk Mains maintenance, increased numbers of large network control valve replacements installed over a shorter time period and increased resilience at Bluntisham Tower.

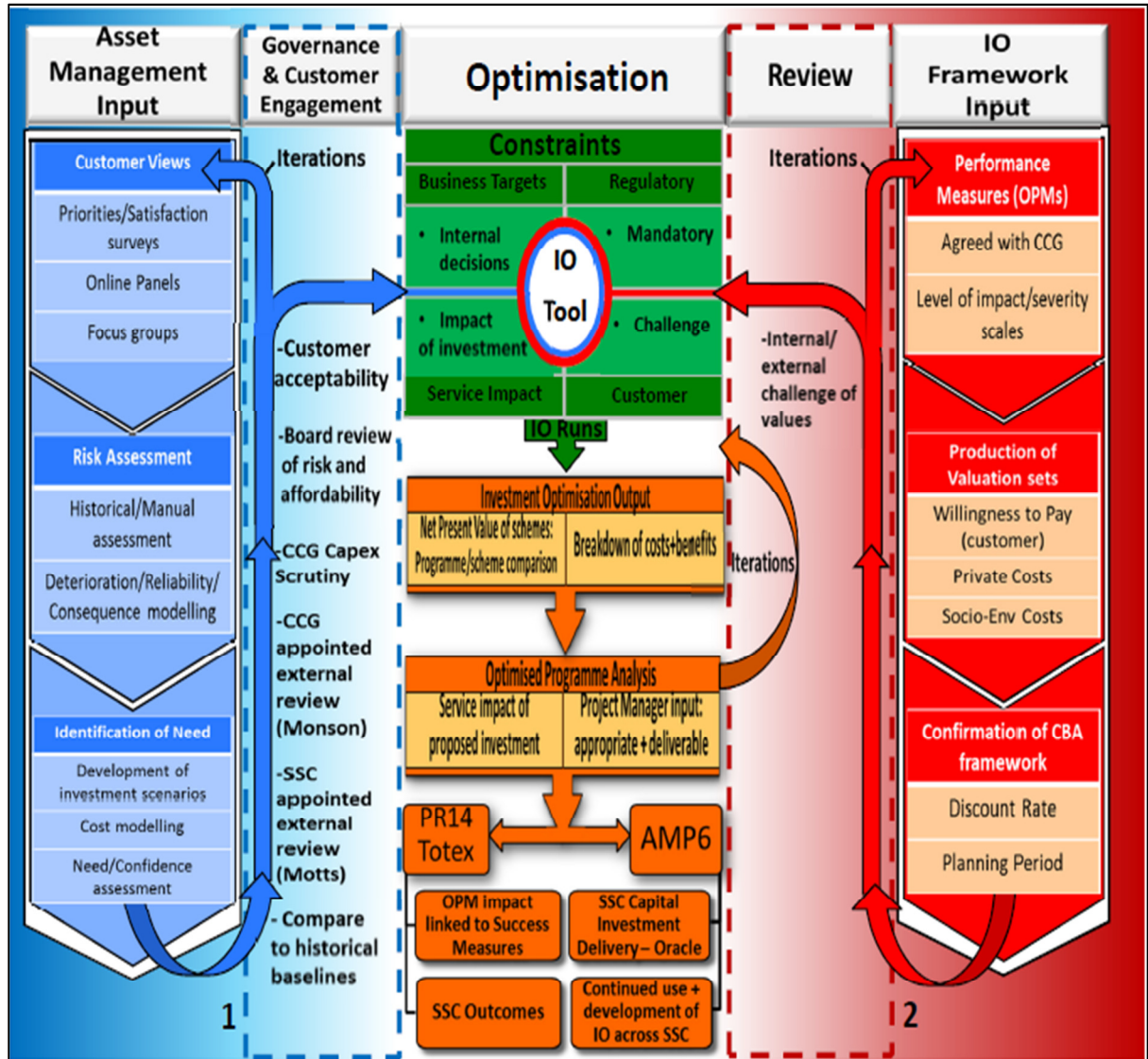
Further analysis was carried out on scheme selection across the Company with use of scatterplots, such as 'SSC – In Portfolio?' below. This provides a clear visual of those schemes that have been chosen in the £190m optimised portfolio (green) or not selected (red) and whether they are cost-beneficial (above the red dashed line) or not (below the red dashed line). The schemes being selected that aren't cost beneficial are representative of mandatory schemes which the Company is required to include in the investment plan, either

due to statutory third-party requirements (eg. EA, HSE, DWI driven) or that have been deemed critical to business operation.



- The IO Tool process diagram below should be tracked through from the two columns on the far left and far right of the diagram, representing the input from both asset management (blue) and the generation of the OPM and valuation framework necessary for the appraisal of schemes within the IO Tool (red).
- Moving inwards, both forms of input mentioned above are subject to processes of review and governance to ensure confidence in investment need/cost and also in the relevance of the chosen OPM set and the associated valuations of these measures, derived from willingness to pay studies.
- The IO Tool then looks to maximise the benefit associated with a chosen investment programme, subject to meeting constraints and targets of both customers and the business.

- Output investment programmes are subsequently analysed to understand how they impact as a whole upon service levels as defined by the OPMs, and as to their alignment with customer priorities and the Company Outcomes and [Long Term Strategy](#).



Following the production of an optimised programme, further challenge has been sought from PR14 project managers and the Board to understand views on its composition and value, together with an assessment of its deliverability. Feedback from this has been used to perform further iterations and define the final investment plans. Breakdown of all costs and benefits associated with investments within the final investment has given sight of indicative total expenditure (totex) levels associated with the final plan. The Company has also demonstrated an ability to set cost constraints in order to smooth the capital expenditure profile across AMP6 within a selected programme.

6. Operational Expenditure

Key Points – Operational Expenditure

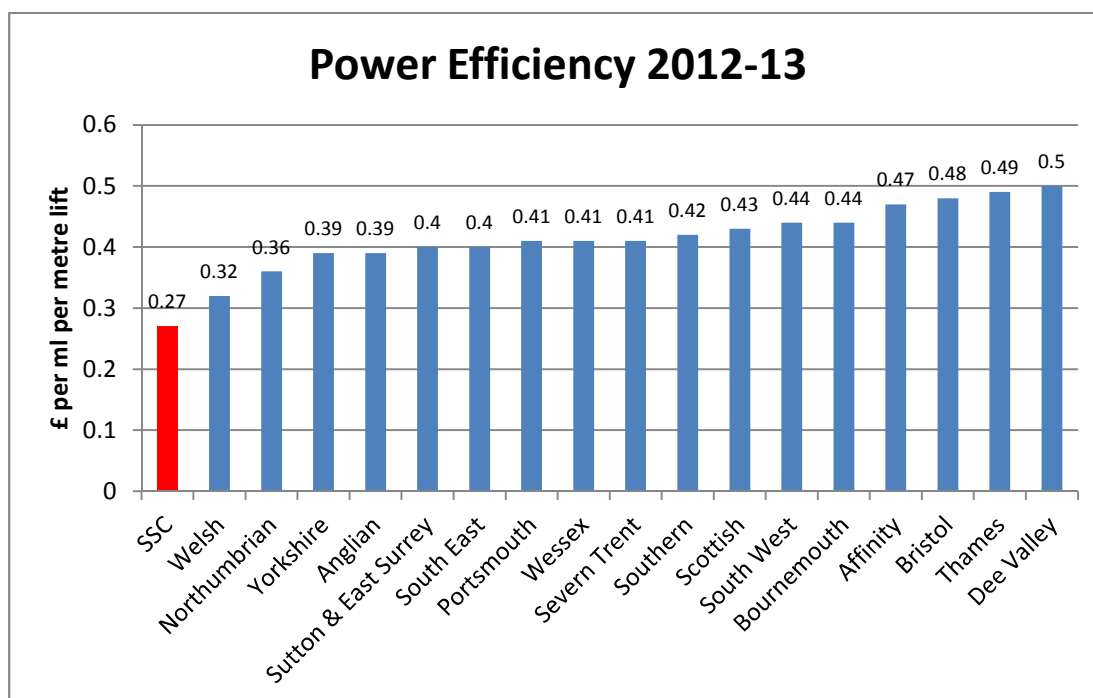
| | |
|------------|---|
| Increases: | Increase mainly related to 3 rd Party increases, such as power costs |
| Scale: | Total Opex impact is £2.80 |

6.1 Power Costs

The increase in power costs in the AMP6 period relates mainly to third party charges including the green levies, and to a lesser extent volume changes. The future wholesale charges are broadly flat. The business plan is based on an increase in real prices of £2m in energy costs – from £8.4m to £10.4m. This 24% increase adds 1.8% (£2.50) to customer bills over the 5 year period.

It is important to note that due to our topography, particularly in the South Staffs region where the pumping requirements are the highest nationally, a change in power costs will be significant. The Company has analysed if it is cost effective to move sources to areas where topography is flatter, but apart from some minor network configuration changes, this remains too expensive.

Due to power costs being a large element of the Company’s cost base, there has been considerable focus on ensuring these costs are efficient, both from a contracting perspective and from power use. The Company is currently the most efficient in the sector for power costs:



This has been achieved from a variety of efficiency and innovation strategies, including:

- Refurbishing pumps (the Company has its own workshops) to ensure their efficiency is maximised.
- Trialling new advances pumps, working with leading suppliers in the market

- Optimising source usage as demands changes so that the lowest cost sources are used.
- Encouraging demand management so that customer usage is efficient (promoting metering, water efficiency, reducing leakage etc.)
- Careful negotiation of our power contracts – ensuring the best long term deals are secured and the timing of these decisions is taken when the market prices are competitive.

The Company has extensively explored the feasibility and economics of renewable energy schemes. These investigations concluded that most large scale schemes were either too expensive or not logistically feasible. Some solar panel installation schemes will proceed but there are no economic proposals for major projects such as wind turbines.

Future energy prices will be significantly affected by the Government's Energy Bill and Electricity Market Reform (EMR) which has three policy objectives – to maintain supply, ensure bills are lower than they would be without the policy, and to decarbonise energy generation. The Company's energy price forecast has been prepared with the possible impact of EMR in mind.

The cost of energy has two main components, the wholesale price and third party charges. Wholesale energy is a tradable commodity and prices are quoted from day ahead to up to three years thereafter. Third party charges mainly comprise levies for renewables, network maintenance and system losses. The majority of third party charges are set by legislation so cannot be challenged or market tested.

The increase in power costs in the AMP6 period relates mainly to third party charges including the green levies, and to a less extent volume changes. The future wholesale charges are broadly flat.

Comparing real prices from base year to 2019/20 the unit cost of energy is forecast to rise by 17.4%. Within this, third party charges will rise by 63% and environmental charges will double. These increases, coupled with demand projections, give a predicted real terms rise in the cost of energy from £8.4m in 2012/13 to £10.4m in 2019/20 i.e. a 24% increase. This is by far the greatest opex driver of future bills. The demand projections are consistent with the WRMP and our income projections. They reflect the fact that 2012-13 was an unusually low demand year due to the weather conditions experienced.

The cost of energy represents around 8% of the Company's turnover with 97% of that cost directly related to supplying water. Comparing real prices from base year to 2019/20 the unit cost of energy is forecast to rise by 17.4%. Within this, third party charges will rise by 63% and environmental charges will double.

Total energy cost is a product of three elements namely demand for water (MI), energy consumption (MWh/MI), and unit price of electricity (£/MWh). The table below gives the forecast demand for AMP6.

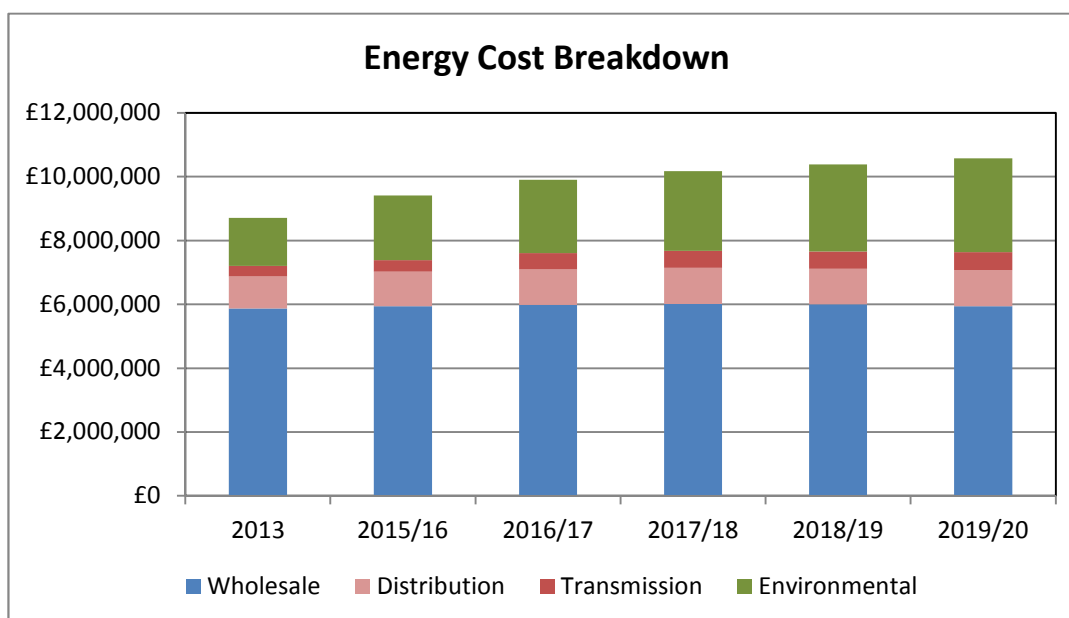
| | | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 |
|-----------------------------|------|---------|---------|---------|---------|---------|
| SSW Weighted Average | MI/d | 299.1 | 299.9 | 300.7 | 301.8 | 302.2 |
| CAM Weighted Average | MI/d | 77.5 | 77.8 | 78.1 | 78.3 | 78.6 |

Price data has been obtained from three main sources: three different supplier's recent offers for the 5 year period received in October/November 2013 (with the most competitive of these included in the business plan); a report jointly compiled by specialist consultants Bergen Energi and Cornwall Energy; and Company data.

The table below gives a detailed build-up of the energy price (£/MWh) at 2013 base

| Tariff Component | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Wholesale Price | [x] | [x] | [x] | [x] | [x] | [x] | [x] |
| Transmission Charges | [x] | [x] | [x] | [x] | [x] | [x] | [x] |
| Distribution Charges | [x] | [x] | [x] | [x] | [x] | [x] | [x] |
| Environmental Charges | 11.56 | 13.65 | 15.57 | 17.95 | 19.62 | 21.48 | 23.26 |
| Energy Tariff (£/MWh) | 78.96 | 79.20 | 81.92 | 86.27 | 88.36 | 89.89 | 91.18 |
| Consumption (MWh/yr) | 102,335 | 102,819 | 105,625 | 105,491 | 105,590 | 105,681 | 106,074 |
| Energy Cost | £8.382m | £8.382m | £9.388m | £9.865m | £10.032m | £10.199m | £10.395m |

The wholesale price is the cost of energy at the point of generation. Transmission charges cover the cost of maintenance and losses in the high voltage network. Distribution charges cover the cost of maintenance and losses of the remaining network up to the customers' meter. Transmission and distribution charges are regulated by Ofgem. Environmental charges recover the cost of support for renewables and are set by government. It is from the latter that the largest real terms increase is forecast to come. The following graph shows how these make up the total energy bill.



There is a further charge allowed for in the EMR called the capacity mechanism but as few details of this are known at the moment it is not possible to estimate its impact on future energy prices.

The Company has been obtaining 5 year prices from the three suppliers we are negotiating with at present. This is a longer period than we have previously locked-in. Due to the upward

direction of prices and the volatility, the Board is minded to manage this risk and secure a long term deal so that customers and the Company are not exposed to this risk in AMP6. Once a contract is secured, we will then continue with our efficiency and innovation drive to ensure that our power costs remain the most efficient in the sector. As well as continuing to refurbish pumps, promote demand management and optimise source usage, this future approach will also include innovations in the types of pumps used and the automation of pump as customer demand fluctuates.

In this business plan the Company has committed to review external windfall sharing with customers. Since a large part of the energy price change relates to green levies, that are currently are hot topic in the political climate, there is a potential for change in the future. Hence should the green levies changes that are forecast not actually materialise, then the Board will consider if the change is significant to warrant sharing with customers (in the form of lower bills or re-investment) in advance of the next price review. Whilst the Company can lock-in to wholesale charges, this is not true of the third party charges and green levies.

6.1 Open Water Costs

The Company has included in this business plan an allowance for the costs of the Open Water programme based on the 2% contribution that we typically pay for industry initiatives (proportionate to total turnover). The costs are for the establishment of the programme and the market operator running costs as outlined in Sonia Brown's letter to MDs on "Resourcing and governance of the Open Water programme" dated 28th October 2013. The plan is restricted to this, it does not include internal costs that the Company is likely to incur. These costs are a major driver, 2% of £7.3m opex in 2019-20 is £146,000 which is a bill impact of 0.1%.

6.2 Permits

Permit schemes are driven by 3rd parties and require the statutory undertaker to apply and obtain a permit, rather than serving a New Roads and Street Works Act (NRSWA) notice. The activities of the street authority and its partners are treated in the same way as statutory undertaker works. The main objective of the Permit Scheme is to minimise delays to road users, by improving the planning, coordination, management and execution of street works, road works and events.

Permit authorities across the South Staffs region have indicated that they will start the permit to work scheme in 2014. The Company have modelled costs, based on schemes that are already running. Forecasts indicate that the Permits schemes across the South Staffs region would increase totex by c£530k per annum. The opex element of this is £200k per year with the capex part mainly within mains renewal activity. Currently there is no indication that the Permit schemes will be operated within AMP6 in the Cambridge region.

6.3 National Environment Programme

There are £1m opex costs (average of £200k/year) of investigatory work, that may not lead to a new asset being developed, in the Cambridge region for investigations into abstraction levels as part of the National Environment Programme (NEP) that has been agreed with the Environment Agency (EA).

6.4 Social Package

The Company has reflected on the challenges forthcoming from the CCG and from wider calls for water companies to do more on affordability and on support of the local environment and local communities. A new discretionary fund of £1.5m will be created to support these themes, split equally amongst:

1. Greater grant support to customers through the Charitable Trust
2. Debt advice to customers working with specialist agencies
3. Local environmental projects (beyond the NEP) and local community schemes. This will allow some schemes to proceed that did not pass the EA's requirements for inclusion in the National Environment Programme (NEP), but are nevertheless important projects in the local community.

The Board is keen to acknowledge and support the Company's corporate and social responsibilities. It is intended to continue discussions with the CCG and other interested parties to determine the most productive programmes to meet these objectives.

6.5 Managing Risk – Opex Costs to Control

The above list of operating cost increases does NOT include two significant cost areas – debt/collection costs and pension costs. There are risks that these will rise, but the business plan assumes the Company takes this risk rather than it influencing customer bills in AMP6. The introduction of the Universal Credit system for welfare payments in 2017 is an example of a trigger for further pressure on debt and collection costs.

6.6 Opex Efficiency

The Summary of the Business Plan highlights the Company's excellent long term record of leading the sector on efficiency. Further innovations are also highlighted which support this drive. In terms of how we have reached this position that is reflected in average bills being 25% lower than the national average, and our plans for the future, the efficiency drive is a package of measures that include:

- Power use: encouraging and helping customers with demand management initiatives (water efficiency, metering and leakage on customer pipes)
- Power use: making sure the Company uses power efficiently through a programme of pump refurbishment / new technology and also source optimisation to use the cheapest sources
- Power contract: negotiations to yield the best contract – timing and commercial negotiations are key and the Company decisions on the period to lock-in are significant
- Debt: ensuring the debt is kept under control through effective collection practises, helping customers pay their bill, and ensuring billing is targeted at different customer segmentation
- Various innovation trials (case studies are included in this report)
- Review of the organisational structure to ensure it remains fit for purpose as new challenges arise

- Pay awards and reviews of terms and conditions, which is important given that employment costs are a high proportion of opex. Pay awards are no longer linked to RPI.
- Merger opportunities to review duplication and follow best practice
- Reducing costs to serve with retail operations (examples being the digital strategy)
- Capex benefits – operating costs can often be reduced once new assets are installed or sources are refurbished to bring about more efficient plant, automation and reduced asset failure costs.

The above list starts with power and debt costs deliberately since these are potentially very volatile in our cost base and it is important there is a strong focus in these areas, otherwise customer bills would rise. This business plan includes an efficiency target of 0.75% per annum which is three times the level set by Ofwat at PR09.

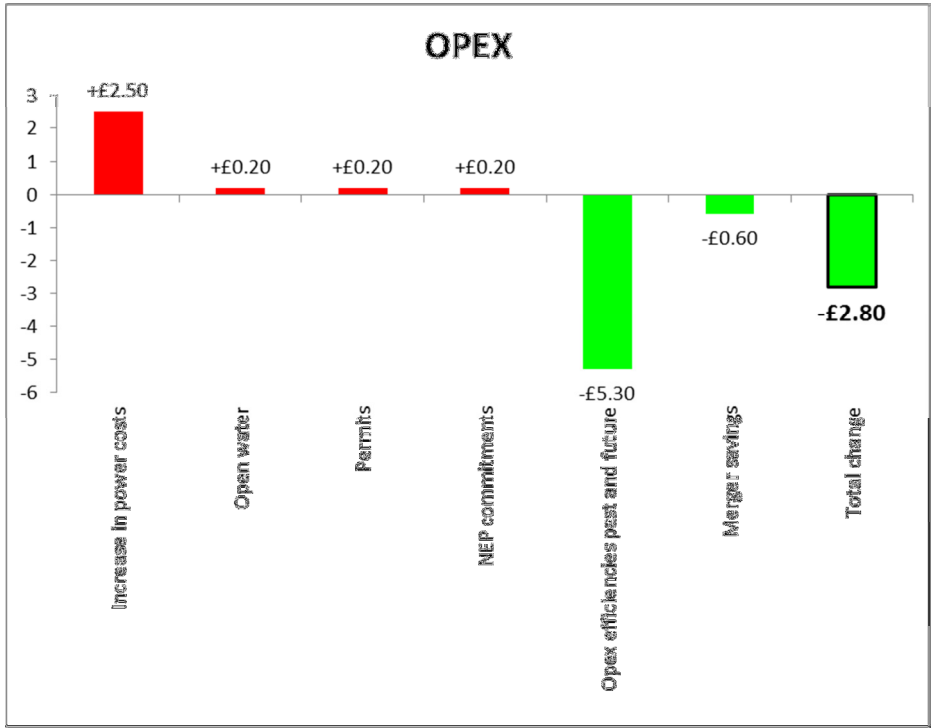
6.7 *Bill Impact of Opex Changes on the 5 year Business Plan*

The 5-year impact of operating cost (opex) changes are summarised as follows:

| | |
|--|---------------|
| Change in power costs | +£2.50 |
| Other opex changes – Opex Water, Permits, NEP | +£0.60 |
| Opex efficiencies – past and future | -£5.30 |
| Merger savings | -£0.60 |
| Total change | -£2.80 |

There is the potential for other opex changes, such as rising debt costs or pension costs. The Company has not included these in the business plan, so is not asking customer's to finance these additional cost pressures. These are risks that the Board are saying will be managed by the Company.

The graph below identifies the changes on average customer bill.



7. Summary of Capital Expenditure

Key Points – Capital Expenditure

| | |
|-----------|---|
| Programme | AMP6 Proposal represents a 13% increase overall Programme includes some large expenditure items, that aren't comparable to the AMP5 programme, i.e. Outwoods Service Reservoir rebuild |
| Challenge | Supported by the CCG and subjected to independent audit, commissioned by the CCG and subsequently ratified by Monson |

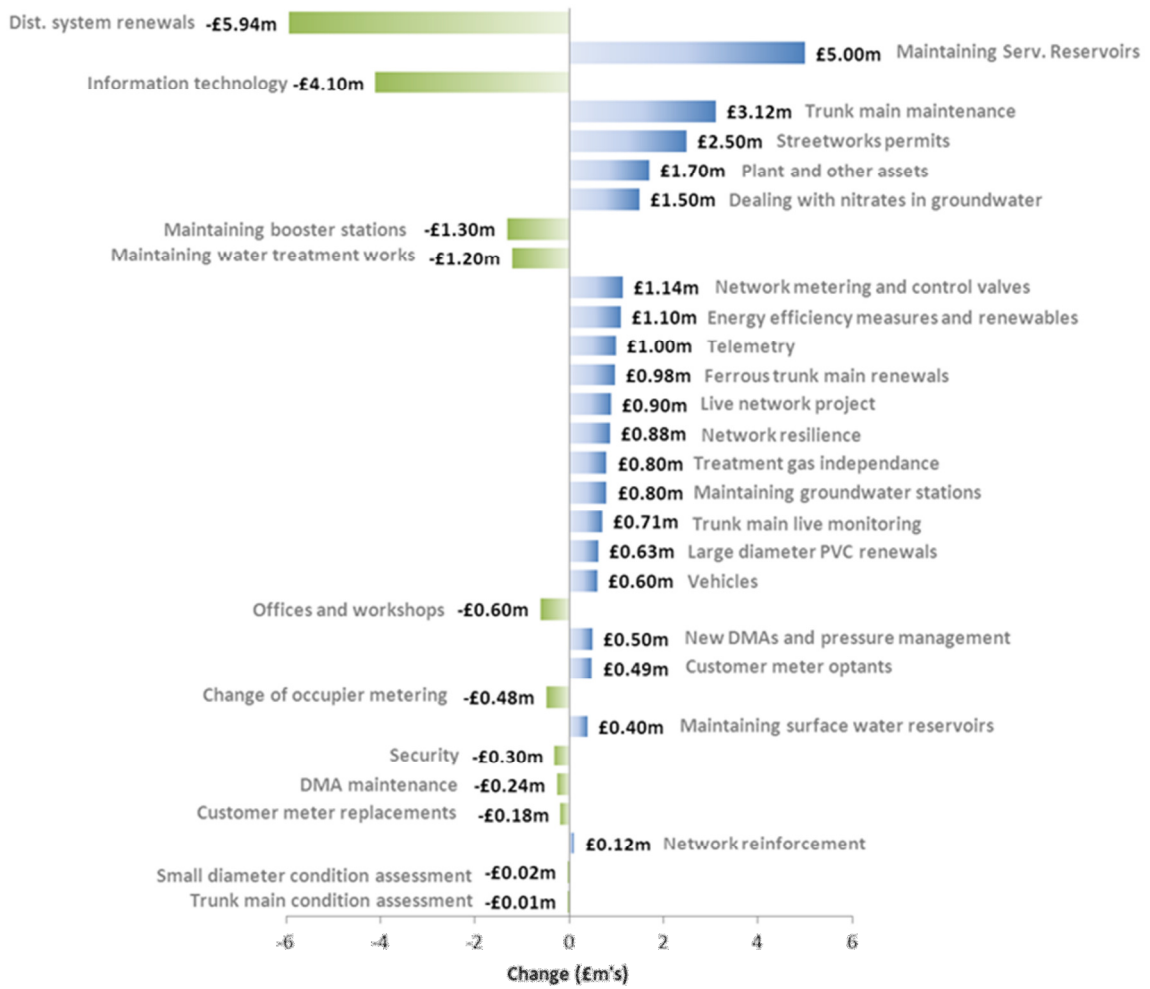
The Company's approach to identifying its AMP6 capital investment plan was carried out using a detailed bottom up appraisal of need; this has been collated over two years. Due to the size of the two regions of the Company, asset management requirements can be reviewed at individual assets level. This bottom up review identification of need was supported, where required, with sophisticated asset deterioration modelling to enable forecasts of future performance to be predicted. In addition to the bottom up identification of need, customer preference has been taken into account by the inclusion of willingness to pay data within the cost benefit analysis. This has ensured that customer priorities have been at the forefront of the investment selection. A review of investment optimisation is included within [Section 5](#) of this document, with further detail in the [Asset Management](#) business strategy document.

The capital programme identified to be delivered in AMP6 reflects an overall increase in expenditure of 13%, this is to ensure the maintenance of existing customer service and the future resilience of the assets is delivered. In addition to this, there are some large expenditure items where comparable schemes are not currently included within the AMP5 programme. The programme has strong customer and CCG support and has been independently reviewed by Monson as part of the CCG engineering scrutiny report.

The summary of the capital plans can be found within the wholesale and retail sections of this document, with the detailed business cases signposted where appropriate.

The diagram below identifies the principal changes between AMP5 and our AMP6 capital investment proposal.

Principle changes in capital expenditure AMP5 - AMP6 (net position +£22m)



8. Totex

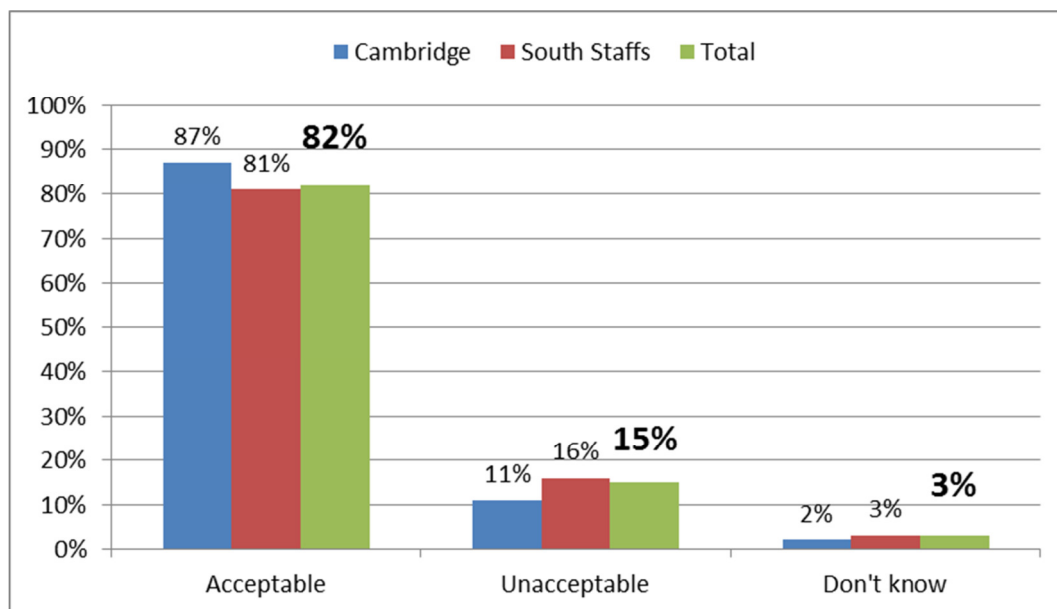
Key Points – Totex

| | |
|--------------|--|
| Capex/Opex: | Capex increases of 13% Opex increase of 2.4% Totex impact of 6.4% increase |
| Bill Impact: | Stable Bill, zero increase in real terms over AMP6 |

The Company has carefully analysed future spend requirements, reviewing the cost benefit analysis (CBA) of different investment options. In order to minimise the impact on customer bills, only activities that are essential to the running of the business or specifically valued by the customer will proceed.

The Board believes the mix of capex and opex solutions chosen reflect an optimum level of totex to meet customers' expectations. There is not a significant statutory or growth programme in this period, the programme is dominated by maintenance spend. If lower capex than proposed was included in this business plan, the likelihood of increased operational costs arising from asset failure, service disruption and poor efficiency would lead to higher customer bills. Likewise, if higher capex was chosen, customer bills would be higher as the offsetting opex reduction would not be sufficient to balance the increase.

The chosen totex level is shown to be cost beneficial, linking the expenditure planned with the customer research undertaken (specifically customers' willingness to pay). Once draft proposals were developed, the Company also embarked on acceptability testing of the proposals to check again that the customers found these to be value for money, in line with their priorities and that the proposals were supported. The customer feedback was very positive. The customer acceptability research was carried out when the increase on bills was proposed at 2.5%, therefore, now that there is a zero bill increase (in real terms) customer acceptability of Company proposals should be greater.



A number of major maintenance schemes are needed in the short to medium term to ensure we can meet customers' expectations of a continuous and reliable supply. These include complete nitrate source refurbishments and a reservoir replacement. The Company has carefully considered the timing of these. Some schemes can be delayed, but this is not

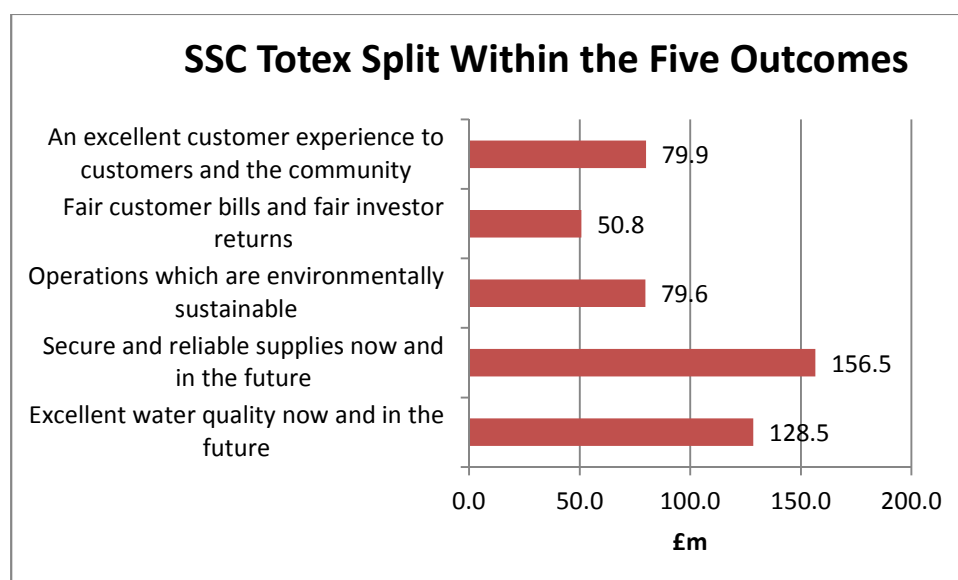
always possible as sources are needed to meet demands and to allow efficient operations. After the AMP6 period there is likely to be a larger environmental programme associated with the Water Framework Directive (WFD) and there are other reservoirs showing signs of deterioration. Hence a long term view of investment needs has been taken and the Company is keen to maintain low bills not only for a further five years, but also into the future.

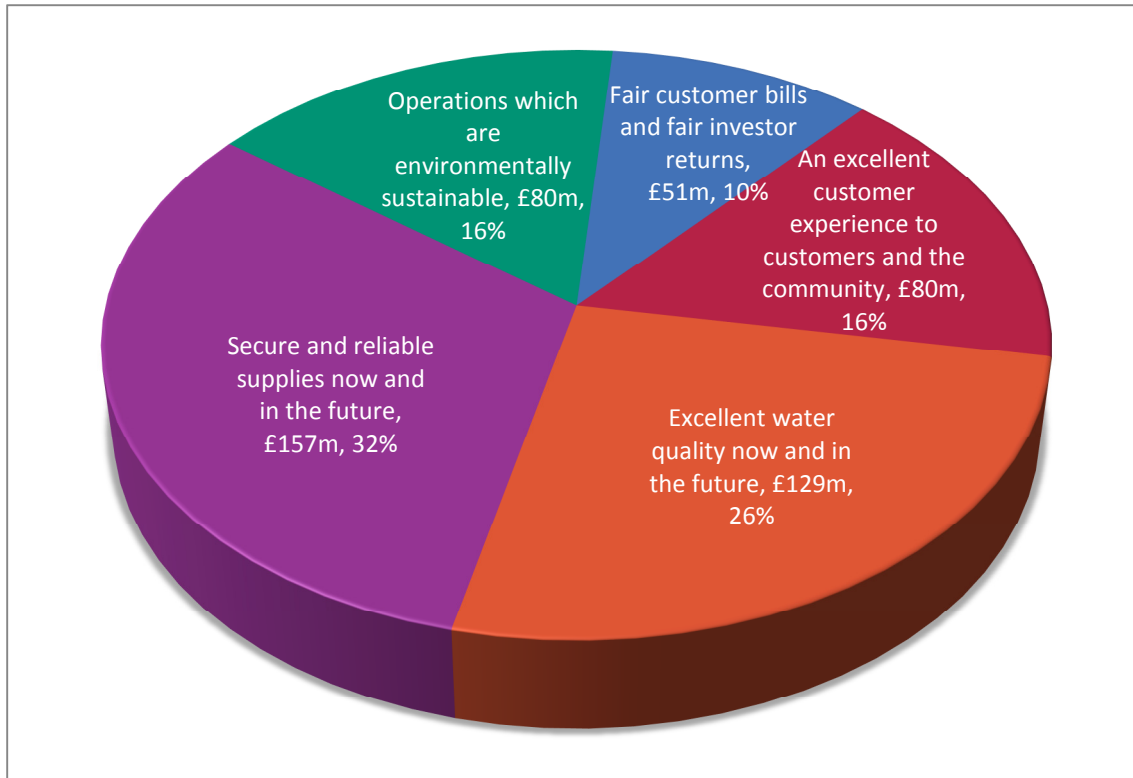
The table below identifies the principal reasons for the opex and capex changes.

| | AMP5 | AMP6 | %Change | Principal Reasons |
|-------|-------------|-------------|----------------|---|
| Opex | £299.4m | £306.7m | +2.4% | Power costs are rising – whilst a national trend this impacts us more than any other due to the topography. |
| Capex | £168m | £190m | +13% | Major spend in the form of reservoir replacement, a new nitrate plant and nitrate station refurbishment |
| Totex | £467m | £497m | +6.4% | As above – but relative to others the absolute totex remains low. |

The additional totex spend is not to improve service, customers told us that current levels of service are good and that we should maintain these. The expenditure is to maintain our current operations and customer satisfaction. The Company has developed service level deterioration models and analysed actual failure experience and this shows that the level of totex spend chosen results in stable serviceability and service levels. This work has been externally verified using companies such as Mott MacDonald and Seams.

In terms of the allocation of spend across the five outcomes, this is shown below:





8.1 Totex in the Longer Term

The Company has produced a [Long Term Strategy](#) document to support this business plan and this is included in the library of supporting material.

Whilst it is difficult to be precise, the AMP7 (2020-25) period includes a number of areas that form an upward pressure for future totex:

- Major storage reservoir replacements and source refurbishments.
- A larger environmental programme associated with the Water Framework Directive and fish/eel statutory schemes.
- An uplift in mains renewals expenditure given that a decision has been taken to reduce spend in AMP6 for a five year period, balancing risk of service failure and customer affordability concerns (the lower level is not sustainable long term given customers' desire for leakage and bursts to be controlled).
- Potential spend on lead pipes and supply pipes.
- Potential spend on UV treatment at major treatment works to address water quality issues (THMs).

The above pressures are upward, but future efficiencies and innovation advances may lead to a downward pressure to counter these areas. These will continue to be explored vigorously but on balance the Company believes the totex trend to be more likely to be upward in the long term, largely due to new obligations arising. This position limits the scope for AMP6 spend to be deferred beyond that which has been identified as possible from our risk-based review.

The Company remains committed to the Water Resources East Anglian (WREA) project group to ensure there is a joined up long-term approach to managing resources in this dry region.

8.2 Innovation and Efficiency

An opex efficiency projection of 0.75% per year is included in this plan, which is three times the level set by Ofwat at PR09. The Board consider this to be very challenging and note that the scope for future efficiency is limited by the progress already achieved and the need to manage risks. At PR09 the Regulator set Upper Band A companies a target of 0.25% per annum. The Company expects to outperform this, with actual AMP5 opex being 5% lower than the PR09 Determination level. The culture of continuous improvement is embedded in the Company and will drive continued cost reduction, with a number of initiatives already identified for the period.

To build on the Company's track record of strong efficiency, it is essential to embrace new technologies and new ways of operating that arise from innovation, best practice and a culture of challenging the way the Company operates. The partners, Group companies and contractors used all operate in strong commercial markets and they need to stay ahead of their competitors to be successful. Equally, there are suppliers and partners such as Cambridge University that the Company works with to generate ideas and new approaches to working in this long term business.

Some of the current exciting innovation projects the Company has commenced, and therefore which helped constitute this plan, are discussed in the [Innovation](#) strategy of this business plan and they include:

| Project | Scope / Objective |
|--|--|
| Risk assessment models of trunk main failures – flood simulation models | This allows a risk register to be further developed so that critical assets are known, based on the consequences of failure. In the future not limited to trunk mains, for example reservoir breaches. |
| Live distribution network technologies | To provide real-time data on the performance of the network so that the Company knows what is happening before customers are disrupted – reducing the need for customers to contact the Company and enabling faster response times |
| Live water quality monitoring | Use of new technology to monitor water quality in the network (e.g. to manage transient turbidity issues) to minimise and resolve customer service issues |
| Pump optimisation automation | Models are already available to identify the cheapest mix of sources to use as demand levels vary – this project develops this to enable the automation of individual pumps to develop this concept further. |
| Identifying practical uses of specific algae to contribute to the low carbon agenda | Innovative work taking place in Cambridge has seen the Company join forces with Cambridge University and the University of East Anglia to research ways of reusing waste created by nitrate removal plants. Practical and commercial uses of algae are being explored. |

| | |
|---|--|
| Pump motor drive development | The Company has recently installed very advanced motor drive technology not previously adopted in the industry, a “synchronous reluctance motor and drive package” that yielded a 5-6% energy saving – this is to be explored further. |
| Water re-cycling in new houses | In Cambridge the Company is working with a major new housing scheme where grey water recycling is planned. |
| Development of infrastructure asset models using asset strings | Allows improved targeting of mains rehabilitation expenditure, which is vital since it is high value (>£15m/year) |

As the Company’s experience of these initiatives evolves, it is clear that the volume of data is high. An improved works management system has been developed based on Qlikview technologies to make data analysis more accessible to field staff and relatively straightforward to undertake. This push makes the innovation projects far more valuable to the Company’s daily operations and is the type of approach that keeps us ahead of other water companies in terms of efficiency.

The Company continues to focus its efficiency drive based on where there are high risks of cost escalation in the supply areas. For example, the operating conditions and demographics are based on high pumping requirements and a deprived customer base in the South Staffs region. Hence the focus on efficient use of power through, for example, a pump efficiency programme and on debt costs through targeted collection activity is very strong. In the Cambridge region there is substantial housing growth envisaged in an already dry area and here the focus is on sustainable abstraction and control of growth costs.

8.3 *Impact on bill*

The impact on customer bills of the totex proposals in this plan is as follows:

| | Bill Impact |
|---|--------------------|
| Higher capital programme | +£5.30 |
| Higher opex – e.g. power costs | +£3.10 |
| Past and future opex efficiencies / innovation | -£5.30 |
| Further opex efficiencies arising from the merger | -£0.60 |
| Overall totex impact | +£2.50 |

This bill impact has been limited by:

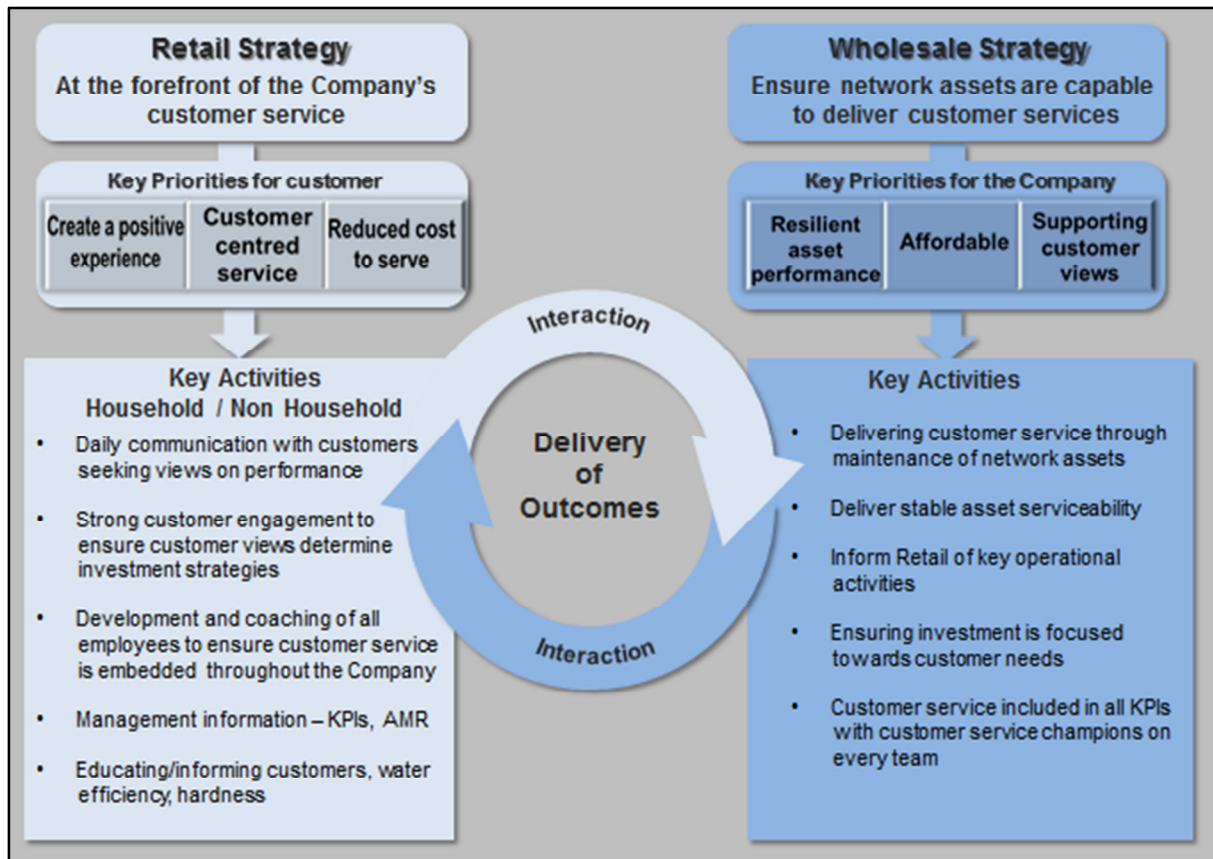
- Early negotiations with energy providers to address the risk of major power price increases.
- Optimising the capital programme in AMP6 to accommodate atypical spend on large assets and balance the overall risks of customer service failure and the need to address affordability.
- Deferral of spend where possible whilst being aware of future cost pressures.

- Adoption of efficiency targets that far exceed the PR09 Determination.
- Careful optimisation of the programme to identify the capex/opex split that has the lowest bill impact yet manages risk of service failure.
- Balancing increased totex with the impact of risk on customers.
- Pragmatic assessment of future cost pressures – uncertain items like changes to business rates have not been included.

Without these seven actions the above bill impact would instead have been much greater.

9. Our Plans (Wholesale & Retail)

The Company is presenting both a Wholesale Plan and a Retail Plan, including both household and non-household, within this document. Whilst the proposals are presented independently, there are clear linkages between the two areas, both in terms of delivery and day- to-day operations.



10. Wholesale

10.1 Introduction


This part of the Business Plan provides a detailed summary on how we will deliver our Outcomes through investment. The detailed more approaches taken to establishing the optimum levels of investment can be found in [Maintaining the Water Quality Compliance and Serviceability of Non-Infrastructure Assets and Maintaining the Serviceability of Network Assets](#) business cases. This section is supplemented with case studies to help articulate the approach and rationale that has been implemented.


Customers and stakeholders have been instrumental in shaping our investment proposals. The Company has listened to what customers want, both in terms of expected service levels and what they are willing to pay for it. The Customer research identified the key priorities customers place on the different aspects of service. With regards to network assets, and the service that they provide our customers, the key priorities were;

- Water Quality was consistently a high priority in all customer surveys.
- Maintaining current levels of service is important.
- Would prefer bills to remain unchanged.
- Customers placed greater value in managing deterioration of asset performance, rather than investing in improvements.
- Leakage levels are an emotive issues for customers, with strong desires to reduce levels, however affordability of bill had a higher priority.






More detail on our approach to customer engagement and the results of our customer surveys can be found in [Customer Engagement](#) business strategy.

When defining the wholesale business plan, these customer priorities were paramount when identifying the optimum investment strategy.

 Secure and reliable supplies

 Fair customer bills

Key Points – Wholesale

| | |
|-------------|---|
| Outcomes: | The Wholesale plan supports the delivery of all of the Company Outcomes, specifically  Excellent water quality  Secure and reliable supplies  An excellent customer experience  Operations which are environmentally sustainable  Fair customer bills |
| Investment: | The AMP6 investment proposals amount to £183m |
| Proposal: | The overarching strategy for the wholesale plan, aligned with customer |

views, is to maintain current levels of service, ensuring future asset resilience, whilst maintaining a low customer bill impact.

In addition to addressing customer priorities, the wholesale AMP6 proposal has been designed to enable effective delivery of the customer supported business outcomes and the associated success criteria, predominantly focusing on the maintenance and resilience of the water supply network.

10.2 The Assets

The Company operates the following assets related to water production, storage and transfer within its distribution networks in the SST region and the CAM region:

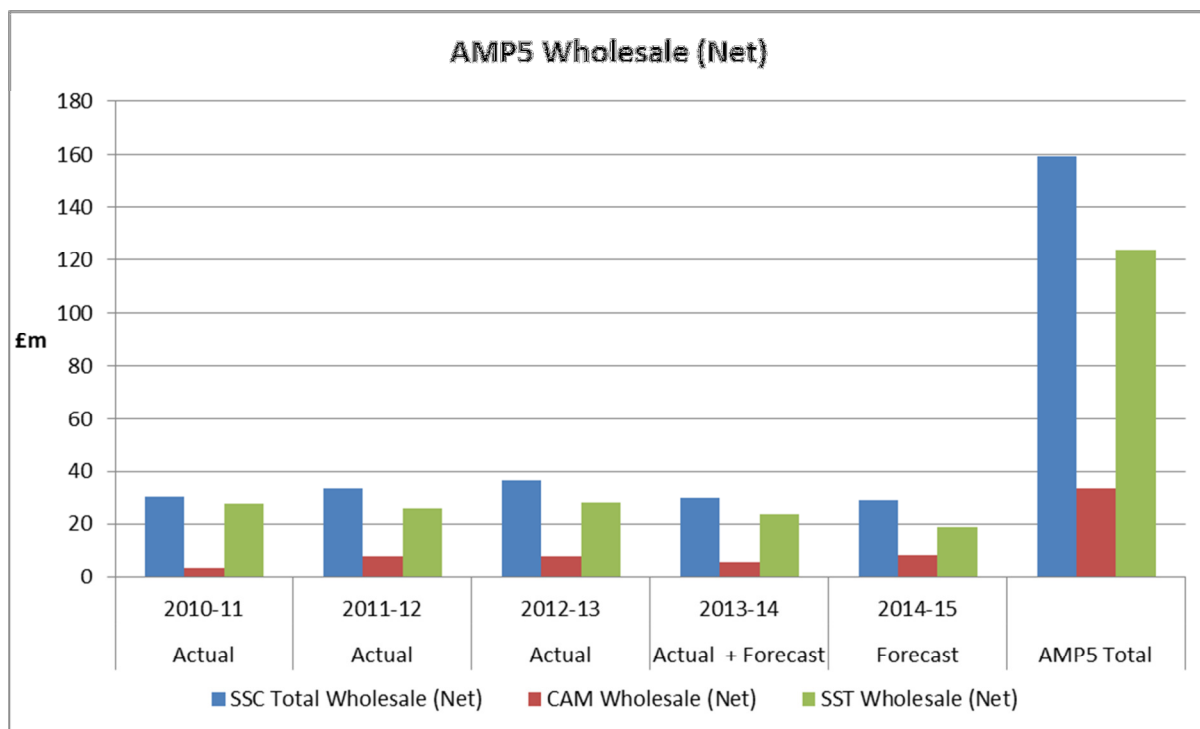
| Asset Type | Function | SST Region | CAM Region |
|--|--|-------------------|-------------------|
| Ground water pumping stations | Abstraction of ground water | 24 | 28 |
| Surface water reservoirs | Storage of raw surface water | 2 | 0 |
| Surface water treatment works | Treatment of surface water | 2 | 0 |
| Service reservoirs and water towers | Storage of potable water | 31 | 32 |
| Booster pumping stations | Boosting of potable water | 44 | 20 |
| Trunk mains | Transmission of water from sources to demand centres | 830km | 652km |
| Distribution mains | Provide water directly to customers | 5969km | 2350km |

The following sections of this document will describe these assets in more detail and present the business strategy and case studies to support the investment needs of these assets.

10.3 Historical Context

In essence the premise of the wholesale plan is to deliver the levels of service our customers have told us, through our engagement process, which they want to see and experience at their tap. In the majority of service areas this amounts to maintenance of current service levels and resilience of this service into the future; however our customers also told us that affordability was equally important. Through a bottom up asset appraisal an investment plan has been identified that maintains current levels of service, whilst balancing both current and future affordability with levels of risk.

During AMP5 the Company will spent c£160m of capital investment to maintain the wholesale assets.



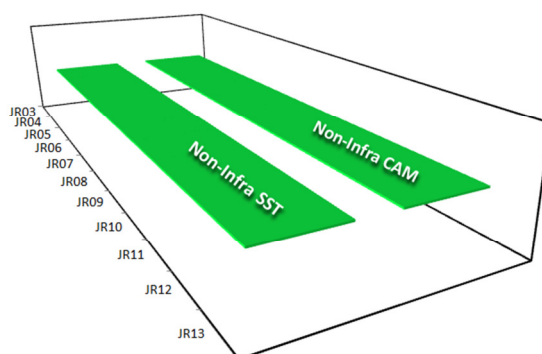
The following sections outline the proposals for AMP6.

10.4 Maintaining the Water Quality Compliance and Serviceability of Non-Infrastructure Assets

This section summarises the Company’s capital maintenance plans for its non-infrastructure assets, in order to maintain their continued compliance with water quality standards and to maintain their stable serviceability for AMP6 and beyond.

Full details of the non-infrastructure capital maintenance plan can be found in the supporting document [Maintaining the Water Quality Compliance and Serviceability of Non-Infrastructure Assets](#). This section is a summary of this plan and is designed to highlight the key methodologies, risks and investment needs for the non-infrastructure assets.

The Company has an excellent history of stable serviceability for its non-infrastructure assets, recording a stable assessment in both the SST and CAM regions since 2003:





Serviceability is a measure of how well the assets can deliver their expected service now and in the future, and is predominantly a trend based approach examining a number of serviceability indicators and comparing them against expected performance thresholds.




The serviceability indicators that the Company will use internally in the AMP6 period remain unchanged from its AMP5 indicators. Reference levels and control limits remain unchanged from those set as part of the PR09 price review. The measures for asset serviceability are intrinsically linked to the performance measures for the Outcomes. The serviceability measures are:

| Indicator | Reference Level SST | Control Limits SST | Reference Level CAM | Control Limits CAM |
|--|---------------------|------------------------------------|---------------------|----------------------------------|
| Water treatment works coliforms | 0.03% | Lower = 0% Upper = 0.1% | 0.13% | Lower = 0% Upper = 0.28% |
| Service reservoir coliforms | 0% | Lower = 0% Upper = 5% | 0% | Lower = 0% Upper = 3.33% |
| Water treatment works turbidity | 0 nr | Lower = 0 nr Upper = 1 nr | 0 nr | Lower = 0 nr Upper = 3 nr |
| DWI enforcement actions | 0 nr | Lower = 0 nr Upper = 1 nr | 0 nr | Lower = 0 nr Upper = 1 nr |
| Unplanned maintenance | 3431 nr | Lower = 2596 nr Upper = 4266 nr | 588 nr | Lower = 470 nr Upper = 706 nr |

The Company will continue to maintain its assets to ensure that they are fit for purpose to serve today's customers and future generations of customers. This capital maintenance plan for non-infrastructure assets will deliver stable serviceability for AMP6 and provide the foundation for stable serviceability into the future for AMP7 and beyond.

The non-infrastructure asset base impacts on all five outcomes as follows:

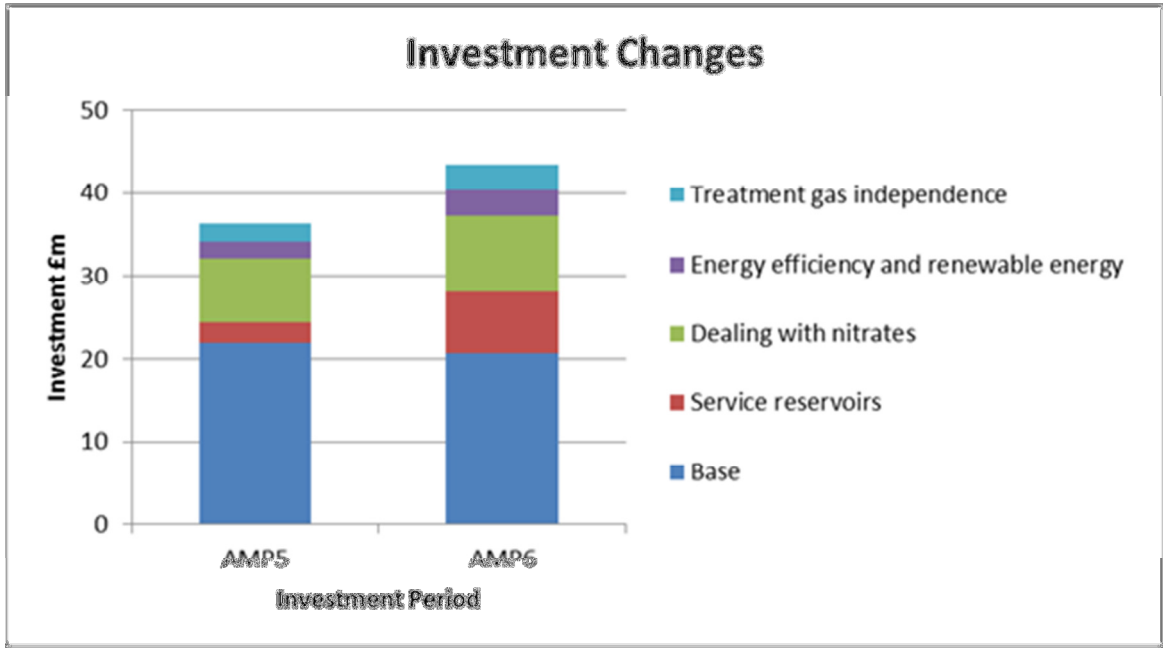
| | |
|---|---|
|  | <p>Excellent water quality (now and in the future)</p> <p>Non-infrastructure assets are strictly controlled by drinking water standards. A large number of water quality parameters are either measured or treated as part of the water abstraction processes which take water out of the ground and from rivers and deliver it into the supply system. It is essential that the Company maintains its assets in a state which will ensure full compliance with quality standards.</p> |
|  | <p>Secure and reliable supplies (now and in the future)</p> <p>It is the non-infrastructure assets that provide the clean high quality drinking water into the supply network for delivery to customers. It is essential that the Company maintains its water production assets to be reliable and able to meet the demands placed on them during peak demand periods and in extreme circumstances, such as drought.</p> |

| | |
|---|--|
|  | <p>An excellent customer experience to customers and the community</p> <p>Although the non-infrastructure assets themselves are quite far removed from customers in terms of direct visibility of operations, they nevertheless have a huge impact on customer service measures. The appearance, taste and smell, pressure and supply reliability of water to the customers taps can all be affected by the non-infrastructure asset base and below par performance in any of these attributes would influence the customer service performance of the Company.</p> |
|  | <p>Operations which are environmentally sustainable</p> <p>The Company's assets interact with the local environments in various ways. This could be the effect of groundwater abstraction on local watercourses or the effects of treatment effluent discharges. The Company takes its environmental responsibilities very seriously and assets must be maintained to ensure compliance with any relevant statutory duties.</p> |
|  | <p>Fair customer bills and fair investor returns</p> <p>Operation of the non-infrastructure assets to abstract, treat and pump water to customers' homes and businesses costs money. The cost of energy and chemicals is rising and a significant labour force is needed to operate and maintain its assets. The Company is continually reviewing how it can drive costs down and in particular power, where rising costs are having significant effects on customer bills at each price review.</p> |

Detailed asset management processes have been undertaken within the business for development of the AMP6 capital maintenance plan. The Company has followed a risk based asset management approach aligned with PAS-55, encompassing the Common Framework and the principles of Ofwat's previous AMA process.

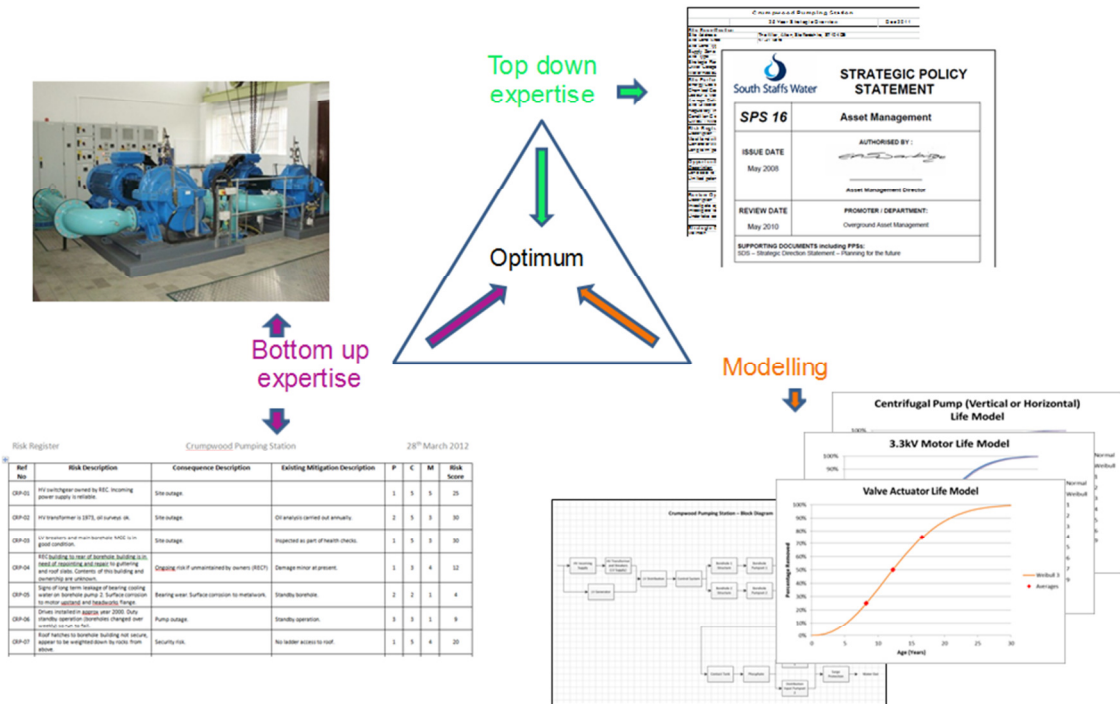
Overall, the Company has utilised a combination of bottom up risk assessments, top down twenty five year planning and deterioration modelling to determine the investment needs for these assets. In house expertise has been supplemented with external consultant support where necessary. The processes followed to determine these investment needs, whilst inevitably geared around the five year regulatory cycle, are nevertheless business as usual. Governance processes which already exist for capital maintenance expenditure within the planning period have been applied to the AMP6 proposals to ensure that the proposals are affordable, fit with the Company's overall strategy, are aligned with customer views and are deliverable from an engineering point of view within the timeframe.

For this Price Review, the Company has built on work it did at PR09 in the use of cost benefit analysis and investment optimisation. Every risk identified through the robust bottom up and top down processes have been scored using the investment optimisation framework and incorporated into a full portfolio analysis along with the risks and needs from other areas of the business. More information on the investment optimisation process can be found in the [Asset Management](#) business strategy supporting document.



The graphic below shows how the Company's top down, bottom up and modelling approaches have come together with the investment optimisation process:

Non Infrastructure Modelling Process



The Company has been through a substantial degree of internal and external challenge before arriving at its final plan.

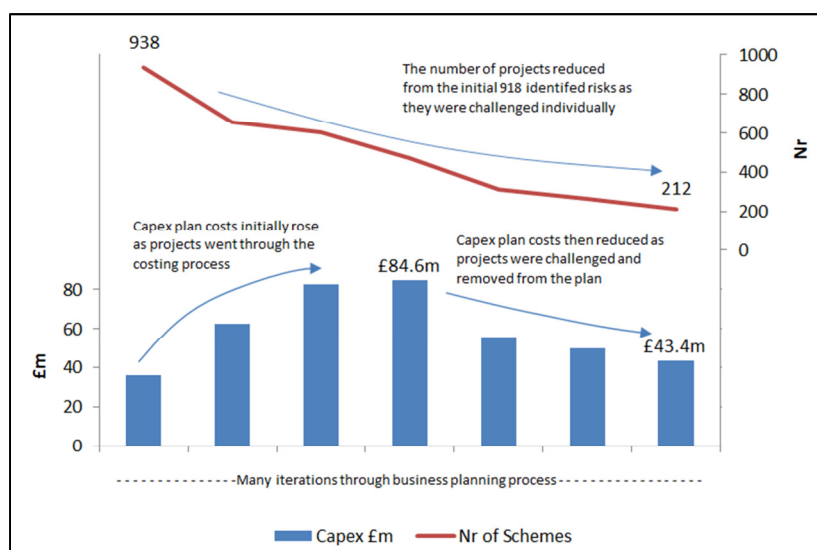
External challenge has been undertaken by the Customer Challenge Group (CCG) utilising Monson for engineering expertise. The challenges made by the CCG have been thoroughly

considered by the Company. More detail on the challenges specific to non-infrastructure assets can be found in the following sections.

Internally, an on-going process of challenge has consisted of several concurrent processes including:

- Validation of the risks identified from the bottom up and top down processes by internal engineers, departmental managers and directors;
- Validation of the assumptions used in scoring those risks within the IO framework, again by internal engineers, departmental managers and directors;
- Consultant support for the large projects such as the reservoir rebuilds and the nitrate plant refurbishments to ensure the engineering judgements and cost estimates are robust; and
- Validation of the portfolio optimisation scenarios (separately for both the SST and CAM regions), to ensure that the capital maintenance proposals deliver the required level of service at an acceptable level of risk and within the affordability constraints set by the business.

There have been multiple iterations of all of the above challenge activities resulting in a significant reduction from earlier predictions of capital maintenance funding. This iterative approach has been used at previous price reviews and really drives down the capital maintenance plan ensuring that only essential interventions are put forward. The journey is demonstrated in the following chart, showing how the total capital maintenance plan for non-infrastructure assets has reduced over time:







The following sections will detail some of the key risks and investment needs for each of the main non-infrastructure asset groups, along with case studies for specific projects and any challenges made by the CCG.

10.4.1 Groundwater Pumping Stations

The groundwater pumping stations are critical assets in the supply of water to customers in both the SST and CAM regions. It is essential that the Company maintains a level of resource availability that allows the delivery of resilient and high quality supplies to customers, both under normal operating conditions and when faced with unplanned and

planned events. The required level of resource availability for each region is set out in the individual Water Resource Management Plans for [SST](#) and [CAM](#).

Key Points - Maintaining the water quality compliance and serviceability of Groundwater Pumping Stations

| | |
|-------------|--|
| Outcomes: |  Excellent water quality now and in the future  Secure and reliable supplies now and in the future  An excellent customer experience to customers and the community  Operations which are environmentally sustainable |
| Investment: | <p>The Company has a number of key themes in this asset group:</p> <ul style="list-style-type: none"> • Borehole maintenance programme • Dealing with rising groundwater nitrates • Treatment gas independence <p>All of these themes are continuations from AMP5 programmes. More detail on each theme will be provided in the case studies below.</p> |
| Proposal: | <p>£23 million across both SST and CAM regions. 12% of IP</p> |

10.4.1.1 Borehole Maintenance Programme

At PR09, the Company put forward a borehole replacement strategy starting in 2010 and continuing through an expected 15 to 25 year timeframe. This was intended to address a number of risks to groundwater supplies that had arisen over the previous 10 to 25 years as these assets become older and their condition deteriorated. This programme was implemented as planned within AMP5 and has been successful. The Company will have drilled four new boreholes by the end of AMP5, and remediated one borehole and one well. This has resulted in an improvement in water quality and reliability from the new assets in service. The activity also includes refurbishment of borehole headwork's to protect against ingress from the surface, and the backfilling of poorly constructed observation and trial boreholes which provide a potential contamination path to the aquifer.

In AMP6 and beyond, a continuing programme for borehole replacement and remediation is necessary to ensure that the Company can keep pace with the deterioration which is taking place and to ensure that replacement needs are not stored up for the future.

The total capital maintenance expenditure on the borehole replacement strategy will be £2m in AMP5. In AMP6 the Company requires £2.6m to continue with the programme. This will allow the Company to drill four replacement boreholes, remediate one borehole and remediate two brick built wells. Additionally the Company will continue to undertake geological surveys on boreholes when the opportunity arises, to ensure that data on borehole condition is up to date and available to inform the on-going strategy. Opportunistic surveys are undertaken on boreholes whenever pumping plant is removed for maintenance or repair as this is the most cost effective time to undertake these surveys.

Case Study – Ashwood Pumping Station:

Ashwood Pumping Station is an 18 MI/d ground water source and is critical to the supply of water in the Springsmire Zone (SST). There are six boreholes on the site constructed between 1892 and 1910. Boreholes 1 and 2 were constructed around 1892, and are no longer operated due to high nitrate levels, and turbidity and conductivity problems.

Boreholes 3 and 4 were constructed around 1900, and are the boreholes currently in service at the site running at 9 MI/d each. Whilst these boreholes are currently below the nitrate PCV, the levels are rising and the trend is forecast to breach the 50 mg/l limit in 2020. There is therefore no standby capacity at the site should there be a failure of boreholes 3 and 4.

Boreholes 5 and 6 were constructed around 1910. The Company has no record of these boreholes ever being used, however initial surveys have suggested that these boreholes are predicted to be in a similar condition to the other boreholes on the site as they were constructed around the same period of time.

CCTV surveys have shown the existing boreholes to be in poor condition with fissures present at various depths.

Assessment of remediation of the existing boreholes along with several drilling options concluded that, given the strategic nature of this site, the most cost beneficial solution is to drill two new boreholes on the site. These will be constructed away from the existing six boreholes to modern standards with appropriate liners and will therefore improve current problems with air and turbidity. Locations have been selected which are assessed to be lower in nitrate levels, to be confirmed by trial boreholes.



The borehole drilling project is estimated to cost £ 996k and proposed to be delivered in the middle part of AMP6, and improve resilience of the site and provide greater operational flexibility.

10.4.1.2 Dealing with Rising Groundwater Nitrates

Many groundwater sites in the SST and CAM regions have high levels of groundwater nitrates as a result of fertiliser use by farmers over several decades. The following case studies details the investment needs and the support received by the DWI for specific projects.

Case Study - Dealing with Nitrates:

Many ground water sites in the SST and CAM regions have high levels of ground water nitrates as a result of fertiliser applied to agricultural land over recent decades. In both regions, a mixture of treatment and blending solutions are used to manage the level of nitrates in drinking water. Nitrate trends in both regions are increasing.

In the SST region a total of eleven sites are above the PCV for nitrate, and three sites have ion exchange treatment plants which were installed in the early 1990's and are now at the end of their operating lives. In the latter, deterioration in condition affecting numerous component parts, control system obsolescence and several plant deficiencies identified through Drinking Water Safety Plan processes could put water quality at risk and outdated design is resulting in inefficient operation. The ground water sources at these sites where nitrate removal plants are located are essential sources within the SST Water Resources Management Plan and intervention is necessary to maintain the availability for supply during a drought. The replacement of these plants to maintain compliance is estimated at £5.8 million.



The Company has received letters of support from the DWI for two specific schemes, with notifications under regulation 28(4) of the 'Water Supply (Water Quality) Regulations 2000' expected in due course.

The first scheme, at Churchill Pumping Station in the SST region, is to lay a new trunk main to blend the high nitrate water from the source with lower nitrate water in another part of the distribution network. In the long term, this option is more cost beneficial than installing a new treatment process. The estimated cost is £1.2 million with additional operating costs of £55k per annum.



The second scheme, in the CAM region, is to install a nitrate removal treatment process at an existing ground water source at Fowlmere. This is a continuation of a programme of nitrate control schemes which started in AMP5 due to increasing trends at many ground water pumping stations. The installation of a nitrate treatment plant is the most cost effective option to achieve compliance with the nitrate standard, and is estimated to cost £2.1 million with additional operating costs of £38k per annum.

In both the SST and the CAM regions, the Company is engaging in catchment management activity for the long term management of rising nitrate trends. The aim of this activity is to provide a sustainable and lower cost alternative to the current high cost methods of dealing with nitrates in ground water through treatment. Two catchments are expected to be investigated in SST, including the Churchill catchment, along with two in CAM including the Fowlmere catchment. These catchment management implementation schemes and investigations are included in the Company's Water Quality NEP for both regions and appropriate funding has been included in the PR14 plan.



10.4.1.3 Treatment Gas Independence

The Treatment Gas Independence (TGI) programme has been on-going in the CAM region since 2012. In the CAM region bottled chlorine gas and bottled sulphur dioxide are used for disinfection of potable water. In the PR09 business plan, Cambridge Water made the case for replacement of these gas dosing systems with liquid dosing systems and ultraviolet light disinfection due to the following drivers:




- The reliance on a single UK manufacturer for chlorine gas raised concerns for supply resilience under the Security and Emergency Measures Direction (SEMD);
- The rising costs associated with bottled chlorine and bottled sulphur dioxide; and
- The high health and safety risks associated with handling and storage of bottled chlorine and sulphur dioxide gases.

Using a risk assessment process the Company has assessed each groundwater pumping stations' dosing needs. This has resulted in reappraisal of ten sites from enhanced disinfection (currently delivered by the gas dosing systems) to marginal chlorination, which will be delivered through the installation of sodium hypochlorite liquid dosing systems. Seven sites still require enhanced disinfection and this will be met through the installation of ultraviolet light disinfection plant along with sodium hypochlorite liquid dosing to maintain the chlorine residual within the distribution system.

This work has already begun in AMP5 with a total of eight plants due to be completed in the period at a forecast cost of £2.2 million which was funded at PR09. A further sixteen plants will be completed in AMP6 at an estimated cost of £3 million.

10.4.2 Surface Water Storage Reservoirs

The SST region has two surface water storage reservoirs supplying its two major surface water treatment works.

| Key Points - Maintaining the serviceability of Surface Water Storage Reservoirs and maintaining the educational and recreational facilities | |
|--|---|
| Outcomes: |  Secure and reliable supplies now and in the future  An excellent customer experience to customers and the community  Operations which are environmentally sustainable |
| Investment: | Refurbishment of some areas of the reservoir perimeters is necessary to prevent bankside erosion. The Company will also continue to invest in specific recreational and educational facilities at Blithfield Reservoir which is of benefit to the local environment and schools from around the region. |
| Proposal: | £0.5 million for maintenance of the reservoir perimeter. £0.4 million for continued provision of recreational and educational facilities. 0.5% of IP |

At Blithfield Reservoir, an earth embankment dam built in the 1930's and 1940's, some bankside erosion has occurred. Refurbishment, along with installation of gabions, is necessary to prevent further erosion and to protect the local area.

Blithfield Reservoir was designated as a Site of Special Scientific Interest in 1987 in recognition of its national importance as a habitat for wildfowl, in particular goosander, widgeon and a wide variety of over-wintering fowl. By providing permissive walks and viewing facilities, visitors share in seeing the varied range of wildlife that is to be found at the site.



The dedicated education facilities on the site are of huge benefit to schools from around the region and small investment is necessary to maintain the facilities.

10.4.3 Surface Water Treatment Works

The Company operates two surface water treatment works in the SST region. It is essential that the Company maintains these sites in a condition that allows the continued delivery of resilient and high quality supplies to customers, both under normal operating conditions and when faced with planned and unplanned events. In average conditions these two treatment works provide around 60% of the supply to the SST region, which makes them both critical sources to meet the demand.

Key Points - Maintaining the water quality compliance and serviceability of Surface Water Treatment Works

| | |
|-------------|--|
| Outcomes: | <p>OUTCOME 1 Excellent water quality now and in the future</p> <p>OUTCOME 2 Secure and reliable supplies now and in the future</p> <p>OUTCOME 4 Operations which are environmentally sustainable</p> |
| Investment: | In AMP3 and AMP4 the Company invested significantly in its surface water treatment works, predominantly for quality and resource enhancement. In AMP5 the onus has been predominantly on maintenance of these assets to ensure continued reliability and water quality compliance. This theme continues into AMP6. |
| Proposal: | £7.6 million. 4% of IP |

The treatment works have many processes and assets, from short life instrumentation, control and monitoring systems, high capacity pumping plant, to long life civil assets such as filters and clarifier tanks. There are also ancillary assets such as the high voltage power supply to the sites with associated transformers and electrical equipment, on site standby generation for providing power resilience and the buildings which house all of this equipment and the site personnel. As can be expected, maintenance of complex works such as these is a continual process and the Company has thorough processes in place to ensure that risks are assessed and monitored, and that interventions, whether capital or operational, are justified and managed appropriately.

Two case studies follow to demonstrate examples of capital projects planned for this asset group in AMP6.

10.4.3.1 Hampton Loade Pipe Bridge

Case Study – Hampton Loade Pipe Bridge:

Located at the Hampton Loade Water Treatment Works in the SST region, the pipe bridge is an elevated road bridge providing a private crossing over the River Severn. The roadway is supported on bearings mounted to concrete plinths at each end of the bridge. The structure is also suspended from the sixty inch diameter raw water pipes which transport raw water to and from Chelmarsh Reservoir, which is the bankside storage reservoir fed by the intake works at Hampton Loade from the River Severn.

Surveys have highlighted cracking in the plinths which support the bridge bearings and spalling of the concrete on support piers. It is essential to undertake repairs on these structures in AMP6 to ensure the integrity of the bridge. The photograph below shows the extent of the issue.




The project is estimated to cost £400k.



10.4.3.2 Seedy Mill Clarifier Refurbishment

10.4.4 Service Reservoirs and Water Towers

The surface water storage reservoirs and water towers are critical assets in the supply of water to customers in both the SST and CAM regions. It is essential that the Company maintains these assets in a condition that allows the potable water to be stored without risk of contamination and without risk of structural defects, which could make a reservoir unsafe to operate. By their nature, service reservoirs have a low likelihood of failure however consequences can be severe.

| Key Points - Maintaining the water quality compliance and serviceability of Service Reservoirs and Water Towers | |
|--|--|
| Outcomes: |  Excellent water quality now and in the future  Secure and reliable supplies now and in the future  An excellent customer experience to customers and the community |
| Investment: | The Company's detailed assessment processes for this asset group have identified that two new service reservoirs are required to be built in the SST region and some refurbishment of pre-stressed structures needed in the CAM region. Under challenge from the CCG one reservoir has been deferred until AMP7. These interventions are essential to maintain the integrity of the structures involved. |
| Proposal: | £7.5 million. 4% of IP |

Based on current average demand levels, the SST region has around 24 hours of storage which is amongst the lowest in the industry, and it is the high flexibility of the Company's network which facilitates this relatively low storage capacity. The CAM region has approximately 46 hours of storage based on average demand levels. These are region level averages but discrete areas within each region will vary.

Over the past ten years the Company has undertaken some major refurbishment work to some of its high capacity reservoir structures in the SST region and this need will continue indefinitely. Concrete and masonry structures will deteriorate and to protect the structural and water quality integrity of the reservoirs the Company must continue to maintain a level of investment to effectively deal with these defects as they arise.

In AMP5 significant internal structural refurbishments to both Gentleshaw Reservoir and Shavers End Reservoir #2 were undertaken to arrest the deterioration which was taking place. Roof membranes were retrofitted to mitigate against the risk to water quality caused by increasingly porous roof structures. Exterior surfaces were refurbished due to deterioration caused by exposure to the environment over many years.

For these refurbishment works the options available were considered in detail including rebuilding and postponement of investment. These projects were funded at PR09 and were delivered as high priority projects within the first two years of AMP5.

The CAM region has eight service reservoirs which were constructed using pre-stressed concrete, applied using circumferential and vertical post tensioning undertaken in-situ during construction. This method of construction became popular in the 1960s during the boom of high rise construction. It allows concrete structures to be lighter in weight as the strength of the concrete is increased through the pre-stressing process. This also means that the

strength of the concrete is highly dependent on the integrity of the reinforcement and corrosion of the reinforcement over time can cause catastrophic failure of the entire structure. This occurred to a reservoir of similar construction at Lanner Hill in Cornwall in 1999, when corrosion of the circumferential pre-stressing meant that the structure was unable to support the weight of the roof.

Since 1992, reservoirs constructed using this method in the CAM region have suffered failures of individual pre-stressing wires. The solution has been to remove or replace the pre-stressing wires. It is essential that regular inspections are carried out to check the condition of the circumferential wires, anchorages and protective grouts to ensure that the structure is not weakened. The Company uses external consultants to provide expertise in the examination and monitoring of these structures.

For the future, there are some very significant risks related to three large reservoir structures in the SST region; namely Outwoods Reservoir #1, Barr Beacon Reservoir #1 and Shavers End Reservoir #2. Two of these reservoirs are well over one hundred years old. For the first time in twenty years the Company is proposing reservoir rebuilds following the extensive options appraisal that has been underway for almost two years. In the CAM region the pre-stressed reservoirs require an on-going monitoring and maintenance regime, and reservoirs of other construction types are approaching ages where they begin to experience marked deterioration of concrete surfaces, metal works and suffer from increased roof porosity.

Initially the Company proposed the construction of both Outwoods Reservoir #1 and Barr Beacon Reservoir #1 in AMP6. However the CCG challenged whether one of these could be deferred until AMP7. This challenge is detailed below:

CCG Challenge

Consider equalising the likely spend on reservoir replacement in AMP 6 with that in AMP 7 by undertaking the work at Barr Beacon No 1 across both AMPs, and thereby reducing the effect on customer's bills in AMP 6.

Company Response

We have reviewed the risks associated with deferring Barr Beacon into AMP 7. Providing an increased monitoring plan is maintained throughout AMP6, and the associated enabling works are delivered within AMP6 to allow an AMP7 year 1 start, the deferral of Barr Beacon is currently considered acceptable. If however the monitoring plan identifies that the condition of the reservoir has deteriorated further this deferral decision will need to be reviewed.

CCG Position

Accepted.

The following case studies demonstrate the investment necessary, firstly in Outwoods Reservoir #1 which will be rebuilt, and secondly for the Bourn pre-stressed reservoir structure in the CAM region.

10.4.4.1 *Outwoods Reservoir Rebuild*



at planning
veloping a
s of AMP 6

10.4.4.2 Bourn Pre-Stressed Reservoir

10.4.5 Booster Pumping Stations

The booster pumping stations are critical assets in the supply of water to customers in both the SST and CAM regions. It is essential that the Company maintains a high level of reliability with these assets that ensures continued resilient supplies to customers, both under normal operating conditions and when faced with unplanned and planned events within either region.

Key Points - Maintaining the serviceability of Booster Pumping Stations



| | |
|-------------|---|
| Outcomes: |  Secure and reliable supplies now and in the future  An excellent customer experience to customers and the community |
| Investment: | In AMP5 the Company spent around £3 million on booster site refurbishment including the construction of two new booster stations to improve supply resilience in specific zones. In AMP6 the Company will spend £1.7 million across both regions. These interventions are necessary to ensure the continual reliable operation of booster pumping stations for the movement of water around the networks and supply to customers. |
| Proposal: | £1.7 million. 0.9% of IP |

10.4.6 Energy Efficiency Programme

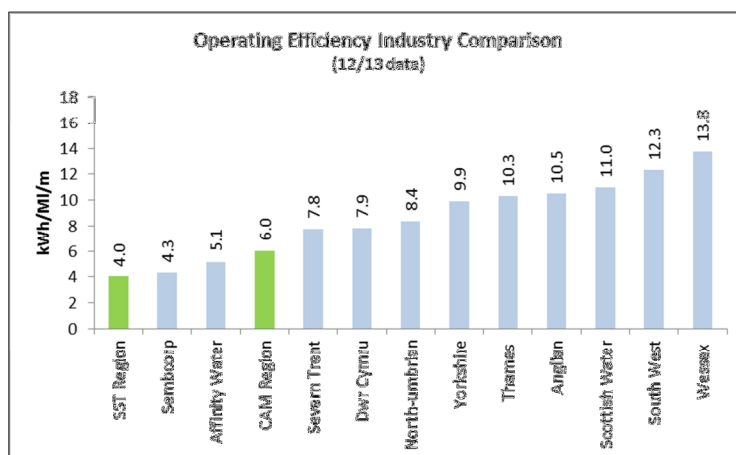
Within the SST and CAM regions the Company has over 300 operational pumps associated with the abstraction of ground and surface waters; and the supply of potable water into and around the Company’s distribution networks. Pumps range in size from approximately 5 kW up to 1,500 kW. It is necessary to undertake performance testing and refurbishment of these pumps to maintain optimum energy efficiency.

The Company typically pumps 150,000 MI of water into its distribution system annually. Of this total, 124,000 MI is supplied in the SST region where the topography requires it to be lifted by an average of around 200 metres. This is higher than any other UK water company. Water supplied in the CAM region is pumped to an average head of 96 metres.

The electrically driven pumping plant performing this function consumes over 100 GWh of grid electricity per year which is 90% of the Company’s total electricity consumption. This represents an operating cost of over £8.6 million per annum which is forecast to rise to £10.6 million by 2020 due to energy price rises. For this reason the efficiency of pumping plant and its rate of deterioration is monitored closely.

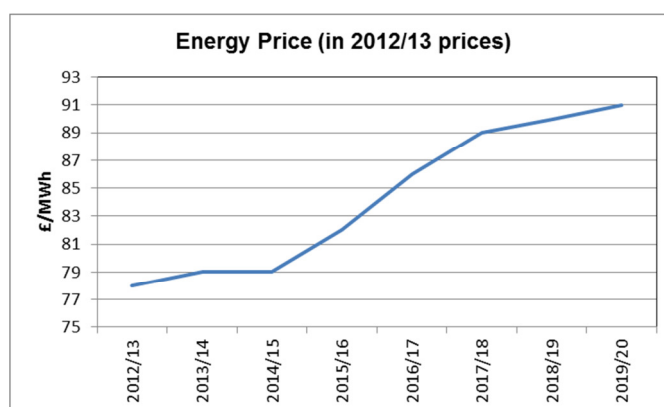
| Key Points - Energy Efficiency Programme | |
|--|--|
| Outcomes: |  Operations which are environmentally sustainable  Fair customer bills and fair investor returns |
| Investment: | The Company has continually invested in monitoring and restoring the energy efficiency of its pumping plant to mitigate as far as is economic, the increasing costs of energy and its carbon emissions. The Company is an industry leader in this activity. |
| Proposal: | £2.3 million. 1.2% of IP |

The industry measure of pumping efficiency is kWh/MI/m which is the amount of energy required to lift one mega litre of water by one metre. A Company average is calculated annually and also internally for each pump as they are tested. The graph below shows a comparison of kWh/MI/m for the SST and CAM regions against the other water companies where the data was available. This shows the SST region to be the most efficient, a position it has consistently held and reflects investment in pumping efficiency improvement over a number of years. The CAM region is also performing well and will continue to improve as cost effective targeted pump refurbishment is undertaken.



Maintaining this level of performance is cost effective. In the last year of AMP4 (2009/10), the efficiency statistic for the SST region was 4.12 kWh/MI/m. This had dropped to 4.00 kWh/MI/m by year 3 of AMP5 (2012/13), representing a net efficiency improvement of 1.48%. When normal decay is added, this represents a gross improvement of 3.16%. This improvement has been delivered through an investment over this time frame of £916k with a corresponding energy saving of £120k per annum.



The price of energy is forecast to rise in real terms over the AMP6 period from 2015 to 2020. A report commissioned from *Bergen Energi* and *Cornwall Energy* by a number of water companies specifically for PR14 discusses how the component parts of the outturn cost of energy are predicted to change. This report has been used to produce the graph below which shows actual and forecast energy prices in real terms from 2012/13 to 2020.



Since 2011 the Company has been reporting carbon emissions under the Carbon reduction Energy Efficiency Scheme (CRC) and since 2012 allowances have been purchased to cover these emissions. Each allowance corresponds to a tonne of carbon dioxide arising from consumption of grid electricity. In phase 1 of the scheme each GWh equates to 541 tCO₂ and each allowance costs £12. Phase 2 commences in April 2014 when allowances will be charged at £16 per tCO₂, a 33% increase in cost.

10.4.7 Utilisation of Renewable Energy

The Company has undertaken detailed investigations into the provision of renewable energy within its regions. Initially investigations were focused on installations of wind turbines with the key criterion being that most of the energy generated must displace grid electricity consumption of an asset operated by the regulated business.

| Key Points - Utilisation of Renewable Energy | |
|--|---|
| Outcomes: |  Operations which are environmentally sustainable  Fair customer bills and fair investor returns |
| Investment: | Solar photovoltaic (PV) technology has been assessed and a number of potential suitable locations for its installation were identified with support from a specialist contractor, <i>Myriad CEG</i> . The benefits from using this technology to displace grid electricity, and any income from direct generation will be passed on to customers. |
| Proposal: | £0.8 million. 0.4% of IP |

A survey of the sites showed that it is possible to install 25kW solar PV plant at three locations; 50kW at one; 100kW at three; 200kW at one; and 500kW at one. This would give a total installed capacity of 1125kW. The table below gives a breakdown of the costs associated with this investment and corresponding income and carbon emissions savings.

| | |
|---|--------------------------|
| Total Installed Capacity | 1125 kW |
| Estimated Capital Cost | £792k |
| Energy Generated | 905,814 kWh |
| Annual Maintenance Costs | £12k |
| Annual Energy Costs Saved | £96k |
| Annual Feed in Tariff Income | £81k |
| Annual Tax | £20k |
| Annual Net Income | £147k |
| Payback | 5.4 years |
| Annual Operational Emissions Saved | 453 tCO ₂ /yr |

The energy saving is based on the predicted delivered energy and current electricity tariffs. The feed in tariff (FiT) income is also based on the delivered energy and the FiT at the time the analysis was undertaken. FiT is a subsidy that can be claimed for every kWh of energy generated. Different rates of FiT apply to different technologies and capacities and these are periodically adjusted according to a regression mechanism described in legislation.

The technology also reduces operational CO₂ emissions and gives long term price certainty for a proportion of the Company's electricity consumption.

10.4.8 Engagement and Challenge with the CCG

The Company's plan for maintaining the water quality compliance and serviceability of non-infrastructure assets in AMP6 has been through many iterations of challenge internally, using the Company's own processes, and externally using the Customer Challenge Group (CCG) directly.

During the course of the CCG meetings, the group decided that some elements of the Company's capital maintenance plan would benefit from additional scrutiny by an engineering professional with experience in dealing with technical engineering projects. The Company welcomed this suggestion as it was an opportunity to validate the outcomes of the Company's thorough asset management processes and the engineering needs of the asset base going forward.

The CCG appointed Mr M. Reid of Monson, who was previously the Company's regulatory reporter. Mr Reid has extensive knowledge of the Company from his previous regulatory auditor role and this meant that he was well placed to provide the CCG with an efficient service and robust scrutiny of key elements of the Company's maintenance plan. Mr Reid was appointed by the CCG, not by South Staffs Water, and he was accountable to the CCG during the period of scrutiny.

The tables below list the challenges relevant to this section of the capital maintenance plan which have been made either from the CCG directly or from the engineering scrutiny audit, along with the Company response.

CCG Challenge

Can some expenditure be deferred until after 2020?

Company Response

Much proposed expenditure has been deferred, with only essential spends on assets to go ahead in this period. An independent review of expenditure is being carried out on behalf of CCG by Mike Reid of Monson Engineering

CCG Position

Following the independent review and subsequent challenges made through the CCG the group welcomed the deferment of work such as the replacement of Barr Beacon Reservoir until AMP 7.

CCG Challenge

Is it possible for investment to rise, but bills to fall through efficiency improvements and better targeting?

Company Response

Action is being taken to minimise the increase, for example, by deferring some capital expenditure. The company has stretching efficiency targets in the next AMP and is balancing all elements of its plan to keep bills as low as possible whilst meeting customer needs confirmed through customer research.

CCG Position

Agreed that appropriate action is being taken, including the improved targeting of capital maintenance work.

CCG Challenge

Is spending on nitrate removal simply a way to secure extra capital spend?

Company Response

Research has shown that water quality is the top priority for customers. Without this capital spending, water quality standards may not be met. In addition, the benefits of relevant technology would be lost and more expensive alternative water sources may have to be used.

CCG Position

Agreed, the CCG recognises that the new nitrate plant at Fowlmere has DWI support and is pleased that the number of nitrate plants to be replaced has reduced from 3 to 2.

CCG Challenge

Consider equalising the likely spend on reservoir replacement in AMP 6 with that in AMP 7 by undertaking the work at Barr Beacon No 1 across both AMPs, and thereby reducing the effect on customer's bills in AMP 6.

Company Response

We have reviewed the risks associated with deferring Barr Beacon into AMP 7. Providing an increased monitoring plan is maintained throughout AMP6, and the associated enabling works are delivered within AMP6 to allow an AMP7 year 1 start, the deferral of Barr Beacon is currently considered acceptable. If however the monitoring plan identifies that the condition of the reservoir has deteriorated further this deferral decision will need to be reviewed.

CCG Position

Accepted.

CCG Challenge

Consider the asset life at Bourn No 2 reservoir after refurbishment and replacement and from that determine the best value option for customers. Look at options at St. Ives reservoir which would allow for regular inspection and maintenance of the existing

reservoir and provide for a second feed to zones served by that reservoir.

Company Response

Asset life for a refurbishment is conservative as would be expected to protect the supplier from guarantee and warranty exposure. It is extremely likely looking at the proposed engineering solution that a significantly longer life will be achieved. The Bourn supply zone is earmarked for significant further development in the next 15 years (i.e. within the guaranteed life of the refurbishment works) which will provide the opportunity to potentially reinforce the network and review security of supply to the Bourn zone. The proposed St. Ives Res. works include provision for a second feed into the zone currently discretely supplied by the single reservoir at St. Ives.

CCG Position

Accepted. Pleased to see that a second feed is to be provided to the St Ives zone which means that the reservoir can be temporarily bypassed to allow for inspection and maintenance.

CCG Challenge

To produce a model showing operating cost savings from each of the sources when the nitrate plants have been replaced and equate that to total opex saving in AMP 6. Also, see possible challenge on level of overall investment programme.

Company Response

Model based on data from Cambridge nitrate plants commissioned during AMP5, indicates that this approach is totex cost beneficial.

CCG Position

Accepted.

CCG Challenge

If the DWI issues an undertaking then the proposal for a new nitrate plant at Fowlmere could become a requirement. The challenge would then be what alternative options do they have should planning permission not be granted for a plant at the present Fowlmere site.

Company Response

In short, none. It is not automatically the case that the site is green belt and therefore at risk of planning application decline. Green belt in Cambridgeshire surrounds the city and this may be outside of the prescribed area. We could/would legally challenge planning as we did at Fleam Dyke several years ago on the basis that there was no alternative.

CCG Position

Accepted on the basis that any additional costs are borne by the Company without increasing customer bills.

CCG Challenge

On the level of risk taken in its above ground assets programme if the concern is that the overall investment programme for AMP 6 is significantly higher than in AMP 5 and areas need to be sought for savings in the short term (next five years).

Company Response

The increase in expenditure is due to the need to undertake the nitrate plant refurbishments and the reservoir replacements. The remainder of the programme is in line with expenditure in AMP5. We have taken a pragmatic approach with our bottom up identification of risks process and have been through several iterations of our baseline maintenance expenditure. Our process ensures that our plan is the minimum level of spend necessary to ensure secure, reliable and regulatory compliant supplies from the above ground assets during AMP6. The delivery of the overground schemes specifically nitrates schemes have been programmed for AMP6 to ensure there is minimum risk to customer service. The programme reflects all work including programmed maintenance

such as reservoir cleaning and consideration has been made with regards to strategy storage and maintaining appropriate deployable output levels to reduce any risks to customer service.

CCG Position

Accepted that level of risk taken in approach to AMP 6 programme is at or about that taken in AMP 5 particularly now that the number of nitrate plants to be replaced has reduced from 3 to 2.

CCG Challenge

To review the need to replace all sample lines at the proposed frequency given the very significant uplift in expenditure, and consider a smaller step change with monitoring to check acceptability of that less frequent replacement frequency.

Company Response

The company has previously replaced sample lines as a low priority following failures of samples attributed to sample lines. The DWI has given messages that sample lines cannot be used as an excuse for failures and there is greater emphasis/scrutiny on a Company's approach to maintenance of sampling facilities. The Company's proposed frequency is based on targeted performance monitoring of sample facilities and the likelihood of a failure if the sample lines are not replaced.

CCG Position

Accepted that increased frequency is required but would advocate a review of replacement regime during AMP 6 to ensure that the most cost effective replacement programme is being followed.

10.4.9 Summary of Capital Maintenance Requirements for Overground in AMP6

This plan for Maintaining the Water Quality Compliance and Serviceability of Non-Infrastructure Assets is the result of several years of investigations to understand risks to service of the water production assets in both the SST and CAM regions.

The Company has followed a robust internal asset management process and has engaged with customers in detail on what elements of service are most valued. Engagement with the CCG has focussed on detailed elements and specific large projects within the plan which the Company has put forward.

The one off interventions and continuing work programmes and strategies put forward in this plan will ensure that water supplies continue to be resilient and meet the high quality standards expected by customers and set by regulators.

The table below shows the expenditure in line with the themes used within this document, and compares the AMP5 forecast and AMP6 planned expenditure for the combined SSC water undertaker.

| Theme | AMP6 Investment | AMP5 Comparison |
|--|-----------------|-----------------|
| Maintaining groundwater pumping station reliability and quality compliance, borehole maintenance programme | £2.8m | + £0.8m |
| Maintaining groundwater pumping station reliability and quality compliance, civil refurbishments | £0.8m | £0 |
| Maintaining groundwater pumping station | £7.3m | £0 |

| | | |
|---|---------------|------------------------|
| reliability and quality compliance, mechanical and electrical refurbishment | | |
| Dealing with nitrates at groundwater pumping stations | £9.1m | + £1.5m |
| Treatment gas independence (TGI) in the CAM region | £3 | + £0.8m |
| Maintaining surface water storage reservoirs | £0.5m | + £0.4m |
| Maintaining water treatment works reliability and quality compliance, civil refurbishments | £1.5m | - £0.3m |
| Maintaining water treatment works reliability and quality compliance, mechanical and electrical refurbishment | £6.1m | - £0.9m |
| Maintaining energy efficiency of pumping stations and installation of renewable energy plants | £3.1m | + £1.1m |
| Maintaining structural integrity and quality compliance of service reservoirs | £7.5m | + £5m |
| Maintaining booster pumping station reliability, mechanical and electrical refurbishment | £1.7m | - £1.3m |
| | £43.4m | + £7.1m (19.6%) |

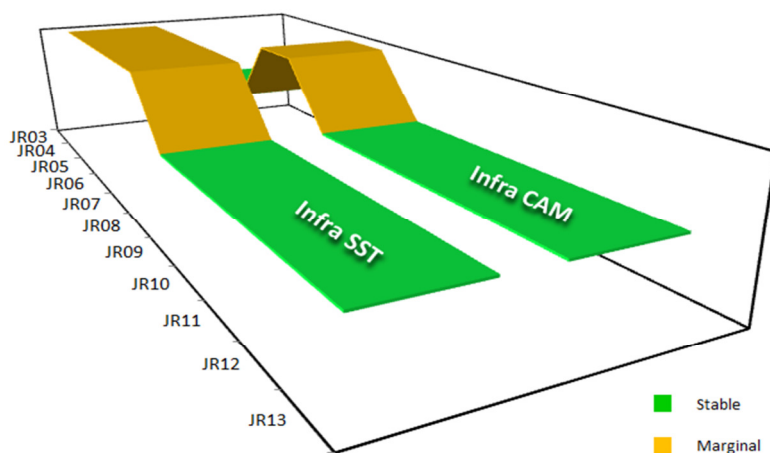
Whilst the water production non-infrastructure assets as a whole require uplifts in capital maintenance expenditure of around £7.1 million, it should be noted that this includes the quality compliance schemes for which the Company has sought DWI support. In total, the DWI have supported and intend to issue notices for approximately £2.3 million which is predominantly to support the Company's required interventions to deal with rising groundwater nitrate levels ([Section 9.6 Water Quality and SEMD](#)). An additional £1.8 million for the Treatment Gas Independence programme in the CAM region is driven by resilience needs under the Security and Emergency Measures Direction and is therefore also necessary. These obligations summate to £4.1 million of the £7.1 million increase. As can be seen from the table above, the Company has traded off expenditure requirements within the non-infrastructure assets (this commentary) to help fund assets which require uplifts in expenditure. This has been done with full consideration and detailed analysis of the individual assets involved and the risks they present over the next 25 year period. The Company has also traded off expenditure requirements from other areas of the business to help fund these small but necessary uplifts.

The Company has undertaken a thorough cost benefit analysis and portfolio level optimisation of its AMP6 proposals across the business using its *Investment Optimisation* framework. This process has provided the Company with a means to derive the best whole life net present value from its proposed investment portfolio, working within both performance and cost constraints. The plans presented in this document represent the outcomes of the optimisation process.

Of the £43.4 million for Maintaining the Water Quality Compliance and Serviceability of Non-Infrastructure Assets, 81% is cost beneficial, excluding regulatory driven schemes and projects continuing from AMP5.

10.5 Maintaining Serviceability of Network Assets

This section summarises the Company's capital maintenance plans for its network assets, which aims to maintain their stable serviceability and resulting service to customers for AMP6 and beyond.



The Company achieved stable serviceability for its network assets in 2007/08 for both the South Staffs and Cambridge regions, following a period of marginal performance where burst mains were a particular issue. This level of service has been maintained throughout AMP5.

Network serviceability is assessed using six key service indicators, for which the Company have expected performance thresholds.

These service indicators are shown in the following table are directly linked to the performance measures associated with the Company Outcomes.

| Indicator | Reference Level SST | Control Limits SST | Reference Level CAM | Control Limits CAM |
|--|---------------------|-------------------------------|---------------------|-------------------------------|
| Burst mains | 1210 | Higher = 1149 Lower = 971 | 327 | Higher = 390 Lower = 263 |
| No water complaints | 60 | Higher = 120 Lower = 0 | 12 | Higher = 66 Lower = 0 |
| Low pressure complaints | 0 | Higher = 47 Lower = 0 | 17 | Higher = 34 Lower = 0 |
| MZ non-compliance Iron (%) | 0.165 | Higher = 0.38 Lower = 0 | 0 | Higher = 0.16 Lower = 0 |
| MZ non-compliance Turbidity, Iron and Manganese (%) | 0.03 | Higher = 0.12 Lower = 0 | 0 | Higher = 0.2 Lower = 0 |
| Discolouration complaints (per 1000 population) | 1.11 | Higher = 1.49 Lower = 0.74 | 0.23 | Higher = 0.29 Lower = 0.17 |




The on-going achievement of the individual serviceability targets requires a complex range of capital investment and operational activity. Full details of the capital maintenance plan can be found in the supporting document: [Maintaining the Serviceability of Network Assets](#). This section is a summary of this plan and is designed to highlight the key methodologies, risks and investment needs.

The Company is confident that its investment strategy will continue to deliver high levels of serviceability from network assets, during AMP6 and for future generations.

The performance of the 8,300km network is critically important for managing the service experienced by customers, delivering 400 million litres of water to a population of 1.5 million every day. In addition to hitting serviceability targets, the Company is determined to ensure that the customer experience is also managed. In order to do this, the investment strategy has been optimised against areas of service that customers value, as described in the Company's outcomes:




| | |
|---|--|
|  | <p>Excellent water quality (now and in the future)</p> <p>This can be managed by renewal and refurbishment of mains, maintenance of fittings, operational flushing of the network and live monitoring of in-network water quality parameters.</p> |
|  | <p>Secure and reliable supplies (now and in the future)</p> <p>This outcome receives the most benefit from the network investment strategy. Mains renewal, maintenance of fittings, network resilience / reinforcement and the maintenance of control valves all contribute towards maintaining a reliable platform for conveying water from pumping stations to customer taps.</p> |
|  | <p>An excellent customer experience to customer and the community</p> <p>The proposed programme will contribute towards responsive and informed customer communication, especially projects such as the 'live network'.</p> |
|  | <p>Operations which are environmentally sustainable</p> <p>The achievement of this outcome relies on managing leakage, and maintaining the trunk mains network to ensure efficient pumping.</p> |
|  | <p>Fair customer bills and fair investor returns</p> <p>The Network investment strategy proposed has been carefully considered to optimally balance immediate capital expenditure with on-going operational costs. The Company has also taken care to avoid under-investing, compromising future performance of these assets at the expense of future generations.</p> |











The Network investment strategy is defined within three key areas:

-  Trunk Mains and Resilience
-  Distribution System Renewals
-  Leakage Management

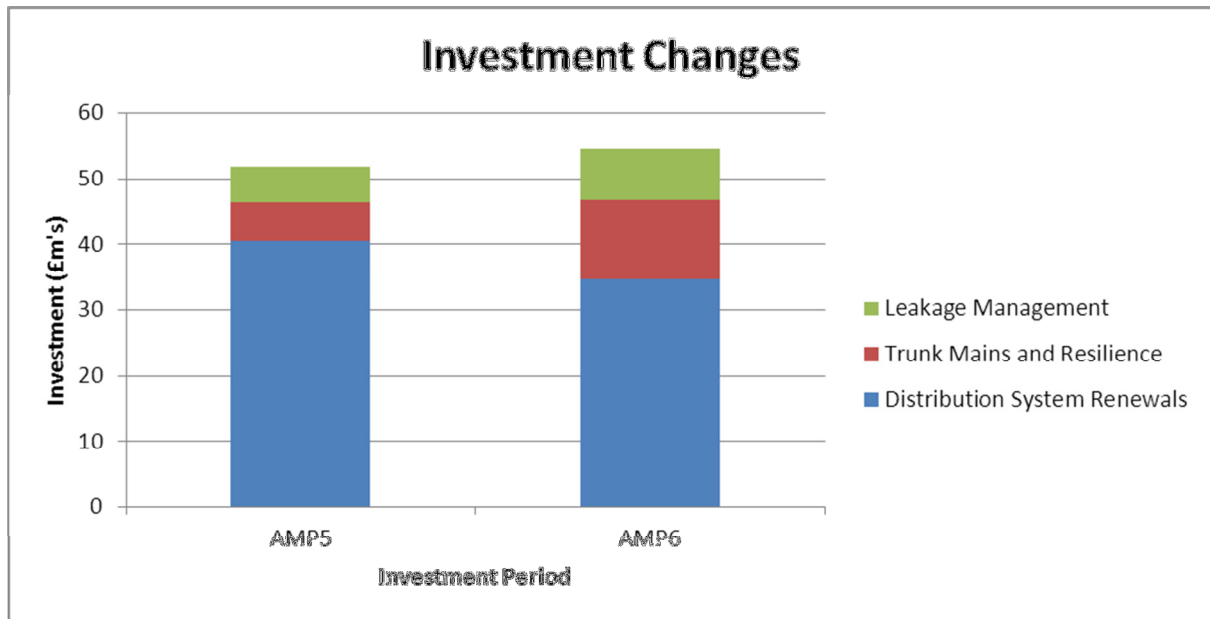
Headline contents of these three areas are:

More focus on trunk mains

-  Increased amount of trunk main renewal in AMP6 – although the programme has been carefully considered to avoid large bill impacts, while balancing risk to customer service.
-  Continued programme of trunk mains maintenance.
-  Increased investment in high risk assets such as pipe bridges and non-return valves.

| | |
|---|---|
|  | Maintenance and upgrade of cathodic protection systems on strategic pipelines. |
| Uplift in network reinforcement and resilience | |
|  | Higher investment to target vulnerable areas of the network, responding to customer values for reliability of supply. |
| Deferral of large diameter PVC mains renewal work | |
|  | Extending the proposed replacement of all large diameter PVC mains over one extra AMP period, using a risk based approach. The Company is still intending to renew all of these high risk assets and still prioritising the 'highest risk' PVC mains for AMP5 and 6, but deferring schemes to AMP7 where possible in order to make the forthcoming plan more affordable. |
| Less small diameter mains renewal, with continued maintenance programme | |
|  | A reduction in the renewal of distribution mains is proposed for AMP6 for both regions to create an affordable plan, whilst still maintaining performance over this period. This is possible due to the achievement of stable serviceability, but also due to an on-going programme of burst management through improved effectiveness of renewal targeting and on-going pressure optimisation. The reduction in spend also offsets an increase in the amount of large diameter main renewal and maintenance activity required. |
|  | Maintenance activity such as network flushing and proactive replacement of CPs under R&M is proposed to continue at current levels. |
| Revised leakage targets | |
|  | New targets derived through analysis based on the principles of the sustainable economic levels of leakage, to provide best overall value for customers and the environment. AMP6 targets are being proposed as a range to allow for extreme weather impacts. |
| Implementation of a live network | |
|  | Developing the capability to remotely assess, monitor and control the distribution network, delivering a more responsive and reliable service to customers. |
|  | Monitoring high consequence trunk mains. Avoiding the need to renew high risk assets by mitigating the consequences with more cost effective monitoring solutions. This will help provide the potential for advanced warning of catastrophic trunk main failures; enabling pre-emptive actions to be taken to reduce or prevent customer impacts. |
| Smarter asset management | |
|  | Asset management of infrastructure and non-infrastructure assets has been combined under one asset management plan and team, allowing management of risks across the entire network. |
|  | Integrating knowledge and processes from across the Cambridge and South Staffs regions and exploring innovative approaches to deliver better solutions for customers. |

The levels of investment proposed for the maintenance of network assets is increasing to £54.6m for AMP6; up by 5.3% since AMP5. The chart below shows the breakdown of these amounts across the three key areas, demonstrating the increased focus on trunk main assets and network resilience. This has then been offset by reductions in small diameter distribution and large diameter PVC renewals, ensuring that the plan remains affordable for customers.



The following sections summarise the proposals in each of the three key areas. Further detail on scheme identification, selection and supporting business cases can be found in the [Maintaining the Serviceability of Network Assets](#) document.

10.5.1 Trunk Mains and Resilience

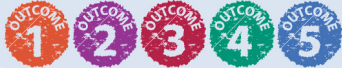
Trunk mains are an integral part of the distribution network and failures can potentially have large scale consequences. The Company has been evolving a strategy for these assets throughout AMP5, aiming to ensure that investment is sufficient to maintain serviceability now, yet also wide enough in scope to ensure secure and sustainable performance for future decades, with the aim of avoiding the need for unaffordable ‘step changes’ during future price reviews, something our customers have told us that they do consider to be appropriate.

There are 830km of trunk mains in the South Staffs region and a further 652km of trunk mains in the Cambridge region. These are disproportionately high lengths of main relative to the total length of the two regional networks, ranking the combined Company (SSC) 4th in the industry (based on diameter banded asset lengths from shared June return data). In the Cambridge region, this high proportion of trunk mains is required to support the large number of groundwater stations. In the South Staffs region, this high proportion of trunk mains is characteristic of the highly urbanised and industrial demographic. This high proportion of assets is potentially challenging and expensive to maintain, necessitating a thorough and innovative approach for developing investment needs.

The Company is confident that the proposals constitute a sensible compromise for managing trunk mains, ensuring recommended AMP6 projects are affordable with maintenance being preferred to renewal, but also concentrating on innovative ways to minimise risk and build understanding. However, it is the Company’s expectation that trunk mains and associated fittings renewal will need to increase from AMP7 for SSC and the rest of the industry, therefore, some of the proposed AMP6 investment is rightly focussed on ensuring that the Company is at the forefront of the industry with its detailed risk analysis of every section of pipe. This risk analysis will ensure that future increases in investment can be minimised and any investment can be targeted as effectively as possible.

There are a large number of projects proposed for managing trunk mains during AMP6, summarised at high level within the following sections:

10.5.1.1 Trunk Main Condition Assessment

| Key Points – Trunk Main Condition Assessment | |
|--|--|
| Outcomes: | Facilitates the creation of the trunk mains risk register, indirectly supporting the delivery of all customer outcomes:  |
| Investment: | Very similar to previous AMP, due to continued need to develop knowledge on trunk mains |
| Proposal: | £0.3m = 0.16% of SSC IP |


Effective risk assessment for trunk main assets relies on a reliable estimate of failure probabilities. The Company has undertaken a programme of condition assessment over the last decade and intends to continue this programme throughout AMP6.

The proposed activity is vital for building the Company's trunk main risk register and for targeting other intervention work.



Figure 1: non-destructive testing of a trunk main

10.5.1.2 Trunk Mains Maintenance

| Key Points – Trunk Mains Maintenance | |
|--------------------------------------|--|
| Outcomes: |  <ul style="list-style-type: none"> 1 Excellent water quality 2 Secure and reliable supplies 5 Fair customer bills |
| Investment: | Only 2% of total IP, but still significant uplift from previous AMPs. Proposed schemes are necessary for ensuring operability and reliability of trunk mains network. |
| Proposal: | £3.2m = 2.0% of SSC IP |

The Company has undertaken a significant amount of inspection and maintenance work on trunk main and ancillary assets during AMP5. This project has identified many assets that are in a non-operable condition or are considered to be a high risk to the supplies received

by customers. These AMP5 findings have driven several proposed schemes for AMP6, designed to continue this programme of corrective and preventative maintenance:

- Trunk Main Ancillary Maintenance
- Pipe Bridge Refurbishment
- Strategic Non-return Valves (review, repair, remove)
- Reservoir Auto Valves (for emergency isolation)
- Cathodic Protection (on strategic mains)

The work proposed is a higher level of investment than the equivalent programme delivered during AMP5. This is a direct response to the condition of assets inspected and maintained during AMP5 and is also driven by an improved ability, using the trunk mains register, to target assets with a high risk of impacting service to customers.

Each of the schemes focuses on maintaining and improving the operation of the trunk main network. Much of this work has the potential to extend the operating lives of the constituent assets and will also increase the number of strategic fittings that are operable if they are ever required during an emergency situation. Based on the expense of renewing these assets, potentially before the end of their operating life, a maintenance approach has been established as the most cost effective strategy.

| Trunk Main Maintenance | £ |
|---|----------|
| <i>Trunk Main Ancillary Maintenance</i> | £940k |
| <i>Pipe Bridge Maintenance</i> | £796k |
| <i>Strategic Non-return Valves</i> | £400k |
| <i>Reservoir Auto Valves</i> | £640k |
| <i>Cathodic Protection</i> | £643k |

A breakdown of proposed expenditure for trunk mains maintenance

Case Study – Air Valves:

Repair, renewal and maintenance

A programme of air valve inspections has been undertaken during AMP4 and AMP5 as part of a project to maintain ancillary assets on trunk mains.

This programme has revealed that 56% of these important assets are not operable or require some form of intervention, leaving the network susceptible to increased risk of environmental ingress or mains failure and decreasing the efficiency of pumping operations.

The operation of the network is now considered to be at a critical point, with the Company not willing to risk the continual deterioration of these assets, to the extent that customers begin to be routinely affected.

Renewal and repair work was started in 2008 to offset the deterioration of air valves, ensuring that the increasing number of inoperable fittings is reversed. To date, over 300 air valves have been returned to fully operable service, then added to a preventative maintenance schedule to guarantee future reliability.

The Company is proposing to increase the rate of interventions during AMP6, delivering benefits which will directly contribute to the achievement of the Company's outcomes for reliable supplies, good water quality and environmentally sustainable operations.



Example of air valve pre and post intervention

Due to uplift in expenditure, but also the emphasis placed in the revised approach to managing our trunk mains assets, the company received some challenges from the CCG on some of the specific trunk mains maintenance proposals:

Challenge – CCG, Monson (South Staffs Region)

Establishing the remaining life of each pipe bridge by establishing remaining wall thickness, carrying out investigations into the possibility of moving any pipe crossings into existing or planned road or rail bridges and gathering information on costs of treating pipes over live rails prior to carrying out a programme of work.

Company Response

Future pipe bridge assessments are to include an initial assessment of mains condition via the use of hand held ultrasound devices. There is also provision in our PR14 submission for mains condition assessments both under and above ground, which will include pipe bridges. Those pipe bridges traversing live rail lines require extensive assessments to establish the viability of refurbishment or diversion. The essential scenario in our PR14 submission includes the costs of full condition assessments, NDT testing, and civil engineering assessments to enable a decision to be made regarding the most cost beneficial solution to this issue.

CCG accepted response

Challenge – CCG, Monson (South Staffs Region)

Whether the condition of the Hampton Loade strategic mains warrants the replacement of the cathodic protection system in AMP6.

Company Response

Many strategic utility pipelines are protected by cathodic protection from new. The technique is designed to prevent or slow down corrosion of the pipe walls, thereby preventing future failures and extending the lifetime of very expensive or very strategic assets. Allowing the pipes to deteriorate before applying or maintaining the protection contradicts this strategy and reduces the amount by which asset lives could be feasibly extended. There is little engineering evidence available to show a viable alternative to cathodic protection of steel mains, so the continual assessment and maintenance of those lengths of main already having cathodic protection is felt to be the most sensible course of action at present. Our essential scenario in our PR14 submission allows for resistivity surveys of all trunk mains above 300mm diameter, with a targeted programme of refurbishment, maintenance and analysis of the benefits of installing cathodic protection on those mains not already protected.

The following challenge was received for the strategic non-return valve project. The Company has since revised the level of activity in this area, opting for a smaller level of investment. This is in reaction to financial constraints and CCG suggestions to restrict work in AMP6 and use findings to establish the programme for AMP7:

Challenge – CCG, Monson (South Staffs Region)




Challenge the Company to consider surveying and removal, repair or replacement of a small number of non return [valves] in AMP6 so the likely risk for mains failure and future costs for dealing with the other non return valves, if then thought necessary, could be established prior to AMP7.

Company Response

The essential investment option has been selected as the optimum delivery strategy as it does target a smaller number of greater risk non-return valves which are located on the trunk mains network of four of the Company's largest water supply zones (WSZ's). For instance, the four WSZ's selected represent at least one-third of the Company's population served. They have significant volumes of water stored at service reservoirs (which can exacerbate the rate of flow from burst mains) that equates to about 65% of all strategic storage for the Company and they also include the top two sections of large strategic pumping mains. Also, one of the four WSZ's has experienced a trunk mains failure recently which may have been attributable (in part) to a faulty/inoperable non-return valve and the failure caused significant damage and flooding to local properties. The scheme strategy of selecting the largest valves (250mm or greater) on a WSZ by WSZ basis has not only provided economies of scale, but is also the most cost beneficial and reduces risk to an appropriate level (as confirmed by IO tool).

CCG accepted response

10.5.1.3 Network Reinforcement

| Key Points – Network Reinforcement | |
|------------------------------------|---|
| Outcomes: |  Secure and reliable supplies  An excellent customer experience  Fair customer bills |
| Investment: | Slight uplift from previous AMPs. This is due to aging network and the high value placed on reliable supplies during customer consultation. Still relatively low percentage of overall IP |
| Proposal: | £2.12m = 1.11% of SSC IP |




The Company is responding to the importance that customers place on secure and reliable supplies, a view reflected throughout the customer engagement exercises undertaken during the development of this business plan.

The networks within the South Staffs and Cambridge regions are responsible for delivering 400 million litres of water to a population of 1.5 million customers every day. Maintaining this ability to consistently deliver sufficient flow and pressure at customer taps is an on-going challenge, and an area of service where South Staffs Water and Cambridge Water have historically excelled. The merged Company intends to continue to deliver against this important outcome.

The Company will invest £2m on network reinforcement by the end of 2014/15, reducing the number of customers that are susceptible to intermittent supply issues. It should be noted that capital investment is used as an option of last resort for resolution of potential supply problems. The Company always uses hydraulic models to simulate rezoning of DMAs or modification of pressure management (where applicable) to resolve problems using the cheapest, most efficient method.

The proposed expenditure for AMP6 is a slight increase over AMP5. This is designed to continue the maintenance of the available headroom in the distribution systems. This uplift is deemed appropriate by the Company, especially as it responds to customers' requests for on-going reliable supplies.

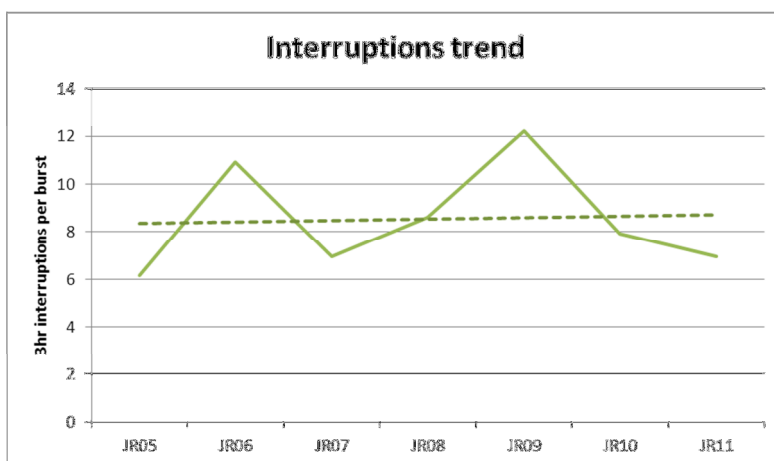
10.5.1.4 Network Resilience

| Key Points – Network Resilience | |
|---------------------------------|---|
| Outcomes: |  Secure and reliable supplies  An excellent customer experience  Fair customer bills |
| Investment: | This initiative responds to customer support for maintaining reliability of supplies |
| Proposal: | £881k = 0.46% of SSC IP |

The Company has developed a programme of network resilience improvements designed to complement the above proposals for reinforcement. This activity proactively targets assets that pose a high supply risk if they fail.

Supply interruptions are often manageable operationally, seldom causing significant interruptions to customers. The proposed resilience programme focuses on areas of the network that have single feeds, or where there are insufficient alternative supply routes. In these areas of the network, any mains failures can potentially cause longer duration interruptions.

The Company experiences a relatively stable average of 3 hour+ interruptions per burst event as shown in the graph. This level of interruptions has been reviewed during AMP5 and the Company has used improved hydraulic models to execute pipe criticality analyses; enabling AMP6 investment scenarios to be devised.



The proposed investment for AMP6 targets a number of proactive schemes within both regional areas where the risk of long term or repeated supply interruptions is deemed to be unacceptably high. Again, this supports the Company's strategy of delivering reliable supplies to customers.

10.5.1.5 Trunk Main Renewals – Large Diameter PVC

| Key Points – Large PVC Renewals | |
|---------------------------------|---|
| Outcomes: | <p>2 Secure and reliable supplies</p> <p>5 Fair customer bills</p> |
| Investment: | Slight uplift over previous AMP, continuing PVC renewal programme that was started in AMP5. Now proposing split over AMP5, 6 & 7. |
| Proposal: | £3.4m = 1.8% of SSC IP |

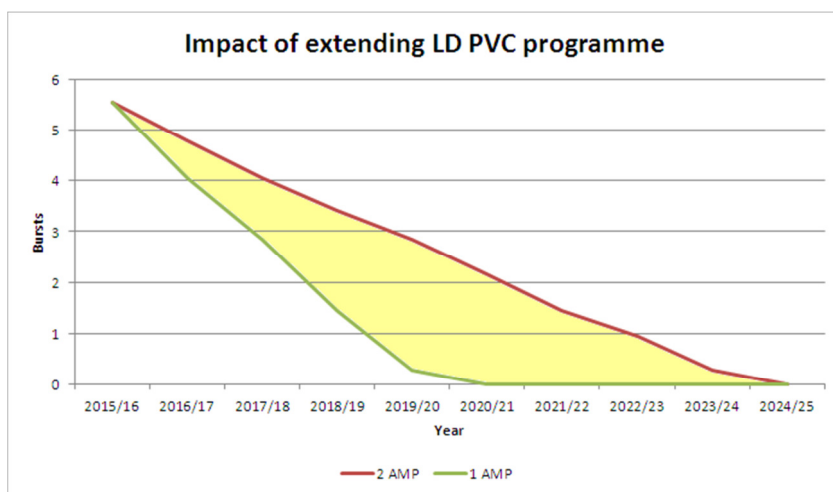
The programme of large diameter PVC replacement began at the start of AMP5 and delivers a commitment by the Company to renew, wherever possible, every section of PVC greater than or equal to 9" in diameter within the South Staffs region. These assets were specifically identified in the PR09 business plan because of the high level of risk posed to customer supplies when these mains fail and also due to the prolonged repair times caused by characteristic longitudinal failures. Where mains are not replaced, then there must be sufficient alternative supply routes to ensure that customers are not affected; this mitigates the risks at a much lower cost to customers.

The work undertaken during AMP5 has been selected based on a risk based approach, prioritising the 40km programme using hydraulic models to assess supply impact and using the Company's geographic information system (GIS) to assess potential damage to roads and property.

The Company has investigated and modelled the extension of the PVC replacement programme, which was originally due to take 10 years to complete. The proposed strategy now recommends the extension of the PVC programme for the South Staffs region until the end of AMP7, reducing required expenditure by £2.72m for AMP6.

This still involves a substantial programme of work, targeting between 13 to 14km of mains across 20 schemes. This is a higher number of schemes and a longer length of assets than that delivered during AMP5. The work is expected to be slightly more expensive per metre, accounting for the additional deployment, design and traffic management charges resulting from the higher scheme count.

The Company supports the selection of the extended strategy because it is more affordable to customers. However, the Company also recognises that stretching the programme over an additional 5 years would result in additional bursts occurring on these assets. This increase is currently forecast at 79% (an extra 11 bursts), indicated by the shaded yellow area on the above chart.



As an example of customer impact, this 79% increase translates into a predicted 143 additional 3 – 6hr supply interruptions.

10.5.1.6 Trunk Main Renewals – Large Diameter Ferrous

| Key Points – Large Diameter Ferrous Renewals | |
|--|--|
| Outcomes: | <p>2 Secure and reliable supplies</p> <p>5 Fair customer bills</p> |
| Investment: | Uplift over AMP5. This is required to target two specific schemes where mains have reached end of serviceable life |
| Proposal: | £983k = 0.52% of SSC IP |



The Company only considers the renewal of trunk mains when there are no other appropriate maintenance options. These assets typically fail at 1/10th of the frequency of distribution mains, which when combined with the expensive cost to renew, makes any renewal intervention difficult to justify.

There are just four schemes that were considered for renewal during AMP6. These are schemes where the failure rate is already very high, or the assessed consequences of failure are very high. Each scheme has been optimised by the IO tool individually and two of the four schemes have been proposed in the final investment plan.

These schemes consist of 1.8km of 18” and 24” mains. In both cases, the mains are failing frequently and have high consequences – including repeated property flooding, large scale supply implications and a risk to disruption of a railway and a major dual carriageway.

The Company recognises that trunk main renewals are expensive to customers, but is confident that the proposals are appropriate and suitably scaled, having been rigorously assessed, justified and challenged.

10.5.1.7 Trunk Main Monitoring

| Key Points – Trunk Main Monitoring | |
|------------------------------------|---|
| Outcomes: |  Secure and reliable supplies  Fair customer bills |
| Investment: | Higher than in AMP5, where minimal investment was made to trial technology. Proposed scheme is in direct response to risks identified when analysing strategic mains |
| Proposal: | £750k = 0.39% of SSC IP |

The Company is planning to utilise live monitoring equipment on sections of trunk main which have been assessed as high risk to customer supplies or to the general public. Based upon the analysis work undertaken for the trunk main register, these high risk sections are expected to total 40km.

The live monitoring installations that have been proposed operate in sets of two or more, identifying any changes in pressure, flow or noise. These alarms are then transferred back to telemetry systems within control rooms, enabling operators to respond immediately. When combined with parallel schemes for automated valves, live networks and telemetry upgrades, this will allow a step change in the ability of the operators to isolate burst mains or respond to other issues. This proposal, by its nature, also provides operational synergies and enhancements with other identified investment needs, such as reservoir auto valves and live networks.

The costs included in the proposal include funding for chambers and equipment. It is worth noting that the chambers and under-pressure tappings can also be utilised for other activities such as flow monitoring, under-pressure camera surveys, leakage surveys and live water quality monitoring. The Company intends to maximise the investment for this area by ensuring that the above synergies are maximised.

The Company has opted to cover all high risk sections of trunk main with live monitoring equipment, helping to reduce the supply and disruption risks associated with these assets; this activity contributes directly towards the achievement of the Company's Outcome to deliver secure and reliable supplies. The potential opportunities for detecting leaks on trunk mains before the point of catastrophic failure also allows the Company to intervene before damage to roads or customer property occurs.

To ensure that this project remains affordable, the Company is proposing to phase the implementation of these monitors over the next two AMPs.

Case Study – Trunk Mains Consequence Modelling:

Assessing flooding risks

Catastrophic failures on the trunk main network can release large quantities of water within a very short period of time , posing a significant risk to the public and to their property .

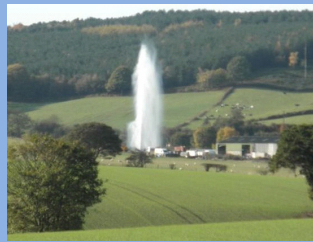
A burst event in Streetly during 2011 released eighteen million litres of water into a residential area , the equivalent of seven Olympic sized swimming pools.

The Company has learnt lessons from these incidents and is now rigorously assessing potential consequences across the trunk mains network. Part of this consequence analysis includes a flooding assessment to determine flow directions and potential depths of flood water .



This is achieved by using the Company's hydraulic network models to predict flow rates for each section of network. These results are then processed using innovative internally developed software which is able to batch process flood simulations every 50m along every trunk main .

Risk assessment of trunk mains has already helped to prioritise and target condition assessment and monitoring activity within some supply zones , and is proposed for use across the whole area of supply for AMP6 projects.



10.5.2 Distribution System Renewals

Key Points – Distribution System Renewals

Outcomes:



Excellent water quality



Secure and reliable supplies



An excellent customer experience



Fair customer bills

Investment:

Lower levels of investment than AMP5. Down by 14.7%

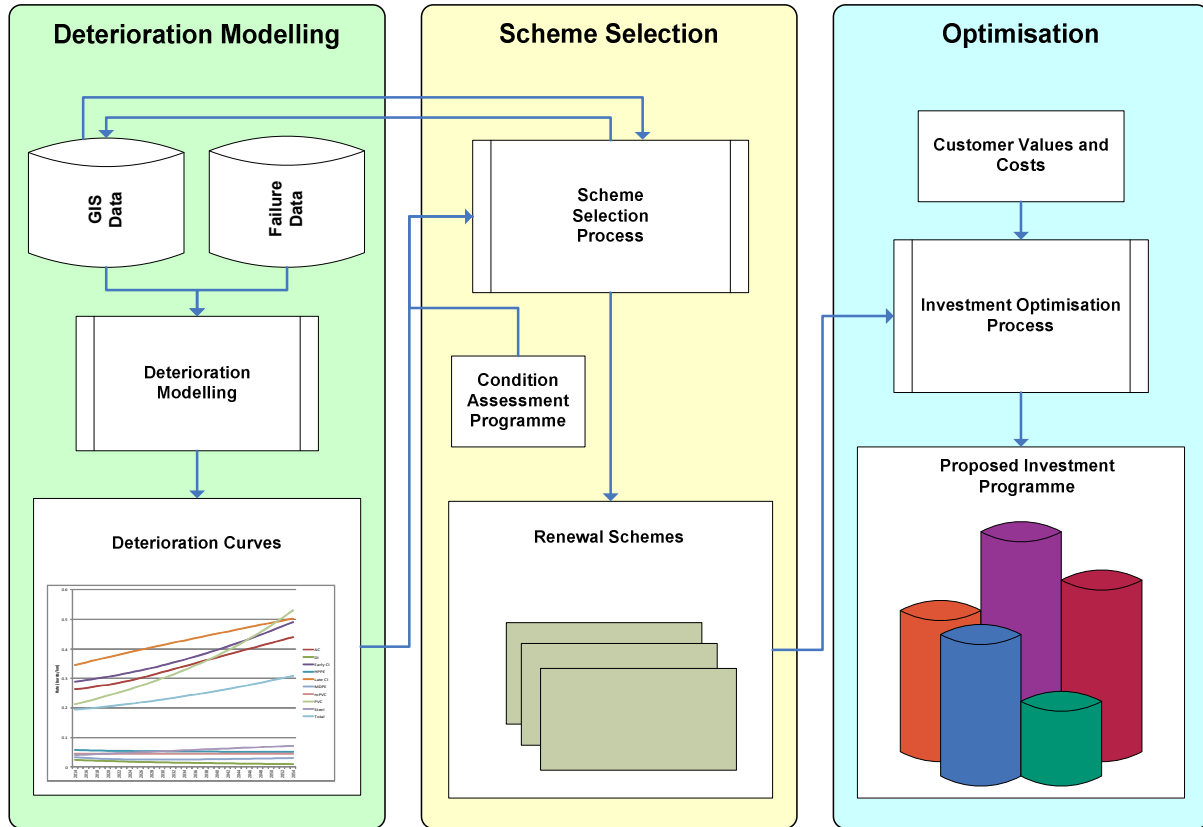
Proposal:

£34.49m; 18.2% of IP

The renewal of smaller diameter distribution mains accounted for almost 80% of the capital expenditure spent on infrastructure assets during AMP5, amounting to a total of £40m. The requirements for AMP6 have been considered from the ground up, to ensure that the proposed programme of work is justified on merit and is not just a continuation of a historical programme. Distribution renewals have been separated from trunk main renewal activity for

AMP6 to enable a more effective approach for risk appraisal and cost benefit analysis to be carried out.

The Company uses a three phase approach for planning renewals activity. A basic overview of these phases is shown below:



The approach has been completely overhauled during AMP5 in order to empower asset managers to make optimal decisions on renewal strategies. The robust deterioration models (based on at least 16 years of observations), enable high confidence forecasts to be made for future levels of network performance; which, when combined with the scheme selection approach described above, allows the Company’s data and knowledge to be fully exploited to ensure efficient targeting of investment to deliver long term serviceability of the distribution network.

The Company is determined to maintain stable serviceability, but also to ensure that investment for infrastructure assets is targeted appropriately so that service is delivered in alignment with the values outlined by customers, both now and in the future. The investment proposals are designed to reflect the emphasis that customers have placed upon the maintenance of secure and reliable supplies.

Case Study – Distribution Renewals:

Deterioration Modelling

South Staffs Water continue to collect failure data for distribution assets, enabling the continuous improvement and development of its asset deterioration models.

These deterioration models are critical for predicting the future performance of the Company's network assets and are the basis for robust asset management and strategic decision making. Models for both regions have been redeveloped for AMP6, with assistance from Mott MacDonald and independent review by Seams Analytics, ensuring that renewal strategies and investment targeting are efficient.

Feedback from Seams Analytics:

".....a sound analytical and modelling effort by SSW"

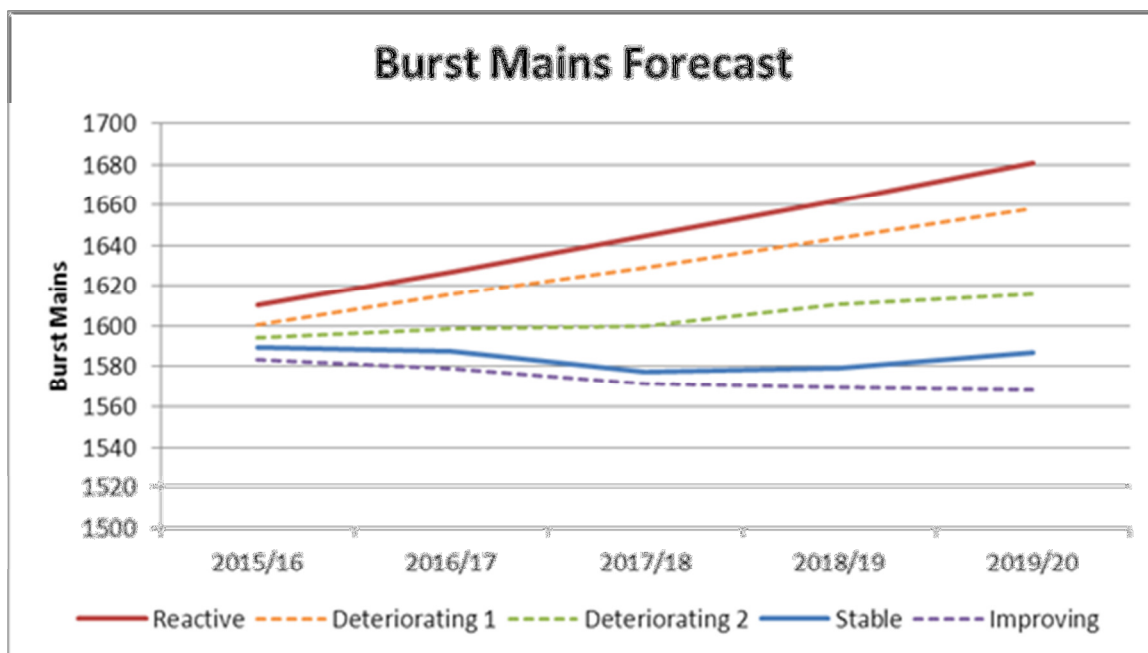
"[the asset data]...is particularly impressive and provides a sound foundation upon which modelling can be carried out"

"The SPSS analysis was excellent and a number of investment scenarios have been carried out utilising an intelligent scheme prioritisation method."

In accordance with the Company's asset management and investment optimisation strategy (outlined in the supporting [Asset Management](#) strategy), the IO tool was used to consider and optimise millions of permutations of renewal strategies before finalising these proposals. This includes considering deferring some or all activity for the next 2 or 5 years to create a more affordable business plan. Deferral of renewal has not been proposed within the final plan, because it would cost too much in future investment periods to return the network to its current level of serviceability, this is supported by our customers, who have said that maintenance of current levels of service is important to them and that they wouldn't want to forgo maintenance now to be faced with a higher bill in the future to recover the performance deterioration.

Thorough optimisation ensures that customer values are represented within the final proposal, adequately weighting the programme of work towards zones where there are more benefits for areas of service that are important to our customers.

The forecast bursts performance of several possible portfolios of work is shown in the chart below. This shows the 'stable' profile of bursts that the Company is intends to deliver, alongside some alternative investment proposals that were considered. The red line shown on the chart is the forecast deterioration if no mains renewal is undertaken:



Proposed investment for AMP6 small diameter distribution renewals for the two regions is:

| Value | Description |
|---------|---|
| £34.49m | Delivering an average of 53km of renewals each year |

This investment is lower than in previous AMPs and has been carefully considered in order to deliver an affordable investment programme for customers. However, the Company is confident that when combined with other initiatives, the objective of delivering good service to customers and maintaining its stable serviceability assessment is achievable.

As should be expected with a project of this scale, the Company received some challenges from the CCG for mains renewal proposals:

Challenge – CCG, Monson (South Staffs Region)

Whilst accepting that there is justification for replacing 50km of main as planned, but that the expenditure in this high cost area of the investment programme be reduced in AMP6 in order to bring the overall capital cost in that period closer to that in AMP5.

Company Response

This option has already been carefully considered. Extensive modelling work has been undertaken to determine the amount of small diameter renewal work required to maintain future stable serviceability. Dozens of options have been considered, ranging from 30km per year up to 100km per year; these options have also considered investment profiles designed to minimise spend in AMP6/7, and increase at a later date. The Company is confident that the scenarios presented to the IO tool are sufficient to cover a sensible range of options; from decreasing serviceability, through to the premium scenario which improves serviceability. The IO tool is then able to choose between these options independently for each of the 20 supply zones using the benefit valuations determined through Customers' willingness to pay. There is a concern that reducing the renewals spend too far could result in the Company regressing to a position of unstable serviceability; this would have a noticeable impact on Customers and would require future increases in spend to counteract. As a guide, modelled scenarios where 15% of expenditure is deferred from AMP6/7 into AMP8/9 has an impact of 30 bursts per year by 2025

CCG accepted response

Challenge – CCG, Monson (Cambridge Region)

Consider factoring into the lengths of main to be replaced an assessment of the number of customers affected should a burst occur on an individual main so to maximise the benefit to customers from the investment.

Look at the effect of capping the cost of mains replacement to the figure of £6m as invested in AMP5.




Company Response

This is considered as part of the scheme selection and prioritisation. Through scheme design, numbers of properties affected by future asset failures are addressed by the installation of additional valves etc. to minimise the impact of future shut offs.

CCG accepted response

10.5.1 Leakage Management

Key Points – Leakage Management

| | |
|-------------|---|
| Outcomes: |  Secure and reliable supplies |
| |  Operations which are environmentally sustainable |
| |  Fair customer bills |
| Investment: | Comparable with AMP5 – ensuring that sustainable economic level of leakage (SELL) is delivered at least cost, providing security of supplies, maintaining assets and delivering social and environmental sustainability |
| Proposal: | Short run/leakage control & repairs = delivered through opex Long run/asset maintenance = £7.81m = 4.11% SSC IP |

The Company acknowledges that leakage is an important issue for customers and other stakeholders, as well as the wider environment and community. A key Company objective is to operate in line with the sustainable economic level of leakage (SELL) targets

The following is a high level summary of the leakage strategy for SSC. Additional detail is covered in the [Leakage](#) business strategy.

10.5.1.1 AMP5 Leakage Performance

AMP5 to date has seen markedly different weather conditions that have impacted significantly on the level of leakage reported. The winter of 2010/11 was extreme, resulting in a significant rise in leakage. The following two years in 2011/12 and 2012/13 were characterised by generally benign winter conditions. 2011/12 was dry, with drought conditions across some areas of the UK. In 2012/13, wet weather limited the leakage breakout during the summer, the subsequent winter was longer than normal but not as harsh as the 2010/11 event.

The reported leakage for both regions over the last five years is shown in the table below, together with the regulatory targets (in MI/d).

| Region | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|--------------|---------|---------|---------|---------|---------|
| CAM (Target) | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |

| | | | | | |
|--------------|-------|-------|-------|-------|-------|
| CAM (Actual) | 13.95 | 14.17 | 13.68 | 12.39 | 12.36 |
| SST (Target) | 75.00 | 75.00 | 74.40 | 74.40 | 74.40 |
| SST (Actual) | 74.25 | 74.43 | 72.83 | 68.17 | 65.25 |

10.5.1.2 AMP6 SELL Methodology

Both regions have assessed the SELL using regional specific data, but with a common methodology and review process to provide a consistent approach. This is in line with the guidelines set out in the Review of the Calculation of Sustainable Economic Level of Leakage and its Integration with Water Resource Management Planning and the respective Water Resources Management Plans.

The PR14 SELL assessment has been further enhanced by the use of a Company specific relationship between leakage management costs and the level of leakage. Beal Consultants were used to provide general support and challenge, as well as an overall review of the data and approach taken to ensure the assessment was robust.

The analysis takes into consideration external factors such as social and environmental impacts and the cost of carbon.

Leakage is an area of interest for customers, and the Company has engaged with its customers to ensure their views have been incorporated into the AMP6 [Leakage](#) strategy. Leakage is linked closely to the following outcomes for customers.



Secure and reliable supplies (now and in the future)



Operations which are environmentally sustainable



Fair customer bills

Customer engagement included a presentation and discussion with the CCG on the concept of the SELL, along with wider customer engagement. Customer valuation of leakage through Willingness to Pay surveys included maintaining leakage at the SELL or current regulatory targets and options to reduce leakage to lower levels. It was not considered appropriate to allow leakage to rise, as this would lead to higher bills and impact on the environment and available water resource headroom.

Leakage is one of the top priorities for reduction when considering the views of uninformed customers that were surveyed. This was a feature of both household and non-household customers. However, in the context of wider supply and demand, with the SELL described as a 'tipping point' at which reducing leakage further costs more overall, only around 1 in 4 informed customers supported reducing leakage beyond the economic level.

The valuation of customers' willingness to pay for specific enhancements must be considered in the wider scale context of affordable bills. Overall there is general support for leakage to be reduced below the SELL, but this is offset by other concerns related to

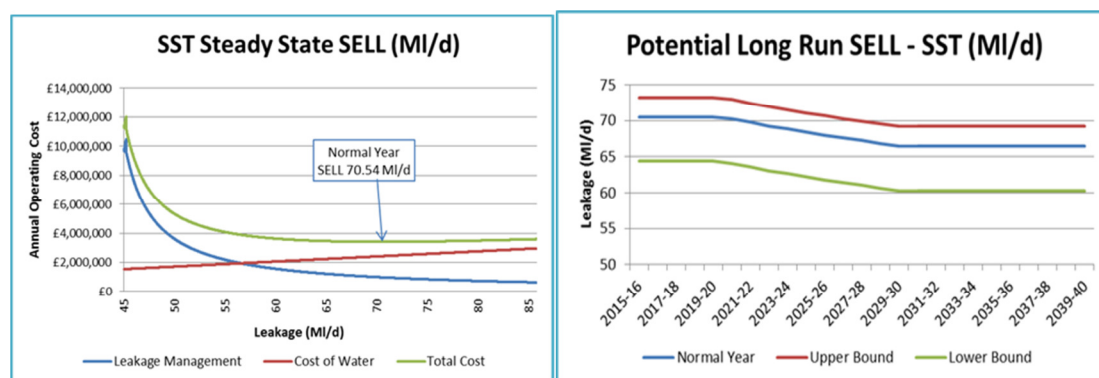
security of supply and affordable bills. Although a reduction in leakage below the SELL was one of the areas informed customers still supported improvements, fewer than one in ten were willing to pay more to deliver the improvement, or sacrifice other levels of service in order to accommodate this.

10.5.1.3 Sustainable Economic Level of Leakage

The steady state SELL for the SST region for a normal year is 70.54 MI/d, and represents the lowest total operating cost, as shown in the chart below. An extreme winter event would add an additional 2.71 MI/d to this, and would be expected to occur on average once in every ten years. As a result a fixed leakage target to cover all expected weather impacts for AMP6 would be 73.25 MI/d. This is 1.15 MI/d lower than the current AMP5 target of 74.40 MI/d.

However, it is proposed that the SELL is set as a range for AMP6, rather than a fixed target, to enable lower leakage targets for normal years and more efficient operations. On this basis, SST would expect to achieve a leakage level of 70.54 MI/d for a normal year, while using the impact of different weather scenarios on the level of leakage, the upper bound of this range would be 73.25 MI/d and the lower bound 64.36 MI/d.

Taking a longer term view, a range of factors such as network deterioration, population growth, increased metering penetration, cost of carbon, pressure management, and mains renewal have been considered to understand their impact on managing leakage. The net forecast effect of these is presented in the chart below and represents a potential reduction in the economic level of leakage in the future, outside of the AMP6 period, due in the main to the forecast cost of carbon.

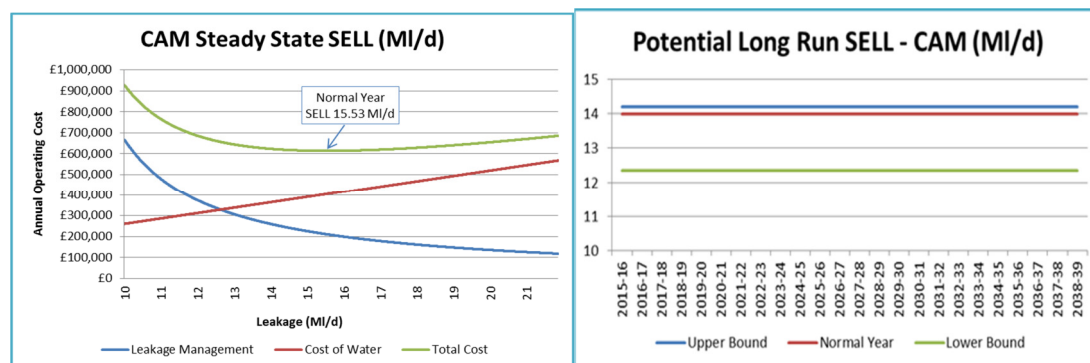


In the CAM region the current regulatory leakage target of 14.00 MI/d is significantly below the latest assessed SELL of 15.53 MI/d. As it would be inappropriate to allow leakage to increase in AMP6, the Company is proposing to target a leakage performance commitment of 14.00 MI/d, but recognises that as a result of the impact of extreme weather it is also appropriate for leakage levels to vary above or below this target, on occasion, to maintain efficient operations.

To efficiently manage this variation the Company is proposing to set a leakage target range, with upper and lower bounds based on weather impacts, around the performance commitment. However, the Company would, on a long term average, expect to report leakage at or below the performance commitment of 14.00 MI/d.

As the performance commitment is already below the assessed SELL, an upper bound leakage target of 14.20 MI/d is proposed. This is considered appropriate, as it is below the SELL, and minimises the need to operate even more uneconomically to provide excessive headroom to cover for extreme winter events. The lower bound target of the range is proposed at 12.36 MI/d, in line with the low levels that can be achieved economically with more favourable weather conditions.

In terms of a long term view, as the current target is below the SELL, analysis indicates there is no scope for further economic reductions, as shown in the chart below. This will however be kept under regular review to ensure this remains appropriate, especially if there is any change in supply demand balance headroom or operational costs or benefits.



10.5.1.4 AMP6 Strategy

The Company’s strategy is to manage leakage at or below the SELL. For the SST region the strategy is to manage leakage at the SELL. In the CAM region, as the level of leakage is already below the SELL, the strategy is to prevent it from rising above the proposed performance commitment based on the AMP5 regulatory target.

Leakage management is an important issue for customers and other stakeholders. As a result this was widely discussed as part of the Company’s customer engagement activities to establish future customer priorities as part of the overall PR14 process.

Whilst customer research identified a desire and general support for the Company to operate at lower levels of leakage, particularly when this subject was discussed in isolation, when considered in relation to the overall impact on the bill, they were unwilling to pay for reductions due to wider affordability concerns.

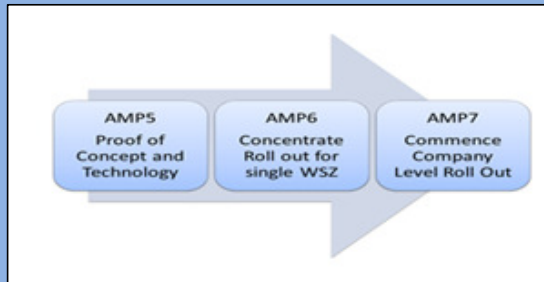
Neither region is forecasting a water resources headroom deficit over the next 25 years. Therefore, there is no economic driver to reduce leakage further over AMP6.

There are however a number of schemes that are considered essential for the on-going delivery of the SELL and to provide increased knowledge to support further sustainable leakage reductions in future AMP periods. These relate to the maintenance and development of DMA and PRV assets. A range of options have been considered to identify the optimum level of investment in this area, using the IO tool, with final proposals identified in the table below.

| Area of Investment | SST | CAM | TOTAL |
|-------------------------------------|-------------------|-----------------|-------------------|
| New DMA/Pressure Management | £1,120,000 | £160,000 | £1,280,000 |
| DMA Maintenance | £2,474,000 | £268,288 | £2,742,288 |
| Network Metering and Control Valves | £2,893,000 | N/a | £2,893,000 |
| Live Network | £747,000 | £150,000 | £897,000 |
| | £7,234,000 | £578,288 | £7,812,288 |

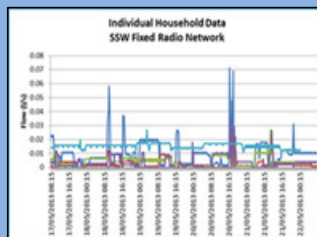
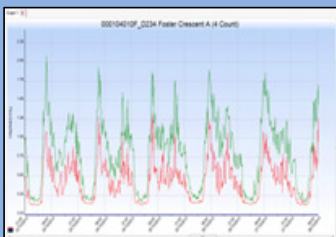
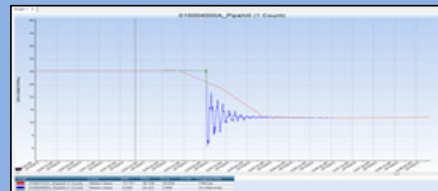
Case Study – Live Networks:

There has been a gradual improvement in available technology since the last Price Review that can provide near real time monitoring of a range of parameters, from across the distribution system. There is the ability to collect additional data to measure parameters such as water quality or pressure transients. However, there is a cost to collecting additional data, and the use of such data needs to be considered in relation to real benefits and how existing business processes can be refined and improved upon.

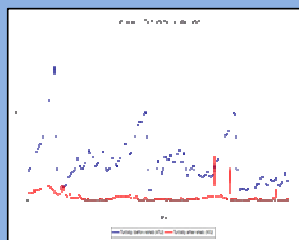


The Company has carried out a number of different trials during AMP5, which are summarised below. The longer term strategy is to take a balanced approach, that aims to roll out a more concentrated level of monitoring in a single Water Supply Zone in each region. This is to ensure that the benefits are realised, and the data is transformed into business information and processes that can result in longer term improvements in network and asset management, customer service, business efficiency and leakage.

Improved technology is enabling pressure transients to be recorded from trunk mains and the distribution system. This data provides improved understanding related to the root cause of asset failure, which should focus investment in the most appropriate areas, and also lead to improved operational practices and processes to reduce the risk of failure.



Improvements in data collection from DMA's through fast logging, and the ability to gather high resolution data from individual properties through long range radio can improve the seasonal assessment of consumption and night use. This is expected to provide an improvement to current methods for assessing night use, and potentially improve DMA targeting and efficiency.



Affordable and portable water quality monitoring technology has been a relatively recent development, but can be beneficial in understanding and resolving operational issues, and demonstrate benefits from mains renewal such as a reduction in discolouration. The benefits of more proactive monitoring of water quality parameters could lead to improvements in operational efficiency as the causes of issues are better understood.

10.5.1.5 Proposed AMP6 Leakage Targets (MI/d)

The Company proposes that leakage targets for AMP6 are set as a range, to take account of the impact extreme weather conditions can have. This will enable lower leakage targets for normal years, while also reflecting the need for the Company to operate in an efficient

manner during periods of extreme weather. This will result in improved leakage performance and lower customer bills over the longer term.

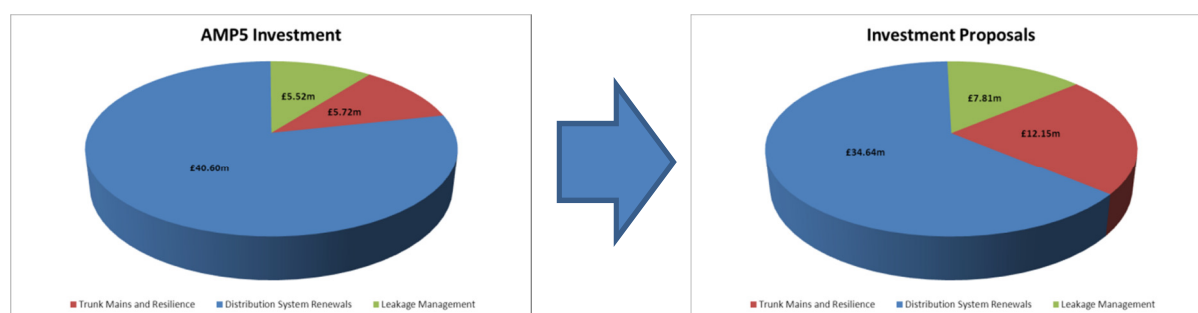
The table below sets out the proposed leakage targets (in MI/d) as a range of upper and lower bounds around the performance commitment for a normal year for both regions.

| Scenario | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 |
|--|---------|---------|---------|---------|---------|
| SST Upper Bound | 73.25 | 73.25 | 73.25 | 73.25 | 73.25 |
| SST Normal Year Performance Commitment | 70.54 | 70.54 | 70.54 | 70.54 | 70.54 |
| SST Lower Bound | 64.36 | 64.36 | 64.36 | 64.36 | 64.36 |
| CAM Upper Bound | 14.20 | 14.20 | 14.20 | 14.20 | 14.20 |
| CAM Normal Year Performance Commitment | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| CAM Lower Bound | 12.36 | 12.36 | 12.36 | 12.36 | 12.36 |

As identified, the Company’s preference is for future leakage targets to be set as a range, with the proposed AMP6 values shown in the table above. If however, it is decided that future regulatory leakage targets are to continue as spot values, the Company would propose the use of the upper bound leakage targets.

10.5.2 Summary of Capital Maintenance requirements in AMP6

As described within the detailed business strategy document, the Company is refocusing some investment for AMP6, to address service risks related to trunk main assets. The comparison below shows the proportional changes from AMP5 to AMP6:



The above charts are not only demonstrative of a significant change in strategy, but also reflect the fact that the Company has used optimisation to divide the funding; focusing spending on asset maintenance and high impact trunk main assets, where benefits are significant.

Small diameter renewal activity still commands the primary share of the proposed network investment, but this is 15% lower than AMP5, at £34.49m. The total length of the Company’s networks is now over 8,300km, some of which is already over 100 years old. Renewal

activity is therefore still a large proportion of the proposed investment, and will continue to be so for future investment periods; however, as evidenced in the strategy document, the Company has undertaken very robust analysis to ensure that an optimal amount of funding is proposed, which is then targeted as effectively as possible to ensure best value for customers.

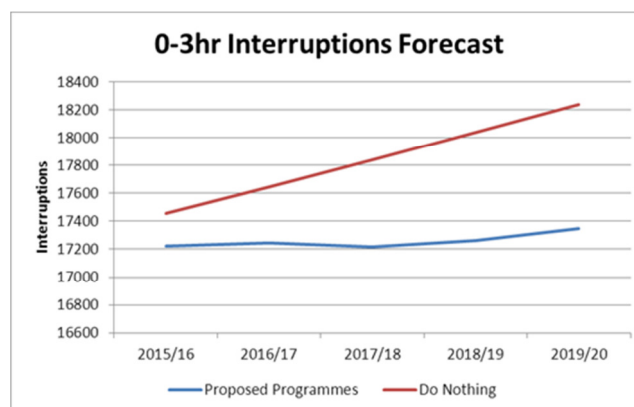
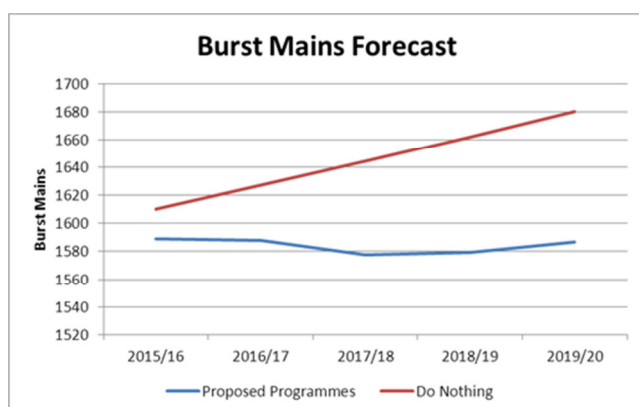
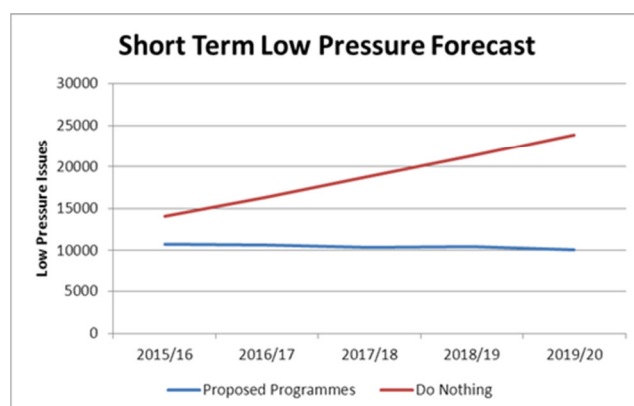
Investment in the 'Trunk Mains and Resilience' group is increasing for AMP6. This is principally due to the increased spending proposed for trunk main maintenance, network resilience improvements, large diameter ferrous and PVC renewals and live monitoring of high risk mains.

Summarised AMP6 projects:

| Scheme | AMP6 Investment | AMP5 Comparison |
|-------------------------------------|-----------------|------------------------|
| Trunk Main Condition Assessment | £300k | - £13k |
| Trunk Main Maintenance | £3.73m | + £3.12m |
| Network Reinforcement | £2.12m | + £118k |
| Network Resilience | £881.2k | + £881.2k |
| Large PVC Renewals | £3.38m | + £630k |
| Large Diameter Renewals | £982.8k | + £982.8k |
| Trunk Main Monitoring | £750k | + £710k |
| Small Diameter Condition Assessment | £148k | - £21k |
| Small Diameter Renewals | £34.49m | - £5.94m |
| New DMAs / Pressure Management | £1.28m | + £498k |
| DMA Maintenance | £2.74m | - £243k |
| Network Metering / Control Valves | £2.89m | + £1.14m |
| Live Network | £897k | + £897k |
| | £54.59m | + £2.76m (5.3%) |

10.5.3 Summary of Customer impacts for AMP6 programme

Through our approach to investment optimisation, the Company is able to predict the impact that different investment scenarios have on levels of service. This suite of graphs compare the reactive position of no investment compared to the optimum level of investment which delivers the performance measures to achieve our outcomes and more importantly the levels of service our customers want to experience.



The graphs above forecast that the Company will deliver the maintenance of service that our customers have continually identified as a priority throughout the customer engagement process.

10.6 Our Plan – Water Quality & SEMD

10.6.1 Water Quality

The Company has recognised the feedback from our customer engagement process, whereby through every strand of customer engagement Water Quality was consistently the highest priority.

The Company has acknowledged it is continuing to face ever changing and increasing risks over both a short term and long term period. This section of the business plan summarises a mixture of solutions to control, or understand how to control, any increasing and existing risks. More details can be found in the Water Quality business case. The measures proposed are a result of a consideration of combination of engineering solutions, which will provide effective mitigation against the risks once constructed, and investigation approaches, whose impact will be over a longer term.

It is important to note that all of the following schemes have been supported or commended for support by the Drinking Water Inspectorate (DWI): The following table summarises the support mechanisms the DWI have used for each scheme, on the condition that the Company responds to the caveats highlighted in the support letters ([see Water Quality appendices for further details](#)).

| Scheme | Scheme reference | Legal instrument | CAPEX | OPEX (per annum) |
|---|------------------|--------------------------------|--------|------------------|
| Churchill WTW - Nitrate | SST046 | Notice under Regulation 28 (4) | £1.2m | £55k |
| Fowlmere WTW - Nitrate | CAM045 | Notice under Regulation 28 (4) | £2.1m | £38k |
| Chilcote WTW - Lead | SST047 | Notice under Regulation 28 (4) | £69.3k | £14.1k |
| Lead Strategy | SST049 | Regulation 28 Notice | £550k | |
| Catchment Management – Hampton Loade and Seedy Mill water treatment works – pesticides, including Metaldehyde. | SST048 | Undertaking under S19 | £495k | |
| Disinfection Byproducts | SST050 | Commended for support | £180k | |

10.6.2 SEMD

The Company has a statutory duty under the Security and Emergency Measures Direction (SEMD) to ensure that potable water sites are suitably protected and emergency plans are in place to ensure that during an incident, which results in the loss of a supply, that 10 litres of

water per person per day is available within 24 hours rising to 20 litres per person per day after 5 days. Compliance with SEMD is an enforceable statutory duty under Section 208 of the Water Act.

| Scheme | Investment Required |
|------------------|---------------------|
| Designated Sites | £650k |
| Source Sites | £530k |
| Reservoirs | £600k |
| Boosters | £1.05m |

10.7 Other Areas of Investment

10.7.1 National Environment Programme (NEP)

As a company whose operations impact on the environment, SSC takes its responsibilities towards the natural environment very seriously and recognises that the environment is important to customers. The Company's continual aim is to operate in a way which minimises negative impact on the environment and improves it where possible, protecting it for future generations. During the course of the development of the Company's PR14 environmental proposals the Company has worked closely with Environment Agency staff and Natural England (with regard to biodiversity) to ensure expectations are aligned and uncertainty is minimised. The Company's approach to protecting the environment is described in the Business Strategy Protection of the Environment.

The National Environment Programme (NEP) forms one part of the Company's [Protection of the Environment](#) strategy.

10.7.2 Water Quality NEP

The Company is proposing to engage in catchment management activities during AMP6. The aim is for catchment management to provide a sustainable alternative to end of pipe solutions using less chemicals and energy for treatment and providing opportunities for additional benefits to be identified. In the South Staffs region two surface water schemes will be implemented focussing on reducing metaldehyde and other pesticides in these catchments. This will involve working closely with farmers in these catchments and engaging with the public. Investigations to determine the potential viability of catchment management to reduce nitrates in two groundwater catchments will also be completed. In the Cambridge region the Company will continue to develop an approach to catchment management in two groundwater catchments where it is expected that benefits could be achieved and will conclude appraisal of the potential for schemes in a number of other catchments.

There is also a requirement to monitor flows of consented discharges for treatment works and ensure they are compliant with the MCERT standard. Most of the Company's discharges are already compliant but there is a small amount of funding required to complete this programme at two sites in the South Staffs region.

10.7.3 Water Resources NEP

Investigations being undertaken by the Company during AMP5 have provided information for the Environment Agency to identify obligations under the Water Framework Directive and the Wildlife and Countryside Act. The Company has worked collaboratively with the Environment

Agency and other stakeholders to identify measures to improve good ecological status, good ecological potential (Heavily Modified Water Bodies) and condition of Sites of Special Scientific Interest where the Company's abstractions have been proven to play a significant part in the problem. The Environment Agency has to date provided the Company with Phase 1, Phase 2 and Phase 3 releases of the National Environment Programme detailing these requirements for inclusion in PR14 WRMPs and Business Plans.

There are a number of schemes in the water resources NEP to address the impacts of abstractions and in total these will result in a 10MI/d reduction in deployable output in the South Staffs region and 5.42MI/d in the Cambridge region.

The Company has considered the impact of Article 4 of the Water Framework Directive ('no deterioration' on ecological status if abstractions increase from recent actual up to full licensed volumes) and has identified a number of sites which may be at risk. All these sites fall within existing NEP study areas and detailed investigation will be progressed through that route.

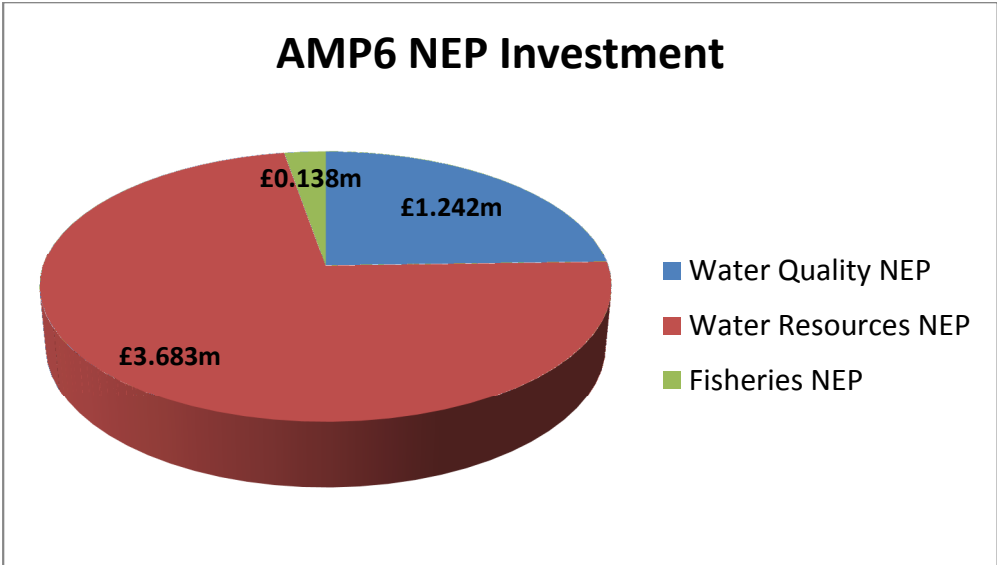
10.7.4 Fisheries NEP

Some requirements around the Fisheries NEP remain uncertain and therefore the Business Plan submission allows for continued study with the objective of clarifying requirements and identifying measures for solutions should they still be required to be implemented early in AMP7 but still within the present River Basin Management Plan cycle.

The potential expenditure in this area at AMP7 could be several £m .The Company is working closely with the Environment Agency to identify innovative and cost beneficial ways to meet the Eel Regulation requirements and to manage the impact on customer bills.

10.7.5 Summary of AMP6 NEP Investment

| Scheme | AMP6 Investment |
|----------------------------|------------------------|
| Fisheries NEP | £0.138m |
| Water Resources NEP | £3.683m |
| Water Quality NEP | £1.242m |
| | £5.062m |



10.7.6 Growth

The Company has utilised local authority Annual Monitoring Reports and Development Plans detailing housing projections and delivery against these targets. The published projections extend to 2026. The Company has reviewed all available Annual Monitoring Reports and has met with those local authorities proposing significant housing growth.

In the South Staffs region Burton was previously a designated growth point under the previous Regional Spatial Strategy for the area. Proposals for significant development in this area continue to be included in the East Staffordshire Development Plan. To date significant growth has not commenced. Also in the South Staffs region there are proposals for overspill housing from Birmingham to be built in the Lichfield District Council area or around Sutton Coldfield. Firm proposals have not been published and broad public consultation has only just begun but the impact in the AMP6 period is considered to be within the overall assumptions included for new homes.

In the South Staffs region the Company has assumed the projected number of properties, as published in the local authority Development Plans, is achieved shortly after 2026 but has adjusted the profile of growth to reflect a slower rate of growth in the period to 2019/20 taking account of the potential additional growth areas. Some recovery to the housing market up to 2019/20 is assumed with more rapid recovery and growth rates up to 2026.

Growth in new non-household connections is assumed to be on average flat over the AMP6 period based on the average growth experienced in recent years. This includes where unmetered non-household supplies are refurbished and supplies are split and metered.

In the Cambridge region much stronger housing growth is projected and the Company is planning for 47,000 new properties to be built by 2040 with 8300 during the end of the AMP6 period. New dwellings will be built to lower water consumption standards, and the Company continues to promote further water efficiency, higher standards and water re-use to manage demands.

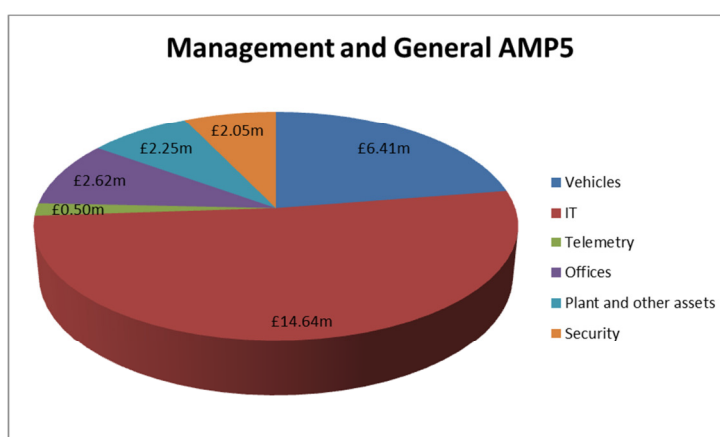
| New Development costs | Combined |
|-----------------------|----------|
| Meters | £0.91m |
| CPs | £5.49m |

| | |
|----------------------|----------------|
| Mains | £7.27m |
| Gross total | £13.67m |
| Contributions | £7.93m |
| Net total | £5.74m |

10.7.7 Management and General

The assets summarised within the Management and General Business Case are diverse, performing varied functions across the Company regions. These assets include the majority of short life technological assets comprising of; plant, equipment, IT and vehicles. Investment is necessary to maintain business capabilities and operational efficiency, allowing employees to perform their daily duties proficiently, providing continued high levels of customer service whilst achieving customers' expectations. The investment presented for AMP6 will ensure these levels of service can be capably maintained whilst aiming to deliver the Companies long term strategic outcomes. The Company is confident that the investment proposals made within the business plan have been developed by expert asset managers, using robust data sources to develop solutions that will ensure assets remain capable of delivering the serviceability that the Company requires and that our Customers expect and value.

Investment in Management and General assets during AMP5 has predominantly focused on Information Technology and Vehicles with a continuation in maintenance of Tools, Equipment and Offices, for both the South Staffs and Cambridge regions. The graph adjacent shows the high level breakdown of this investment during AMP5.



Due to the managed deterioration of asset conditions over AMP4 and AMP5 and the predominantly short life of these assets, interventions have been identified to maintain the high serviceability levels and quality of service being achieved and experienced by customers. Numerous dynamic and vigorous assessments have been carried out across six sub asset divisions for Management and General, highlighting key investment for AMP6, ensuring that any investment put forward contributes to ensuring the Company continues to provide customers with fair bills and an excellent quality of service.

To establish a balanced customer focused business case for AMP6, the business has established multiple options for interventions across Management and General assets. For each scheme and asset category, four options were put forward where appropriate; Minimum, Essential, Optional and Premium. The options put forward, allowed the business to analyse investment against reductions or improvements in operational efficiency, performance and service to customers. Utilising the Investment Optimisation Tool, inclusive of Customer and Willingness to Pay Research, allowed a balanced, outcome focused investment programme to be proposed. Summarised below is the investment required in each category for AMP6.

10.7.7.1 Information Technology



The AMP6 requirements for both software and hardware remain similar to the level of investment undertaken in AMP5. Some of the systems which the Company continues to operate with, would become unsupported during AMP6, having an impact on operational efficiency and the experience and service customers receive. The Company has recognised by maintaining IT systems ensures operational activity is proficient, and the changes in customer expectations for service are met and current / future debt levels are managed.

Investing in the IT infrastructure will provide Company employees with an integrated information source, providing customers with a single point of interaction for first time contact resolution, delivering an excellent experience to customers.

10.7.7.2 Telemetry



Telemetry across the Company regions has been highlighted for replacement at the beginning of AMP6. This is required to negate foreseen system failures and operational inefficiencies, a consequence of which would ultimately see a need to introduce additional manpower to operate the distribution network. The current system operated by the Company will become unsupported in AMP6, with continued concerns in relation to system integrity, resilience and limited developments being made available. It is vital that the system remains stable, supportable and resilient to failure. There are significant issues associated with this at present due to unsupported product lines and evidently increasing hardware failure rates at remote sites.

10.7.7.3 Plant and Other Assets



Essentially 'Plant and Other Assets' are varied and largely impact upon either customers, functional competences, efficiencies and risks of non-compliance with regulatory and legislative obligations. Interventions identified throughout this sub set include (not limited to); leakage detection apparatus, vehicle diagnostic systems, water quality monitoring equipment and operational maintenance activity type tools such as floor saws, ground breakers etc. The replacement and maintenance of these asset types ensure the Company meets the expectations of customers, through safe and timely resolutions to operational activities, whilst minimising the impact on the environment.

10.7.7.4 Offices and Workshops



Investment in offices, workshops and buildings allows for Company sites to remain habitable and suitable for employees, members of the public and its operational assets. The Company sites contain a variety of buildings which vary in age from the late 1800's through to today. These buildings provide the necessary housing of employees and provide protection and security to the pumping and water treatment equipment and are therefore assets which need to be maintained effectively. The Company undertakes annual inspections of all of its buildings using an internal buildings management team and compiles reports detailing defects. Failing to intervene in this area would present the Company with

unacceptable risks to the health, safety and welfare of employees and members of the public as well as not being able to meet legal obligations.

10.7.7.5 Security



The Company proposals for security interventions during AMP6 aim to ensure compliance with government advice notes and to ensure customers continue to receive secure, safe and reliable supplies of drinking water. The Company continues to assess sites and condition of security resources to make certain suitable mitigation measures remain effective. Without undertaking investment in maintaining security levels, the Company would not only be non-compliant with government advice notes, unacceptable risks would surface and increase the potential for contamination and third party interferences.

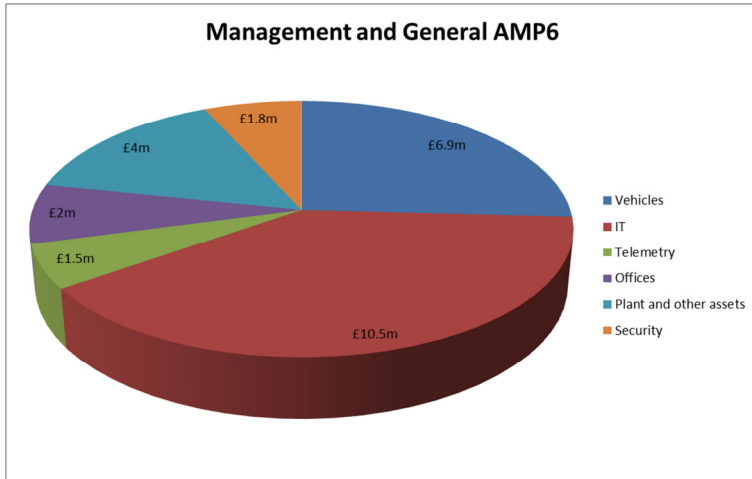
10.7.7.6 Vehicles






The Company has a large fleet of vehicles which allows its employees to fulfil basic operational functions and meet legal obligations placed on the Company. The fleet strategy entering AMP5 functioned on a three year replacement policy for vans, during this period the strategy altered with the business accepting more risk going into AMP6, moving to a four year replacement policy. This decision allows for the fleet to be effectively managed out of manufacturer's warranty removing the need to replace vans after three years. The Company will effectively be replacing vans three times in a twelve year period rather than four, removing the purchase of one hundred and sixty five vans in this twelve year period. This decision does incur foreseen and unforeseen operational costs which the Company is willing to accept, whilst it may have a minor potential for impact on customer service levels, the strategy will significantly outweigh this by contributing to customers receiving fair bills.

10.7.7.7 Summarised AMP6 projects

| Scheme | AMP6 Investment | AMP5 Comparison |
|------------------------|-----------------|-----------------|
| Information Technology | £10.5m | - £4.1m |
| Telemetry | £1.5m | + £1.0m |
| Plant and Other Assets | £4.0m | + £1.7m |
| Offices and Workshops | £2.0m | - £0.6m |
| Security | £1.8m | - £0.3m |
| Vehicles | £6.9m | + £0.6m |
| | £26.7m | - £1.7m |



10.7.8 Metering

-  **Supporting outcome 2 (Secure and reliable supplies – now and in the future)**
-  **Supporting outcome 4 (Operations that are environmentally sustainable)**
-  **Supporting outcome 5 (Fair customer bills and fair investor returns)**

In the South Staffs region the Company currently has a relatively low proportion of metered household customers (current meter penetration is approaching 30% of billed properties compared to an industry average of just above 40%). Domestic meter penetration will rise from the current level of around 30% to 40% at the end of 2019/20.

In the Cambridge region domestic meter penetration is much higher at 66% and this is forecast to rise to 74% by the end of 2019/20.

10.7.8.1 Meter Type and Location

The Company does not plan to change the current policy relating to location of meters, unless it is impractical or uneconomic to do so. This is considered appropriate as this strategy delivers benefits associated with customer supply pipe leakage, and ensures meter reading is carried out efficiently.

The Company intends to progress with the installation of Automated Meter Reading (AMR), to deliver longer term benefits associated with meter reading efficiency, identification of customer side leakage, data for consumption analysis and customer service benefits. The AMR strategy is considered to be future proof in terms of longer term developments in technology that may facilitate collection of meter reading data. These strategies ([Metering Investment and Business Strategies](#)) will be reviewed as appropriate, and taking both regions requirements into consideration.

10.7.8.2 Meter Policy

The Company proposes to continue with the following existing metering policies in both regions in AMP6:

- Free meter policy – domestic customers can opt for a meter free of charge with a 12 month reversion period for domestic customers.
- New supply policy – all new household and non-household properties must be metered.
- Compulsory metering policy for customers with swimming pools or ponds greater than 10,000 litres capacity
- Compulsory metering of domestic customers wishing to use unattended garden watering devices

In addition, in the South Staffs region the Company will continue with change of occupier metering policy commenced in April 2010, where meters are installed in certain properties when they change occupier; and will also continue with compulsory metering of all non-household properties.

The Company's CCG is supportive of the continuation of the discretionary policy of change of occupier metering, as they consider it to be a sensible way to achieve greater domestic meter penetration levels over the long term. Metering is supported by customers but they also want bill impacts to be minimised. Hence since the Company has a supply surplus, taking an approach that leads to moderate metering growth is seen as the right balance.

The Company is committed to aligning [Metering](#) strategy and policy appropriate to the needs and benefits of the customers in each region. It is intended to manage this in a transitional way using the opportunity of having different technologies, approaches and experiences to determine optimised solutions.

10.7.8.3 Meter Replacements

The Company understands the need to manage the existing meter assets over the longer term basis, to ensure fair and accurate billing and ensuring these assets remain fit for purpose as a tool to manage demand. Meters installed wear and their performance deteriorates over time. Extensive independent meter test data has been collected, that is used to develop models to determine optimum strategies. The two regions have historically targeted meter replacements differently, with SST focusing on replacement programmes, whilst CAM identify failed meters and replace when issues are identified.

This area was reviewed by Monson during an Engineering Scrutiny Audit in September 2013, and the approach to determining an optimum strategy was considered robust. Both regions are forecasting to replace a similar percentage of their respective meter assets in AMP6. The most optimum strategy will be reviewed, with experiences from both regions, on an on-going basis.

There are additional benefits associated with upgrading larger commercial meters to a standard specification. A number of meter chambers are old, and are forecast to be upgraded to ensure meters are installed to a standard specification to ensure accurate and fair billing. There are risks associated with deep chambers, dangerous location of chambers and large, non-standard lids with associated risks to personnel accessing these assets. The Company has a standard specification for meter chamber installations, to mitigate these risks as far as is considered practical.

10.7.8.4 Overview

The following table compares the forecast numbers and costs associated with the above, for AMP5 and AMP6 covering both regions.

| Activity | AMP5 | | | AMP6 | | |
|--|--------------|------------|------------|--------------|------------|------------|
| | South Staffs | Cambridge | Total | South Staffs | Cambridge | Total |
| Free Meter Fits | 29,179 | 5,553 | 34,732 | 29,150 | 3,999 | 33,149 |
| Free Meter Options Expenditure | £7,240,791 | £1,197,000 | £8,437,791 | £7,190,000 | £796,000 | £7,986,000 |
| Change of Occupier Meter Fits | 9,083 | n/a | 9,083 | 9,800 | n/a | 9,800 |
| Change of Occupier Meter Expenditure | £2,188,319 | n/a | £2,188,319 | £2,690,000 | n/a | £2,690,000 |
| Household & Non Household Meter Replacements | 27,957 | 5,586 | 33,543 | 36,917 | 13,000 | 49,917 |
| Household & Non Household Meter Replacements Expenditure | £4,222,506 | £780,000 | £5,002,506 | £5,060,002 | £1,995,000 | £7,055,002 |
| New Development CPs | 11,551 | 7,275 | 18,826 | 7,000 | 8,301 | 15,301 |
| New Development CPs Expenditure | £6,404,063 | £3,092,000 | £9,496,063 | £5,150,000 | £3,528,000 | £8,678,000 |

11. Retail

11.1 Introduction

The retail business case covers activities which involve interaction between the Company and its household and non-household customers. The retail business case is the forefront of the Company’s customer service delivery change programme focusing on both household and non-household customers. The [Retail Strategy](#) also provides a broad range of activities aimed at meeting the Company [Long Term Strategy](#) and Outcomes.

Investing in retail will ensure that:

- Customers have a positive experience when interacting with the Company.
- Customer feedback is embedded in processes and procedures to ensure that change is driven by the needs and desires of customers and not based on the Company’s assumptions.
- The Company’s retail operating model is cost effective.

These strategic priorities seek to ensure customer service becomes an integral part of the day to day activities of all Company representatives.

| Key Points – Retail | |
|-------------------------|--|
| Outcomes: |  Excellent water quality – now and in the future |
| |  Secure and reliable supplies – now and in the future |
| |  An excellent customer experience to customers and the community |
| |  Operations that are environmentally sustainable |
| |  Fair customer bills and fair investor returns |
| AMP6 Investment: | £6.772m |
| Proposal: | <ol style="list-style-type: none"> 1. Customer Service <ul style="list-style-type: none"> ▪ Contact and Account Management ▪ Workforce Optimisation ▪ Business to Business Solutions 2. Debt Management 3. Meter Reading 4. Water Efficiency 5. Developer Services 6. Supply Pipes |

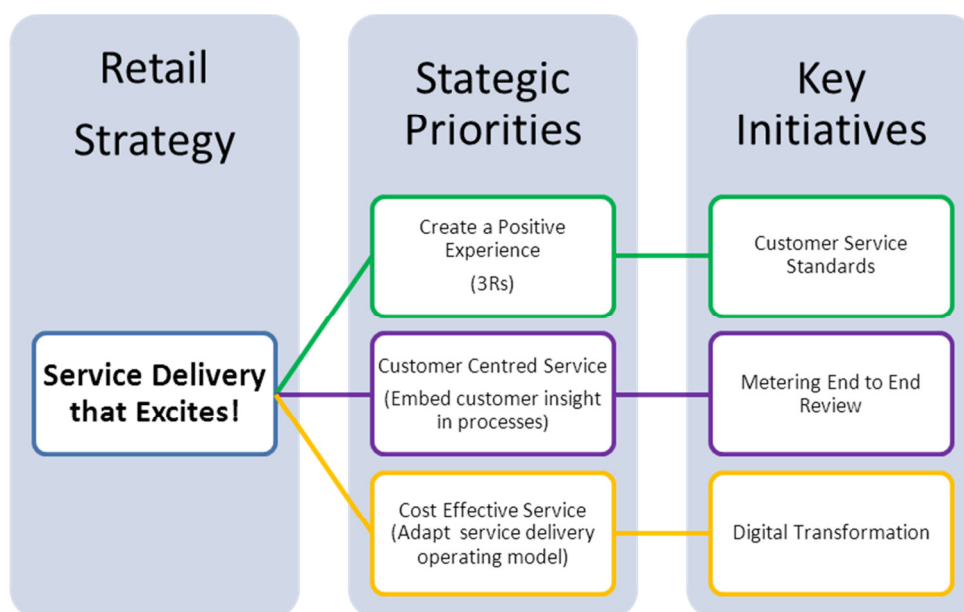
The Company has specific schemes associated to the retail business case highlighted in this section. The Company has also recognised that a percentage of other investment being proposed in AMP6 contributes towards the delivery of this business case, such as vehicles.

Breakdown for Retail Investment

| Retail Investment | £m |
|--------------------------|----------------|
| Customer Service | £2.305m |
| Debt Management | £0.545m |
| Metering | £0.005m |
| Water Efficiency | £0.470m |
| Development Services | - |
| Supply Pipes | - |
| Other i.e. vehicles | £3.447m |
| Total | £6.772m |

Customers are at the heart of the Company and their expectations drive the business objectives. The Company is responsive, straightforward and committed in all dealings with its customers. It goes above and beyond what is required to ensure satisfaction for all of its customers. It delivers what it promises, building on the successes to improve its services further. The [Retail](#) strategy covers activities which involve the interactions between the Company and its household and non-household customers. It is the customer service activities, debt management, meter reading, water efficiency and developer services activities. The Company’s overall strategy is based on knowing and understanding customers, what they want and how they would like it to be provided. The distinction between household and non-household customer service expectations is also addressed through a differentiated service for non-household customers.

The diagram below summarises the Company’s approach listing examples of some of the key initiatives:



11.2 Historical Context

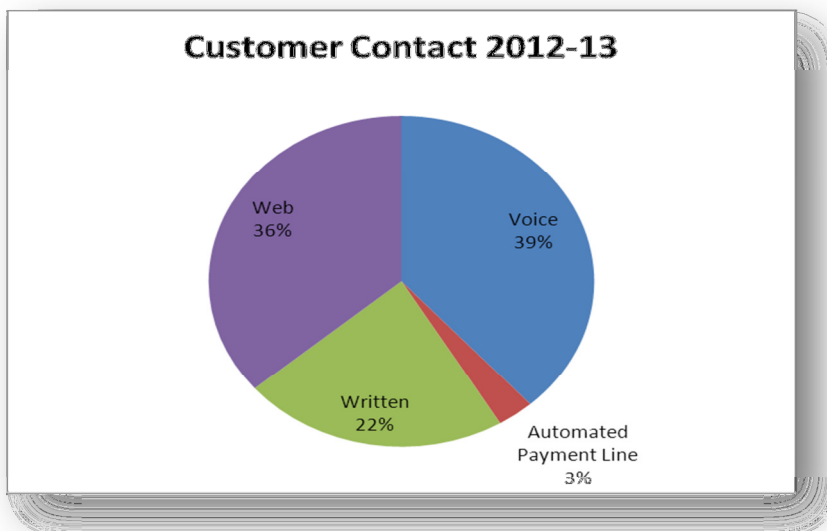
During AMP5 the Company has improved its customer service and related SIM position, its AMP5 mandate, conducting major customer impacting meter reading and billing process reviews, whilst embarking on a two year digital transformation programme. AMP5 has seen extensive customer research and customer service standards introduced as an integral part of business as usual activities. The service standards explain the standard of service customers can expect to receive when they interact with the Company and goes above and beyond the Guaranteed Standards of Service (GSS), already defined by Ofwat.

The Customer Service Standards are summarised by the Company '3R's' (always acting in a way which is Responsive, Reliable and Respectful). These have been developed following subsequent and extensive customer consultation to ensure they reflect customers' priorities.

- **Responsive:** The Company will seek to understand customers' requirements and expectations and respond quickly to their needs and expectations.
- **Reliable:** The Company are consistently good at delivering high-class customer service. Getting it right first time
- **Respectful:** The Company will treat all customers with politeness, patience and consideration

11.2.1 Customer Contact

The majority of all customer contacts are related to billing – payments, changes to address details, querying bills and the basis of charges, meter readings. The Company handles ten times as many calls related to billing as it does to water operations. Water operations related contact is dominated by issues relating to discolouration, no water, low pressure, defective stop tap, and reporting of leaks. The following chart demonstrates the channels customers currently use to interact with the Company and the percentage split of contact for each channel:

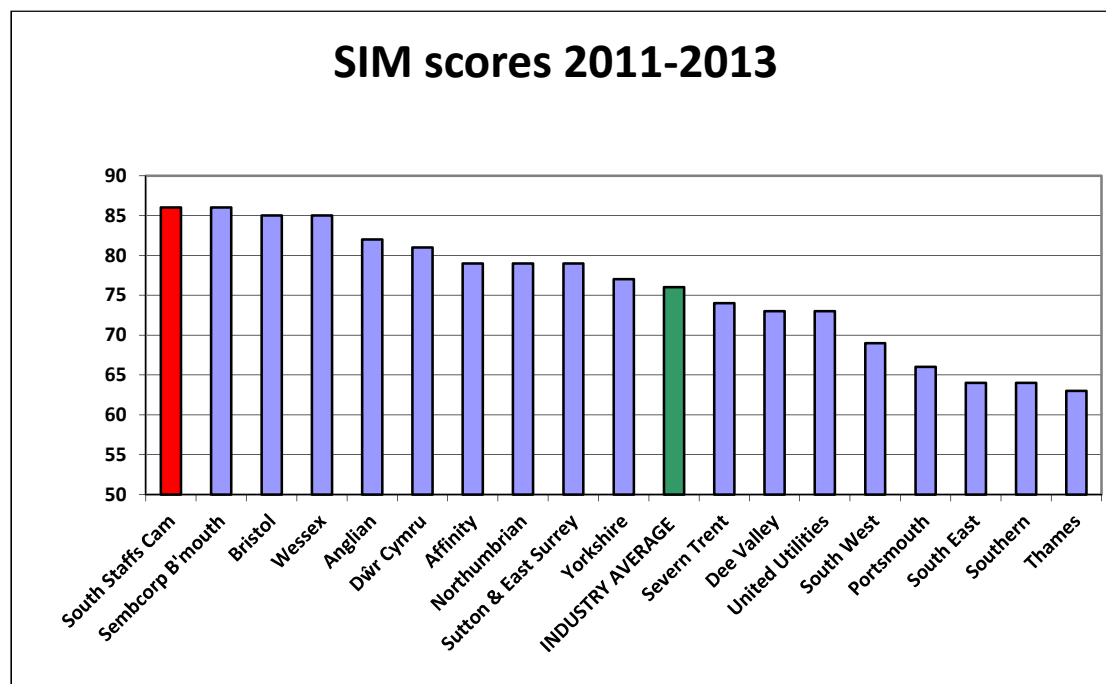


The Company has launched, an Online Account Management Service, giving customers greater control of their accounts. As part of the Company's commitment to develop and improve services, customers have the option to pay bills directly online (previously only available through a third party provider), view their account including previous bills, change

contact details and receive paperless bills. The new self-service portal is the first step in an overall digital transformation programme, which includes implementation of IVR, re-vamped website, mobile app and social media.

11.2.2 Customer Voice (SIM)

The Company has recognised that there is a growing desire from Customer for the Company to develop and maintain multiple contact channels to ensure its customers are listened too. The Company’s Customer Voice (CV) team was created early in AMP5 to provide an enhanced customer interface, with a focus on customer service delivery improvement and a detailed understanding of customers’ requirements. The team unifies a common language for the Company going forward and are a key input for new policies or services; any significant changes the Company makes to processes are tested with customers in advance of making any changes. Customer Voice survey activity is conducted daily to understand how the Company is interacting with customers and how the Company can improve these interactions. The Company’s average SIM score for 2011-13 of 86, ranking first among all water companies, shows that customers think the Company is delivering excellent customer service and reflects the significant effort and progress the Company is making in this area.

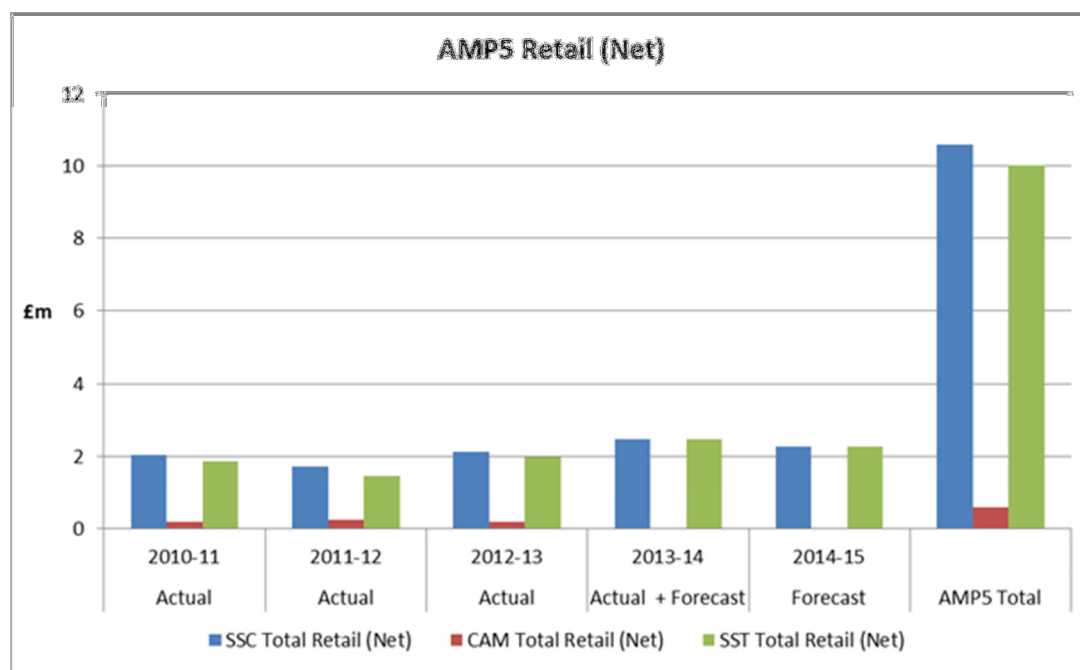


The Company knows that customer demands are changing and that the service interface will change as technology advances. The Board is confident that the planned business plan proposals, with modest investment levels, are well targeted to maintain the excellent service that customers appreciate. In the Acceptability Testing the level of current customer satisfaction was 96%. This is in line with customers’ expectations as demonstrated through results of the customer engagement programme.

11.2.3 Meter Reading and AMR

As the Company moves towards a more fully integrated digital communications environment, the ability to provide business customers with real time data on water usage will be a key deliverable. More than 200 of the Company’s business customers have logging meters on site that provide accurate and up to date readings on water use and volume. This is particularly useful for customers to assess their peak usage and review operational

processes and procedures to support cost savings and improved efficiencies. The use of Automatic Meter Reading (AMR), will improve the process of capturing readings, enabling direct and Bluetooth recordings to be captured thus driving down the costs of data capture and improving the Company's carbon footprint. Work is in progress to look at creating a self-serve environment where business customers can access information via a secure online interface. Below is a graph which shows the level of investment in retail for both regions during AMP5.



11.3 Future Service Delivery – Delivery Plan

The Retail Business Delivery Plan aligns the 2015-2020 retail objectives and investment plans with the Company's overall strategy that is focused on delivering high service levels while retaining low customer bills and the Company's commitment to delivering the outcomes as determined by its customers and stakeholders. Each investment plan for 2015-2020 is a contributor to the outcome: Delivering an excellent customer experience to customers and the community. The Company does expect to see a shift from agent to self-service over the next five years providing the following customer benefits:

- Enhancing the ways by which customers can contact and interact with the Company: phone; text; email; website; social media or post.
- Simplifying customer journeys to encourage self-service for those who choose to do so, whilst not excluding those who are unable to self-serve.
- Providing quick, accurate and convenient (24/7) responses to customer's queries.

A key part of the business plan preparations was the engagement and delivery of customer research. This research was highly beneficial to the Company by aligning proposals to the outcomes of the research, which showed that customers want to see:

- Contact with the Company made easier

- Increased communication about environmental issues to help customers understand what the Company does around environmental activities, water hardness awareness, lead and water efficiency
- Communication channels to keep customers informed of disruption, leakage or planned outages
- Enquiries that are managed across a range of channels, convenient to customers
- Support for customers in debt, through early identification and development of initiatives (for example social tariffs) for customers who have difficulty paying
- Out of hours contact routes, through automation and online services to enable transactions to be completed at their convenience

For non-household customers

- A dedicated point of contact
- Improved communication about service interruptions – especially planned outages
- Support in planning and forecasting their water usage and bills
- Proactive information/items in relating to water efficiency

The customer research findings have provided strong feedback, that the Company's communications with customers could be more effective. Customers have expressed a desire for advice and education on saving water, on water hardness and on how to reduce their bill, as examples. They also have a desire for more information on the Company's performance and how their bills finance investment activities so they can see where their money goes. Communicating effectively with customers is vital to the customer service provided and the Company takes the view that effective communication is not just a one-way process but also a vital conduit for constructive customer engagement. It is also central to shaping customer expectation, reducing complaints and improving satisfaction.

So whilst SIM performance is strong and customer satisfaction levels are high, there is clearly more that can be done for customers and the Company will work hard to improve its customer communications following this feedback. From a starting position of 1st place in SIM performance there is no complacency on the service offering proposed. The Company is determined to progress initiatives to enhance the customer experience and reduce the cost to serve through less customer inconvenience, fewer complaints, less contact and lower cost interface channels that technology allows. As the Company enters AMP6, it continues to focus on the newly developed strategy 'Service Delivery that Excites' to improve the ways in which services are delivered. This new customer service strategy is designed to improve customers' experience of interacting with the Company and remains appropriate for now and the future. The strategic priorities are:

1. **Create a Positive Experience** - acting in a way which is Responsive, Reliable and Respectful.
2. **Customer Centred Service** - customer insight is embedded in processes and procedures to ensure that change is driven by the needs and desires of customers and not based on the Company's assumptions and perceptions.
3. **Cost effectiveness / reduce the cost to serve** - adaption of the Company's operating model to improve cost efficiency, targeting inefficient processes.

The Company intends to consolidate the excellent improvements in the retail activities to better respond to its household and non-household customer needs. An ambitious plan which includes delivering critical technology capability has been developed in five key areas.

1. Customer Service
 - Contact and Account Management
 - Workforce Optimisation
 - Business to Business Solutions
2. Debt Management
3. Meter Reading
4. Water Efficiency
5. Developer Services

11.4 Customer Service - Contact and Account Management

(£905k)

Contact and Account Management incorporates methods and processes that control incoming and outgoing customer contact. Contact management encompasses the applications and processes that allow agents to provide or capture information resulting from customer contacts, whether online, written or telephone. Customer account management involves the provision of a holistic and up to date view of customer information and processes to enable customer facing employees to make quick, informed decisions from offering value-added information to effective issue resolution.

The objective of the contact and account management scheme is to develop SSW customer service offer through personalisation of service, self-service options and proactive customer contact with the outcome of reduced customer effort, first contact resolution, reduced unwanted contact and faster transactions to maintain existing SIM score. In addition, to improve the level of service being received by customers by focusing on personal, quality interactions with customers based on intelligent customer profiling and segmentation, driving customer behaviour and targeting services to customer groups. Customers will be able to contact SSW through the latest technologies and will be left with a positive experience following receipt of a customer centred experience.

| Contact and Account Management Delivery Plan | | |
|---|--|---|
| Customer Feedback | Capability | Outcome and Benefits |
| <p>They wish to see:</p> <ul style="list-style-type: none"> • contact with the Company made easier • increased communication about environmental issues to help customers understand what the Company does around environmental activities, water hardness awareness, lead and water efficiency • communication channels to keep customers informed of disruption, leakage or planned outages • enquiries that are | <ul style="list-style-type: none"> • self-service functionality • enhancement of all existing contact and access channels to add new • customer contact channels in line with technology developments • proactive communication regarding issue resolution progress updates • personal, quality interactions with customers based on intelligent customer profiling and segmentation • drive customer behaviour • target services to specific customer groups | <ul style="list-style-type: none"> • reduced customer effort • first contact resolution • 24/7 access to services/information • personalised service based on customers' wants and needs • faster transactions |

| | | |
|--|--|--|
| managed across a range of channels, convenient to customers | | |
|--|--|--|

11.5 Customer Service - Workforce Optimisation

(£1.15m)

The Workforce Optimisation scheme encompasses workforce management, workflow management and workforce development. Workforce management is organising human resource to handle inbound customer contacts and ensure that regulatory requirements are achieved. Workflow management is the internal and external distribution of work generated by customer contacts. Workforce development is ensuring that employees have the required skills, knowledge and training to undertake duties.

The objective of the Workforce Optimisation scheme is to ensure that the workforce is optimised to support the move towards to multi-channel contact, including multi-skilled agents, cross channel workflow management and automation of business processes. The outcome of this is to reduce cost to serve, increase operational efficiencies and realise opex savings through cross channel working and automation of back office processes, improve quality of service and enhance customer experience and satisfaction. Through investment in this scheme, customers will experience a faster service through better workforce management and quicker responses from appropriately trained agents. Customers will have better quality of information delivered faster through a range of channels. Customers will experience contact with highly trained agents who are able to provide first contact resolution through the provision of information in real-time and reduced waiting times as a result of flexing resource according to demand.

| Workforce Optimisation Delivery Plan | | |
|--|---|---|
| Customer Feedback | Capability | Outcome and Benefits |
| <p>Whilst customers would be willing to accept reductions in service by traditional channels (letter and telephone), they would nevertheless expect to be able to contact the Company in other ways such as automation and online outside of office hours to complete transactions. Customers expect telephone and letter to be slow but they would expect a quicker more cost effective alternative.</p> | <ul style="list-style-type: none"> • enhancement of Business Process Management (BPM)- business processes supported by automated decision making technology • workforce is optimised to support the move towards to multi-channel contact, including multi-skilled agents, and cross channel workflow management • E-Learning for contact centre, collections and back office agents to support enhanced customer service delivery • Genie based training agents (keeping track of knowledge delivered, measuring performance and adjusting individual training plan) • Knowledge management (desktop based interface providing call handlers with information to support calls) | <ul style="list-style-type: none"> • maximised productivity, improved operational decision-making and increased company agility to meet customer demand • proactive detection and response to breaches in service standard/levels – a prerequisite to achieving high customer satisfaction levels • faster service through better workforce management and quicker responses from appropriately trained agents • better quality of information delivered faster through a range of channels • provision of information in real-time and reduced waiting times as a result of flexing resource according to demand • increase operational efficiencies |

11.6 Customer Service - Business to Business Solutions

(£250k)

Business to Business Solutions incorporates methods and processes that control incoming and outgoing transactions between the Company and its non-household customers. Non-household customers will be able to choose from a wide range of services – from a low-cost self-service option to a dedicated account managed service.

The objective of the Business to Business Solutions scheme is to deliver a highly personalised service for business customers, focussing on quality of contact and account management, providing additional services that would be of benefit to businesses e.g. early warning of exceptions. The outcome of this is that business customers experience a complete end to end service which exceeds competitor standards. This is of vital importance in a competitive market to secure and retain high value customers.

| Business to Business Delivery Plan | | |
|---|--|--|
| Customer Feedback | Capability | Outcome and Benefits |
| <ul style="list-style-type: none"> • A dedicated point of contact • Improve communication about service interruptions – | <ul style="list-style-type: none"> • contact channels specifically tailored for 'business' account management (for example, online, IVR, business | <ul style="list-style-type: none"> • personalised service for non-household customers, focussing on quality of contact and account management |

| | | |
|---|--|---|
| <p>especially planned outages</p> <ul style="list-style-type: none"> • Support businesses in planning and forecasting their water usage and bills • 27% of business customers identified as a priority to provide proactive information/items in regards to water efficiency. 6% of business customers would be willing to pay for this service. | <p>account)</p> <ul style="list-style-type: none"> • specialist services and information for business account customers (for example, online water consumption data, GIS mapping service, bill verification, utility mapping and property searches) • specialist billing and tariff structures, PIN number access to services • dedicated 'Business Centre' | <ul style="list-style-type: none"> • provision of additional services that would be of benefit e.g. early warning of exceptions, water efficiency advice • end to end account management of all business enquiries and proactive information and advice on products and services for businesses |
|---|--|---|

11.7 Debt Management

(£545k)

Debt management is a combination of all the activities and improvements specifically relating to the collections process. This includes debt collections systems, collections agents, back office processes in relation to chasing and processing of debt and the customer contact channels to pay arrears and obtain debt advice.

The objective of the Debt Management scheme is to optimise debt recovery process, reducing cost to serve, improving customer access to debt information and payment options and developing smarter and intelligence based approaches to collecting bad debt. The outcome of this approach will be improving SSW brand image and reputation through customer centred debt collection processes, improved debt collection performance through targeted investment in collection technology and initiatives.

Through investment in this scheme customers either in debt or at risk of falling into debt will be able to access information, payment options and account management through a range of channels and would be able to access more information, advice and guidance for those customers experiencing payment difficulties to prevent debt occurring.

To ensure the Collections Strategy is fit for purpose; this will include a review of how the Company engages customers to ensure processes are clear and accessible; either directly with the Company or via any third party organisations.

| Debt Management Delivery Plan | | |
|--|--|---|
| Customer Feedback | Capability | Outcome and Benefits |
| <ul style="list-style-type: none"> • There is an appetite to support customers in debt through early identification and support for customers in debt and development of | <ul style="list-style-type: none"> • upgrade of the existing collection system to ensure full functionality of system is utilised for collections activity • automation of early | <ul style="list-style-type: none"> • optimised debt recovery process, reducing cost to serve • improved customer access to debt information and payment options |

| | | |
|--|---|---|
| <p>initiatives (for example social tariffs) for customers who have difficulty paying.</p> <ul style="list-style-type: none"> • Provide discounts for people experiencing affordability issues • Ensure early identification and support for customers in debt | <p>recovery processes</p> <ul style="list-style-type: none"> • development of self-service service channels and proactive communication channels for debt • AVR technology (automated outbound debt collections telephone dialler). • predictive data to analyse information to postcode and household level | <ul style="list-style-type: none"> • smarter and intelligence based approaches to collecting bad debt • advice and guidance for customers experiencing payment difficulties to prevent debt occurring |
|--|---|---|

11.8 Meter Reading

(£50k)

Across both regions the Company is installing AMR meters in new replacement household situations supporting efficiency and customer service drivers. The installation of AMR meters is considered a wider opportunity, not only to replace the facility to capture consumption but to improve potential customer experience through enhanced data capture during meter reads. The Company continues to install meters for household and non-household customers. As a consequence of this the Company needs to enhance and maintain its meter reading capabilities. The investment in this area is very small but contributes to the delivery of a wider [Metering](#) strategy.

AMR meters are now being deployed in both regions enabling:

- Quicker and multiple readings
- Recorded frequency of readings
- Substantial reading ranges
- Indications of potential leakage

AMP6 investment in Meter Reading is minimal due to the level of investment undertaken in AMP5 on systems. Investment proposed for AMP6 is for the replacement of meter reading equipment.

11.9 Water Efficiency

(£470k)

The Company believes that the promotion of water efficiency is very important for a number of reasons; it is something that customer's value, it is part of the Company's strategy for managing its impact on the environment, it can help with managing bills and affordability and it is part of providing good customer service.

The Company [Water Efficiency](#) strategy and activities provide an opportunity for multiple benefits, and is a key part of reducing per capita consumption in our water resource management plans. The driver for investing in water efficiency has historically been based on the need to manage the supply demand balance and deliver obligations to promote water

efficiency. The Company is fortunate that it has a healthy surplus in its supply demand balance in both regions of operation and therefore investment in Water Efficiency not needed on this basis. However, the Company has reflected on the strong messages received from customer consultation and engagement which indicate a clear desire for greater recognition of impacts on the environment and better communications around water efficiency. The Company proposes to revise the current approach and move some water efficiency focus onto behavioural change. This will be aimed towards an outcome of maintaining sustained reduction in water use over the longer term.

This will require a significant change in approach and the Company is currently working towards this through involvement in collaborative projects such as the Plug-in project, and in supporting higher levels of the Code for Sustainable Homes in new dwellings. The Company's AMP6 Business Plan includes continued levels of expenditure on water efficiency activity but this will no longer be spent solely on the provision of water saving devices and will be refocused on a mixture of more sustainable water efficiency projects and initiatives working with key partners in the wider community.

The future water efficiency business case comprises a number of streams of activity including:

- Provision of advice and information to non-household customers. (This will include non-household customers such as public services, schools, colleges, universities, hotels and hospitals, small users on multiple sites i.e. supermarket chains and shopping centres and water audits of industry types common within the Company's area of supply).
- Development of water audit packs for businesses, offering advice on reducing water consumption.
- Improving customer facing support by delivering water efficiency education to the Company's staff. (Ensuring water efficiency messages can be cascaded to the wider community at the most appropriate time and in a cost effective way).
- Continuation of communications with all customers on the availability of help and advice to save water, through billing mail inserts, the Company websites
- Education of future customers through the Education Programme delivered through Blithfield Education Centre, and local school visits, including an outreach programme to provide help and advice to schools and groups of customers
- Promoting and supporting projects such as 'Plug-in', grey water recycling, and water reuse

11.10 Developer Services

Companywide Developer Services provide the conduit for Developers and other applicants to enable access to new water mains and service connections. The provision of these services requires extensive delivery support from wholesale business elements with Developer Services the central hub of the activities. The Company maintains effective working relationships with Developers by encouraging early liaison on new schemes and projects. Further development of systems / customer interfaces will be based on consultation with these key stakeholders. Delivering operational efficiency and improved customer service are the on-going challenges alongside continuing development of Self Lay and associated legislation.

The introduction of permit schemes, working restrictions and associated costs for working on public highways will also be new impacts to manage effectively with internal and external stakeholders. The ultimate output of the Developer Services retail responsibilities culminates in the creation of new customer accounts on the billing system. On-going development and review of all related systems and processes is focused on streamlining the customer journey from application to account creation.

Due to efficient system synergies with Customer Service there is no investment specifically linked to Developer Services during AMP6. The retail responsibilities will benefit from schemes being proposed such as Contact and Account Management.

11.11 Supply Pipes

The Company manages customer supply pipe leakage in line with the overall SELL principles. Leaks on the network, either Company or customer are identified as part of ALC operations. The Company's current policy on customer supply pipe repairs remains unchanged and continues to be supported by the Company's free phone leakline and provides free supply pipe repairs meeting the following criteria:

- First repair per property only
- External underground leaks only (internal or those under buildings or permanent structures are excluded)
- Private domestic customers only (excludes Local Authorities, Housing Associations etc.).

Customers can opt for a supply pipe replacement, and the Company will subsidise the cost of replacement to the value of the average cost of a supply pipe repair. The Company also promotes home insurance provision that covers supply pipes. The supply pipe repairs policy is subject to periodic review. The Company follows the UKWIR methodology for assessing supply pipe leakage allowances that was developed in 2007/08. The proposed update to this methodology expected in 2012 has been delayed to enable further data collection across the industry. This has recently commenced and is expected to be completed over the remainder of AMP5.

Supply pipe leakage allowances per property are average estimates for all types and ages of property distinguished only by whether they are metered and the location of that meter. Supply pipe leakage allowances for unmeasured properties or internally metered properties are higher than externally metered properties due to the fact that leaks are identified more quickly on properties with external meters where the water leaking is registered through the meter and therefore repaired more quickly.

The forecasts for supply pipe leakage reflect the switching of unmeasured properties to metered through the free meter option scheme or the change of occupier metering policy. There is a reduction in supply pipe leakage allowance from 33.84l/prop/d to 24.95 l/prop/d for each property that becomes metered. Each new property that is connected for water supply will be metered and has been assigned the lower metered supply pipe leakage allowance of 24.95l/prop/d reflecting the Company's policy to install meters externally. The increase in properties forecast over the planning period driving supply pipe leakage upwards is largely off-set by the reduction in allowance per property as more properties become metered. Average supply pipe leakage allowances per measured or unmeasured property remain unchanged throughout the forecast period.

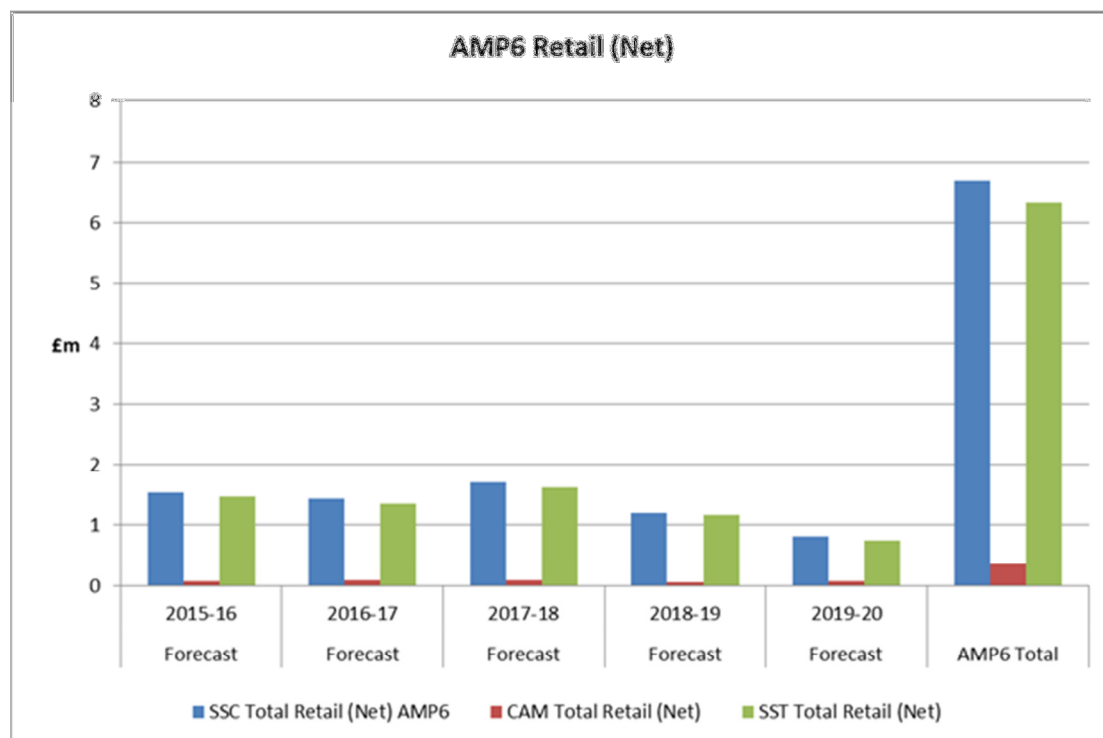
The investment relating to supply pipe leakage is part of the Opex associated with leakage management and forms part of the [Leakage](#) strategy and is detailed within the Water Resources Management Plan.

11.12 Summary

This retail business case summarises a range of initiatives to improve its retail activities and interaction with household and non-household customers. These range from continuing to fully exploit customer feedback to a clear customer service strategy with the strategic priorities to create a positive experience; offer a customer centred service; improve cost efficiency. The Company is also committed to improving its customer communications and offering a differentiated service to its non-household customers. Despite a robust debt management strategy the Company remains committed to developing an [Affordability](#) strategy for its customers.

AMP6 will be challenging but the Company has a reputation for its customer service and commitment and it has a very clear strategy to enable priorities and outcomes to be achieved.

Below is a graph which shows the forecasted level of investment in retail for AMP6.



12. Financing the Plan

12.1 AMP5 Performance

The financial performance in terms of post-tax return on capital has been and is projected for the remainder of AMP5 as follows:

| | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 |
|-------------------------------------|---------|---------|---------|---------|---------|
| SST region – Ofwat FD | 6.0% | 5.6% | 5.7% | 5.7% | 5.7% |
| SST region – actual/forecast | 5.8% | 6.1% | 6.0% | 5.5% | 5.5% |
| CAM region – Ofwat FD | 6.2% | 5.4% | 5.5% | 5.5% | 5.5% |
| CAM region – actual/forecast | 7.2% | 6.7% | 6.2% | 6.5% | 6.7% |

The outperformance largely arises from opex efficiency outperformance, particularly in the Cambridge region, which will be passed back to customers at this price review. The deterioration in financial performance in the South Staffs region in the next 2 years reflects:

- lower income from new connections
- higher depreciation from short life assets
- reduced efficiency scope

The Final Determination figures from PR09 are higher than the headline of 4.9% due to the different gearing/cost of capital assumptions and the incentive rewards earned by the Company for OPA standards and efficiency.

In the current period the Company is outperforming regulatory expectations in some years, which were higher than other companies since an OPA reward was applied, a good CIS ratio was secured and the returns expected also reflected the opex efficiency incentive.

The Company's financial success has run parallel to a period where SIM performance has excelled, all regulatory targets have been met or exceeded (e.g. leakage), the full capital programme has delivered the outputs in accordance with our plans, and by outperforming on efficiency there are major benefits to customer bills from 2015 as these savings are then returned to customers. Where the outperformance was due to favourable conditions, rather than the success we had on efficiency, the Board instructed these gains to be re-invested in service and in asset renewal. This supported improved customer satisfaction and has helped reduce the long term expenditure needs. Specific examples of additional spend have included:

- extra spend on debt collection in terms of systems and staff resources in order to avert rising debt levels;
- extra spend to protect Blithfield Reservoir during pro-longed dry conditions which involved the use of more expensive sources to avoid a need to impose drought restrictions on customers;
- extra spend on reducing leakage for the same reasons as above;

- additional spend at Blithfield Reservoir to improve the environment and open this source up to the public for recreational activities;
- additional expenditure at our 2nd largest source, Seedy Mill, due to unpredicted asset failures;
- expenditure on customer engagement at this price review to ensure future proposals were based on their views.

12.1.1 Regulatory Capital Value

One issue to note is that the Regulatory Capital Value of the Company is very low compared to other water companies (for example on a per property basis it is the lowest in the sector). Many financeability conditions are based on this RCV metric so this point is important. After the merger the RCV of the combined entity is still smaller than that of Bristol Water, which at the Competition Commission for PR09, was assessed as being a small company.

12.1.2 PAYG

The Company has not adjusted the PAYG rates from the forecast opex:capex split. This stance was taken because:

- Current operating practices are not bias in favour of capex
- Short term gains on customer bills simply mask a problem for their future levels. The long term projections do not show falling totex so it would be inappropriate to store up further future pressures on customer bills or future risks to financeability (e.g. risks to financial ratios or covenants).

12.1.3 Run Off Rates

The Company does have a high run-off rate relative to other water companies, though this will largely be resultant from the low relative RCV, as noted above, and from the focus on maintenance schemes.

12.1.4 Gearing

The merged entity has a combined level of gearing of 65%. It is an objective to keep it broadly at this level throughout the AMP6 period, though if circumstances change this will be reviewed.

12.2 Cost of Capital

The vanilla cost of capital (WACC) projected for South Staffs Water is 4.5%. This compares to 5.5% set by Ofwat at PR09, with the reduction resulting in a household bill reduction of £5.50 (4%). The basis of the calculation reflects the Company's financial structure and debt financing position as follows:

| | SSC PR14 | Ofwat PR09 |
|-------------------------|----------|------------|
| Equity (post tax, real) | 6.6% | 7.6% |
| Debt (pre tax, real) | 3.3% | 4.0% |
| Gearing | 65% | 57.5% |
| Vanilla WACC | 4.47% | 5.50% |

New debt: The cost of debt uses the current market rates that can be secured for the period 2015 to 2020 in respect of the £30m of debt being refinanced in the period. These market rates have been obtained from Lloyds Bank and cross checked against other banks and represent the five year swap rate for this period of 2.7% plus margin of 0.95% and annualised fees of 0.2%. The existing short term debt arrangements are:

| | |
|------------------------------|---------------|
| Barclays loan (in Cambridge) | £26.5m |
| Irredeemable debentures | £1.8m |
| Finance leases | £1.6m |
| Total | £29.9m |

The business plan assumes that this £30m of debt can be re-financed at a fixed rate of 0.6% real, thereby capturing to the maximum extent possible current low interest rates. This cost that has been used by the Company compares favourably to the cost of new debt estimated by Oxera of 2.2% to 3.5% real.

Embedded debt: It is not in customers interests for the Company to break away from the current index linked long term debt arrangements that account for 86% of our total debt. Embedded debt of £185m exists until 2045 and 2051 at a cost of 3.75% real. The estimated early redemption cost (based on the difference between the market value at 31 March 2013 of £255m and the indexed principal at that date) is approximately £75m that would be payable in order to secure current rates. It is not therefore financially attractive to refinance this debt and incur this cost in order to reduce debt cost to current low rates. It would also not be in customers' interests for a new approach of using wholly short term borrowing to be adopted to fund a long term business.

The existing index linked debt comprises £143.7m Artesian loan that was issued in 2005 and matures in 2045 at 3.82% and a £41.0m bond issued in 2008 with maturity in 2051 at 3.50%. The total of these two components is £184.7m at a cost of 3.75% real.

Overall Debt: The Company's long term debt was issued at competitive rates (3.75%) and assuming short term debt can be refinanced at 0.6% real, this leads to overall average debt rate of 3.3% for South Staffs Water, which is at the mid-point of Oxera's range.

| Overall debt | | |
|-------------------------|----------------|--------------|
| Index linked (embedded) | £184.7m | 3.75% |
| Fixed rate (market) | £29.9m | 0.6% |
| Total | £214.6m | 3.30% |

Equity: The cost of equity assumption of 6.6% compares to 7.1% allowed at PR09 using the gearing of 52.5% assumed for small companies or 7.6% if gearing was adjusted to 57.5% used for WASCs. Whilst at the low end of the Oxera range set out below of 6.5% to 8.6%, this has been done deliberately to achieve an overall cost of capital of 4.5% including the Company's actual debt costs and gearing.

This cost of equity also signifies an acceptance by the shareholder of the need for lower returns and their support for the plan and the Company's customers.

The Board believe that the Company will be financeable at this cost of capital and no equity injection is considered necessary with the AMP6 proposals in this Business Plan.

Oxera Report

A report from *Oxera* is included in this Business Plan (within the library of supporting information) to evidence the cost of capital position, together with retail margins. The report was commissioned by Bristol, South Staffs, Sutton and East Surrey, Sembcorp Bournemouth, Portsmouth and Dee Valley Water. The companies' assessments of their individual cost of capital levels were then assessed independently by each company without consulting the others – the report recommended a range rather than a specific value to use. This *Oxera* reports presents strong reasons for a different cost of capital for the smaller water only companies, noting that:

- Smaller companies are more exposed to general business risk (such as closure of major customers, large operational events etc.) and therefore a higher asset beta and/or lower gearing would be appropriate.
- The cost of raising finance is proven to be higher for the smaller companies, partly as some markets are not open to smaller sized issuance and also the transaction costs are higher.
- Smaller companies face greater exposure to financial risk as they have a larger proportion of fixed costs, a factor that Moody's note in the credit rating of Baa2 that they assign to the Company.

Oxera having independently considered the evidence conclude that a small company premium of 0.4% to 0.7% is therefore appropriate.

Overall WACC

The Company's cost of capital assumption of 4.47% compares to the following advice from *Oxera* for a water only company with 65% gearing, having adjusted the *Oxera* gearing assumption of 55%:

| | Low | High | Mid |
|------------------------------------|-------------|-------------|-------------|
| Real risk free rate | 1.25% | 1.50% | 1.375% |
| Equity return premium | 5.25% | 5.50% | 5.375% |
| Asset beta | 0.35 | 0.45 | 0.40 |
| Equity beta | 1.00 | 1.29 | 1.14 |
| Equity (post tax, real) | 6.5% | 8.6% | 7.52% |
| Debt (pre-tax, real) | 3.0% | 3.6% | 3.3% |
| Gearing | 65% | 65% | 65% |
| Vanilla WACC | 4.2% | 5.3% | 4.8% |
| <i>Oxera</i> report at 55% gearing | 4.0% | 5.1% | 4.6% |

The *Oxera* report advises that within the range, an estimate above the mid-point, or close to the top, of the range might be justified. South Staffs Water has analysed its actual debt financing position and this is in line with the mid-point of *Oxera's* evidence (3.3%). The Board has then used a cost of equity assumption of 6.6%, which is near the low end of *Oxera's* recommendations. This Board decision was taken for a number of reasons, with the Board well aware of the CCG challenges; on the desire for bills to be affordable; and in the knowledge that some customers did not find our initial draft business plan proposals acceptable.

The Board believes that this is a reasonable position to adopt, however a reduction in WACC of 1% to 4.5% is considered to be as large as the Company can sustain whilst continuing to deliver the high levels of service, water quality and resilience valued by our customers. Whilst a larger cut may be possible elsewhere amongst larger or less efficient companies, due to the Company's size and embedded debt it is not possible for South Staffs Water. The Company therefore believes that there is a compelling case for a Small Company Premium or an allowance for the embedded debt in order to allow this level of Company specific WACC for South Staffs Water.

12.3 Retail Margins

The same *Oxera* report for the six smaller WOCs reviews the new issue of separate price controls and the need for retail margins to:

- Create opportunities for competition to be active in the non-household sector
- Ensure the continued financeability of the separate business functions, noting that the retail businesses will have a new risk profile (including debt risks)

Ofwat's methodology acknowledges that the retail function is asset-light compared to the wholesale function, hence a retail net margin approach is proposed. *Oxera* has studied comparable net margins in other sectors, in particular the retail businesses in other utility services, with for instance net margins of 2% to 5% being seen in the energy sector for the period 2008-2012 and Business Stream earning over 5% margin in the non-domestic water market in Scotland.

Based on this evidence, *Oxera* recommend a range of 2.0% to 4.0% for the non-household market. Given the importance of stimulating competition they believe it would be appropriate to choose an estimate towards the top of the range.

For the household market, they recommend a range of 1.0% to 2.0% to ensure the financial viability of the retail business and to allow for potential future changes in the market. One of the most likely cost pressures facing the retail business will be bad debt and collection costs, particularly once the Universal Credit system rolls out in 2017.

In a similar manner to the Company's approach to the cost of capital, due to the affordability agenda and the need to respond to the acceptability research findings we received, the Company has used a margin at the low end or slightly below *Oxera's* recommended stance. This business plan assumes a 2.0% non-household margin and a 0.5% household retail margin. These margins have both been set at a low level on the assumption that the indexation of retail costs of 2% per annum and the debt adjustment to Average Cost to Serve for deprivation are both considered acceptable. In the event that these two items were not included then a higher margin would be necessary in order to offset the impact of not including these items in the retail plan.

Return measures:

As per Ofwat's requirements, the following metrics are each reported before any PR09 legacy adjustments and they are expressed in nominal prices except for ROCE and RORE which are in real terms. Where numbers differ in each year of the period 2015-20 the range is quoted.

| | Value |
|---|----------------------------------|
| Return on capital employed (ROCE) ((EBIT – tax)/RCV) | 5.4%-5.6% |
| Return on regulatory equity (RORE) (return due to shareholders / equity component of RCV) | 5.5%-6.1% |
| Retail net margin | 0.5% household; 2% non-household |

Financial ratio measures:

| | Value |
|---|-------------|
| Cash interest cover (funds from operations / net interest) | 6.0-6.3 |
| Adjusted cash interest cover ratio ((funds from operations less capital charges)/ net interest) | 2.1-2.3 |
| Funds from operations/debt | 0.188-0.192 |
| Retained cash flow / Debt | 0.158-0.191 |
| Gearing – Net Debt/RCV | 65.0% |

Equity ratios:

| | Value |
|---|-----------|
| Dividend cover | 0.9 |
| Regulatory equity / regulatory earnings for the regulated company | 15.4-16.7 |
| RCV/EBITA | 8.4-8.6 |

The Company's dividend policy will continue to ensure that the Company retains sufficient headroom to avoid any breach to the financial covenants and to continue to comply with our licence.

The target credit ratings are in line with the current position:

- Standard & Poor rating of BBB+
- Moody's rating of Baa2

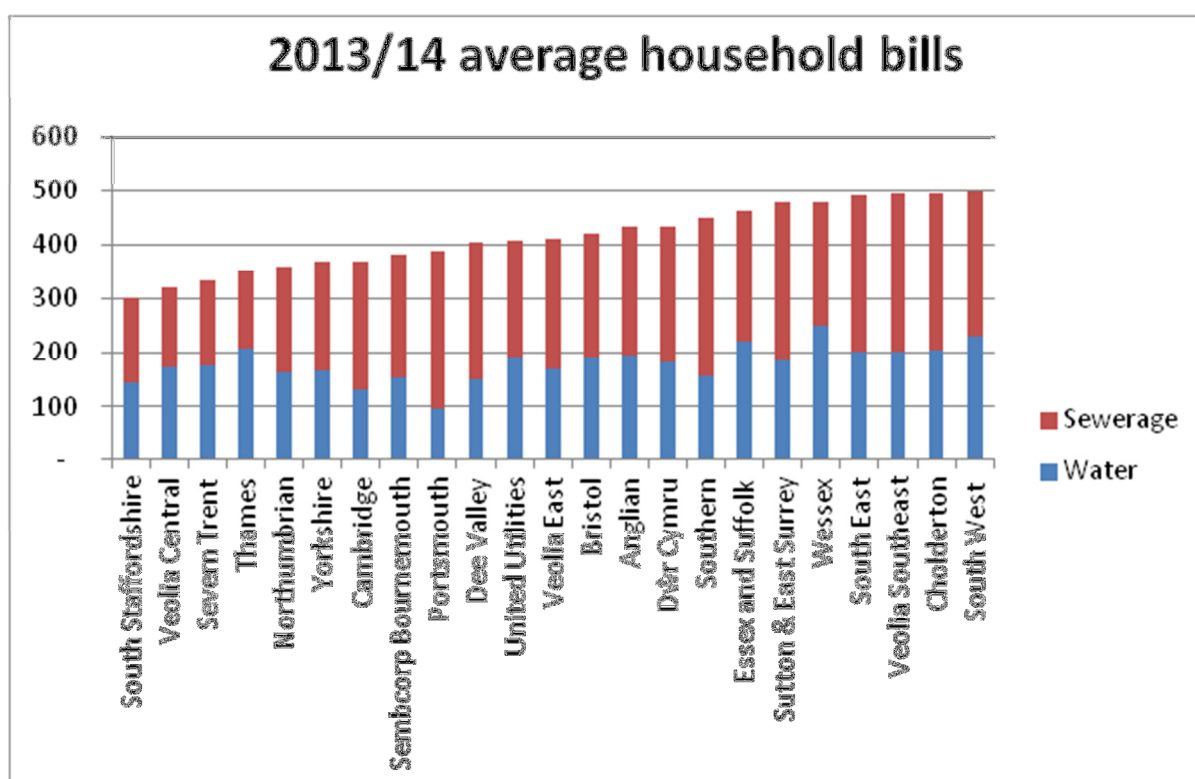
13. Affordability

3 Supporting outcome 3 (Delivering an excellent customer experience)

5 Supporting outcome 5 (Fair customer bills and fair investment returns)

In an economic environment where income levels are falling, living costs are rising and Welfare Reform is underway, addressing affordability is a high priority for the Company.

South Staffs Water customers receive the second and third lowest water bills in the country; with prices in both regions over 25% lower than the national average. The graph below shows the total amount customers paid for their water and wastewater bills in 2013/14. In reviewing issues around affordability, the Company recognises it is important to look at bills from the perspective of the customer, rather than look solely at the water element of the bills which it is responsible for. It has therefore committed to working with Severn Trent Water and Anglian Water when seeing to address the general issue of affordability.



The Company is focused on keeping bills low, while delivering the service customers require. Early action was taken to avoid debt and collection spiralling, and performance metrics show this has proved successful despite the deprivation in the area. This focus on affordability has hence been for the benefit of all customers since in the retail cost metrics, the position here is relatively low debt costs. Tackling affordability issues is an aim for the whole business, led by customer services at the first point of contact right through to debt & collections if the customer gets into difficulty.

The Company currently offers a comprehensive range of solutions to address affordability issues, as shown in the table below

| Metering/Billing | Tariffs | Payment Methods | Payment frequencies/amounts | Payment Schemes |
|--|--|---|--|--|
| <ul style="list-style-type: none"> • Water meter • Billed for consumption • Billing Frequency | <ul style="list-style-type: none"> • Watersure • Metered - low income/high water use • SoLow • Metered - low user. Higher wastewater volume charge, no wastewater service charge | <ul style="list-style-type: none"> • Water Direct • in receipt of qualifying benefits • Direct Debit • annual discount applies • Credit/Debit Card • Online payment • GIRO • Paypoint • Doorstep visit • Company offices • Payment card/Payment Book | <ul style="list-style-type: none"> • Flexible payment arrangements • short term plans for temporary difficulties • reduced amounts/longer term to assist budgeting • income receipt date/payment date matching | <ul style="list-style-type: none"> • Charitable Trust • customers in debt able to show commitment to clear debt • NewStart • payment matching facility |

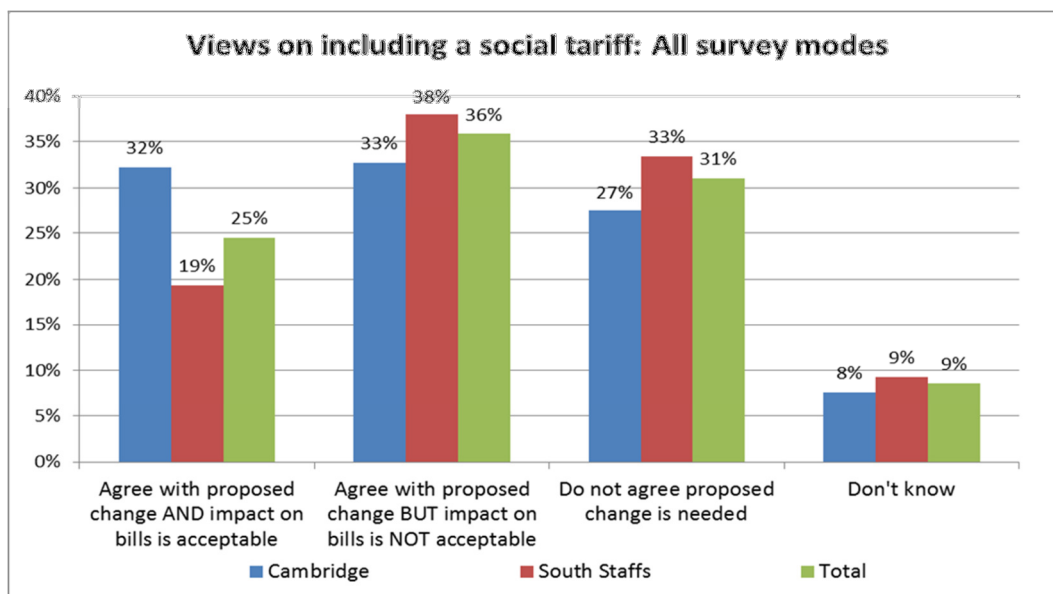
Many customers in the Company's area do struggle to pay their bills; this has been a long standing problem in this area. The Company's [Long Term Strategy](#) has been to help customers in need and this is evidenced by debt levels being under control. The last five years has been a difficult economic period that has compounded such difficulties. The Company has worked hard to assist customers so that fewer build up debts they will not be able to re-pay. This support has been through offering many payment options, flexible payment plans, debt advice and support, together with sophisticated debt recovery processes. The Company has also increased support through the Charitable Trust, having been the first water company to launch such an initiative.

13.1 Consultation with customers and stakeholders

The acceptability study carried out by ICS Consulting revealed that although six in 10 customers (61%) said they would agree with a social tariff, of these only a quarter (25%) agreed to a social tariff that would have a 2% impact on their bills. ([Customer Engagement strategy](#))

Just under a third of customers (31%) did not agree with a social tariff and 9% were undecided.

Introducing a social tariff had an impact of a 31% reduction in overall levels of acceptability.



Source: ICS Consulting - Acceptability research

Consultation on the proposals put forward in the business plan by Community Research showed 59% supported introducing a social tariff which would help customers in genuine need and 47% thought savings from the merger should be used to support customers that were struggling to pay.

The Company has not yet launched a social tariff but there is a commitment to review this further with customers, stakeholders and neighbouring sewerage undertakers (for whom billing is carried out). If low customer support for a social tariff continues ie, a subsidy, the Company will review further self-financing and affordability initiatives. The Company will also ensure consideration is given to how different tariffs interact across water and wastewater elements of a customer's bill, following the anticipated guidance from Ofwat in this area.

In early 2014 the Company will commence further customer research and stakeholder consultation, to build on the existing research already undertaken in this area.

In line with considered best practice, as reaffirmed in Ofwat's response to a Thames Water Interim Determination of K (*IDoK*) given in October 2013, the Company has also engaged with credit reference agencies to identify how sharing data can be used to enhance collection strategies.

Work is also underway to implement the National Landlord Portal. This is an industry-led initiative which seeks to encourage landlords to register occupier details with water companies through a web-portal. The Company has been actively involved throughout its development by participating in expert user groups and specifying desired outcomes. It is expected the National Landlord Portal will help reduce debt on tenanted properties by identifying occupiers sooner, enabling prompt billing and reducing accumulated debt and affordability issues.

In total 22% of properties in the South Staffs region and 11% of properties in the Cambridge region are registered as tenanted. This amounts to 146,673 properties (a significant number could also be unidentified). If successfully adopted, the National Landlord Portal has the potential to identify and address affordability issues for a significant number of customers, and improve efficiencies and reduce costs associated with income and debt management.

The Company will continue to monitor the impact of Welfare Reform on customer affordability and is already engaged with stakeholders on the impact this may have on Third Party Deductions and WaterSure. The Company has already taken steps to inform customers of potential changes that may affect them and will continue to monitor this.

The Company will be extending the Charitable Trust that operates in the South Staffs region, funded by the Company's owner, into the Cambridge region from April 2014. Customers in the Cambridge region who are unable to afford their bill will have a new opportunity for assistance in paying. In addition a new discretionary fund over the AMP6 period will be made available to:

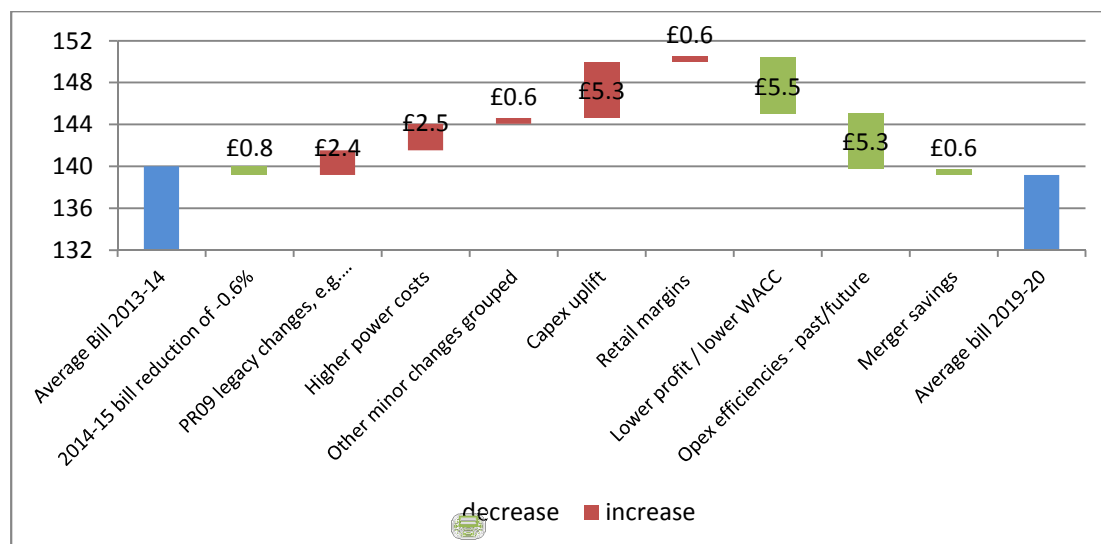
- Further boost the Charitable Trust through allowing more grant support to customers in need of support (this initiative is over and above the extension to the Cambridge region)
- Commence activities to offer debt advice to customers working with independent agencies such as the Citizens Advice Bureau and other support agencies

This presents opportunities to reach out to the wider community and target help to the most vulnerable without additional costs impacting the whole customer base.

The [Affordability](#) strategy will evaluate the basis of an affordability tariff structure (not necessarily a Social Tariff). As an example of this, early research indicates that a possible route is to provide access to an affordability tariff based on household income and not solely on the existence of Universal Credit (UC) as a signpost. With changes to UC still evolving it is difficult to understand its scope and possible implications to the customer base, along with challenges in understanding the data available in respect of recipients and resistance to data sharing from the Department of Work and Pensions. Should access be addressed at a more local level, the passing of the administration of Council Tax Benefit to local authorities from central government (now replaced with Council Tax Relief) could be considered as a potential signpost to an affordability tariff if the data can be legitimately obtained.

14. Impact on Bill

Overall customers will experience a bill reduction in 2014/15 (equivalent to minus 0.6% as per FD09), following by five years of stable bills in AMP6 (excluding inflation). This is shown in the following chart:



The data within the above table can also be reviewed in Table format:

| | £ impact (data value in chart) | % impact |
|---|--------------------------------------|----------|
| • Average household bill in 2013-14: £140 | | |
| 2014-15 planned bill reduction | £0.80 | -0.6% |
| PR09 legacy changes: SIM and RCM | £2.40 | 1.7% |
| Higher power costs | £2.50 | 1.8% |
| Other minor changes grouped together (Open Water, Permits, NEP) | £0.60 | 0.4% |
| Capex uplift for resilience | £5.30 | 3.8% |
| Household retail margin | £0.60 | 0.4% |
| Lower profit from lower cost of capital (WACC) | £5.50 | -3.9% |
| Opex efficiencies – past/future | £5.30 | -3.8% |
| Merger savings | £0.60 | -0.4% |
| • Average household bill in 2019-20: £139 | | |

Hence the bills will remain well below the national average. They are currently 24% lower and this difference is expected to rise should other companies progress inflation only increases (since they are applied to a larger bill).

The PR09 legacy items are based on an anticipated SIM reward of 0.5% of revenue (given we lead the sector after two years); together with adjustments associated with the revenue correction mechanism (RCM). The capital spend will be in line with PR09 so the CIS adjustment is not applicable. There is no logging up/down, nor any shortfalling.

The next increase reflects power costs – these are mainly green levies and third party charges, rather than volume changes or wholesale price changes. South Staffs has very high pumping requirements due to its topography, thus the impact of power prices is material to customer bills. An increase of 24% is anticipated. The Company will continue to progress efficiency in its use of power (we lead the industry on this metric also).

The next item labelled “other minor changes grouped” relates to the operating cost changes for permits for work on the highway (TMA costs); for Open Water costs consistent with Sonia Brown’s recent letter to companies; and for NEP investigations in the Cambridge region. These three items are approximately of equal value (circa £0.2m/year).

These are the only opex increases in the business plan. Costs such as debt and pensions will be managed by the Company, they are not drivers of bill changes at PR14.

The capex uplift required for resilience, including some major spend on nitrate treatment sources and on service reservoirs, is then another positive impact on bills from 2015. Whilst this is a high value, it has been proven that the spend proposed is cost beneficial, reflecting customer valuations of service. The Company has had historic capex spend levels much lower than other companies, so the increase is against a low starting position. The Company has worked hard to minimise the impact, identifying spend areas that can reduce and deferring some spend to AMP7, providing that the risk can be managed and the impact of bill changes in 2020 is taken into consideration.

Finally there are increases arising from the new approach to wholesale/retail separation, with a net retail margin assigned to the asset-light part of the business.

There are then three factors with a negative impact on bills, i.e. bringing bills down.

The first and most significant of these is the assumed reduction in the cost of capital – the impact of changing from a WACC of 5.5% at PR09 to 4.5% at PR14 brings household bills down on average by £5.50.

The next item is opex efficiencies – both those achieved already through our outperformance that are passed back to customers at PR14 and the challenging future target of 0.75% per annum in AMP6 (which compares to Ofwat’s PR09 target of 0.25% per annum),

The Company has also achieved additional efficiency savings of £0.5m due to the South Staffs/Cambridge merger. There had been a debate with the CCG as to whether these specific savings should be re-invested, but the customer research findings clearly favoured these being passed back to customers in the form of lower bills and so this approach has been followed.

Hence overall the net impact of these changes is that bills in 2019/20 will be slightly lower than current levels in real terms, due to the April 2014 price reduction planned. In the AMP6 period the bill levels are stable (in real terms).

15. Risk & Reward

The key proposals in this plan are a package of measures to support current and future customers. The package includes:

- Stable water bills, rising with inflation only.
- Outcomes and investment proposals that reflect extensive customer engagement
- A social package to support affordability, local communities and the environment
- Additional investment to strengthen the resilience of assets

The above is made possible with flat bills through efficiency savings and lower profits.

The Board of the Company has considered carefully the key decisions of its business strategy so that customers are the beneficiaries. These proposals balance the views of different stakeholders. The Board believes it has taken a balanced view of managing the risks it faces and a robust view of the future costs we will incur in addressing these risks. The plan is built on the five outcomes to be delivered that have been identified as customers' priorities based on extensive customer research and in conjunction with the CCG. Proposals for dealing with affordability are also developed.

The key headlines from the plan include;

82% Customer Acceptability from research of 1,000 customers. This was based on a real price change of +2% that formed our initial draft proposals in the summer. The final position is a real change of zero, suggesting even more customers will now find this plan acceptable.

An increase in total expenditure of 6%, principally arising from higher power costs (opex) and higher investment to ensure assets are resilient (capex), consistent with customers' expectations. Major investment is planned to replace critical assets such as some of its storage reservoirs and to refurbish nitrate removal plants.

- A cost of capital of 4.5% (compared to 5.5% at PR09).
- An efficiency projection that is three times the target set by Ofwat at PR09.
- A commitment to share with customers future external financial windfalls should they arise.
- A new discretionary fund of £1.5m to tackle debt, affordability and local community projects including those with an environmental focus.

The Company will build on its track record of providing low bills and high service standards.

16. Conclusion

The Board considers that this plan is good for customers – the Company has listened extensively to the views and priorities held by the different stakeholders. Some difficult decisions have been needed to keep customers’ bills to the lowest sustainable level and overall the Board consider that this plan will:

- Maintain service excellence
- Ensure customers receive a value for money service in line with their expectations
- Retain efficient operations exploring innovation opportunities and
- Address the future challenges to be faced.

The Company will aim to:

- Continue to lead the sector on service through staying in tune with the interfaces the customer wants from their utility provider
- Continue to lead the sector in efficiency through new innovation and a continued drive to secure strong competitive forces in all of our spend areas
- Maintain efficient stewardship of assets, encompassing a forward-looking risk-based approach to asset management and service delivery
- Retain low customer bills for a further five years and beyond given that a long term perspective has been taken to consider bill impacts after 2020.

The following table summarise the main features of this business plan in the context of the elements of Ofwat’s risk based review:

| | |
|--------------------------------------|---|
| <p>Performance in 2010-15</p> | <ul style="list-style-type: none"> • 1st on SIM • High service standards and satisfaction levels (96%) • 2nd lowest household water bill • Full regulatory compliance • 5% Opex Outperformance (Band A) • Capex in line with PR09 |
| <p>Outcomes</p> | <ul style="list-style-type: none"> • Five outcomes aligned to customers’ priorities – confirmed by research • Performance commitments to maintain high standards • Incentives scaled to customer valuations • Penalties of up to £1.7m a year • Rewards of up to £0.7m a year • Reputational incentives in line with the CCG’s desire to monitor our progress |

| | |
|---|--|
| Costs | <ul style="list-style-type: none"> • Totex is optimised to ensure cost beneficial investment to meet the outcomes that customers want • Totex increase of 6% largely reflects power costs and asset resilience • Efficiency targets three times greater than PR09 • A suite of innovation proposals outlined |
| Risk and reward | <ul style="list-style-type: none"> • Proposals to manage risks and therefore avoid bill increases and keep our bills around 25% lower outlined • Only two notifiable items proposed • Outcome penalties greater than the rewards • External windfall sharing with customers proposed |
| Affordability and financeability | <ul style="list-style-type: none"> • Stable bills – 25% lower than current national average • Social package to support debt and affordability proposed. • 4.5% cost of capital (compared to 5.5% at PR09) • 65% gearing |
| Board Assurance | <ul style="list-style-type: none"> • Exemplary record • External advice on key aspects of plan – customer research and optimum totex proposals • Board leadership to reduce bill impact to zero • Assurance given to future compliance, transparency and benefit sharing |