

Our Blueprint for Yorkshire

The right outcome for Yorkshire

Our Wholesale Waste Water Business Plan

December 2013



YorkshireWater

The world is changing
– and so are we.
We've got a plan,
which we're calling
our Blueprint
for Yorkshire.



Contents

4	Foreword	86	We protect and improve the water environment
6	Board statement	100	We understand our impact on the wider environment and act responsibly
10	Executive Summary	106	Financing the plan
20	Support for our plan	112	A good plan for customers
24	About our Blueprint	116	A fair plan for customers
28	Serving Yorkshire	120	Delivering the plan
38	Engaging customers and stakeholders	124	What happens next?
44	Listening to our customers and stakeholders	125	Contact us
58	Developing our Blueprint	126	Appendix 1
72	How we will deliver our outcomes for Yorkshire	127	Appendix 2
74	We take care of your waste water and protect you and the environment from sewer flooding	129	Appendix 3

Foreword

As a provider of essential waste water services to nearly five million people and around 135,000 businesses, our responsibilities have never been greater, and the pressure on us to balance the needs of all our stakeholders has never been bigger.



We are experiencing a period of sustained increase in population. We are starting to see the impacts of climate change in the weather we experience. Statutory obligations and regulatory standards from Europe continue to tighten and the economic climate means there is an even greater need to focus on the cost to our customers.

It's a difficult balancing act to find a way to meet all of these sometimes conflicting challenges and we've spent the last two years collecting the information we need to find that balance. This has stretched us more than ever before and this plan will be a real challenge for us to deliver. We believe this plan balances fairly the expectations of all our stakeholders, especially for our customers who pay for everything we do.

We've always been a company that has consulted with its customers in developing its plans. During the past two years we've stretched ourselves even further and undertaken our largest, most thorough and in-depth customer and stakeholder engagement programme ever. We've attempted to find out what the people of Yorkshire really need from us, so that we can genuinely say this plan is the right outcome for Yorkshire. Our in-depth research has involved over 8,000 customers through focus groups and in asking them to participate in structured face-to-face and online surveys. We have engaged widely across the region to understand if the outcomes developed through our in-depth research are supported more widely across the region we serve. We also worked with an independent Customer Forum to ensure that our plans represent a reasonable balance of our customers' views. We listened and acted on the results of this engagement and as a result we've used our customers and stakeholders priorities to shape the direction of our business.

This price review is known as PR14 and will ultimately set the prices we can charge our customers for the period 2015-2020. Ofwat intends to set us four individual price controls: wholesale water, wholesale waste water, retail household and retail non-household. However, customers will continue to receive one bill. The wholesale business covers all the core activities we undertake to provide our customers with clean water and take away their waste water. It can be further divided into two separate and distinct areas of activity; wholesale water and wholesale waste water services. **This document presents our plan for the wholesale waste water business.**

Yorkshire Water's board commitment to 'The right outcome for Yorkshire'

Board Assurance Statement

Introduction

The Yorkshire Water Board (the Board) members confirm that Yorkshire Water (the Company) has produced a high quality business plan for the period 2015-2020.

This assurance statement, in line with Ofwat's Business Planning Expectations, explains the Board's ownership of this plan and why we consider it to meet the criteria set out to define 'high-quality'.

The plan is designed to deliver good outcomes for customers and the environment whilst ensuring we continue to meet our statutory obligations. It is written in the context of our 25 year vision of delivering 'The Right Outcome for Yorkshire'.

The plan has been developed through close working and liaison with other regulators; namely the Environment Agency, the Drinking Water Inspectorate and Natural England. The plan follows the planning assumptions, guidance and information notes issued by regulators and is built on the basis of Defra's Statement of Obligations. The Board confirms that the plan includes the activity and investment to meet the requirements of the National Environment Programme, the Drinking Water Enhancement Programme and the Water Resource Management Plan.

Board Governance

The Board confirms that sufficient, transparent governance has been put in place to develop a high quality plan.

To ensure alignment with strategic objectives we have implemented a governance structure early in the process, defining roles and responsibilities of the Board and other key groups in developing our plan. This structure is shown diagrammatically in the governance section of our core business plan.

There have been monthly dedicated Board meetings and workshops to shape our plan which have been fully minuted, recording the Board's leadership and decisions on the plan.

The Board has appointed a Regulation Committee comprising the executive directors and relevant senior managers. The prime purpose of the Regulation Committee is to oversee the overall management and direction of arrangements for the Periodic Review process and to report matters to the Board.



Outcomes and Customers

The plan throughout is shaped by the feedback on customer priorities that we have received from customer engagement and the Customer Challenge Group (known in Yorkshire as the Customer Forum).

- Our service valuation work has been independently designed, assured and implemented and described by industry experts as 'state of the art'.
- To reflect customers' views fully our Outcomes, measures of success and delivery incentives have all been developed and tested with customers.
- Extensive acceptability testing has been carried out on the plan with all elements of our customer base. Over 77% are supportive of the plan, exceeding the acceptability threshold set by CC Water. This support was achieved whilst showing openly the impact of RPI on bills and before further savings of £6 per year on bills.

The Customer Forum has provided independent challenge on our approach to customer engagement, ensuring that the plan delivers good outcomes for customers and the environment. It has been fully involved throughout our service valuation, customer engagement and acceptability testing activity.

The final report produced by the Customer Forum submitted directly to Ofwat provides evidence that the views of customers and representatives on the Customer Forum have been fully embedded into our plan.

The Independent Chair of the Customer Forum stated in September 2013 that we "have a clear mandate from the customer base to proceed with the current plan" and that the Forum "will support the approach we have taken".

Business Plan Projections and Estimates

To satisfy ourselves that our plan is accurate and efficient, we have instigated extensive processes of assurance on all elements of the plan. We have engaged as auditors Atkins (our former reporters) and PwC (our statutory auditors) (together "the Business Plan Auditors") and have mirrored the approach used in our Risk and Compliance Statement process, which is ISO9001 certified.

The Board confirms that these processes and internal systems of control are sufficient to ensure the plan has been fully reviewed. The feedback received from this assurance, as well as from the Customer Forum, gives us confidence that the costs are not inflated and that it is an accurate submission, not a 'bid'.

As our Business Plan Auditors also assure our Risk and Compliance Statement, we are confident that the plan has been challenged within the context of our AMP5 performance and expenditure. They have confirmed that the plan contains truthful and complete information about the differences between planned and actual expenditure in AMP5.

Our internal and external assurance processes are explained fully within the plan with the external assurance statements attached in the evidence base

Yorkshire Water has a Competition Compliance policy which has been reiterated to employees during the development of our plan. We have introduced appropriate separation of our retail and wholesale businesses to comply with competition law throughout the regulatory changes.

We have seen no evidence to change our belief that our plan was developed independently of other companies and competitors.

Risk and Reward

The Board confirms that the plan shares risk and reward fairly between customers and shareholders.

It should be noted that we believe that the current framework for allocating and mitigating risks works well and do not propose any major changes. It ensures risks are allocated to those best placed to manage them. It is important for current cost incentives to continue as they have driven companies to become more efficient and ensured that efficiencies are passed back to customers. We believe that the Outcome Delivery Incentives (ODIs) will further enhance the current set of service performance incentives.

The overall risk to Yorkshire Water and subsequent reward for managing that risk is reflected in the allowed returns. To assess these we have used the well-established CAPM approach which is considered the best available method for assessing reward based on the risk to the company. In addition to this we have used advice from leading economic consultants, First Economics, and appropriate comparators.

Our scenarios and risk modelling show that where a risk is shared between customers and investors, each party's exposure to risk and reward is fairly balanced. Potential reward earned by investors is proportionate to the level of risk to which they are exposed.

The scenario and risk modelling has been externally audited, peer reviewed and has used industry leading techniques and practices to understand uncertainty in our plan – we have demonstrated 95% confidence that we will be able to deliver our plan in all years of AMP6.

The key elements of risk and reward have been agreed following extensive Board level discussion of the available information.

Leadership and Corporate Governance

The Board confirms that Yorkshire Water complies with the relevant conditions of appointment under the Water Industry Act. This is reviewed and stated annually in our Annual Report, our Risk and Compliance Statement and our Control Risk Self-Assessment.

We have recently reviewed and confirmed our compliance with the relevant parts of the 'UK Corporate Governance Code' (the Code). This is documented in the Yorkshire Water Annual Report (the Report) for the year ended 31 March 2013 (pp 38-43). It describes how the Company demonstrates effective corporate governance, operates transparently and how the Board provides strong leadership to the Company. The Report provides an explanation of how the Company applies the Code and where appropriate an explanation of any departures from the Code provisions has been provided. The Company has complied with the provisions of the Code except as disclosed in the Report. The Report also includes significant additional disclosures in relation to the Company's corporate structure, senior management remuneration and its tax position.

In addition the Board has reviewed the principles of "Board leadership, transparency and governance" as set out in a consultation document from Ofwat dated 19 September and the subsequent Information Notice IN 13/13. In his letter of 28 October 2013 to Ofwat, the Chairman confirmed that the Board will develop a governance code for Yorkshire Water in compliance with the principles and in accordance with the timetable set out in the consultation as requested.

The Board has also provided strong leadership in both the development of our strategic plan and the day to day operation of the Company.

Assurance Of PR14 December Data Submission

In addition to the assurances on our plan the Board also confirms that it has sufficient processes and internal systems of control to fully meet its obligation for the provision of information to Ofwat in the December Data Tables Submission 2013, which forms part of the PR14 business plan submission.

So far as the Directors are aware there is no relevant information of which the Company's Business Plan Auditors are unaware. The Directors have taken all of the steps that should have been taken in order to make themselves aware of any relevant audit information and to establish that the Company's Business Plan Auditors are aware of the information.

The process for completing the PR14 December Submission is aligned with our annual reporting process which is certified to ISO 9001:2008. This represents best practice as it is both long-established (since 2007) and externally verified.

In particular the Board has taken note of the following:

- The PR14 December Submission 2013 process and key issues raised by the Business Plan Auditors have been reviewed by the Yorkshire Water Price Review Steering Group
- That the process undertaken includes audit checks and challenges by data providers, data managers, senior managers, Executive Directors, the Regulation Team, Yorkshire Water Price Review Steering Group and the Business Plan Auditors
- The considerable dialogue between the Company's Business Plan Auditors to understand any issues raised by the data, all of which are satisfactorily resolved
- The text of the PR14 December Submission 2013 adds explanation to and explains assumptions behind the data submitted where necessary.

Signed by Yorkshire Water Services Limited Board of Directors



Kevin Whiteman
Chairman



Richard Flint
Chief Executive



Liz Barber
Finance and Regulation Director



Martin Havenhand
Independent Non Executive Director



Charles Haysom
Director of Production



Roger Hyde
Independent Non Executive Director



Michelle Lewis
Director of Corporate Communication



Stuart McFarlane
Company Secretary



Nevil Muncaster
Director of Asset Management



Helen Phillips
Director of Customer Service and Networks



Kath Pinnock
Independent Non Executive Director



Anthony Rabin
Independent Non Executive Director



Pamela Rogerson
Director of Human Resources, Health and Safety

1. Executive Summary

Section summary:

This document describes our five-and 25-year plan to ensure that we take care of waste water and protect customers and the environment from sewer flooding and pollution. Affordability is a customer priority so we have kept bills as low as possible while maintaining a high quality waste water service. We have mitigated cost pressures from ageing assets and new statutory requirements by reducing our investors' returns and by passing back current and planned cost efficiencies.

Our Wholesale Waste Water Business Plan:

- Has been developed through extensive engagement and has the support of customers, stakeholders and regulators
- Is robust. Supporting detailed evidence documents describe how we used risk-assessment, latest information and national guidance
- Will ensure our average combined household bill does not increase above inflation in the period 2015-2020. Our bills will remain among the lowest in the country
- Will cost £2.1 billion over the period, 54% of the average household bill.

This investment is essential to:

- Maintain the region's waste water treatment works, pumping stations and pipes
- Meet our legal obligations, for example securing 100% compliance with permit conditions at waste water treatment works and meeting the requirements of the EU Water Framework Directive
- Protect 400 properties from internal sewer flooding, working in partnership to provide best value integrated solutions and building in flexibility to address climate change
- Manage our impact on the environment and ensure our waste water service is sustainable, for example improving 379 km of river.



This section provides an executive summary of our Wholesale Waste water Business Plan.

1.1 Investing for the future - The Wholesale Waste water Business Plan, part of our Blueprint

We developed our plan from what our customers and stakeholders told us; we call this our 'Blueprint'. This sets out our long term aims and objectives for the coming five-and-25 years.

The Wholesale Waste water Business Plan forms part of our Blueprint, focusing on the next five years in the context of our 25-year plan and concentrating on customer priorities. It explains what we intend to deliver, the amount we propose to invest and how this will impact customers, stakeholders and the environment. This is the first stage of a long-term plan for a sustainable future while keeping bills affordable. The plan is aligned with our vision of 'Taking responsibility for the water environment for good'.

Our customers expect that they should be able to pull out the plug, flush the toilet and have their waste water removed without any interruption, knowing that it will be treated responsibly. Businesses expect to have flexible waste water services that suit individual business needs in Yorkshire. The wholesale waste water price control covers all the technical services that take away and treat waste water and return it safely to the environment. This includes ensuring the resilience of our sewer network, preventing sewer flooding and pollution incidents, maintaining and improving water treatment standards and protecting river and bathing water quality.

Our customers also expect us to protect and improve the environment, and this is also fundamental to the plan. This includes improvements to the rivers of the Yorkshire region to meet the aspirations of the Water Framework Directive, under which the government wishes

to see more of our rivers returned to a healthy condition, reversing much of the damage caused since the Industrial Revolution. This work will be required over the next 12 years. We must also recognise and be prepared for meeting the challenges that the future will bring including: population growth, housing/business development and climate change.

Our customers have told us we need to keep bills stable and affordable without compromising core services. Our combined bills are some of the lowest in the country, and in 2013/14 were 5% lower than the average water and sewerage household bill. We've achieved this by driving efficiencies where we can, by engaging in good planning and by avoiding unnecessary costly investment where we think it represents poor value for money.

The objective of our waste water investment is to maintain stable asset performance and reliability, secure the improved level of service and quality we have delivered over recent years, deliver new statutory environmental improvements and prepare for the future challenges of population growth and climate change.

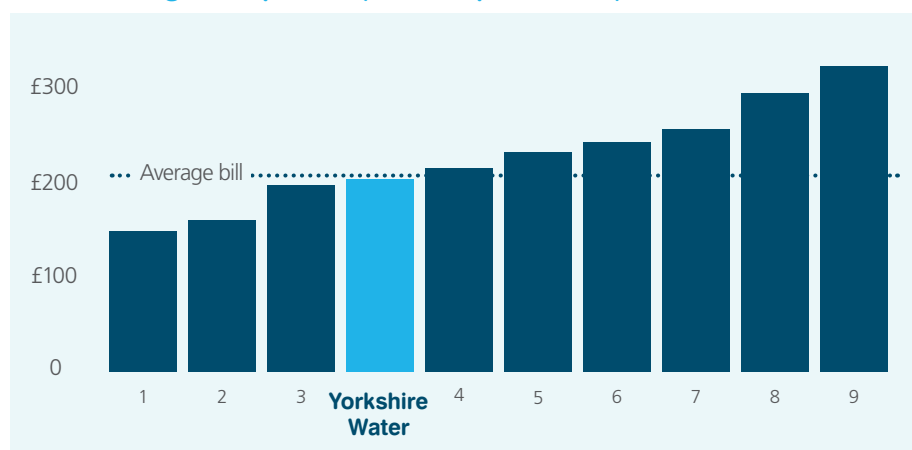
Between 2015-2020 we plan to spend £2,105m to deliver the resilient waste water services that our customers and stakeholders told us that they want and need. We will also have to pay interest and offer returns to these investors. We are planning to do all of this and hold customer bills in line with inflation.

Over the summer in 2013 we tested our whole business plan as part of our engagement with our customers and overall 77% of the customers consulted support our proposals. We are planning to do all of this and hold customer bills in line with inflation.

Our plan is built on sound estimates of efficient costs, accounting for projected future efficiency gains, including a robust forecast of all the costs we expect to incur between 2015 and 2020. It has been rigorously challenged by customer and stakeholder representatives through the independent Customer Forum, and is fully assured and owned by the Board of Yorkshire Water.

Figure 1A

Our current sewerage bill relative to other Water and sewerage companies (2013/14 price base).



This Wholesale Waste water Plan, as part of our overall Business Plan submission, will drive through significant improvements while helping to mitigate an upward cost pressure on average household bills. We recognise that paying for the cost of our services is still a challenge for some customers and we will continue to support them with our industry-leading programmes of cost management, debt management and flexible payment arrangements. Our waste water bill is one of the lowest in the industry as figure 1A highlights. This plan will help keep it low.

1.2 An efficient company

Customers have told us we need to keep bills stable and affordable without compromising core services.

In 2013/14 our sewerage bills were slightly lower than the average household sewerage bill (0.5%). We've achieved this by driving efficiencies where we can, by engaging in good planning and by avoiding unnecessary costly investment where we think it represents poor value for money.

We're proud of all the work we do to keep our bills affordable. It means being responsible, taking difficult decisions and regulating ourselves. At Yorkshire Water we have done this for the last two price reviews in 2004 and 2009. We've done it again in building this plan. This strikes a balance between the aspirations for more investment, and affordability and returns to investors. In striking a balance and planning the right outcome for customers we have not been able to meet all the aspirations of all our stakeholders, and this will create challenges for us in delivering the plan. However, we think we've made the right decision in responding to our customers' consistent message of not increasing bills by any more than inflation. Our bills are low, this plan keeps them low.

1.3 Developing the Outcomes for Yorkshire

Over the last two years we've been investigating what our customers, the environment and our investors need and want from us over the next five and 25 years. We've carried out a detailed assessment of our assets to understand the level of asset risk and the costs involved in mitigating those risks and we've engaged with our customers and reflected their views faithfully to help us shape our plan.

Our plan has been developed through an in-depth and thorough programme of engagement with our customers and stakeholders. It has been built and tested an iterative process where we have gathered evidence on priorities and costs, built our proposals and tested our proposals with customers.

Figure 1C

Outcomes mapped to price controls

Outcome	Price Control
We provide you with water that is clean and safe to drink	Wholesale Water
We make sure you always have enough water	Wholesale Water
We take care of your waste water and protect you and the environment from sewer flooding	Wholesale Waste Water
We protect and improve the water environment	Wholesale Water and Wholesale Waste Water
We understand our impact on the wider environment and act responsibly	Wholesale Water and Wholesale Waste Water Retail Household/Retail Non-Household
We provide the level of customer service you expect and value	Retail Household/Retail Non-Household
We keep your bills as low as possible	Retail Household/Retail Non-Household

In 2012 'Valuing Water' and 'Willingness-to-Pay' studies provided information on where customers place most value on our services. This informed us of our customers' likely outcome priorities which we tested and refined with customers in 2013.

Throughout all of our studies customers said that we need to keep getting the basics right in delivering core water and waste water services, be responsible in the way we treat customers and the environment and keep our prices affordable. Customers also told us that in the current economic climate, they do not want prices increasing above inflation. We have faithfully reflected all of this in our business plans, which together form 'The right outcome for Yorkshire'

Customers told us there were seven outcomes we need to focus on. They helped us to shape the measures of success and incentives in delivering these outcomes. These outcomes are the foundation of our Blueprint: the next 25 years and this five-year plan.

The seven outcomes for Yorkshire and their relationship between each outcome and price control is illustrated in figure 1C.

The Wholesale Waste water Business Plan contributes to the delivery of three of these outcomes. These are 'We take care of your waste water and protect you and the environment from sewer flooding', 'We protect and improve the water environment' and 'We understand our impact on the wider environment and act responsibly'. Where an outcome is delivered by more than one price control there are separate components or targets specifically attributable to each, with the exception of 'We understand our impact on the wider environment and act responsibly', where the targets are for the whole business to achieve together. Additionally, our measure of 'Working together with others' will be jointly delivered by all four price controls, with qualifying activity being carried out by any area of the integrated business.

Between 2015 and 2017, our wholesale function proposes to address its points of interaction with our Retail services provision by developing Service Level Agreements to facilitate ways of setting performance expectations which allow each area of the regulated business to best meet customers' needs. Wholesale Waste water recognises that, following the anticipated opening of the market for non-household retail, these Service Level Agreements will become the foundations of our level playing field for ensuring we provide the same information and levels of service to all Retailers. Appendix 1 details the interactions between the wholesale waste water and other three price controls.

Figure 1B

Our approach to developing 'The right outcome for Yorkshire'

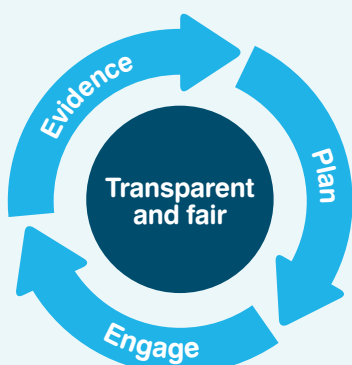
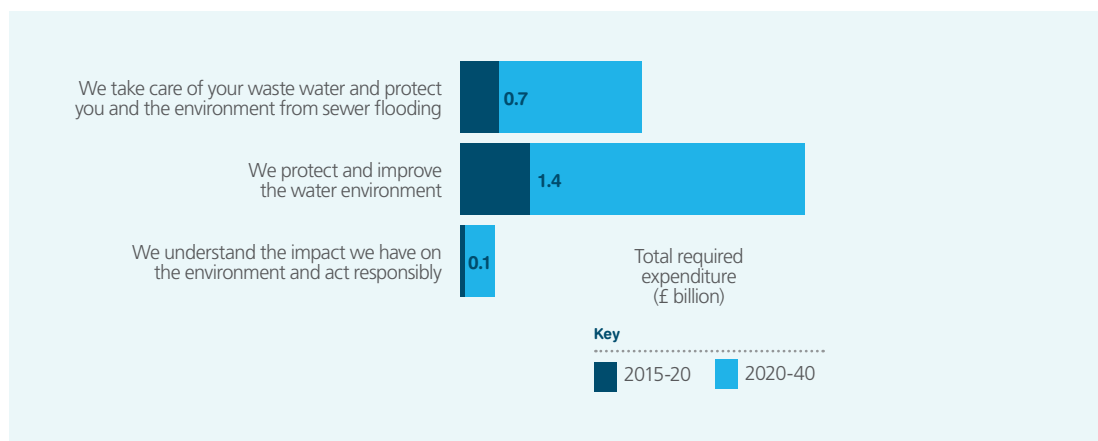


Figure 1E

25 year expenditure requirements to deliver the three Waste water outcomes for Yorkshire

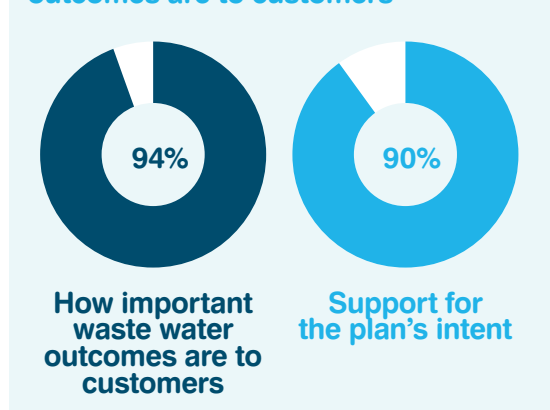


In developing our whole business plan, our outcomes, activities and costs have been developed and tested with over 8,000 customers. We have been fully transparent with our customers, showing them the forecast impact of inflation before coming to our decisions. The final draft of the plan received 77% support from the customers surveyed.

The overall intent of our business plan and its outcomes have been tested and commented on more widely across the region; nearly 30,000 people have provided feedback showing 90% support for its overall intent, with the waste water plan receiving 94% support for its outcomes. This is illustrated in figure 1D.

Figure 1D

How important Waste Water outcomes are to customers



1.4 Planning for the challenges of the next 25 years from 2015-2040

In September 2013, we published our long-term strategic direction, 'Blueprint for Yorkshire – the next 25 years' which is based on what our customers and stakeholders told us. It showed how, over the 25 years from 2015, we'll need to invest around £20.8 billion in total across all parts of the business to achieve the outcomes, and specifically £10.7 billion to deliver the three outcomes which form the core of this Waste water Plan. The plan accounts for the extra 855,000 people who are expected to be living in Yorkshire by 2040. The graph below shows where our investment will be directed, with 33% of the investment focused on protecting and improving the environment.

Some of the key improvements we will be making are:

- Protecting 2,000 properties from internal flooding from sewers, building in flexibility to address the impact of climate change in the future
- Introducing additional remote sensing and telemetry into our sewerage network to help us prevent pollution resulting from sewer blockages
- Delivering better rivers by improving the performance of our waste water treatment works and overflows, resulting in a better habitat and environment for wildlife. It will also allow the UK to meet the demands of the Water Framework Directive (WFD) by 2027.

A significant proportion of the investment will ensure that the standards of service delivered today are maintained into the future. Achieving this will mean a 12% increase in investment to maintain our waste water treatment plants and underground pipe networks.

Figure 1F
**Yorkshire Water Long term
Investment profile 2015 to 2040**

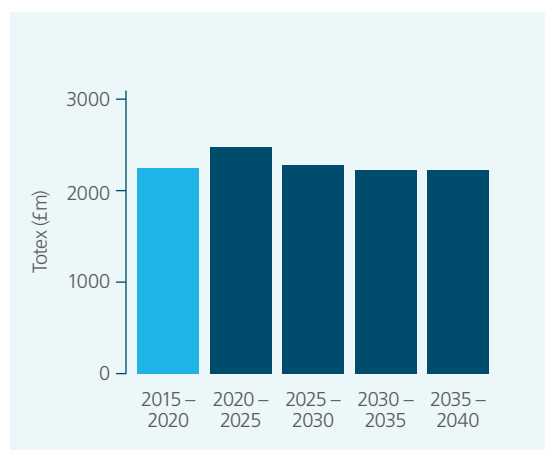
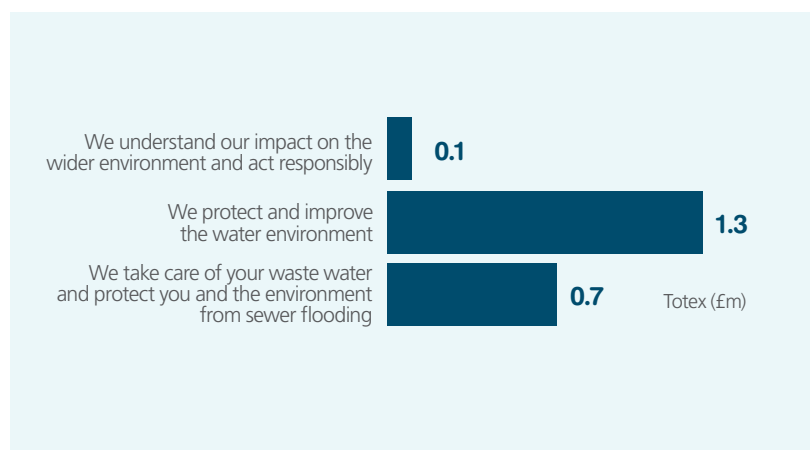


Figure 1G
**Five year expenditure for the Waste Water service
to deliver outcomes for Yorkshire**



These levels of investment are broadly the same as we have seen over the 25 years since privatisation, although the balance of enhancement and maintenance is planned to change in the future as we begin to tackle the long-standing under-investment in the underground pipes as the quality programmes diminish. This is visible in the broadly stable investment profile through to 2040, as shown in figure 1F, although it is clear that the ongoing requirement to ensure the UK properly implements the WFD will bring further pressure in the period 2020-2025.

1.5 Our plan to deliver services between 2015-2020

The Wholesale Waste water Business Plan focuses on three of the seven outcomes in full or part. The Wholesale Waste water Plan will cost £2.1 billion in the period 2015-2020, accounting for about 54% of the average household bill. Our plan for the next five years from 2015 is focused on maintaining core services and ensuring we can meet our statutory obligations to collect and treat waste water and to protect the environment.

We will be stretching our performance with the aim of achieving 100% compliance with our permit conditions at waste water treatment works. Our pollution performance will also be an area where we will be challenging ourselves to improve through efficiency and effectiveness. Our commitment to keep prices low for customers means that we have not been able to include any specific investment proposals to reduce pollution incidents. Instead, we will drive improvement through our sewer renovation, sewage pumping station and waste water treatment works programmes, focusing on aligning activities to reduce serious incidents wherever possible.

Some highlights from the programme are outlined below:

- We plan to invest £155 million to address growth pressures on our waste water assets. We are including £84 million to protect 400 properties from internal sewer flooding. We plan to work in partnership with other flood Risk Management Authorities (RMAs) to provide best value integrated solutions, where appropriate. We have identified an additional £8 million of funding to specifically allow us to work proactively with RMAs across the region to understand high flood risk locations. The plan includes the recovery of £35 million of grants and contributions, reducing the net cost from £155 million to £120 million. This work supports delivering outcomes 'We take care of your waste water and protect you and the environment from sewer flooding' and 'We protect and improve the water environment'.
- In total £299.5 million (Totex) is included in the Wholesale Waste water Plan to meet the waste component of our environmental obligations focusing on WFD river water quality and biodiversity. This investment includes all activity to meet statutory compliance improvements required by the Environment Agency, meeting the priorities of Natural England, the Forestry Commission and Government's Biodiversity 2020 objectives. This investment is needed to deliver the National Environment Programme (NEP) for Yorkshire. The total NEP Programme will cost £325m, of which £209m is required to achieve the WFD river water quality objective of NEP Phase 5 which will improve 379 km of river between 2015-2020 through our Wholesale Waste water Plan.



1.6 Efficient costs

The costs to deliver this Waste water Plan have been subject to significant internal challenge and scrutiny as detailed in section 7. Our operating cost estimates have been developed from our current base year of expenditure, reflecting the real efficiencies we have driven to date. We have discounted all atypical costs from our recent restructuring activities and added in only legitimate additional costs associated with the transfer of private pumping stations, changes to our pension arrangements and the operating effects of future investment.

Our capital costs are based on the outturn cost of our waste water assets procured during the period 2005-2015 and are reflective of the capital efficiencies we are experiencing in this period. Overall, we are delivering the current PR09 programme for £198 million less than assumed in the determination and these efficiencies are reflected in our costs.

It is becoming progressively challenging to reduce costs as we rebase our costs at each price review. However, we believe that the incentives we have in place, plus the introduction of new and innovative ways to challenge the company to improve, retains sufficient incentive for the company to drive further improvements. We have investigated the scope for further outperformance in the future, considering both the real input price pressure we should expect and the productivity improvements gains we expect to make in the future.

1.7 Financing the Yorkshire Water plan

Overall, to continue improving drinking water quality, maintaining the balance of supply and demand and raising environmental standards we'll need to borrow £1.4 billion from investors to fund all our plans, both wholesale water and waste water. To do that efficiently, we need continued access to low cost finance and a careful review of when we recover the costs through bills. This is especially important in the current economic climate.

With regard to when customers pay for investment, we have looked at opportunities for slowing down the charges customers pay for the delivery of day-to-day wholesale waste water services and the depreciation of assets during the period 2015-2020. In addition to our proposed run-off rates and totex average life, we have also included our average pay-as you-go (PAYG) ratios for wholesale waste water that are planned for 2015-2020. These ratios are shown as a percentage of wholesale waste water totex in figure 1I.

Figure 1H
Pay As You Go percentages
for the period to 2020

Price Control	2015-2020 average
PAYG % – Waste Water	49%

Figure 1I

Average household sewerage bills from 2015-2020 (bills in 2012/13 price base)

	2015-16	2016-17	2017-18	2018-19	2019-20
Average Wholesale household bill – Sewerage	183	184	186	189	191

Figure 1J

Average total household bills from 2015-2020 (2012/13 price base)

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Average Wholesale household bill - Water		140	139	137	134	132
Average Wholesale household bill - Sewerage		183	184	186	189	191
Average combined retail household bill		28	28	28	28	28
Average combined household bill	351	351	351	351	351	351

In assessing the return to investors for the wholesale waste water control, we have estimated the cost of equity utilising the capital asset pricing model, while the cost of debt is based on 75:25 split of our actual embedded debt and estimated cost for new debt. Overall, our assessment of the weighted average cost of capital (WACC) for the wholesale waste water business is 4.2% (real. vanilla).

At the company level, we have planned to maintain investment grade ratings for Standard & Poor's at BBB, Fitch at BBB+ and Moody's at Baa3. To be assured of maintaining these credit ratings, our plan includes key financial ratios to support this.

1.8 Managing the bill for customers

Our customers told us that they did not want us to increase costs over the next five years. Therefore we are proposing that the average combined customer bill won't increase by any more than the rate of inflation during 2015-2020. This means that we won't be charging our customers any more for all the work we plan to deliver during 2015-2020, apart from the additional cost of inflation.

Our customers will continue to receive one bill that covers all the water and sewerage services we provide and this is therefore shown alongside the full customer bill impact in figure 1I.

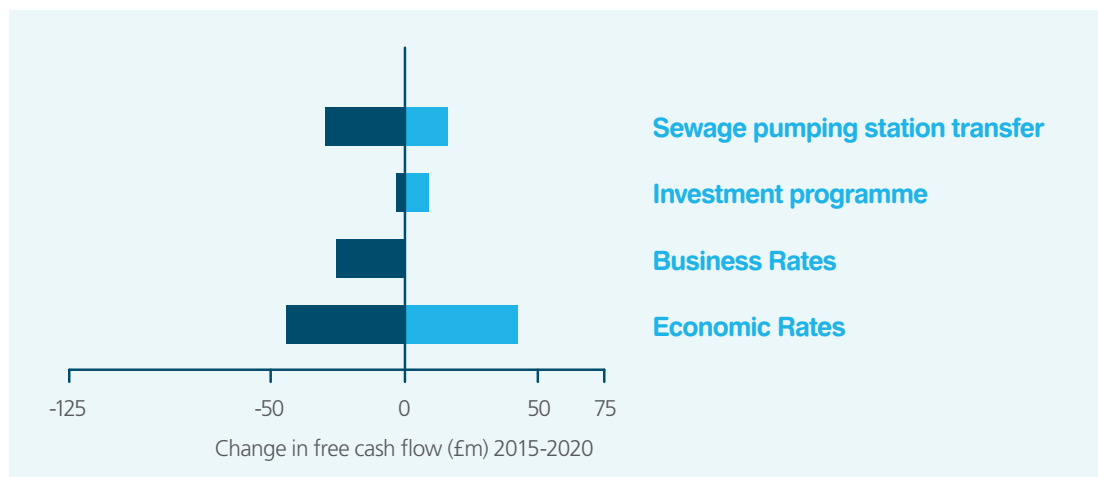
The average customer bill for Wholesale Waste Water over the next five years is detailed in figure 1J.

1.9 Sharing risk and reward

We have designed a set of outcome delivery incentives to complement a menu-based cost incentive. These incentives reflect the existing regulatory and statutory methods of recourse which currently exist, such as fines and the imposition of instruments to force correction. Our proposed incentives mean we'll retain focus on delivering short-term and long-term outcomes for customers and the environment. The overall balance of penalty and reward exposure is over 5 to 1, predominantly driven by the penalties for failing to deliver core outcomes, and maintaining assets sustainably for future generations. The lesser scope for rewards within the waste water part of the business is associated with reducing incidences of internal flooding from sewage and the number of projects we deliver beneficially in partnership with other agencies.

Figure 1K

Changes in wholesale waste free cash flow due to specified input factors



This has fed into our assessment of return on regulated equity (RORE), along with a number of other scenarios associated with economic conditions, business rates revaluation and investment programme cost uncertainty. These are discussed in more detail in Section 11. The results of this analysis for Wholesale waste water are presented in figure 1K which demonstrates that we are more likely to experience additional costs than receive unexpected gains.

Figure 1K does indicate that there are potential upside gains for the company from economic factors beyond its control or influence. We recognise that these gains should be shared with customers. In previous and current periods we have reinvested efficiencies for the benefit of customers. With this in mind, and in the event that we generate significant gains due to external factors, we will work with customers and the Customer Forum to prioritise reinvestment opportunities, making specific reference back to the customer research we have carried out in this period.

Overall, we believe there is an appropriate balance of risk and reward for the company, and that our approach to sharing gains (due to external factors) with customers is fair.

1.10 The right outcome for Yorkshire

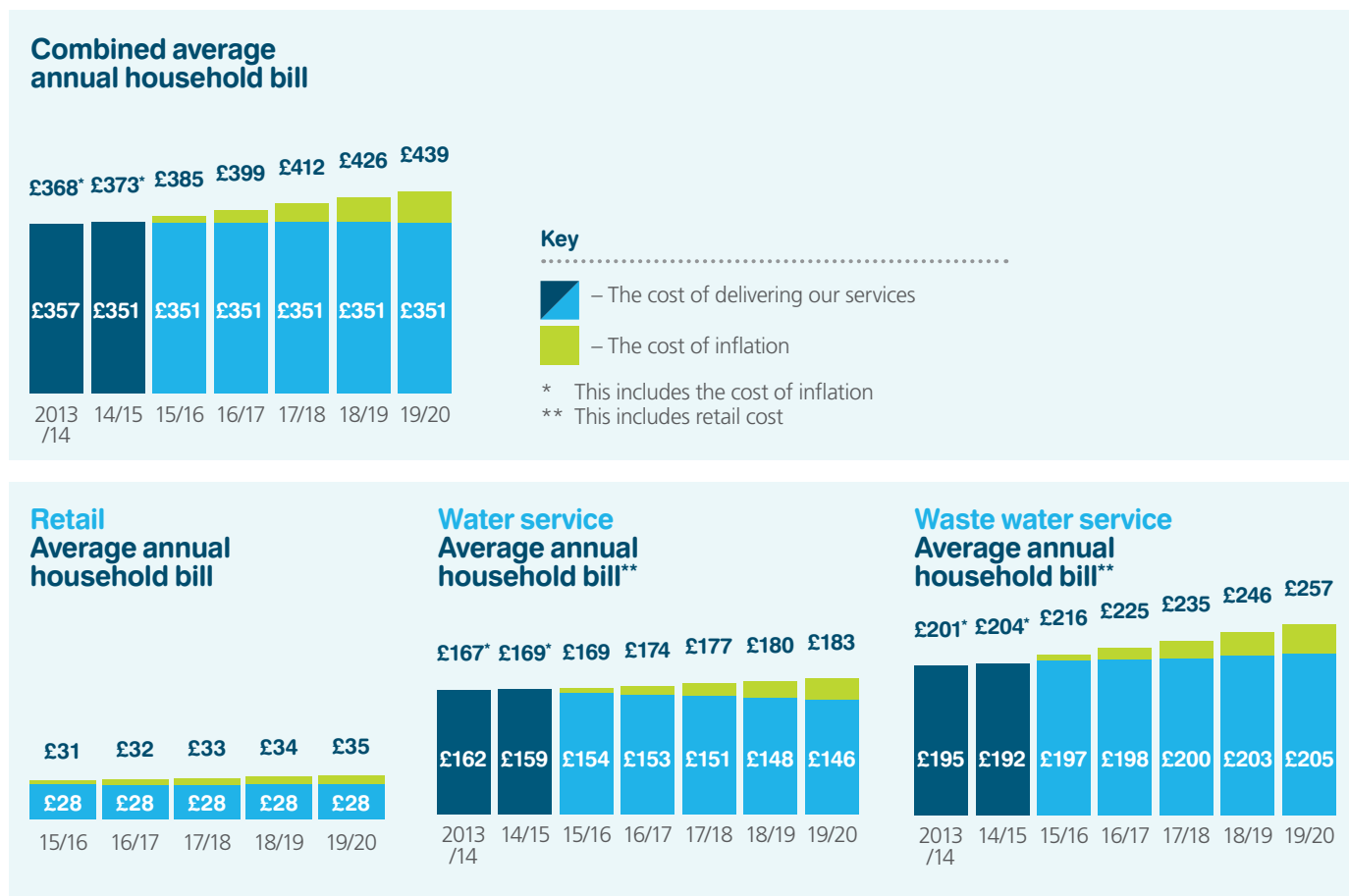
We believe this is a fair plan that has been based on customer and stakeholder priorities, rigorously challenged by customer and stakeholder representatives through the independent Customer Forum, and is fully assured and owned by the Board of Yorkshire Water.

It is built on sound estimates of efficient costs, accounting for projected future efficiency gains, including a robust forecast of all the costs we expect to incur between 2015 and 2020. As a result, it means we have no plans to seek a further increase in overall bills before 2020. This plan drives significant improvements while mitigating an upward cost pressure on average household bills. We recognise that this is still a challenge for some customers and we will continue to support them with our industry-leading programmes of cost management, debt management and flexible payment arrangements.

Our bills are some of the lowest in the industry. This plan keeps them low.

Figure 1L

Average household bills 2015-2020 (2012/13 price base and outturn prices)



2. Support for our plan

Section summary:

- We have carried out best practice, industry-leading research with thousands of our customers. 77% of those surveyed support our plan. Support from hard-to-reach and business customers was even higher, achieving the ‘example of excellence’ standard defined by the Consumer Council for Water
- We have reached nearly two million people with our business plan communications. About 95% of those surveyed showed support for our intent
- An independent Customer Forum ensured that customers’ views and opinions were considered and fairly represented throughout the business planning process. They concluded “...you have a clear mandate from the customer base...We will commend the approach you have taken”
- The Environment Agency have confirmed their support for our plan. The Environment Agency observed that we “are seeking cost effective and innovative ways to deliver environmental improvements... your business plan is robust”.

Figure 2A

Customer acceptability testing results - support for the plan

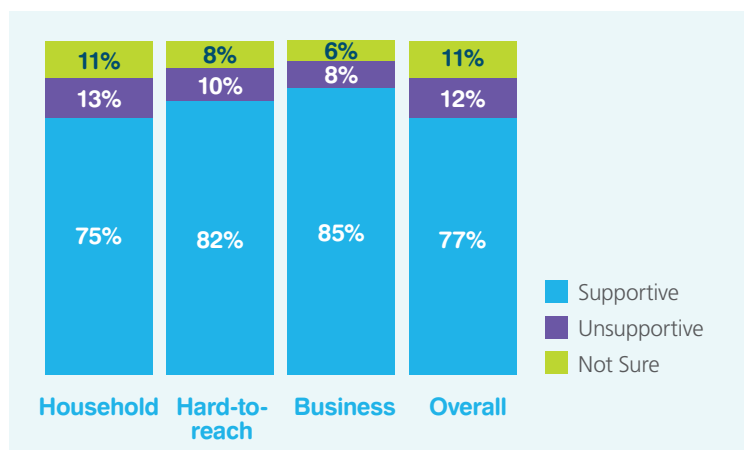
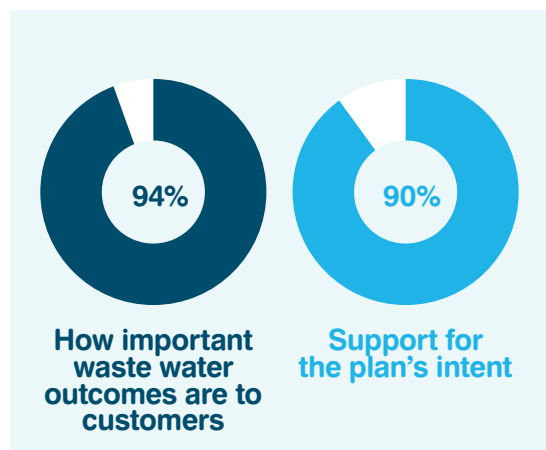


Figure 2B

How important Waste Water outcomes are to customers



This section demonstrates the high levels of support we have secured for our plan, following industry-leading levels of consultation and collaboration.

2.1 Customer Support

In July 2013, the Consumer Council for Water (CCWater) published a report which outlined its expectations for companies to achieve a minimum level of business plan acceptability of between 70% and 75%. If a company scores 82% acceptability or higher, CCWater would deem the business plan as an example of excellence.

Throughout 2013, Ofwat, CCWater and our Customer Forum have consistently challenged us to ensure that we are transparent when engaging with customers, with particular reference to ensuring customers understand the impact that inflation can be expected to have on their bill over the life of the plan.

We have accepted this challenge in our research, and made clear to customers the impact our proposals will have on their bill, both excluding and including inflation through to 2020. The results from our fourth, and final, cycle of customer acceptable testing results for our Yorkshire Water plan are shown in figure 2A.

Overall, 77% of all customers surveyed supported our whole business plan. Domestic customers were at the top end of the acceptability range, while hard-to-reach, vulnerable customers and business customers results reached the example of excellence.

To supplement our customer acceptability research we have been engaging with customers right across the region through online questionnaires, videos of the Yorkshire Water family, a dedicated stakeholder conference, town centre high street stalls, market show stands and speakers panel presentations across the region. We have asked them to give us feedback on our Blueprint.

The overall intent of our plan and its outcomes have been tested and commented on more widely across the region. Nearly 30,000 people have provided feedback, with the plan receiving 95% support for the outcomes and 90% support for its overall intent.

2.2 Customer Forum

In developing our plan, we worked with an independent Customer Forum to ensure that customers' views and opinions are considered and fairly represented in our final business plan. Throughout the business planning process, the Customer Forum has been involved in every aspect of our customer research programme, challenging us to:

- Be clear and transparent in the way we present information to customers
- Make sure our sampling fairly represents the demographics of the region
- Make sure we give hard-to-reach and vulnerable customers an opportunity to contribute
- Ensure that we interpret the results of the research properly and reflect it faithfully in our plan.

In addition to challenging us, we have involved members of the forum in development of research material and invited them to observe research in action to give them confidence in our research.

The Customer Forum has produced its own independent report on our engagement and our plan. With the forum's permission, we have placed a copy of its report on our Blueprint website blueprintforyorkshire.com.



Following the completion of our penultimate round of customer acceptability testing, Andrea Cook, Independent Chair of the Customer Forum, wrote to us on 16 September 2013, stating:

“The Forum considered the results of the Acceptability Testing to be well within the 70-75% range recommended by Consumer Council for Water (CCWater) following its research into customer attitudes towards acceptability thresholds. We are aware that you are giving thought to whether further research is needed. The Forum’s view is that the results of the Acceptability Testing should be seen alongside the level of the company’s transparency around the issue of RPI, and particularly the provision of monetary values. It is clear that Yorkshire Water has used best practice in its approach to the research, irrespective of the potential for such transparency to suppress acceptability results. Our view would be that you have a clear mandate from the customer base to proceed with the current plan and that no further research is necessary. We will commend the approach you have taken.”

Andrea Cook

Independent Chair of the Customer Forum

2.3 Support for our service valuation study

We undertook our service valuation (willingness-to-pay) studies in 2012. We engaged the service of Accent, supported by professor Ken Willis, to carry out this work using a stated preference choice experiment. We asked a world-renowned expert in this topic, Professor Ken Train (University of California), to peer-review the approach. He has described the methodology as ‘state-of-the-art’.

“Their methodology follows the current state of the art, and they have implemented the methods thoughtfully and with great attention to detail.”

Professor Kenneth Train
(University of California)

The results from this exercise have formed the starting point for our outcome development, our benefit functions used in investment optimisation and net benefit calculation.

2.4 Environment Agency – Yorkshire and North East

The National Environment Programme (NEP) is the vehicle through which the Environment Agency (EA) identifies measures to be included in the Periodic Review 2014 (PR14). The National Environment Programme for Yorkshire Water has been developed in liaison with the Yorkshire and North East Regional Environment Agency office.

Our plan has been developed on the basis of sound science, and through close liaison and discussions with the Environment Agency. Where target measures have not yet been finalised for phases four and five of the NEP we have followed Ofwat's guidance to "use our judgement and make assumptions on all measures we reasonably anticipate, including NEP phases four and five." The majority of the NEP investment falls within the Wholesale Waste water service comprising £299.5m and the remaining £25.3m being allocated to Wholesale water service.

Our PR14 investment proposals have been agreed by the regional Yorkshire and North East Environment Agency to achieve short-term objectives set in the context of a 25-year horizon.

The Environment Agency business plan evaluation report includes the following statements:

"We believe that Yorkshire Water has engaged openly and transparently with the Environment Agency in developing your business plan, and that you have showed a high degree of commitment to ensure you deliver your statutory environmental obligations."

"From the evidence submitted and through on-going dialogue, we are of the opinion that your business plan is robust."

"We can see evidence that you are embracing a more integrated approach to investment planning for the environment. You are seeking cost effective and innovative ways to deliver environmental improvements, through integrated catchment management for both clean and waste water issues, adaptive management investigations for heavily modified water bodies, and a proposed new approach to sewer network management. Your intention to work in partnership on catchment management, fish passage, catchment pilots and flood risk should deliver benefits beyond those you could achieve on your own"

2.5 Natural England

Over the last two years we have worked alongside Natural England and their specialists, who have identified relevant legislative drivers, sources of guidance and advice and available data, which we have then applied to our asset base. Areas requiring action during 2015 – 2020 were developed in conjunction with the Environment Agency and incorporated within the National Environment Programme.

Natural England indicated support for our proposals at the Quadripartite meeting on 10 October 2013.

3.

About our Blueprint

3.1 Overview to Blueprint

At Yorkshire Water, we recognise that the world is changing and we have a plan for the future. That plan is called Blueprint. This part of our Blueprint is the Wholesale Waste Water view of our plan for the five years from 2015-2020.

3.2 Delivering Blueprint through four price controls

In the future, we will continue to deliver our integrated service through four regulatory price controls or 'businesses', which focus on a specific aspect of service, and the skills and expertise needed to deliver the service as efficiently and effectively as possible. These are:

- Wholesale water
- Wholesale waste water
- Retail household
- Retail non-household.

The move to four revenue controls and the promise of retail competition requires a new way of thinking across our business. To meet new regulation, we have planned for the need to structure our business differently so we can succeed in a competitive market and provide the best service for our household and business customers. However, we will continue to operate as one integrated business.

This is our Wholesale Waste Water Plan for the five years from 2015-2020. It has been written for regulators, and informed stakeholders and customers who wish to understand more about our business and our plans. In doing this, we have tried to avoid regulatory or technical terms as far as possible, but because there are inevitably some technical matters discussed we have included a glossary as one of the supporting documents to help explain some of the specific terms used.

The wholesale waste water price control covers all the technical services that take away and treat waste water and return it to the environment. This includes ensuring the resilience of our sewer network, preventing sewer flooding and pollution incidents, maintaining and improving effluent treatment standards and protecting river and bathing water quality.

Each of the plan documents has been developed to be read both in isolation as a standalone document or as part of our wider Blueprint. We have designed this document to help you focus on the topics that interest you most. Through our **blueprintforyorkshire.com** website our customers, regulators and stakeholder will have the ability to specify and build a bespoke pdf of elements of Blueprint.

We are actively embracing the water industry regulator, Ofwat's, proposal for proportionate regulation, and as such, more technical and detailed information is located in the supplementary annexes and supporting documents.

3.3 Section overviews

In sections 2 and 3 we have given a summary of our Blueprint, and stakeholder party support for the plan. The remainder of the document expands on the key elements of our plan. Below, we outline what is provided in each of the sections that follow:

Section 4: ‘Serving Yorkshire’.

In this section, we describe how we serve Yorkshire with great value waste water services by managing large scale assets and operations.

Section 5: ‘Engaging customers and stakeholders’.

In this section we describe how we have developed our business plan through extensive engagement with an independent Customer Forum and directly with customers, regulators and other stakeholders.

Section 6: ‘Listening to customers and stakeholders’.

In this section we summarise what we heard from our customers, regulators and other stakeholders during our programme of engagement. It describes how we have developed outcomes, measures of success, performance commitments and incentives and how we have tested customer support for our plan.

Section 7: ‘Developing our Blueprint’.

In this section we summarise the activities, systems and processes we used to build a robust and best value plan that delivers the priorities of our customers, regulators and other stakeholders.

Section 8: ‘The right outcome for Yorkshire’.

In this section we detail the three outcomes for Yorkshire directly delivered by the Wholesale Waste Water Plan, the measures of success, the costs and the outcome delivery incentives we have derived. For each outcome we set out our objective, long term context and our 5 year plan and expenditure.

Section 9: ‘Financing the plan’.

In this section we provide an overview of our financial strategy, including our proposed Wholesale Waste water returns, cost recovery rates and forecast future efficiencies

Section 10: ‘A good plan for customers’.

In this section we explain why this is a good value, balanced plan that delivers the priorities of our customers and stakeholders, ensures our legal compliance and our ability to maintain high quality services.

Section 11: ‘A fair plan for customers’.

In this we describe how we have ensured a plan that is fair for customers, stakeholders and investors by sharing risk and reward, proposing incentives and how we share them, and proposing a way of sharing gains through investment in outcomes.

Section 12: ‘Making our plan visible’.

In this section we outline how we will transparently report our progress in delivering our plan and achieving our Measures of Success. We also discuss our approaches to partnering and giving something back to the communities we serve.

Sections 13: ‘What happens next’.

The section sets out the high-level timetable for the remainder of the review and directs people to other related documents they may wish to read.

Section 14: ‘Contact us’.

This section provides a number of ways people can access further information about our Blueprint and a number of useful links to other key stakeholders directly involved with the review.

3.4 The 2014 periodic review of prices

This plan was submitted to Ofwat on 2nd December 2013. Ofwat will announce its initial assessment of our plan in spring 2014 and in late 2014 we will expect to finalise how much we will charge customers for the next five years. The new prices will apply from 1st April 2015.

We think our plan for the next 25 and five years is the right one for our business, for the environment and for our customers and stakeholders. The reason we're so confident about our plan is that it has been created by listening to the views, needs and aspirations of the people of Yorkshire, and it puts their needs at the heart of everything we intend to do. In the next section, you can read about why we are so passionate about serving the Yorkshire region, its people and its environment.



4.

Serving Yorkshire

Section summary:

We are passionate about serving Yorkshire. Every day we treat and supply about 1.26 billion litres of drinking water and treat and safely return about one billion litres of waste water to the environment. We strive to ensure our services are great value for money and consistently keep our bills among the lowest in the industry. Our vision is: Taking responsibility for the water environment for good.

Since privatisation in 1989, we have invested approximately £10 billion to maintain and improve waste water services for our five million domestic and 135,000 business customers.

This investment has helped us to:

- Halve the number of properties experiencing internal sewer flooding from 495 in 1997/98, and we plan to reduce this even further
- Make Yorkshire's coasts and rivers cleaner than they've ever been since the industrial revolution by delivering a step change in the treatment of waste water
- Turn sludge from a burdensome waste into a valuable resource that is used to generate renewable energy and replace petrochemical fertilisers and peat composts.

Our plan will help us to maintain affordable services long into the future. We have built our plan to cope with the pressures from a growing population, the changing climate, and an ageing asset base.

Figure 4A
**Yorkshire Water region showing
operational boundaries for
Sewerage Services**



This section describes how we provide Yorkshire with great value water services by managing large scale assets and operations.

4.1 Serving our region

We serve the Yorkshire region and beyond; from Scotch Corner in the north to Chesterfield in north Derbyshire in the south and from Bridlington on the east coast to Ingleton in the west. The region we serve is an amazing, beautiful and diverse place and was recently voted third best region in the world to visit by the Lonely Planet Guide.

In our region we have 11 major rivers totalling 1,087 km in length. Our 'coast to boast about' stretches from Staithes in the north to Spurn Point in the south and is home to resort towns that include Whitby, Scarborough, Filey and Bridlington. The industrial city of Kingston upon Hull sits at the mouth of the Humber, just a stone's throw away from the Yorkshire Wolds. Yorkshire boasts nearly a third of the total area of National Parks in England covering a fifth of the region's land area. In stark contrast, Leeds is one of the fastest growing cities in the UK and we also serve the former mining communities of South Yorkshire. The Yorkshire region is home to approximately five million people, the majority living in the metropolitan areas of West and South Yorkshire.

The landscape, settlements, economy and land use of our region have a major impact on our assets and services. The topography is a major factor in the design and operation of our assets and networks; our regional area is almost a natural catchment, bounded mostly by high moors and coastline. This creates flashy rivers with a quick response rate to rainfall that offer resilience and flooding challenges, as well as limited opportunities to consolidate waste water operations. It is a successful region whose population will grow significantly over the coming years.

We pride ourselves on being custodians of the natural environment and public health, providing essential services to the people of the Yorkshire region. Every day we collect about one billion litres of waste water from five million people and 135,000 businesses in our region, cleaning it and returning it safely back into the environment. We make sure that the effluent discharged to our region's rivers, watercourses and coastline is of the highest standard.

4.2 Maintaining Assets and Services

To deliver waste water services to customers and protect the environment we operate thousands of long-lived assets including 640 waste water treatment works and 58 sludge treatment facilities, and we look after 52,000 km of sewerage pipework. In 2011 we adopted 22,000 km of private sewers and in 2016 we expect approximately 720 private pumping stations will also become our responsibility.

Figure 4C
An example of our operational network from source to sea



Details of the assets we operate every day are shown in figure 4B. The increasing age and cost of our asset base is a stretching challenge for the company and is one we take seriously. It’s why we place so much focus on making our operations and investment more efficient every year. It means we can put more into maintaining a growing and ageing asset base while keeping costs down.

Table 4B
Summary of the asset base operated by Yorkshire Water

Asset Type	Number
Sewers	52,000 km
Sewage pumping stations	1,854
Combined sewer overflow	1,913
Waste water treatment works	640
Long sea outfalls	12
Sludge treatment facilities	58

As well as delivering the improvements that matter most to customers and stakeholders and ensuring we meet all of our legal and statutory requirements, we need to do all of this while keeping our bills as low as possible. To do this we need to operate efficiently, be able to finance investment in our waste water services and deliver a return for our investors so that we can continue to operate a financially sustainable business.

4.3 A legacy of improvements

We have a proud history of maintaining and improving services for the Yorkshire region. We’ve come a long way since the water industry was privatised in 1989. Back then, we inherited the management of an enormous legacy of treatment works, pumping stations and pipes across our region. Some of these were already many decades old, dating back to the Victorian era and many are expected to last well into the future. Since then we have invested approximately £10 billion in maintaining and improving the assets which provide waste water services and we’re immensely proud of what we’ve achieved while keeping our bills among the lowest in the industry.

The following sections highlight some of the challenges we have met in recent years.

Reducing the risk of sewer flooding

Sewer flooding is unacceptable to our customers and we share this view. In 1997/98, 495 properties in our region were identified as having experienced sewer flooding and remaining at risk of recurrence. Following an extensive programme of investment, we have more than halved this number to 227 and we plan to reduce this further to 134 by March 2015.

Since the wide-scale flooding in Yorkshire in 2007, we’ve worked in partnership with local agencies to understand the effect our sewer network has on flooding and to reduce its impact. In the future we will continue to protect properties and the environment from the impact of sewer flooding.

Protecting and improving the water environment

Yorkshire's rivers are cleaner than they've been since the industrial revolution. Over the past 15 years, investment in our environmental quality programmes to meet EU legislation such as the Urban Waste Water Treatment Directive (UWWTD) and the Water Framework Directive (WFD) means that many of our waste water treatment works treat effluent to higher standards than ever before, cleaning the water to remove potentially harmful elements such as phosphorus and nitrogen before returning it to our rivers. Our River Care programme has contributed to a better water environment, supporting populations of brown trout and otters in the River Aire.

Three decades ago the Don was dubbed one of the most polluted rivers in Europe – our aspiration is to see salmon swimming through the centre of Sheffield and our other major cities once more. In partnership with the Environment Agency we've helped to facilitate the Don Network, a coalition of stakeholders with an interest in the river and its surroundings.

Delivering cleaner bathing water

Between 2000-2005, our £120 million CoastCare investment programme revolutionised the way we treat waste water at towns and villages along our East Coast. As a result, the quality of the waste water we have returned to the North Sea over the decade has exceeded the standards required by European legislation.

Between 2010-2015 we decided to go further and invest £110 million more to meet the new, higher quality standards, demanded by the Revised Bathing Water Directive (rBWD). In fact, we are the only water company currently investing with the intention of achieving the 'excellent' standard in bathing water quality. We're helping to make sure that the water quality at Yorkshire's beaches doesn't just meet the new standards but exceeds them where possible, to attain the coveted 'excellent' standard. This means more potential for our region's beaches to be awarded Blue Flags, benefiting local communities and attracting increased tourism for Yorkshire.

Reducing our impact on the environment

To deliver acceptable improvements in waste water quality, over the past 20 years we have had to invest in energy intensive treatment processes. Our current energy consumption is 595 gigawatt hours (GWh) which equates to our third largest operating cost at around £50 million per year. Between 2010-2015 we are actively reducing our energy consumption and our reliance on grid electricity through renewable energy generation and energy efficiency activities. We have just built our first energy neutral urban waste water treatment works at Esholt, near Bradford. At Esholt we are pioneering a more sustainable route for sludge disposal using a thermal hydrolysis plant (Biothelys) combined with anaerobic digestion, which will generate energy from human waste and effluent. Our long-term plan is to continue with these investments where they make economic sense for customers.

4.4 PR09 - Delivering a stretching plan

Our PR09 business plan sought to 'strike the right balance' between our five strategic business objectives – customer service, environmental focus, lowest possible prices, returns for investors and world class asset management. It included stretching our environmental ambitions through our bathing water improvement and pollution reduction programmes, and customer service benefits through the reduction number of properties at risk from sewer flooding. These and other improvements were driven by a plan which kept customers' bills amongst the lowest in the industry.

At the PR09 price review, our plan was recognised as 'best value', with our operating costs for the water service categorised by Ofwat as 'frontier' status and our sewerage service categorised as 'A lower'. This meant that we demonstrated an industry-leading position for operating efficiency. This was combined with planning the best value capital programme, and resulted in us being the only company to have Capital Incentive Scheme (CIS) ratios below 100 for both water and sewerage services. Yorkshire Water's capital costs were recognised as being 10% lower than the median company.

Since 2010, across our whole business, we have delivered operating cost efficiencies which has meant that we have been able to absorb the additional costs from the transfer of private to public sewers, the Carbon Reduction Commitment, Environment Agency Sludge Permitting and higher than expected levels of Bad Debt.

Table 4D

Serviceability performance 2010-2015

Serviceability measures	2010-11	2011-12	2012-13	2013-14 (Forecast)	2014-15 (Forecast)	On target
Sewerage infrastructure	Stable	Stable	Stable	Stable	Stable	✓
Sewerage non-infrastructure	Stable	Stable	Stable	Stable	Stable	✓

We have also made further efficiencies against the overall wholesale waste and wholesale water capital programme through the delivery of innovative partnerships, processes and technologies. Given our outperformance, and the low financing costs we have experienced within the current price control period the Yorkshire Water Board made the decision as early as 2012 not to seek an Interim Determination of Prices (IDoK). We have also reinvested savings from outperformance to make network improvements to secure customer service reliability, and renewable energy production to help protect customers from rising energy price impacts.

4.5 Delivering our PR09 commitments and returning money to customers

In 2012 and 2013, we published an Annual Risk and Compliance Statement³⁴. This is a statement detailing our compliance with our obligations, provides performance information against some key performance indicators and details what action we are taking or planning to take regarding any key performance indicators that show as amber, either against our target or against the industry average.

In 2013, for waste water services, we published an action plan for our sewer flooding performance, pollution incidents, discharge permit compliance and sludge disposal. In 2013, we published an action plan for our sewer flooding performance, pollution incidents, discharge permit compliance and sludge disposal. A total of 18 actions have been published, of which 12 are complete. Out of the remaining actions all are in progress, with three due for completion prior to the publication of the Risk and Compliance Statement in 2014 and three longer-term actions due for completion by the end of the current period.

We work hard to ensure that our business planning activities are statistically robust and based on sound evidence. However, the future does not always mirror the past, meaning that we can under or over-estimate the amount of investment we need to make, and in some cases, further investigation means we no longer need to invest where we expected. This can mean that in some cases we have recovered more money from our customers than we actually need to spend. In response, we will return that money to our customers between 2015-2020. In rare cases where we do not achieve the level of service we promised, we will also refund the performance shortfall to our customers. In this section we have provided more detail on our performance against the 2010-2015 plan, and where we intend to return money to our customers in prices between 2015-2020. This demonstrates our honest and transparent approach to doing business.

At PR09 Yorkshire Water planned to invest in total over £763 million (based on the Final Determination baseline 07-08) to enhance the supply-demand balance, environmental and drinking water quality and levels of service to our customers. This investment was allocated between 338 sewerage defined outputs, 99 water defined outputs, 859,771 metric outputs and 292 register or serviceability levels improvements. From the start of the period we have delivered strong performance against a stretching plan. Nearly all capital outputs have been delivered either early or to the timescales we promised in our original business plan.

Our performance in delivering our Wholesale Waste water commitments is set out in figure 4D.

We are forecasting to achieve stable serviceability at the end of the current five-year period. We achieved an overall improvement in levels of serviceability in 2012-13.

Table 4E
Performance against delivery of defined outputs 2010-2013

Output Type	Ofwat Service	Number of Outputs	On target
Defined	Sewerage	338	✓

Table 4F
Performance against delivery of metric outputs 2010-2013

Output Type	Ofwat Service	Number of Outputs	On target
Metric	Sewerage	886	✓

Table 4G
Performance against delivery of serviceability outputs 2010-2015

Output Type	Investment Programme	Ofwat Service	Measure	Reduction req'd	Delivered
Register	DG5 1 in 10 and 2 in 10	Sewerage	Properties	59	✓
Serviceability – sewerage Infrastructure	Pollution	Sewerage	Incidents	58	33
Serviceability – sewerage Infrastructure	DG5 Other causes	Sewerage	Properties	73	✓
Total Serviceability				190	165

Our largest and most ambitious area of activity was the £110 million of investment we planned and delivered to improve the quality of Yorkshire's bathing water. In doing so, we have helped the Yorkshire Bathing Water Partnership to generate a 'coast to boast about' and create some of the best beaches and bathing waters in Europe. In November, the Minister for Water, Dan Rogerson announced the 2013 official bathing water results, with Yorkshire's beaches showing improvements compared with 2012, and 80% of Yorkshire's 20 bathing beaches achieving the very highest possible standard (Guideline). In fact, all Yorkshire's beaches reached the minimum standard for bathing water quality, something we are very proud of. The multi-agency Yorkshire Bathing Water Partnership includes the Environment Agency, East Riding of Yorkshire Council, North Yorkshire County Council, Scarborough Borough Council and Welcome to Yorkshire and is in agreement that the overall project is on-track.

We have achieved all metric outputs for the sewerage services other than one obligation where, due to external factors, we have not needed to invest. In response, we are returning £4 million to customers within the plan. We have also experienced fewer properties suffering sewer flooding in the period (a shortfall of 151). As a result, we have not needed to invest in as many outputs as we expected. Despite fewer properties suffering sewer flooding,

we are still planning to reduce the numbers of properties identified as at risk of flooding on our registers to 134. As a result of delivering fewer outputs we are returning £16 million to customers in the 2015-2020 plan.

We are forecasting to deliver all register and serviceability improvements that we planned, with the exception of 25 of our pollution incident reduction outputs. Since 2010 we have invested considerably more than we were funded for at PR09 to reduce pollution incidents on the network and we are continuing to drive as hard as possible to further improve our performance. While overall pollution incidents are, and will, improve beyond expectations, those resulting from the sewerage infrastructure network were higher than expected in the Summer of 2013. Consequently, we recognise that in this specific area we have not been able to deliver the ambitious improvements for customers that we expected. Consequently, we are refunding £12 million to customers in the 2015-2020 plan for this isolated shortfall in performance.

Continuing to achieve the best value for customers at the same time as delivering ambitious environmental improvements requires best practice governance. Good governance and outperformance has been driven through the period by the Yorkshire Water Board Capital Investment Committee. This committee has delegated board responsibilities and meets weekly to apply governance to output delivery and monthly to formally review and ensure the delivery of the regulatory programme.

We believe that it is this rigorous governance that has allowed the company to deliver on its obligations and reinvest more for customers, while driving down costs beyond those of an already efficient company

We work hard to do more for our customers. By making financial efficiencies we are able to re-invest this money into delivering better service for customers and the environment. We are also more able to absorb unexpected cost pressures, avoiding the need to ask customers to pay more through an interim determination of prices. Ultimately, the cost savings we make are passed on to customers by keeping prices low in the next price control period. We believe this mechanism works well for us and for customers.

4.6 Recognising future challenges for our region

4.6.1 Population growth

Our research shows us that over the next 25 years, the population in Yorkshire will increase by approximately 855,000 and we will see an increase in the number of households needing waste water services by around 500,000. To meet these challenges we will need new infrastructure to ensure our treatment works, pipes and network have enough capacity at a time when the impact of climate change is also predicted to increase.

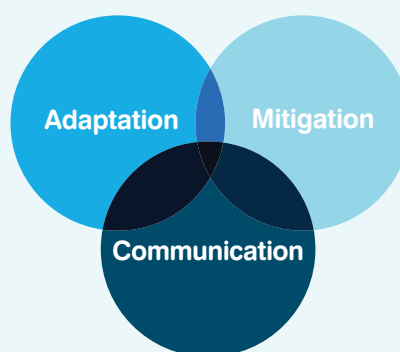
Our research also shows that the population demographics of our region will change over the next 25 years. For example, currently 18% of the Yorkshire population is over the age of 65 but by 2036, this is due to increase to almost 26%. As a business we need to respond to this demographic change and especially consider the needs of a more elderly and potentially more vulnerable population base.

4.6.2 Climate change strategy: enhancing resilience to weather and reducing greenhouse gas emissions

We are at the forefront of responding to climate change because our waste water services are heavily influenced by the weather. Rainfall and runoff increases the flow through the sewer network, increasing the risk of flooding and pollution. This increases the amount of pumping and puts pressure on the treatment facilities at the waste water treatment works. We already manage the impacts of today's variable and extreme weather. Our risk assessment shows how such impacts will grow as climate change brings more severe weather events. Climate change is one of our biggest challenges and a long-term business priority.

Rainfall, drought, river flows, very low temperatures and storms all have an immediate effect on our ability to protect our customers from sewer flooding and safely return waste water back to the environment. Climate change projections are far more frequent and more extreme weather events in the coming decades. We have taken this into consideration when building our plans to ensure that we can continue to provide the services our customers need and value to an acceptable and affordable level. We have also assessed how we can cost-effectively reduce our carbon footprint to play our part in minimising future climate change. In order to achieve our ambitions, we have developed a Climate Change Strategy to inform our detailed and long-term plans. This is published alongside this business plan submission and can be found on our website at yorkshirewater.com/climatechange.

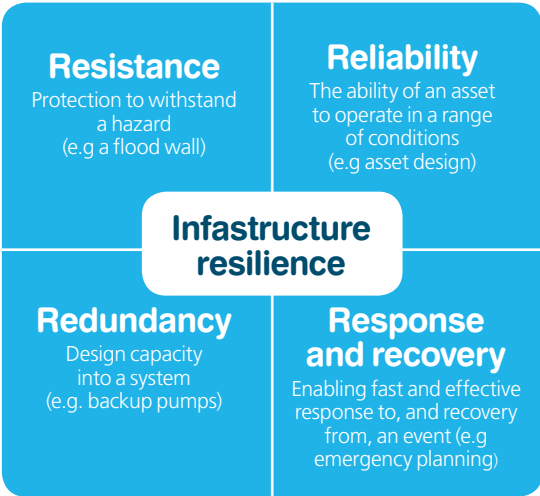
Climate change strategy



Our strategy is made up of the three elements shown in the diagram opposite. Our strategy describes our climate change risk assessment and response plans in four time-steps through to the 2080s. We have sought a measured, proportionate and risk-based approach to create a robust climate change strategy.

Responding to government and regulatory expectation, we have completed a suite of detailed risk assessments and quantified our risk position in many of our priority areas. We have assessed the range of options we can use to cost-effectively respond to our risks and reduce our carbon footprint.

We know that provision of waste water services requires planning far into the future. Long-term waste water supply planning is a regulatory expectation set out in a number of government guidelines and legislation such as the Drainage Strategy Framework. Ofwat, has stated that “we expect each company to have carried out sufficient climate change sensitivity analysis on investment decisions to identify those that are sensitive to potential changes from UKCP09”. We are also using the guidance in the Cabinet Office report “Keeping the Country Running – Natural Hazards and Infrastructure” to inform our plans. The four box model of effective infrastructure resilience is shown below and highlights the need to consider both operational and capital solutions to improve resilience. We have used this model to develop the weather resilience options within our strategy, ensuring action in all four components.



Our priority climate change risks and response plans include:

- Evolving our approach to sewer and drainage management to protect people and the environment from the impacts of heavier rainfall events and urban development. We work with other flood management authorities to ensure an integrated, cost-effective response to regional flooding issues. We are evolving our approach by using advanced hydraulic modelling and broadening our portfolio of potential response options to include Sustainable Drainage Systems (SuDS) and modular designs.
- Protecting and improving the environment is a priority as healthy species and habitats are most able to resist climate change and other pressures. We continue to deliver improvements in river and coastal water quality by enhancing our waste water treatment capabilities. We also continue to restore large areas of our own land and work with others to protect their land.
- Minimising emissions from our use of electricity is a mitigation priority because it is our largest source of emissions. We have reduced our total electricity consumption by 5.3% since 2010-11. Our land and infrastructure could support a wide range of technically-feasible and cost-effective renewable generation activities. Our customers cannot afford the upfront capital cost in the current economic climate, so we are seeking alternative funding options. We would like stronger legislative and regulatory incentives to help us maximise the benefit we can provide society, for example an industry-specific emissions reduction target.

4.6.3 Integrated flood risks

During AMP5 we have worked in partnership with the Environment Agency and several local authorities on multi-agency studies driven by the Flood and Water Management Act (2010). These studies assessed the integrated flood risk in key locations by bringing together models, data and expertise from all the relevant organisations involved in an area's drainage.

The three main studies have been in Hull, Leeds and Sheffield. To date, best available evidence has been used in all three investigations and the performance of the sewerage network has been evaluated. We will continue to maintain our sewerage system and respond to local sewerage issues. We are a key player in these cities' flood management strategies and will remain closely involved with relevant discussions and planning.

In Leeds there is potential for some of our assets to be compromised by changes to proposed river flow arrangements. We will continue to work with the Leeds project team to ensure our customers' current levels of service are not compromised.

In Hull the local topography presents significant challenges to us and other flood risk management authorities. We will be continuing to work with partners to define the long-term objectives and approach. Hull is also vulnerable in the future to storm surges due to the shape of the North Sea and the Humber Estuary as surges tend to 'bounce' around the North Sea and get channelled up the funnel shaped Humber Estuary (Baxter, 200534). The Cabinet Office suggests that a storm surge has between a 1:20 and a 1:200 relative likelihood of occurring within the next five years (The Cabinet Office, 201335).

Many flood risk management authorities are involved in preparing for a storm surge. We are supporting the Humberside Local Resilience Forum who lead our region's response planning for coastal inundation.

We will also continue to work with our partners on a study at Goole. A report is expected soon and will help those organisations involved define the appropriate way forward.

Our plan for 2015-2020 builds on our legacy of proven performance. High levels of service and performance, coupled with lower than average bills, provides a springboard to deliver the right outcome for Yorkshire. We are passionate about serving Yorkshire. Passionate about protecting and enhancing the environment, and passionate about delivering the best service for its people. We're also fair. When we don't need to do something, we don't, when we fall short of our promises we acknowledge it and we return money to our customers. That's why we embarked on our biggest ever programme of customer and stakeholder engagement to understand what they really want from us and ensure we built a plan around their views and that we challenge ourselves to deliver. You can read about our approach to customer and stakeholder engagement in the next section.

4.7 The right outcome for Yorkshire

Our plan for 2015-2020 builds on our legacy of proven performance. We are passionate about serving the Yorkshire region, protecting and enhancing its environment and delivering the best service for its people. That's why we have embarked on our biggest ever programme of customer and stakeholder engagement to understand what they really want and ensure we build a plan which reflects this. Our approach to customer and stakeholder engagement is in the next section.



5.

Engaging customers and stakeholders

Section Summary:

- We have carried out best practice, industry-leading research with thousands of our customers. 77% of those surveyed support our plan. Support from hard-to-reach and business customers was even higher, achieving the ‘example of excellence’ standard defined by the Consumer Council for Water
- We have reached nearly two million customers with our business plan communications. About 95% of those surveyed showed support for our intent
- An independent Customer Forum ensured that customers’ views and opinions were considered and fairly represented throughout the business planning process. They concluded “...you have a clear mandate from the customer base... We will commend the approach you have taken”
- The Environment Agency have confirmed their support for our plan, observing that we “are seeking cost effective and innovative ways to deliver environmental improvements...your business plan is robust”
- We have engaged a variety of stakeholders throughout the development of our plan. The independent Environmental Advisory Panel of about 25 stakeholders have confirmed their support for our plan.

This section describes how we have developed our business plan through extensive engagement with an independent Customer Forum and directly with customers, regulators and other stakeholders.

5.1 Introduction to our customer and stakeholder engagement

Our Blueprint is about keeping our promises and listening to all our customers. That's why we've worked closely with them to develop our plan and reflect the needs of Yorkshire; protecting public health, the environment, customer service, and customers' money.

Overall 77% of customers who took part in our in-depth research support our plan (75% of household and 85% of business customers). 77% exceeds the benchmark of 70-75% support set out as acceptable by the Consumer Council for Water, and our support among hard to reach and business customers is categorised as an example of excellence. This research was undertaken against our overall Yorkshire Water plan incorporating the proposals laid out in each of the individual price control plans including this one.

Since the customer research we undertook for the last price review in 2009 (PR09), the national economic outlook has changed considerably. We wanted to understand how this had affected our customers both from an economic and financial perspective. We designed a customer engagement strategy which went beyond just understanding customers' willingness-to-pay for future water and waste water services. We wanted views from a regionally representative sample of customers to ensure our plan provides resilient and sustainable outcomes in the long-term, and that we meet our legal obligations as a water and waste water company, at a price which is acceptable to our customers.

To ensure we delivered a representative and transparent customer engagement programme for Price Review 2014, we worked with an independent Customer Forum, which helped us make sure our research strategy was robust and legitimate and that the results have been properly reflected in the Blueprint.

5.2 Working with an independent Customer Forum

In Ofwat's paper 'Involving customers in the price setting process', it identified the need for companies to engage with, and gain customer support for business planning and the price review process, something we have always tried to do. To ensure this customer engagement process is conducted legitimately and robustly, Ofwat asked companies to establish Customer Challenge Groups (CCGs) to ensure that customers' views and opinions are considered throughout the price review process and fairly represented in final business plans. While Ofwat asked companies to establish the structure and membership of each CCG, these groups should be independent from the company and chaired by an independent representative.

The CCG in Yorkshire is known as the Customer Forum and is an independent group of invited experts, who represent the needs of customers and of the environment and is structured so that the diversity of our customer base is fairly represented. The diverse range of organisations helps to ensure that challenges are robust and comprehensive. Each organisation has different interests and varying needs in terms of engagement.

The organisations that make up Yorkshire's Customer Forum are detailed below:

- Andrea Cook, Independent Chair
- Local Government Yorkshire and Humber
- Confederation of British Industry
- Natural England
- Citizens Advice Bureau
- Drinking Water Inspectorate
- Consumer Council for Water
- Environment Agency
- Federation of Small Businesses
- Age UK
- Yorkshire Water Environment Advisory Panel
- Independent Academic

Appendix 2 contains more information about the role of the organisations that constitute the customer forum membership.

The Customer Forum has met twelve times, and during that time has been involved in shaping our customer research programme and providing feedback on our plans. An extensive list of specific challenges has been captured on the research programme throughout the price review process, as well as the challenges made directly by the Customer Forum members in meetings.

Figure 5A
PR14 customer research activities

Research Project	Objective
Valuing Water Nov 2011 – Mar 2012	To understand customers' views and opinions on the value of water now and in the future and in preparation for PR14, and understand their financial position today compared to research undertaken for PR09.
Service Valuation (Willingness to Pay) May – Aug 2012	To identify priority areas of service among our customers and within this, to ascertain customers' 'willingness to pay' for specific levels of service improvement achievable under each priority area.
Severity Failure Severity Study Aug – Oct 2012	Within priority areas identified through Service Valuation, this study aimed to understand the value customers place on changes in the severity of specific service level failures.
Outcomes Feb – May 2013	Building on the results from Service Valuation this study aims to derive customers' priorities in the development of long-term outcomes for the business, to identify appropriate performance measures which customers understand and support, and, to explore opinion on appropriate outcome delivery incentives.
Investment Choices and Acceptability Testing May – Oct 2013	Building on the results of Service Valuation and Outcomes, we developed our proposals for 2015-2020. This iterative study provided customers with four opportunities to feedback on our Blueprint proposals. It included choices to not only maintain current performance and meet statutory obligations, but also to improve our performance for: flood resilience, sewer flooding, river water quality, energy generation via renewables and sludge. This study gave customers a clear view on the expected impact of inflation. The results ensure customers' views have been fairly and properly represented in the development of the Business Plan and that it is affordable.

We have captured these challenges via the minutes recorded at the Customer Forum meetings and through a separate log of challenges. These challenges have been shared and discussed with the Customer Forum's independent report advisor throughout the price review process. You can view the Customer Forum minutes and report at our website blueprintforyorkshire.com.

Throughout the business planning process, the Customer Forum has been involved in every aspect of our customer research programme, challenging us to:

- Be clear and transparent in the way we present information to customers
- Make sure our sampling fairly represents the demographics of the region
- Make sure we give hard-to-reach and vulnerable customers an opportunity to contribute
- Ensure that we interpret the results of the research properly and reflect it faithfully in our plan.
- In the next section we will summarise our in-depth customer research..

5.3 Research and acceptability testing

In developing our business plan we recognised the importance of our customers and how their views, opinions and behaviours differ from those of the research conducted at last price review submitted in 2009. At that time, the economic landscape was very different and we wanted to understand how customers' economic and financial situations had altered prior to conducting our specific price review customer research for the next five year period.

In 2010, we refined our research strategy that put customers at the heart of our planning process. The diagram below provides an overview of the core activity we have undertaken with our customers throughout the PR14 process. We estimate that by the time we have submitted this plan to Ofwat in December 2013, we will have spoken to over 6,700 household customers including 160 'hard to reach' customers and 1,700 business customers. To ensure we have fairly reflected future customers views in the business plan, we also consulted with young non-bill payers throughout the Outcomes and Acceptability Testing research programmes.

Figure 5A summarises the customer research engagement we have conducted for PR14 business planning.



More information about our customer and stakeholder engagement is in the supporting document 'How Customers have Helped Shape our Business Plan' at our website blueprintforyorkshire.com.

5.4 Wider engagement with customers and stakeholders

Yorkshire Water's external engagement plan was designed to complement the customer research work carried out as part of acceptability testing and aimed to give as many of our customers as possible the opportunity to share their views.

The PR14 engagement plan has been the biggest single public engagement programme ever undertaken by Yorkshire Water. Throughout this campaign we estimate we have reached 1.9 million customers' in some way (66% of our bill payers), making customers from across the region and from all social profiles, aware of our future plans and giving them the opportunity to give us their opinions on it. Our approach has been to encourage customer and stakeholder feedback on our plan through the use of traditional media stories, social media, paid-for media, presentations and face-to-face events. See Appendix 3 for more detail on our wider engagement campaign.

Our campaign reach included:

- Over 300,000 customers had the opportunity to meet with us face-face at customer events
- Messaging to over 130,000 business customers through their bills, with an additional 1,000 businesses emailed directly about the plans
- 28,267 unique visits to our Blueprint for Yorkshire website
- 29,862 surveys returned
- 43,793 customers received an email newsletter

- 4,283 customers received a summary of the plans through their doors
- 250,709 people have viewed our Yorkshire Water family experience videos
- Approximately 200 key external stakeholders engaged with face-to-face at our stakeholder conference and through our contact programme briefings
- 1.9 million customers through the media, advertising, events and direct mail letters supporting the capital programme.

Customer insight was used to localise the campaigns to make information presented to local people as relevant as possible, and reach as many customers as we could across our region. We have used innovative techniques such as Experian Mosaic data to understand the profile of our customers to allow us to tailor the type and content of our communications to audiences in each area.

One example of this is the way in which we ran our campaign in Skipton, where we identified that a high proportion of our customers in this area are farmers. The campaign in Skipton was therefore tailored to contain bespoke information developed to help farmers see the relevance of our plans, discussing issues pertinent to them such as catchment management and flooding.

To ensure our plans are reflective of our region, we also consulted regional experts with a different perspective on our customers' needs. These included Members of Parliament, Local Authority Leaders, regional organisations such as Visit Yorkshire and groups which represent our hard-to-reach customers. In July 2013 we shared our vision for the future at a Blueprint for Yorkshire stakeholder conference. This was a fantastic opportunity to share our vision for the future with our key partners and to get their feedback on our plans for the next five and 25 years.

Figure 5B
Summary of our regulators and their contribution to our waste water business planning process

Environment Agency	Natural England	Defra	Consumer Council for Water
The National Environmental Programme for Yorkshire Water has been developed in liaison with the Yorkshire and North East Regional Environment Agency office.	We have worked with Natural England’s specialists to identify relevant legislative drivers, sources of guidance and advice and available data, which we have then applied to our asset base. Areas requiring action during 2015 – 2020 were developed in conjunction with the Environment Agency and incorporated within the National Environment Programme.	To ensure our assets, and therefore our customer service, are protected from potential acts of terrorism, we have liaised with the Water Security and Emergencies Department within Defra Water Supply and Infrastructure. This ensures we are both up to date on the latest developments, but are also advised on implementation and associated timescales.	During all stages and aspects of our customer research the Consumer Council for Water provided challenge, ensuring our research was robust.

5.5 Working with regulators

We have a long history of collaborating successfully with our quality regulators and stakeholders in Yorkshire to develop balanced plans that meet the needs of our customers and the environment. Working in partnership with the Environment Agency, Natural England, Department for Environment, Food and Rural Affairs and the Consumer Council for Water has been key to the development of our waste water business plan. They have helped ensure that our plan not only meets our customer and environmental needs, but also meets existing and new legal requirements such as those of the European Union’s Water Framework Directive and sets the timescales by which we need to do this. This has helped us to ensure that we will meet our statutory obligations. The table below summarises our regulators and their contribution to our business planning process.

5.6 Environmental stakeholders

We recognise and value the importance of our role as custodians of the natural environment. For many years we’ve been inviting stakeholders to share their views through an independent Environment Advisory Panel (EAP). While not a quality regulator in its own right, this body advises us on where and how we need to engage with wider regional environmental activities. It demonstrates the breadth of regulatory and stakeholder engagement we have undertaken with regard to our environmental responsibilities.

The panel has worked alongside us for over 10 years. It is independently chaired, (the Chair is now also a member of the Customer Forum), and is made up of regional and national environmental stakeholders listed in figure 5C. Its role is to support the company in developing its understanding of environmental issues and drive informed and balanced policy-making and investment, as well as building relationships with key local and regional environmental stakeholders. The Panel’s involvement has covered future risks to the company, the development of long-term planning and outcomes, and identified relevant legal drivers and environmental priorities to inform the plan. The panel challenges and supports us in taking on a bigger environmental leadership role in Yorkshire. We will continue to use the skills of the panel throughout the delivery of our Blueprint, building stronger partnerships for the future.

Figure 5C
Yorkshire Water Environment Advisory Panel Membership

Aire Action Leeds	Nidderdale Area of Outstanding Natural Beauty	National Trust
Business in the Community	Environment Agency	EA Fishery Advisory
National Farmers Union	Forestry Commission	Calder and Colne Rivers Trust
RSPB	Ramblers Association	River Aire Trust
Groundwork	East Yorkshire Rivers Trust	Country Land and Business Association
Natural England	Salmon and Trout Association	Campaign to Protect Rural England
Don Catchment Rivers Trust	Canal Rivers Trust	Yorkshire Wildlife Trust
Forestry Commission		

5.7 Engaging with our supply chain

We have long-term partnering relationships with our key suppliers of asset management and construction services. We committed to this by setting up our Asset Delivery Unit in 2010. This unit co-located all our partners and ourselves to drive deeper collaboration and efficiency gains during 2010-2015. As partners, we entered into mature conversation and negotiation about the transition from AMP5 in to AMP6, identifying the risk of skill-loss and inefficiency by not smoothing the transitional workload.

Concurrently, in July 2012, the Treasury published a White Paper entitled ‘Smoothing Investment Cycles in the Water Sector’. We took this forward and developed a proposal to allow transitional investment to occur without distorting the incentives of the regulatory regime. These proposals were co-presented with Anglian Water to Ofwat on 21 June 2013., and we are pleased to see them reflected in Ofwat’s methodology.

The result is that we assessed that we could manage or mitigate the identified risks by advancing investment from AMP6 where it was beneficial to customers or the environment. Our transitional investment plan for waste water services is approximately £21.3 million, and will retain key skills within the supply chain and make a measured and efficient start to our AMP6 programme of improvement.

By talking to our customers, and giving them the chance to have their say on our plans, we’ve learned a great deal about what matters most to them. They’ve helped us identify seven clear long-term outcomes that they want us to work towards achieving in the next 25 years. Together with our partners, we are ready to deliver customers’ outcomes. In the next section, we summarise in more detail what we heard from our customers and stakeholders and what we believe we must do to meet our statutory obligations.

6.

Listening to our customers and stakeholders

Section summary:

We have iteratively developed our business plan with extensive customer and stakeholder engagement. Our customers have told us they support our plan and that we have the right outcomes, measures and incentives that reflect what's important to them. This package is also supported by the independent Customer Forum.

We have worked with the Environment Agency and Natural England to develop our plan and gain their support. Our statutory improvement requirements total £456 million and account for 12% of our total expenditure in 2015-2020.

Headline messages we heard and incorporated into our plan, include:

- Customers are experiencing affordability issues
- Any reduction in the level of the waste water service is unthinkable, even if this means a lower waste water bill
- We should strive to improve, however there was little ability or willingness to pay more.
- Statutory compliance is essential
- Partnership working is increasingly important to deliver maximum benefits.



This section summarises what we heard from our customers, regulators and other stakeholders during our programme of engagement. It describes how we have developed outcomes, measures of success, performance commitments and incentives and how we have tested customer support for our plan.

6.1 Interpreting what we heard to develop ‘The right outcome for Yorkshire’

Our wholesale waste water plan has been developed through an in-depth and thorough programme of engagement with our customers and stakeholders. It has been an iterative process where we have gathered evidence on priorities and costs, built our proposals and tested them with customers.

In 2012, ‘Valuing Water’ and ‘Willingness to Pay’ studies provided information on where customers place most value on all of our services. This informed us of customers’ likely outcome priorities which we tested and refined with customers in 2013. Customers told us there were seven outcomes we need to focus on, of which three are specific to the waste water part of our business. They helped us to shape the measures of success and the incentives for delivering those outcomes. These outcomes are the foundation of our ‘Blueprint: the next 25 years’ and this five-year plan.

The following sections outline the main headlines from these ‘Valuing Water’ and ‘Willingness to Pay’ studies.

6.2 Valuing Water

In order to prepare for PR14, it was important to understand if our customers’ views, opinions and behaviours differed from that of PR09. The economic landscape of the price review process in PR09 was very different to that of PR14, and we wanted to understand our customers’ economic and financial situation prior to conducting specific price review customer research. Valuing Water was an extensive customer research study undertaken between November 2011 and March 2012. This study provided the foundations to PR14 business planning.

Our customers told us that water was an essential part of everyday lives, but is typically taken for granted. Similarly, any loss or reduction in the waste water service level is unthinkable. Customers have experienced affordability issues on the back of rising costs for food, petrol, energy bills and insurance etc. whilst income has, at best, remained static.

Despite this, customers told us that there was no appetite for reducing the waste water service levels in return for a lower waste water bill. Conversely, there was very little willingness to pay any more to ensure current service levels, although there was a sense of resignation that, if the bill were to go up, customers would simply have to pay. Throughout this research, customers told us that they receive good levels of service for waste water and they would want to maintain this level of service if it meant keeping bills low. The findings of this research helped us frame the next phase of research known as Willingness to Pay.

Figure 6A
Service areas tested for service valuation with customers

Water Services	Waste Water Services	Environmental Services
Drinking Water Quality	External Sewer Flooding	Pollution Incidents
Discoloured Water	Internal Sewer Flooding	River Water Quality
Taste and Odour of Drinking Water	Odour from Sewage Treatment Works	Bathing Water Quality
Interruptions to Supply		
Security of Supply		

6.3 Service Valuation – Willingness to Pay

In determining the five-year price charged to our customers, we include information on investment required, and information on customer preferences and demand, i.e. willingness to pay for increases in the levels of service measures, and willingness to accept bill reductions for reductions in the same measures in the business planning process. To justify any investment beyond statutory requirements Willingness to Pay must exceed economic costs; to justify any reduction in service measures (subject to a minimum legal standard being met) Willingness to Accept must be less than cost savings.

We undertook this research activity with over 2,500 domestic and business customers to establish customers’ priorities for levels of service provision across eleven services areas, as shown Figure 6A.

The Willingness to Pay service valuation is carried out with customers in consideration of all Yorkshire Water Services, not for Wholesale Waste water services in isolation.

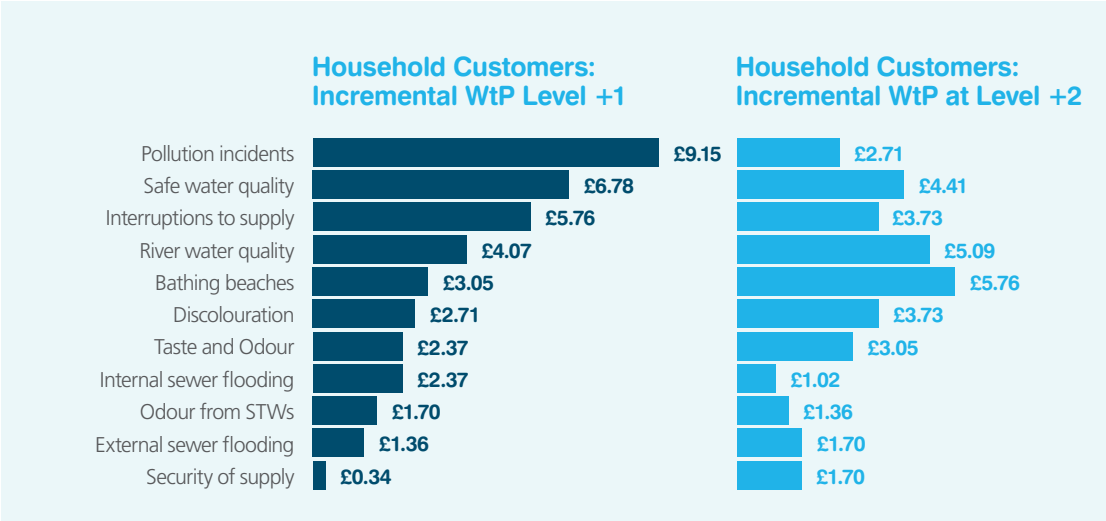
The outcome of this study provided us with the ‘value’ that both household and business customers place on different aspects of water, waste water and environmental services that we provide. The values derived from this study were used as part of our intervention optimisation process, which supports the decision making for our plan.

In general, customer feedback from this study was comparable to the feedback received in the Valuing Water research. Customers told us that we provide a high quality service, and this was due to the fact that very few customers had experienced problems with the service in the past. Therefore, customers admitted they simply took the service for granted. When customers were presented with current levels of service, they were typically perceived as being at an acceptable level and often exceeded peoples’ perceptions. Despite this, customers felt we should strive to improve. However, as observed in the Valuing Water research, there was little Willingness to Pay for improvements among household and business customers.

To establish customers’ Willingness to Pay for changes in water and waste water services (as well as changes in the severity of specific service level failures⁶⁸), we asked them to trade off different levels of service across the eleven service measures. This approach allowed us to estimate the percentage change in bill that customers would be willing to pay to receive an improvement in service. As expected, customers were on average willing to pay higher bills for improvements in services that went well beyond statutory levels and willing to accept bill reductions for reductions in service levels (after which services levels would still be greater than the minimum permitted levels). However, while they valued improvements in services across all service areas, it was observed that the overall value was 50% less than that at PR09.

In terms of individual service measures for the wholesale waste water business, household customers were willing to pay most to achieve improvements in levels of pollution incidents and river water quality. They were willing to pay least for making improvements to external sewage flooding and odour from waste water treatment works. Figure 6B below provides the relative value which household customers place on each level of service improvement.

Figure 6B
Household customer value for improved levels of service



6.4 Three outcomes for Yorkshire’s Wholesale Waste water Business

This price review is different from previous reviews in that it moves away from regulator-driven programmes of defined outputs to one where we set our own unique outcomes based on engagement with our stakeholders and customers. We set out to deliver outcomes aimed at addressing the short-, medium-and long-term challenges we face e.g. climate change, weather volatility, population growth etc. For us, this meant developing a set of outcomes which built upon the views of our customers from the Valuing Water and Willingness to Pay research, while meeting the legislative requirements set out by the government and regulators.

Our customers prioritised the aspects of service most important to them, with removal of waste water and maintaining/repairing pipes ranked second, after clean, safe drinking water. This is illustrated in figure 6C

Based on what our customers told us48 was important to them, we identified seven long-term objectives, which will form the core of Yorkshire Water’s future direction. Wholesale waste water services will contribute directly towards delivering three of these seven regulatory outcomes:

- We take care of your waste water and protect you and the environment from sewer flooding
- We protect and improve the water environment
- We understand our impact on the wider environment and act responsibly

Our customers told us that these are the right outcomes for Yorkshire. They describe the high level things which customers want and need us to deliver over the long term. They reflect what’s important to them and are presented in the order in which our customers told us they value them. Every outcome we presented to customers was fully supported by a majority of the respondents throughout our consultation, and no omissions were identified.

The section below provides a more detailed review of the development and support for the outcomes relating to Wholesale Waste water.

Figure 6C
Hierarchy of importance of aspects of service



6.4.1 Developing ‘We take care of your waste water and protect you and the environment from sewer flooding’

There were two initial draft outcomes presented to customers which focused on waste water services, outlined below:

Draft Outcome 4:
We will protect you from sewer flooding

Draft Outcome 5:
We will maintain waste water services

Customers told us that draft outcome 5 should be our standard default position. Maintaining waste water services is what we do and is what they expect us, as a waste water company to just keep on doing. Customer responses to draft outcome 4 however depended on people’s individual experiences. For most the idea of any sewer flooding was unacceptable and they were therefore willing to support the commitment we were making under this the draft outcome.

Customers also made it clear that that simply maintaining waste water services in the long term was not acceptable, customers want to see us improving. They also wanted to see more focus on prevention of sewer flooding events rather than monitoring or managing any events which may occur.

Customers agreed that draft outcome 4, protection from sewer flooding, was too narrow to encompass a wide reaching waste water goal they would fully support and draft outcome 5 was not aspirational enough. Therefore, based on the feedback from our customers it was agreed that the wording for draft outcome 3 should be changed to something much more aspirational enough to be a long term goal which was inclusive enough to also reflect customers’ priorities in relation to sewer flooding. The final wording for this outcome is therefore: **‘We take care of your waste water and protect you and the environment from sewer flooding’**.

6.4.2 Developing ‘We protect and improve the water environment’

There were two initial draft outcomes presented to customers which focused on environmental services, each as outlined below:

Draft outcome 6:
We will protect and improve the water environment

Draft outcome 7:
We understand the impact we have on our environment and act responsibly

Customers clearly identified that they were two very different outcomes and therefore should stand separately to one another. Customers told us that the quality of Yorkshire’s rivers, beaches and wildlife were also of high importance to them and therefore they broadly supported this outcome.

“That’s good, definitely, improved river quality. You know, whether you care about wildlife or not, it’s important. Fish for example, you don’t want to see dead fish floating down the river all the time, do you? And beaches, we all love, well we don’t get the weather but we love to go to the beach, you don’t want to have a polluted beach do you?”

(Domestic customer, Leeds).

Many customers also expressed that were not aware of the scale of our responsibilities and were impressed with the scope and efforts expressed in this draft outcome.

The final wording for this outcome was agreed as **‘We protect and improve the water environment’**. Due to the scope of this outcome the delivery of its objectives are split across both the wholesale water and wholesale waste business plans.

6.4.3 Developing ‘We understand our impact on the wider environment and act responsibly’

There were two initial draft Outcomes presented to customers which focused on environmental services, each is outlined below:

**Draft outcome 6:
We will protect and improve
the water environment**

**Draft outcome 7:
We understand the impact
we have on the environment
and act responsibly**

The focus of this draft outcome was on communicating that we are a sustainable business who considers the environment. Key aspects include: innovation, sustainable technology, reducing carbon emissions, minimising waste and investing in renewable energy.

Customers felt this could be easily confused with outcome 6 and questioned whether our intentions were clear enough under this outcome. However, they did broadly support the objectives this outcome proposed but suggested the wording was made clearer for customers to understand. There was also some scepticism over references to ‘zero carbon and zero waste’ in our proposed performance measures. Customers raised concerns that this was an unrealistic aspiration and did not want to see the word in our commitments and lose the credibility of what we are trying to achieve.

“I think the zero carbon is – I think it’s just a nice word what people like to use, you know. Because obviously they’re a big company and I think most big companies will have a zero carbon policy at hand to prove that they’re caring and that they are on the case. But I don’t think they’ll ever get to zero carbon and definitely not zero waste, you’re going to always have waste, aren’t you?”

(Domestic customer, Mosborough)

Following customers feedback consultation with the Customer Forum, it was agreed that this outcome should be reworded to make it much clearer and realistic. This outcome was agreed as **We understand our impact on the wider environment and act responsibly**.

6.5 Measures of success

We think it’s vital for us to be able to show and measure how we are doing against these long-term outcomes. This allows our customers to see how we are delivering the things which are important to them, and whether we are improving, maintaining performance or even deteriorating over time. We worked with our customers and stakeholders to identify the right measures of success for each outcome to ensure the whole package represents customer needs and the specific needs of regulators and stakeholders.

Engagement with our customers took place with the second phase of qualitative research which tested revised outcomes, measures of success, target levels of performance and proposed incentives.

Customers told us how to phrase the measures so they were better understood. They also told us the level of value they placed on each measure, for example customers wanted to see quantifiable tangible measures rather than subjective measures. Furthermore, customers preferred independent surveys, even if they are less statistically accurate, rather than company surveys.

We used customer feedback, and UKWIR methodology principles around selection of measures, (material, informed, measurable, verifiable, comparable, at least partly controllable, meaningful) to reduce the number of measures to those which would meaningfully represent the planned activity and expenditure.

In the final measure selection we limited complexity by seeking to meet a maximum of four measures per outcome for each service, and sought to ensure that for each Outcome there was one specific measure for each audience group e.g. customers, Ofwat, quality regulator(s) and ourselves. Finally, following feedback from the Customer Forum and stakeholders we ensured that the measures fully reflected the breadth of our operations, and our desire to work together with others in the future.

Our customers told us that the measures of success reflect what’s important to them in demonstrating our progress towards delivering the outcomes. The most important measures to our customers were closely related to the services which they value most:

- Internal and external sewer flooding incidents
- Plus any measures identified as a statutory measure.

Figure 6D
Waste water service performance commitments

Outcome	Measures of Success	Performance commitment	Deadband
We take care of your waste water and protect you and the environment from sewer flooding	Internal flooding incidents	927 pa	798 to 1070
	External flooding incidents	Greater understanding	
	Total number of Pollution Incidents	260 pa	
	Stability and reliability factor: Waste water network	STABLE*	
We protect and improve the water environment	Length of river improved	379 km	
	Stability and reliability factor: Waste water quality	STABLE*	
	The amount of land we conserve and enhance	16,349 ha	
	Solutions delivered by working with others	Commitment to make information available	
	Number of Yorkshire's Bathing Waters that exceed the required quality standard	15	
We understand our impact on the wider environment and act responsibly	Energy generated through renewable technologies	12%	by end of AMP6
	Waste diverted from landfill (re-used and recycled)	96%	

* Performance Commitment at Year 4

6.6 Performance Commitments

The performance commitments for each of the measures for 2015-2020 have been derived from the final Programme. In principle:

- Service will be maintained, therefore, as a minimum the target or performance commitment for each measure is defined by the AMP5 outturn performance commitment, or the forecast actual performance if this is more relevant.
- Where there is a change (increase) in the level of service, the target will be informed by the optimised programme (which is produced by our corporate system, ELSA+). Increases in levels of service may be due to:
 - an obligation to increase levels of service (i.e. NEP),
 - changes due to supply and demand or
 - response to customers' willingness to pay.

For each performance commitment we have also considered whether dead-bands are applicable. These represent performance around a target value which can be considered 'close enough to the target to enable it to be claimed', given the commitment.

The things we have considered when reflecting whether dead-bands should be used are the uncertainty in the calculation, the external factors (i.e. weather or actions of others), sensitivity of the indicator, and variability of past performance. We have decided only to consider dead-bands for those measures where there are financial incentives. We will use tolerance levels in our reporting of performance for measures with non-financial incentives.

The performance commitments for each of the measures for the waste water service are shown in Figure 6D.

6.7 Outcome Delivery Incentives (ODIs)

We are confident that our proposed performance commitments cover all areas of activity and investment, as well as statutory, legal and environmental obligations. For each commitment we have considered how we should be held accountable for any non-delivery, or under/over-performance. These incentives are to ensure we do what we say we will do in the plan.

The incentives have also been developed following consultation with our customers. Incentives take the form of either reputational or financial incentives. For financial incentives this means penalties and/or rewards. In deciding which is most appropriate we have considered,

Figure 6E

Outcome Commitments with Reputational Incentives

Outcome	Measures of Success
We take care of your waste water and protect you and the environment from sewer flooding	External flooding incidents Pollution Incidents
We protect and improve the water environment	Length of river improved The amount of land we conserve and enhance Solutions delivered by working with others Number of Yorkshire's Bathing Waters that exceed the required quality standard
We understand our impact on the wider environment and act responsibly	Energy generated through renewable technologies Waste diverted from landfill (re-used and recycled)

among other things, whether penalties exist elsewhere, the extent to which performance is within our control, and the level of importance to customers.

For each measure we have considered whether reputational or financial incentives are appropriate.

6.7.1 Reputational incentives

We have proposed reputational incentives where the measure is subjective, and typically if the commitment is for an improving or stable trend.

Additionally, financial incentives are rejected in favour of reputational incentives where:

- Financial penalties exist elsewhere (i.e. in legislation)
- A financial penalty cannot be reasonably calculated
- We have limited control over the performance.

The measures for which we propose a reputational incentive are shown in figure 6E.

6.7.2 Financial incentives

We consider that the remaining performance commitments are appropriate for financial incentives. They are fundamentally demonstrative of the services which we provide, and representative of the things which impact on customers.

The suggested methodology for calculation of a financial incentive is described by Ofwat using the 'Value' expressed by customers in the Willingness to Pay surveys. However, our surveys were commissioned prior to publication of this methodology, and were not expressly designed for this purpose.

Therefore we have examined whether our information is appropriate for use.

We also reviewed the interaction between financial ODIs and an assumed totex menu to make sure that the incentives proposed were appropriate, and accounted for any reward/penalty which may be earned from the menu due to cost efficiencies. (In other words, we needed to make sure we are not twice penalised or rewarded due to avoided or additional costs associated with under-or over-delivery).

Our resultant financial incentive design takes two approaches; using the 'Value' that customers place on the measure, and using alternative methodology based on a cost (totex) related approach.

6.7.3 Value based rewards

We have one incentive where we will face penalties for underachievement, but can also gain rewards for delivering meaningful improvements to the specific aspect of service. This incentive is based on the value which customers place on the service or activity, derived from the Willingness to pay survey. Customers have told us that they think this measure is important.

Figure 6F

Outcome Commitments with Financial Incentives

Outcome	Measures of Success	Performance commitment	Incentive value / unit -Penalty/+reward
We take care of your waste water and protect you and the environment from sewer flooding	Internal Flooding Incidents	927	-£136k / +£35k
	Long term stability and reliability factor: Sewer Network	Stable*	-max 10% Totex for outcome
We protect and improve the water environment	The number of solutions delivered by working with others	Information provision	+3% scheme outturn
	Long term stability and reliability factor: Waste water Quality	Stable*	-max 10% Totex for outcome

* Performance Commitment at Year 4

6.7.4 Totex based rewards

We have identified penalty-only incentives for the two Stability and Reliability factors. This is because we do not hold willingness to pay information for Service as defined by these factors. These factors reflect our primary duty to provide waste water services to protect public health and the environment over the short and long term. Some customers expressed opinion in these areas, saying that we should provide consistent services without additional reward. We feel that these measures are fundamental to our service, and that it would be inappropriate to apply a reward for doing what we are obliged to do. In the same way, we consider that the penalty should be, or should be able to be, of meaningful value.

We therefore propose a totex-based penalty which follows the essence of the current serviceability assessment. This will be limited to a maximum of 10% of totex in the Outcome in the relevant element (service).

We have also considered the effects of the measures in the wider context, and reviewed what behaviours we wish to encourage. We consider it appropriate to positively and financially incentivise the 'Solutions delivered by working with others' measure.

We really want to embrace working together, and to deliver as much benefit as possible into society by looking for new and innovative ways of working with other stakeholders, agencies, groups and individuals. We will continue to select best value interventions, but we know that by working together we will face new challenges and short-term risks and uncertainties which we would not otherwise face. That's why we have identified a small reward for each intervention made by working with others, to recognise the additional benefits realised, and to recognise the issues which we will need to overcome and the cultural change which we will be driving.

6.7.5 Implementing the financial incentives

We consulted with customers about the form that penalties or rewards should take.

Customers were not generally in favour of refunds to their bills, particularly for 'small' amounts, and expressed a preference for us to reinvest penalties in services. Additionally, customers value stable bills, and so would not want to see rewards passed directly to bills.

We have defined a framework for implementing the financial incentives and shared it with the Customer Forum. In general:

- For performance shortfalls, our commitment is to always rectify a performance shortfall at our own expense in the following year, or within the following three years for the Stability and Reliability factor. For the measures identified above we will also apply an additional penalty. The penalty will take the form of extra investment in the area of the service failure, and will be funded by shareholders.
- For performance which earns reward, we will reflect the value of the reward in year 1 prices of AMP7. The reward associated with the 'Working together' measure will be calculated annually and invested in services within the three subsequent years, and reflected in prices in AMP7.

We will validate the process for calculating rewards and penalties by seeking independent review and challenge, through the Customer Forum or other independent party, (e.g. our Environment Advisory Panel).

6.7.6 Outcome Delivery Incentives conclusion

We have heard our customers tell us that these are the right outcomes for Yorkshire. We have heard that the measures of success reflect what's most important to them and are the right measures against which our performance can be assessed. We also heard that this is the right incentive package against which customers can hold us to our word and encourage us to strive for better performance. This package is also supported by the independent Customer Forum and has been designed to ensure we:

- Identify what we will do in return for revenues over the next 5 years
- Measure our performance against our commitments
- Hold ourselves to account for any shortfalls
- Are clear about any rewards we earn for providing meaningful service improvement over and above our commitments.

We will publish our performance against these measures annually, to show customers how we are achieving our commitments, and what our performance is. It is important to us to ensure that we can be held publicly accountable for our performance, and that we can demonstrate to customers how we are delivering our services, providing great customer service, and undertaking our statutory duties.

A detailed breakdown of how we will achieve our outcomes and the associated measures of success through our long- and short-term plans can be found in Section 8.

6.8 Customer Support for 'The right outcome for Yorkshire'

Customers have told us throughout our research programme that they've experienced noticeable changes to their household expenditure in the past few years, while their incomes have remained virtually static in that time.

**"I haven't had a pay rise
in the last three years."**

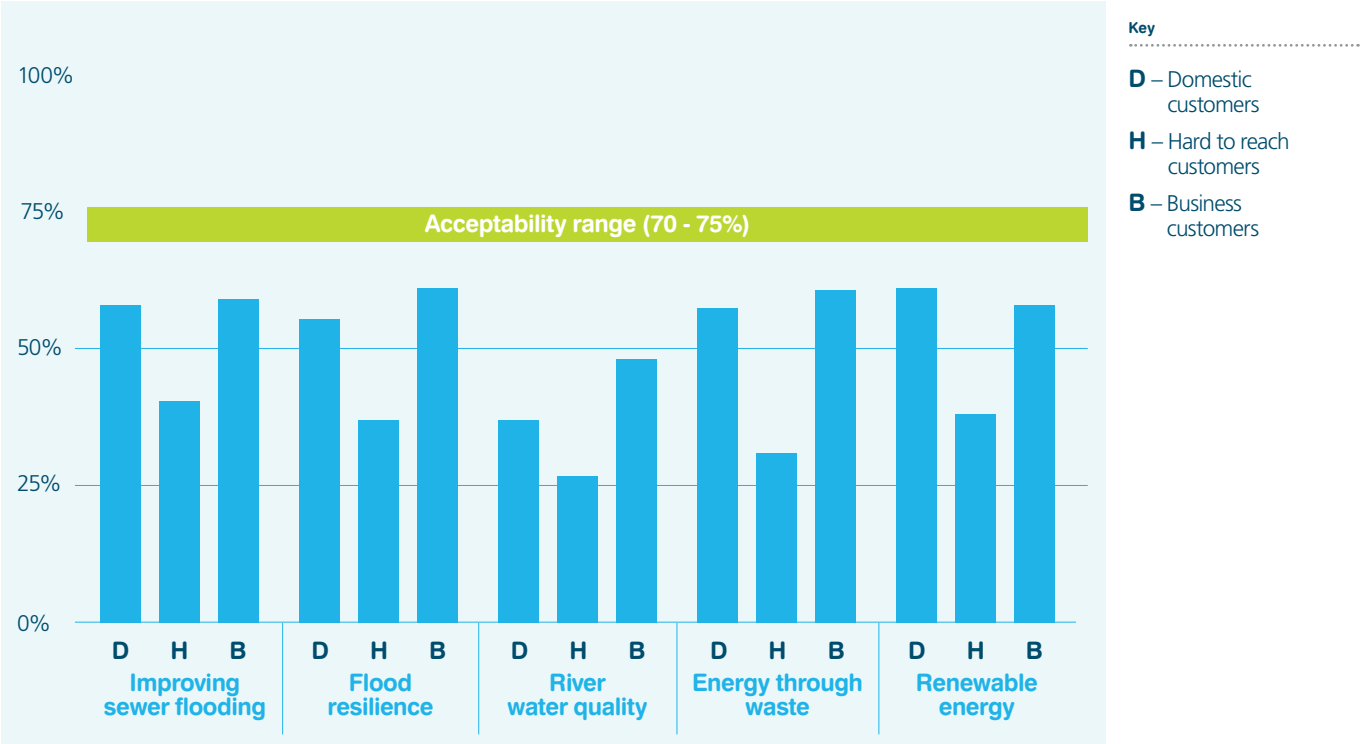
Household customer
Whitby

Due to the challenging economic climate, we found that customers are now more generally aware of the size of their water and waste water bill, although awareness of the waste water service in itself is not universal, and awareness of usage of the waste water service by volume is virtually non-existent. They also told us that their total bill for water and waste water services is one of the smaller household bills and was generally considered to be reasonable, although they have some concerns regarding affordability, as costs continue to rise while their incomes remain static.

Despite household spending pressures, the customers we asked still expect the same or even better level of water services from us. Lowering service levels in return for a lower bill was considered unacceptable. It would be a backward step for example, to increase the risk of flooding, pose health risks or reverse the legacy of service improvements that have been made to-date.

To ensure we have reflected this feedback in the development of our business plan, we undertook a large survey with customers to gauge the level of support for our plan (Acceptability Testing). Throughout 2013, we worked with the Customer Forum and customers to ensure what we were proposing in the plan reflected their priorities. This activity also tested whether customers understood the content of the plan e.g. did they understand the reason for the research and was the content presented clear?

Figure 6G
Level of customer support for choices



s part of our whole business plan acceptability testing we gave customers an additional five investment choices over and above our wholesale waste water base plan, in the context of the effect on the overall Yorkshire Water Plan and the total bill. In return for a higher bill, this provided them with the option to not only maintain but improve our performance for: flood resilience, sewer flooding, river water quality, energy generation via renewables and energy generation. The results of this study are shown in figure 6G. While the level of support for some of the choices was high, no areas met the 70-75% acceptability range recommended by the Consumer Council for Water. In the final stage of acceptability testing we removed the choices and only presented our customers with the business plan which has a zero impact on bills before the rate of inflation.

In September 2013, we tested our final plan, (the Business Plan for all Yorkshire Water services) which was based on feedback gathered throughout the process, with over 800 household customers and 200 business customers across the Yorkshire region. The plan outlined the total level of investment we propose to make between 2015-2020. The results of this acceptability testing are outlined below.

Overall 77% of our customers surveyed supported our plan (76% of domestic customers, 82% of hard-to-reach customers and 85% of business customers surveyed said were supportive of the business plan).

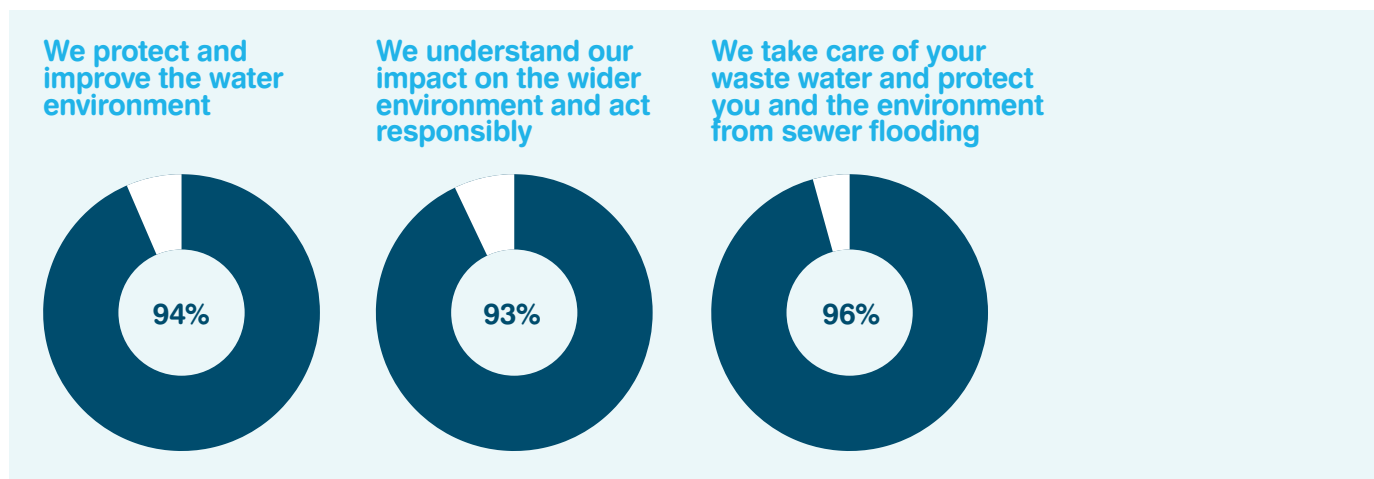
The Customer Forum told us that they considered the results of the Acceptability Testing to be well above the 70-75% range recommended by the Consumer Council for Water. **“Our view would be that you have a clear mandate from the customer base to proceed with the current plan... We will commend the approach you have taken.”** Andrea Cook, Chair of the Customer Forum, September 2013.



Nb. Numbers may not add up due to rounding

Figure 6I

Support for the outcomes and the intent of the plan



Further to the customer research programme, we undertook an extensive communications programme with customers to understand the level of importance they placed on all our outcomes. We spoke to approximately 30,000 customers during 2013. Customers told us that the outcomes were important to them, averaging 4.72 out of 5 (95%). They also agreed with the intent of our plan, with an average score of 4.52 out of 5 (90%).

The support for our waste water outcomes is shown in figure 6I.

Throughout our customer engagement programme we have heard customers tell us that they don't want their bills to rise between 2015-2020, but neither do they want us to compromise core services or allow our performance to deteriorate. We also heard them tell us that they want the surety of prices remaining stable over the next five years. This confirms that we have listened, interpreted and developed a plan which reflects the views of our customers.

In summary, we heard our customers say that our business plan is the right outcome for Yorkshire. These are the right outcomes, and the right levels of performance at an acceptable price.

6.9 Meeting our statutory obligations

We completed an extensive programme of engagement with our quality regulators. They have told us our Yorkshire Water plan (and the waste water element within), needs to meet all of our statutory obligations. Our quality regulators view confirms that our plan meets the requirements set out in the Defra document 'Statement of Obligations Information for Water and Sewage Undertakers and Regulators on Statutory Environmental and Drinking Water Provisions Applicable to the Water Sector in England' and the extensive further guidance provided by the DWI and the Environment Agency. The full extent and context of our statutory obligations for waste water are described within our NEP Business Case. The Climate Change Strategy describes the climate change risk we face and our approach to resilience.

We have developed the environmental improvement programme with the Environment Agency, and to a lesser extent Natural England. This sizeable programme of investment reflects the ongoing requirement to meet the challenges of environmental regulation coming from the European Union, and reflected in UK law.

We put in place a structured programme of engagement with the Environment Agency, shown in Figure 6J to properly understand the statutory objective which we can clearly see today, but also to jointly produce a robust understanding of the obligations due to be placed on us in 2016 through the second River Basin Management Planning cycle (National Environment Programme phase 5).

Figure 6J
Environment Agency / Yorkshire Water joint management approach



Figure 6K
Summary expenditure agreed with Quality Regulators

Driver	Capital expenditure £m	Operational expenditure £m	Total expenditure £m
Environmental Obligations	293.2	6.3	299.5
Quality to Base Allocation	(4.69)	0.0	(4.69)
Security and Emergency Measures Direction (SEMD)	6.7	0.1	6.8
Private to Public Sewers and Pumping Stations	53.8	9.9	63.7
Sewer Rehabilitation	0.1	0.0	0.1
First Time sewerage	2.2	0.0	2.2
Total Expenditure £m	351.3	16.3	367.6

We heard from the Environment Agency that we need to ensure that there is sufficient maintenance of our existing assets included in the plan, and that we should aim to deliver 100% compliance with our permits. They need us to plan robustly for whole National Environment Programme, we need to start to address the challenge of climate change and we need to enter into closer partnership working with other flood Risk Management Authorities when fulfilling our duties and promoting our programmes of flood protection.

Figure 6K shows the high level summary of our proposed quality enhancement expenditure requirement for wholesale waste water that has been developed through liaison with the Environment Agency and other Stakeholders.

In total, our statutory improvement requirements across both clean and waste programmes of £450 million accounts for 12% of our total expenditure for 2015-20:

- The NEP will cost £325 million (8% of total expenditure) of which £299.5m will be delivered by the waste water plan

- £209 million of the NEP is accounted for by phase 5 (5% of total expenditure)
- Including robust phase 5 costs in the plan means we do not anticipate requesting an increase in prices during the period, although this will ultimately be a decision for Ministers to make in 2016
- Providing cost certainty for our customers and delivering benefits to the environment.

We have shared our proposals with our Environmental Advisory Panel. It has reviewed and endorsed the plan, describing it as '**an evidenced and risk based approach taken to clear conclusions**'. The level of detail presented was welcomed and a number of shared objectives were identified. Members were supportive of our approach to current economic and water environment challenges.



6.10 Working in partnership

Through discussions and meetings with stakeholders, particularly environmental bodies and flood risk management bodies, we have heard a consistent message of the need to work in partnership to deliver integrated benefits to the environment and customers where needed and possible. We have listened to this feedback and are changing our ways of working to involve more other agencies in the delivery of our outcomes. We see a clear need to engage with bodies such as the Canals and Rivers Trust, Flood Risk Management Authorities and the farming community in delivering improvements to rivers, homes and catchments. We recognise this to be of such importance that we are proposing a small incentive to challenge ourselves to pursue this approach for the greater long term benefit of customers. We have identified AMP6 expenditure that we will use to proactively engage on wider flooding issues to generate greater societal value.

6.11 An overarching need to keep prices low

We have always focussed on striking a balance between what customers have told us they want us to deliver and what we need to charge them for those services. From the research we have carried out it has never been clearer that we must manage prices for customers during these difficult economic times. Our plan responds to that, delivers the improvements our customers want and keeps their bill in line with inflation.

We're very pleased that our customers and stakeholders support our plans and that the Customer Forum approves of the direction we're taking. Our customer-focused outcomes give us a clear sense of direction together with a set of objectives against which we can measure and demonstrate our progress. We have heard a consistent message that we must manage the cost to customers. The next section describes how we have used our customer and stakeholder views faithfully and built our plan around what they told us.

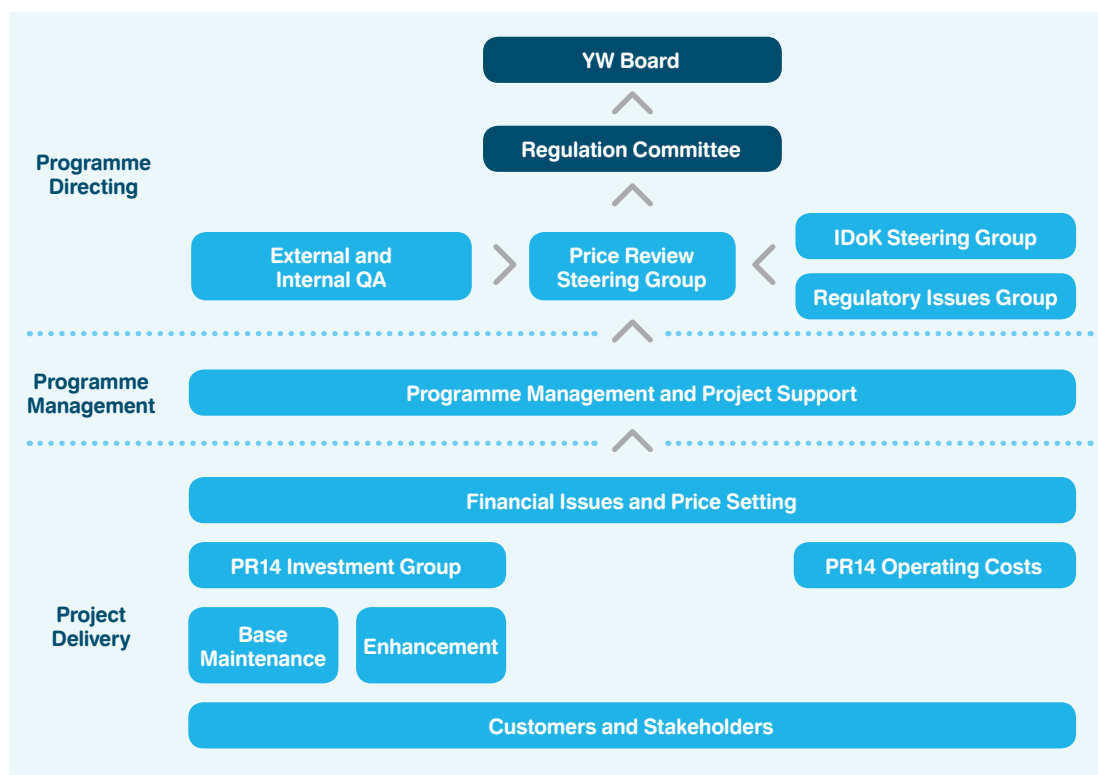
7.

Developing our Blueprint

Section summary:

- We have assured our plan by replicating our ISO9001 certified Risk and Compliance Statement assurance process. Atkins and Pricewaterhouse Coopers (PwC) have provided external assurance of the plan. Atkins concluded that our plan “has been properly prepared in accordance with relevant guidance and requirements and is generally well evidenced and presented”
- We have embraced the totex approach set out by Ofwat. We have built an optimal plan using best practice principles, by considering the whole life of our interventions and applying cost benefit analysis. Our mature Leading Edge Asset Decision Assessment (LEADA+) systems prioritise the activities that deliver the best net-benefit to customers at lowest whole life cost
- We have modelled into our costs all the efficiency that we have achieved in recent years. In AMP5 we are on course to deliver £106 million of efficiency from our operating costs and £198 million from our capital programme, compared with what was allowed at 2009. We have set ourselves further challenging efficiency targets between 2015-2020
- We will be taking on additional risk over the period 2015-2020 because of the cost pressures to keep bills low and deliver further statutory requirements. We recognise that this cannot be maintained in the long-term so our plan includes for increasing maintenance between 2020 and 2030.

Figure 7A
Our governance structure



This section summarises the activities, systems and processes we used to build a robust and best value plan that delivers the priorities of our customers, regulators and other stakeholders.

7.1 Governance and assurance of our Plan

Our vision of ‘Taking Responsibility for the Water Environment for Good’ and our world class asset management processes have been used as the foundation of our approach to the price review. In 2011 we developed our approach to building our plan which included developing a transparent, accurate and well justified business plan reflecting our customers’ priorities. This was the approach we adopted at PR04 and PR09. The regulatory landscape has changed significantly since then but the principles still apply.

7.1.1 Board Governance

To ensure alignment with strategic objectives we implemented a governance structure early in the process, defining the roles and responsibilities of a number of groups reporting into the Board and the formally recognised Regulation Committee. This is shown in figure 7A.

The Board formally appointed a Regulation Committee containing the executive directors and relevant senior managers. Regulation Committee has met on a fortnightly basis as required. Its prime purpose is to oversee the overall management and direction of arrangements for the periodic review process and to report matters to the Board. The Board has met on a monthly basis to receive evidence on the development of the plan, lead the strategic direction of the company in developing the plan and make the decisions on the plan’s content. The Board has received assurance through our internal and external assurance processes. The Board has met with the chair of the Customer Forum on two occasions to hear first-hand the Forum’s views. Executive and Non-executive directors have attended Customer Forum meetings to better understand how interventions have helped shape the plan.

Through these two Director-led groups, there was a continuous Board and Regulation Committee challenge of the 2015-2020 programme to balance, service, investment, prices and returns while delivering a robust asset management plan and working towards our 25-year outcomes.

The Yorkshire Water Board has been fully involved in the leadership, development and decision making of our five-and 25-year business plan.

Figure 7C

Assurance approaches applied to the business plan

Level of Assurance	Type of Assurance
Internal Data Validation (1st line)	<p>Detailed validation of data, models and systems through:</p> <ul style="list-style-type: none"> • Technical Approaches • Check and review process for developing and applying cost models • Reviews of data sets to identify missing data / outliers • Sampling of data to check risk and cost assumptions. <p>Accountable managers provided assurance statements to our Board, confirming completeness, accuracy & appropriateness of information provided to develop the plan.</p>
Internal Quality Assurance (2nd Line)	<ul style="list-style-type: none"> • Ensuring business cases are as robust as possible through review and cross business challenge. • Documented quality assurance/challenge process of our asset management processes and business plan. <p>Cyclical reporting to PR14 Steering Group to highlight key risks and action plans that need to be delivered.</p>
External Assurance (3rd Line): Technical	Independent review, challenge and audit of business cases and tables by appointed reporter, Atkins.
External Assurance (3rd Line): Financial	External review of our financial data tables by PricewaterhouseCoopers.
Customer Engagement	Independent analysis and peer review by leading experts in the field (e.g. ICS Consulting, Newcastle University, University of California).
Customer Forum	Responsible for providing challenge to ensure that customers' views and opinions are considered throughout the price review process and fairly represented in final business plans.
Other	<p>We have engaged specialists to provide assurance to the plan. For example:</p> <p>ICS Consulting have assured our risk processes, and our approach to Outcome Delivery Incentives.</p> <p>We have used Cranfield University to review our approach to risk and reward and our investment programme risk modelling (scenario analysis system) has also been independently reviewed by an expert in the field.</p>

7.2 Assuring our Plan

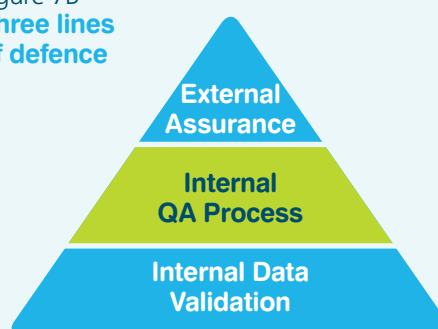
We are committed to preparing a five and 25-year transparent, accurate and well justified business plan which reflects our customers' priorities. Throughout the price review process, we've made sure that the data and information we've used to construct our plan is fully assured, robust and accurate.

We have replicated our ISO9001 certified Risk and Compliance Statement assurance process, for the development of the business plan. This uses a 'three lines of defence' principle representing best practice. Our assurance processes have been approved at our Group Audit Committee providing additional assurance to members of the Yorkshire Water Board.

Due to the complexity of the plan we have adopted a range of quality assurance approaches relevant to the different parts of the plan. This is shown in Figure 7C

Our technical evidence base contains more detailed information and results from our assurance processes.

Figure 7B
Three lines of defence



7.3 Technical assurance

We engaged our appointed internal reporter Atkins, to provide external assurance of the plan. Atkins has a duty to the Board and has designed its approach and focus to be consistent with the Board's own Assurance Statement. Atkins has provided an Assurance Report to the Yorkshire Water Board, concluding:

We conclude, for the areas we covered, that: The Submission, including supporting data tables has been properly prepared in accordance with relevant guidance and requirements, and is well evidenced and presented: material issues, assumptions, risks and their mitigation have been disclosed to us, the expenditure proposed have been based on estimates of activities and costs which reflect the Company's historical costs, and where appropriate are consistent with the delivery of the Outcomes and Measures of Success defined by the Company in consultation with the Customer Forum. The Submission includes activities and expenditure required to meet the relevant requirements of the quality regulators, the basis of the balance of risk and reward in the context of incentives is clearly set out and evidenced, estimates and data have been prepared independently of other companies and competitors. Where data has been sourced from third parties this has been appropriately referenced in the underpinning documentation supporting the Submission

Atkins, October 2013.

7.4 Financial assurance

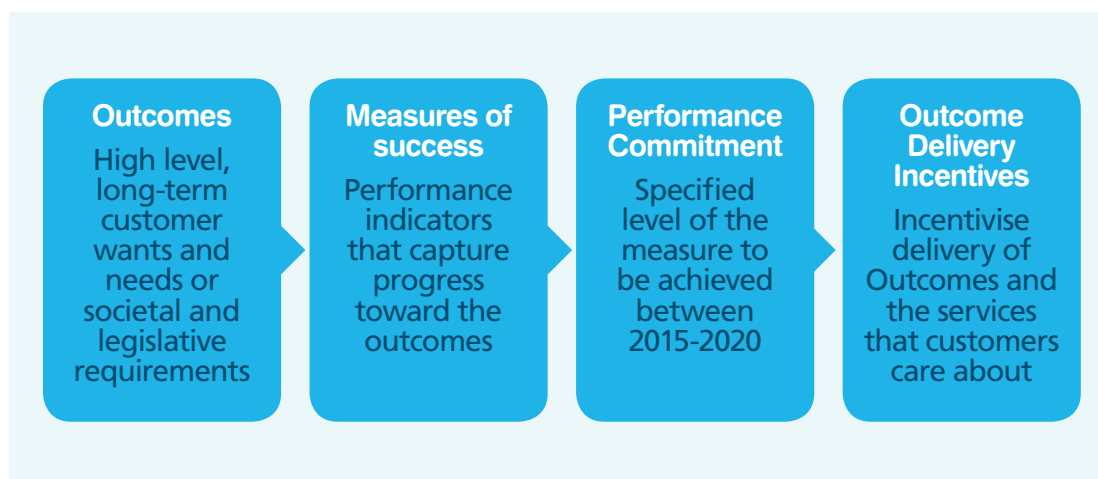
To ensure that the financial information is accurate and complete we engaged our financial auditor PricewaterhouseCoopers (PwC) to carry out a programme of assurance. PwC prepared an Assurance Report and their conclusions were presented to the Board in October 2013. Minutes from the Board meeting record the following statements:

"They confirmed that the Ofwat guidance had been followed and that the business plan had been reviewed to ensure consistency in the commentary, both by reference to historical documents and tables that provided projections"

"In summary, PwC noted that there were no issues arising from their review and that the data that they had reviewed agreed with the underlying documentation"

Figure 7D

Process followed to develop our Outcome Delivery Incentive Package



7.5 Developing our Outcome Delivery Incentive package

The Outcome Delivery Incentive package is designed to ensure we:

- Show we are doing the best we can to deliver the best service for customers at least cost
- Identify what we will do in return for revenues over the next five years
- Measure our performance against our commitments
- Hold ourselves to account for any shortfalls
- Are clear about any rewards we earn for providing meaningful service improvement over and above our commitments.

To define our Outcome Delivery Incentive package, we have followed the process shown in figure 7D.

The way in which we worked with our customers to develop the outcomes, measures of success and performance commitments is covered in section 6. Our plans for how we will deliver the outcomes and meet our performance commitments, and how we will deliver our outcomes and measures of success are detailed in section 8.

Figure 7E
Expenditure Mapping – Allocation to Outcomes

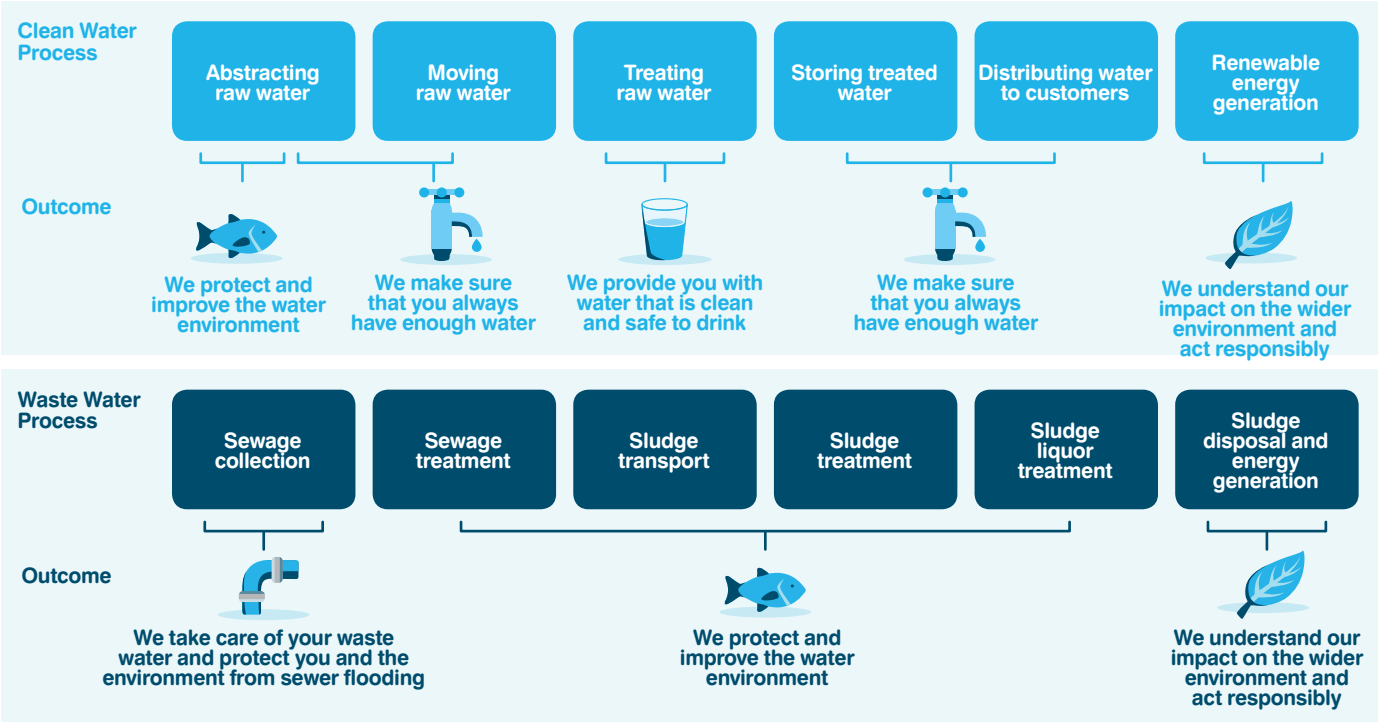
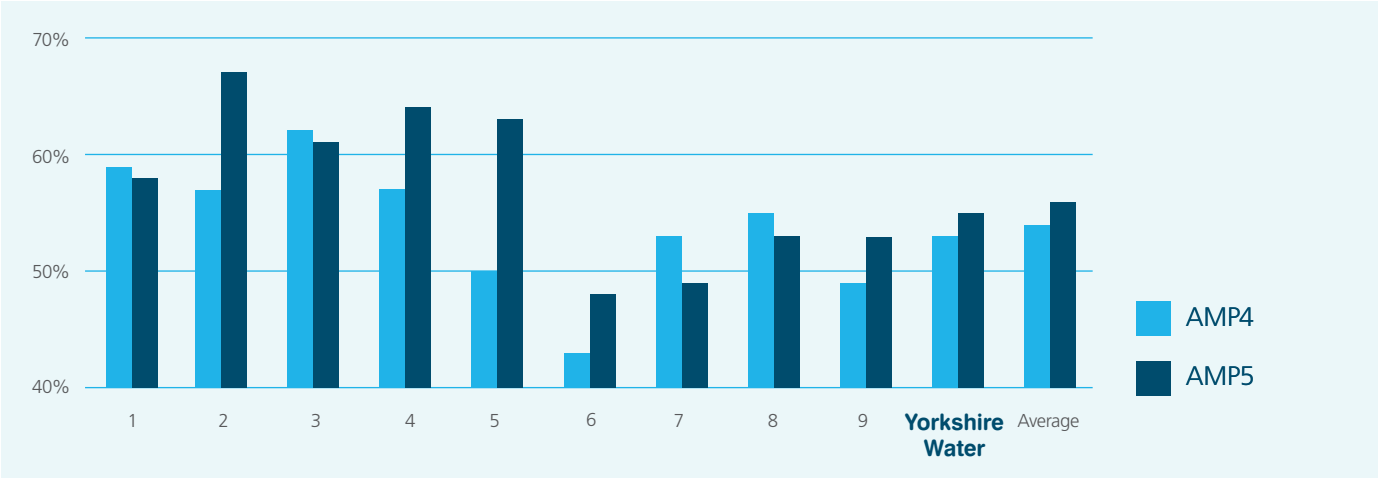


Figure 7F
Pay As You Go (PAYG) rates by company for AMP4 and AMP5



7.6 Aligning costs with outcome Delivery

To ensure that we build costs to deliver customers' outcomes we developed a process map for the reporting of both operational and capital expenditure against our outcomes. This lets us consistently report total expenditure at an outcome level as part of an overall governance process. The mapping is shown in the figure 7e, and follows work we undertook to define accounting separation for Wholesale and Retail activities. It also means we will be able to track our performance in delivering against the outcomes.

7.7 Embracing totex

We have always taken a balanced approach to the utilisation of opex and capex expenditure to deliver our commitments. We have examined carefully the least whole life cost of the interventions we propose. This can be seen by looking back over the last ten years at the balance of opex and capex for all the water and sewerage companies, where we observe Yorkshire Water aligns closely to the industry average distribution of costs. This can be seen in figure 7F.

However, as outlined earlier, in this plan we have embraced a totex approach. All solutions optimised in our plan are optimised using net benefit to customers utilising least whole life costs. This whole life cost calculation takes account of both capex and opex components of totex at a solution level. This approach has resulted £45 million of prioritised operational interventions as alternatives to capital cost interventions being included in the plan.

We are committed to delivering outcomes to customers through totex solutions and believe it must be undertaken in an informed and controlled way. We will continue our programme of innovation, and consider the impact it has on service from a 'Source to Sea' perspective and how we can facilitate change in the totex environment. This continues work we have previously undertaken in considering risks from a 'Source to Tap' and 'Sink to River' perspective. We will also continue our approach to partnering in the context of delivering outcomes and driving integrated totex solutions to bring maximum benefits for customers.

We recognise that continuation of our journey to embrace totex solutions will require a cultural shift across all areas of the service delivery process, particularly the supply chain that supports the current 'capital' delivery process. Our current partners will be with us until 2020 and we have commenced a programme of 'preparing for totex' in the run up to the start of the next investment programme. We are clear we need partners that focus on efficient solutions to manage the risk.

7.8 Using efficient costs

Continuous, efficient and effective ways of working are embedded in our culture, both in the way we operate our assets, and in the way we invest in them and proactively anticipate the changing environments we operate in. We always work to deliver our service at the lowest possible cost.

Through the 2010-2015 period we are on course to deliver our capital programme requirements for £198 million less than was allowed at PR09. We have achieved this by driving new ways of working and new technologies. Whenever a scheme is completed, the actual observed cost information is used to create historic cost models for the activities undertaken. Taking actual observed costs ensures we only allow for the costs that are likely to occur. We do not build in any potential overestimate that could be introduced by assessing scheme risk separately. It also ensures that we are modelling into our costs all the efficient and effective delivery process and materials that have been deployed.

Historical cost data has been captured for over 15 years, leading to a unit cost model set developed and used by trained experts within the business, and by our consultants when required. The modelling philosophy is to include as much contemporaneous data as possible, with a maximum age limit of 7 years, exceptions being made where particular models lack data or where data comes from very large assets where we have few data points because we have not needed to build them very often.

The unit cost model data set has been used to cost the business plan, ensuring (wherever feasible) current efficiencies are embedded in our cost estimates.

We have set ourselves some further challenging efficiency targets between 2015-2020. We have effective partnering relationships within our supply chain, ensuring both risk and reward are carried by all parties to varying degrees. These relationships also facilitate a greater potential for the development of innovative materials and methodologies, enabling the delivery of these future efficiencies

The LEADA+ process that we deploy in construction of the intervention programme utilises net benefit as the decision making methodology, which means we consider least whole life costs over a 40 year period against the customers' service priorities. This process takes into account both capital and operating cost impacts, ensuring the best intervention is selected. This is discussed further below.

Operating cost efficiency savings have enabled us to absorb additional cost pressures as they have arisen during 2010-15, e.g. the introduction of the carbon reduction commitment, the transfer of private to public sewers and the impact of extreme weather events.

The principle source of outperformance to offset these impacts has been energy costs. Through a focused programme of improvement, Yorkshire Water has taken steps to lock in favourable wholesale energy pricing, manage demand shape to reduce network costs and reduce overall demand through energy efficiency initiatives.

In addition, all other parts of the business have responded to the challenge to make operating cost savings through the period to offset smaller operating cost impacts as they have arisen.

In building our AMP6 expenditure plan we have taken the baseline year (2013/14) operating costs, which reflect the lower cost base described above, and pass through to customers the savings made in AMP5. We have removed any atypical costs, such as recent re-structuring, from the base year on the grounds we do not expect them re-occur during the AMP6 period.

To ensure a fair estimate of operating costs, expected future cost movements have been considered in totality, balancing upward pressures with downward opportunity. The only cost movements we have included are for:

- Transfer of private pumping stations
- Costs associated with introduction of competition for retail services for business customers
- Efficient opex interventions
- Opex effect of Quality obligations
- Defined benefit pension deficit payments.

Other expected cost movements, such as electricity wholesale price increases, have been considered as part of overall input price variation.

Where there is significant uncertainty about how costs will move in the future e.g. in the areas of rates and the introduction of universal credit, these have been proposed as notified items and no additional costs have been included in the plan.

7.9 Making Efficient Decisions

Customers and stakeholders are at the heart of our business. Our plans need to reflect their priorities and demonstrate that we are delivering the best value for the least cost. Our customer research provides us with significant customer data, from which we are able to robustly assess our customers' willingness to pay for service levels and support for the outcomes that we prioritise in our plans.

We have a proven history of developing our business plans based on customers' willingness-to-pay and have used a suite of IT systems known as Leading Edge Asset Decision Assessment (LEADA+) to successfully develop three consecutive business plans since its introduction for PR04. We led the industry in business planning tools when we introduced LEADA, and over the past ten years we have continued to improve the systems decision making capability to support the development of our asset management planning. Our latest system, LEADA+ is a powerful tried and tested, tool that allows us to put customer and stakeholder considerations at the centre of the investment choices we make.

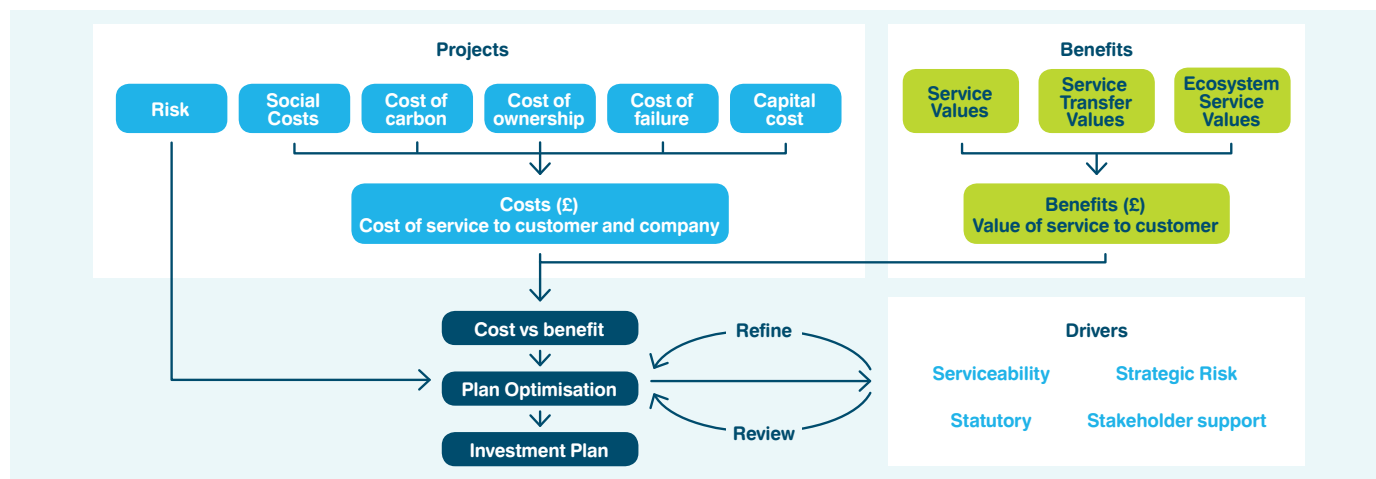
LEADA+ enables us to systematically consider all of our investment options, how they impact customer service and assess the impact on our resulting plan. The LEADA+ systems and process allows us to consider the cost and service benefit of our investment choices and enables us to understand the impact of our plan in terms of:

- **Serviceability impact** – we need to ensure that service can be maintained affordably over the long-term by maintaining the serviceability of our assets.
- **Statutory obligations** – we must ensure that our plan abides by the Water Act and meets the requirements of European law on water quality and environmental standards, as regulated by the Environment Agency and Drinking Water Inspectorate.
- **Strategic risk** – we need to ensure that our plan addresses our strategic risks and that we can have confidence in our ability to deliver our plan.
- **Stakeholder support** – we must ensure that our plan is supported by our customers and other stakeholders.

LEADA+ takes real information about our assets, using observed risks and deterioration models, predicts the performance of these assets over time to generate service risks. The solutions to address these risks are costed using a suite of unit cost models based on historical project outturn costs.

Figure 7G

Development of our intervention plan through LEADA+



Our external auditor Atkins has said “We consider that the Company’s approach to the development of below ground cost models is one of the best capital cost estimating processes in the industry.” LEADA+ also considers the long-term impact on customer bills to ensure our plan reflects what our customers are willing-to-pay for and that we can create maximum value for our customers through optimisation of the most net beneficial solutions. An overview of LEADA+ is shown in figure 7G.

In some cases we need to constrain expenditure into the modelling process. For example, where projects are needed to meet defined quality programmes or where risks and solutions are derived from non-modelled methods. Examples include solutions to meet the National Environment Programme obligations, management and general expenditure, health and safety improvements and some asset maintenance solutions required to fulfil statutory obligations. However the optimiser still works to find the most net beneficial interventions to meet the constraint and allows us to ensure we deliver a programme that remains net beneficial for customers.

Our plan aligns to best practice principles set out by Ofwat and by the UK Government, by considering the whole life of our interventions and applying cost benefit analysis. As part of the periodic review process, we undertake market research to understand our customers’ willingness to pay for the services we provide. We then turn this into an annuitised monetary benefit. Doing this enables our optimisation engine to compare customer valuation to the annuitised whole life cost and understand where the maximum customer benefit is being derived. Basically, it undertakes the calculation shown below for hundreds of thousands of potential interventions, and then compares them to establish a programme that ensures our customers get the best service return for every pound we spend.

Annuitised Benefit – Annuitised WLC = Net Benefit (also known as Net Present Value)

One of the key benefits of having LEADA+ is the ability to embrace totex. From the very outset the systems were designed to utilise annuitized whole life cost, and capex and opex, and combined capex and opex, solutions were put on the same basis so they could be directly compared. At previous reviews we have proposed modest sums associated with opex interventions, however for this review we have embraced totex more fully and have brought through approximately £45 million of opex solutions and £24 million of opex associated with capex.

Through the utilisation of the LEADA+ system, we have ensured that our plan:

- Maintains investment in the assets which deliver the core service outcomes for customers
- Meets the legal obligations required of a statutory undertaker
- Meets the requirements of the National Environment Programme including a forecast of investment needed to achieve the first step towards Good Ecological Status
- Meets the requirements of the forecast number of new customers.

Our technical evidence base contains more information on the principles of LEADA+ and how the system has been used to construct our plan

34 – THE GREEN BOOK:
Appraisal and
Evaluation in Central
Government, HM
Treasury (2011)

7.10 Making improvements from PR09

Asset management is fundamental to what we do. In developing our plan we have continued to follow the well-founded principles set out in the Common Framework for Capital Maintenance Planning (CFCMP). We have continued to build on Ofwat's feedback through its Asset Management Assessment (AMA), as set out at PR09.

At PR09 we received the best overall AMA classification, however Ofwat identified a number of areas where we could improve. We have taken steps to improve our capability and strengthen our planning capability in a number of areas. This is set out below.

- **Stakeholder Engagement** - In developing this plan we have completed the most extensive customer research and engagement programme we have ever undertaken, ensuring our customers' and stakeholders' views have been reflected at every stage the planning process.
- **Data and Analysis** – At PR09, an identified shortfall was our use of expert panels in defining asset lives for our non-infrastructure assets. In response to this, we have implemented a more advanced statistical expert elicitation process, as well as incorporating measured failure data to calibrate predicted with real-life observations. Our infrastructure models have the benefit of five years' worth of additional monitoring data to inform the models and produce more accurate predictions. There have also been significant improvements to our risk methodology including the incorporation of a second stage probability assessment in our non-infrastructure modelling, i.e. assessment of risk includes for the risk of asset failure and the risk of this resulting in service failure as two discrete steps. Furthermore, Atkins has commented that our approach to costing is "the best they have seen in the industry". The details of these improvements are laid out in our technical approaches within our evidence base.
- **Systems** – Over the last five years, application of our systems in our business as usual processes has been improved. Our Asset Inventory and asset failure prediction models are now fully integrated, facilitating better risk assessment and improved capture of data from completed of interventions.
- **Balance** – Our PR09 business plan 'Striking the right balance for Yorkshire' aspired to build and deliver a balanced plan, and we believe 'The right outcome for Yorkshire' again balances the needs of customers, regulators, operational stability and returns to investors. In developing this plan we have taken a mature approach to risk management and have made significant advances in our modelling capabilities, including the development of an innovative Monte-Carlo analysis system 'Investment Programme Risk Modelling'103, which allows us to demonstrate certainty around delivery of our plan and to demonstrate that risk and reward are shared fairly between customers and shareholders.

Figure 7H
Breakdown of our Management and General expenditure

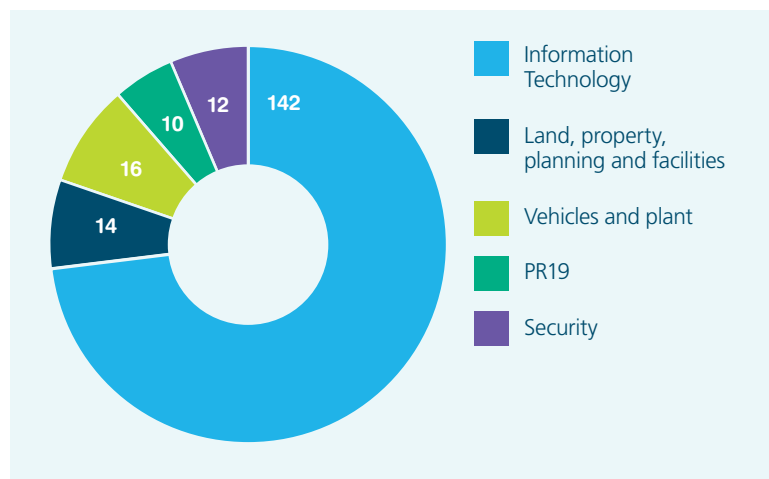
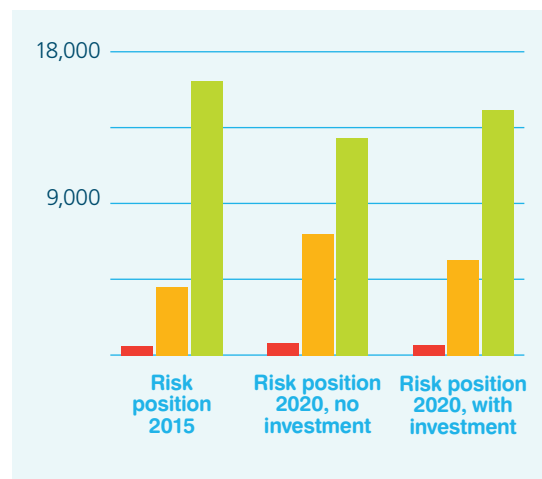


Figure 7I
Waste Water Non Infrastructure risk summary



7.11 Maintaining an efficient business

There are some activities which are essential for Yorkshire Water to function efficiently and which we manage across the whole business to facilitate efficiencies of scale.

We have assessed circa £10m of expenditure for fleet and Information Technology (M&G) that is attributable, primarily to the delivery of Retail outcomes. This has been included in the Retail price Control and has been accounted for through the Retail depreciation line. There was no available lines within tables to represent the expenditure. This expenditure is not included in the Wholesale Price Control. It does however, in practice, support the delivery of the Wholesale objectives and to ensure visibility of this expenditure we have included it within graphics in the Wholesale business case representation.

We refer to this activity as ‘Management and General’ investment and it underpins delivery of the entire range of outcomes and measures. This is essential investment to maintain and improve our IT systems, maintain our buildings, maintain our extensive fleet of vehicles and drive innovation through research and development to find better and more efficient ways of delivering service and protecting the environment. Figure 7H illustrates the breakdown of the investment required to keep the business functioning and capable of delivering outcomes for customers. We have allocated all of this expenditure to the delivery of outcomes. The diagram shows total expenditure, of which 51% is waste water and 49% is clean water.

7.12 Efficient operational risk management

In building our Blueprint we have recognised that we need to balance the needs of all our stakeholders. This is consistent with the decisions we’ve made at past reviews and stems predominantly from the continued need to invest significant costs in making environmental improvements. As a result, we have once again looked at the level of risk we can manage and still maintain the reliability and stability of services to customers and the environment. We need to consider carefully the management of risk in finalising our overall plan. Using LEADA+ we are able to understand how our intervention programme impacts on the overall business risk position in the context of developing our long-term investment plans.

In the same way as we managed risk at PR04 and PR09, we will be managing additional risk over the period 2015-2020. This can be observed in the profiles of amber and red (the most service threatening) risks. These are greater at the end of the period than they were at the start.

For our non-infrastructure waste water assets this is illustrated in figure 7I. Overall the plan will result in an increase in red risks of 11% by 2020. We will have to manage these risks operationally. This position also leaves an increasing amber risk position indicating future increased investment requirements to maintain our asset base. This is demonstrated in our long-term planning where increased expenditure is identified.



Figure 7J
Waste Water Infrastructure risk summary

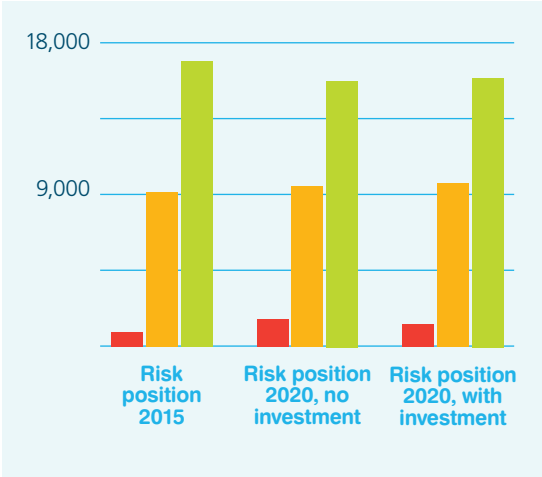
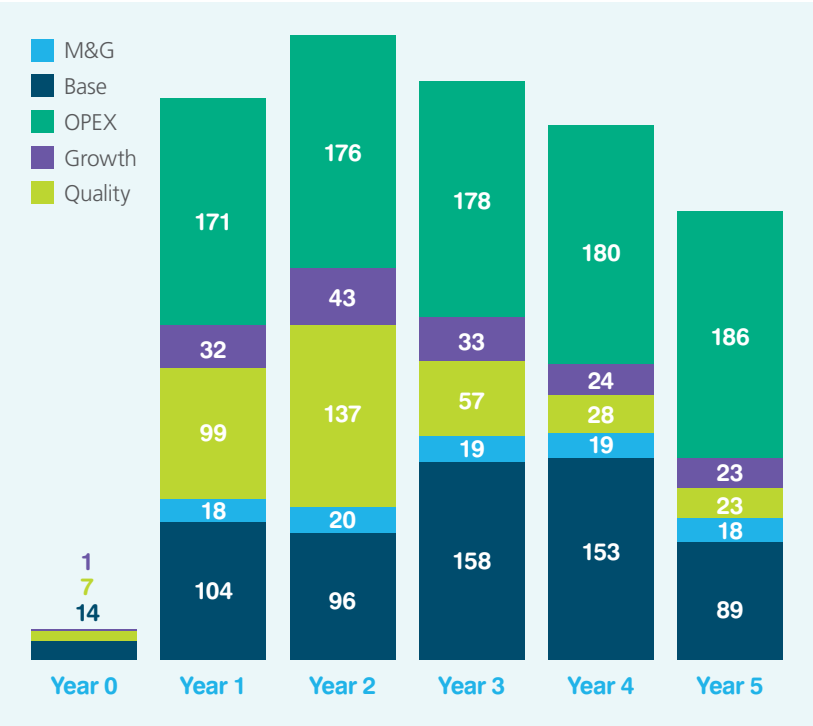


Figure 7K
2014-2020 Waste water service investment profile



By 2020, 3% of the waste water network asset base will have deteriorated to the point of becoming a higher service threatening red risk. This is approximately one additional risk for every 14 km of underground pipework, which will require operational management. As with the non-infrastructure assets we are setting ourselves the challenge of managing this risk through operational efficiency gains. We have achieved this in previous periods, and in the current climate we recognise that we need to repeat it between 2015-2020. In the longer term, there will be a need to raise investment in the maintenance of the underground networks.

7.13 An Efficient Transition from AMP5 to AMP6

Following the guidance published by Ofwat in "Setting Price Controls for 2015-20- final methodology and expectations for companies' business plans" we have optimised a total allocation of £48 million for "transition expenditure", of which £21.1 million will be delivered in wholesale waste water. The criteria set for identifying these areas of work was agreed at our Board Capital Investment Committee, which has formal delegated powers from the Yorkshire Water Board. The criteria and process has been based on the guidance from Ofwat. Our 'transition expenditure' incorporates a range of schemes aimed at meeting challenging regulatory compliance dates agreed with the Environment Agency and also a selection of high priority base maintenance and growth schemes. Each piece of work proposed to be brought forward into 2014-15 was reviewed to make sure that it will deliver early benefits for customers and the environment, and will result in efficiencies as a result of being brought forward. The transition investment profile is shown in figure 7K.



Our business planning process is proven, robust and well-evidenced. The output of this is the plan we propose to deliver in AMP6, as well as a long-term view of our investment requirements. Having established our Blueprint for Yorkshire with the help of customers and stakeholders, we've also been careful to ensure that it's measurable, accountable, quality assured and properly costed. Our plan is built on established efficient processes using costs reflective of our current efficiency. We will be taking on additional risk and managing this through operational efficiency. In the next section, you can read a more detailed summary of the key services and performance commitments, targets and incentives we've set ourselves against each of our outcomes, together with the cost to deliver our plans.






8.

How we will deliver our outcomes for Yorkshire

8.1. Introduction

In this section we provide an overview of the activities we have included in our Wholesale Waste water business plan. The activities in our plan are all essential to maintain our infrastructure and services, manage our risks and achieve our customers priorities and legal requirements. The plan has been developed through our mature and proven business planning processes using a risk-based approach, latest evidence and national guidance. The Wholesale Waste water plan will cost £2.1 billion in the period 2015-2020, and accounts for about 54% of the average household bill. This cost has increased compared to the previous five years, largely due to the impact of the National Environment Programme (NEP), a near doubling of length of our sewer network, and increased maintenance and renewal costs associated with previous environmental improvements.

Figure 8A
Outcome Summary Table (totex)

Wholesale Waste water				
Outcome	Measures of Success	Units	Service Level	Value (£m)
We take care of your waste water and protect you and the environment from sewer flooding 	Internal flooding incidents	No. Prop	927	£115.1
	External flooding incidents	No. Prop	N/A	£18.6
	Pollution incidents	No.	260	£77.7
	Long term stability and reliability factor: Sewer Network	Stable/ Improving	Stable – Year 4	£497.3
We protect and improve the water environment 	Length of river improved	km	379	£231.7
	Number of Yorkshire's bathing waters that exceed the required quality standard	No.	15	£38.7
	Long term stability and reliability factor: waste water quality	Stable/ Improving	Stable – Year 4	£1054.7
	Amount of land we conserve and enhance	Hectares	16,349	£11.9
We understand our impact on the wider environment and act responsibly 	Energy generated through renewable technologies	%	12	£17.9
	Waste diverted from landfill (re-used and recycled)	%	94–96	£45.8

8.2. Wholesale Waste water Outcomes for Yorkshire

Outcomes are the long-term objectives our customers told us they want us to deliver through our investment and operational activities. We worked with customers and stakeholders to develop seven outcomes for Yorkshire, which are supported by the Customer Forum and which will form the core of our future direction. Full details of the way in which we have engaged with our customers and Customer Forum have been described previously in Sections 5 and 6.

The Wholesale Waste water business plan is focussed on contributing directly towards achieving three outcomes with 10 measures of success as summarised in Figure 8A.

8.3

We take care of your waste water and protect you and the environment from sewer flooding

Section summary:

Customers value our role in protecting them and the environment from sewer flooding and pollution. Over the next 25 years we plan to invest £3.6 billion to secure the customer and environmental sewer improvements delivered to date, and to deliver further enhancements. In AMP6 we plan to invest £709 million and evolve our approach to ensure full alignment with the principles of the Drainage Strategy Framework recently published by our regulators. We will use this investment to:

- Operate and maintain our ageing sewer network to efficiently and effectively collect waste water. This includes about 720 privately owned pumping stations that will become our responsibility in 2016.
- Maintain our level of service on internal sewer flooding by investing to protect about 400 properties.
- Ensure no deterioration of the environment by maintaining our performance on pollution incidents. We will further our ability to monitor storm overflows to inform future needs.
- Use advanced modelling techniques to improve service by developing our understanding of the sewer network and targeting resources.
- Adapt and innovate our approach to help ensure a resilient and sustainable waste water service that is responding to pressures from urban development and climate change. For example, we will develop a storm water management strategy.
- Work in partnership to provide best value integrated flood management solutions.

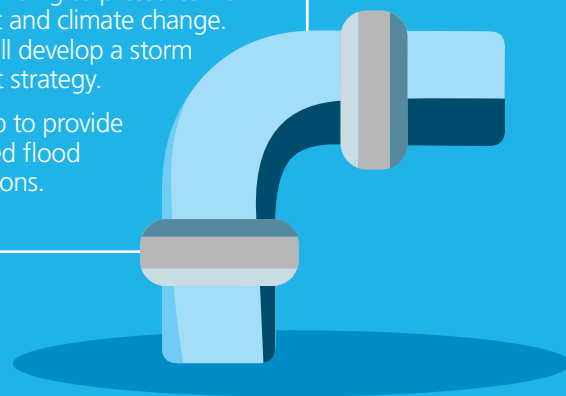
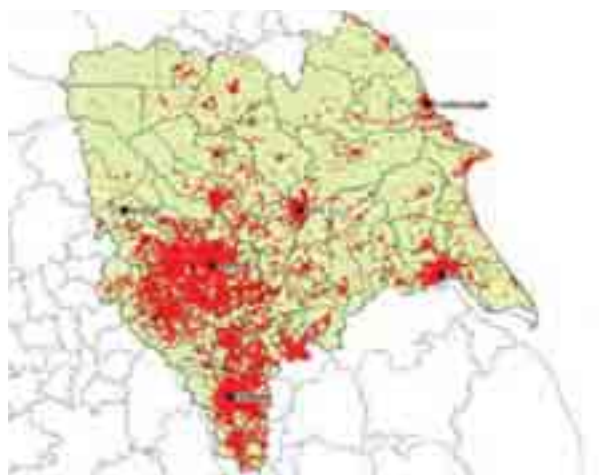


Figure 8B

Yorkshire region showing location of sewer network



8.3.1. Outcome Objectives

We maintain a network of 52,000 km of sewers which form 640 separate collection systems, and receive one billion litres of waste water every day from homes and businesses across the Yorkshire region. We know our customers see the provision of waste water services as a basic sanitation need and expect waste water and surface water to be removed safely and efficiently.

We look after these collection systems on a daily basis by clearing blockages, repairing collapses, jetting pipes and maintaining pumping stations to keep waste water flowing away from homes and properties, and onwards for treatment and discharge.

Our objective under this outcome is to mitigate the number of sewer flooding events our customers experience each year, ensuring our register of properties does not increase. We will also proactively engage with other flood authorities to maximise the opportunity of joint funding to facilitate wider benefit for the people of Yorkshire. We will maintain our sewerage network to ensure we minimise the effect of failure on the natural environment.

External pressures that are contributing to the risk of sewer flooding include climate change, urban development and surface water management. Innovative approaches to reducing the risks will require third party involvement, in some cases third party funding e.g. matched funding from local government, and the use of new and innovative solutions such as SuDS (Sustainable Drainage Systems).

This long-term outcome needs to feature strong partnership working and is about us playing a leadership role in working with others to integrate catchment management, the management of surface water flows and the responsible use of sewers now and in the future. Achieving this outcome is perhaps our most challenging task.

8.3.2 Our 25 year plan to achieve this outcome

Between 2015 and 2040 we plan to invest £3.6 billion to maintain levels of service, meeting the challenge of a projected 855,000 more people living in the region while tackling sewer flooding and pollution from the waste water network. We will also drive environmental and social improvements. The investment will be targeted at:

- Reducing spills from sewer overflows to our rivers during times of heavy rainfall
- Compliance with the Water Framework Directive and other European directives;
- Protecting a further 2000 properties from internal flooding from sewers;
- Introducing remote sensing and telemetry into our sewerage network to help us prevent pollution resulting from sewer blockages;
- Additional capacity for around 855,000 people.

Figure 8C

European Benchmarking Cooperation: Average age of the sewer system in years

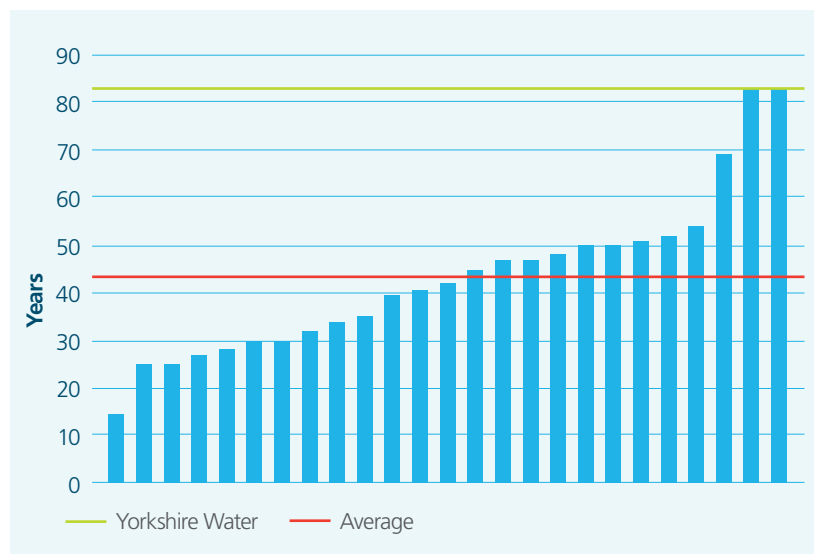
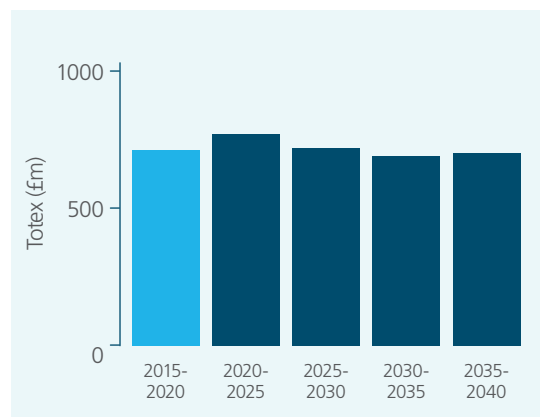


Figure 8D

25 year investment profile for the outcome 'We take care of your waste water and protect you and the environment from sewer flooding'



We are planning to sustain significant levels of investment to address sewer flooding over the 25 years from 2015 onwards. In addition, using risk based analysis; we've identified a need for, and planned, a 20% increase in our maintenance activity over the period 2020-2030, as we start to address the long-term sustainability of assets and services, with particular focus on the resilience of the sewerage network. This activity will increase by a further 15% through to 2050. This increasing need for investment to manage risk is rational, when placed in the context of the average age of our network compared to that of our counterparts in the UK and across Europe, shown in figure 8C.

We will also continue our 25 year strategy to build full regional coverage of our Drainage Area Plans. These are models which allow us to understand how our sewer network performs. Sharing the knowledge from these models is an important element of our partnership work and will help us identify holistic solutions with our Lead Local Flood Authorities and other stakeholders.

The 25 year profile of investment to deliver this outcome is shown in figure 8D.

8.3.2 Our five year plan to achieve this outcome

Over the next five years we will continue to operate and maintain our sewer network to ensure we deliver valued waste water collection services to the Yorkshire Region. We will seek new and efficient ways of working to help us minimise the risk of things going wrong, and to seek to clear blockages or collapses and their effects quickly when they occur. We will continue to innovate and move to understanding our network operations in real time, so that we can maintain waste water services to customers.


Customers indicated that improving the performance of the sewer network was a priority to them in our willingness to pay research. Specifically customers expressed interest in reducing pollution and sewer flooding. However, customers' overarching message was that we should keep bills level, and seek to make improvements where possible within this constraint, while meeting our legal obligations. Our optimised programme is constrained by affordability and includes environmental enhancements to meet our obligations for the National Environment Programme (NEP). This means that we are planning to maintain service, and have no further investment included to improve the performance of our sewer network before 2020.

We are committed to mitigating the impact of our assets on our customers and the environment. The proposed measures of success are well established and will enable us to innovate and adopt new approaches to achieving this outcome. Driving forward our plans to develop partnership approaches and work together with others for the benefit of Yorkshire becomes essential as we challenge ourselves to manage the risks of the sewer network in the current economic environment.

We are an active member in our region's formal flood management structures. Our dedicated Flood Strategy Team attends the Regional Flood and Coastal Committee and all four sub-regional Strategic Partnerships. Our engineers meet regularly with Lead Local Flood Authorities and the Environment Agency for technical meetings. We have pioneered a data exchange protocol to proactively share information about our sewerage network and its performance with the other regional flood management organisations.

Figure 8E

Outcome Summary Table (totex)

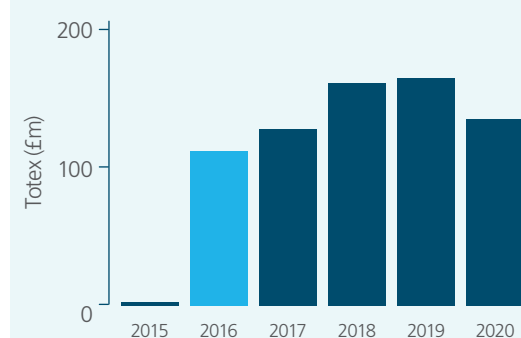
Wholesale Waste water				
Outcome	Measures of Success	Units	Service Level	Value (£m)
We take care of your waste water and protect you and the environment from sewer flooding 	Internal flooding incidents	No. Prop	927	£115.1
	External flooding incidents	No. Prop	N/A	£18.6
	Pollution incidents	No.	260	£77.7
	Long term stability and reliability factor: Sewer Network	Stable/ Improving	Stable – Year 4	£497.3

Expenditure Summary

In total we expect to invest £709 million to ensure we take care of your waste water and protect you and the environment from sewer flooding and this is shown in figure 8F. We will invest £513 million in capital solutions and £196 million in operational expenditure. Of this we have identified £2 million of transitional expenditure.

Figure 8F

5 year investment profile for the outcome “We take care of your waste water and protect you and the environment from sewer flooding”



The following section provides more information on how we will deliver this outcome for our customers.

8.3.3 Meeting our performance commitments for each measure of success in AMP6

Pollution, internal and external flooding have a causal relationship; all are the result of sewer escape due to a problem in the collection system. The causes can include sewer blockages or collapses, overloaded sewers and sewer misuse.

The investment in AMP6 to achieve this outcome has been split by measure where we target specific activities to address the resultant effects of sewer escape.

The following sections look at the measures and performance commitments for each of the outcomes in turn, providing an overview of the activities we plan to undertake, and some of the key investments we are proposing in the next five years.

We have set our annual performance commitment target of no more than 927 internal flooding incidents using Monte-Carlo uncertainty analysis. We think that this measure has such an impact on customers that it is appropriate for a financial incentive. We have set bounds on the range over which the penalties and rewards apply to recognise the inherent variability in performance due to events outside of our control.



8.3.4 Measure of success: internal flooding

We recognise that flooding of a customer’s property with sewage is one of the worst things that can happen. We have heard what our customers and stakeholders have told us and reflect this in our commitment to managing the risk of internal sewer flooding incidents. Over the past 20 years we have reduced the number of properties flooded internally with sewage by over 1,000.

We will measure ourselves against the number of incidents of waste water flooding of customer properties each year. This includes any incident of internal flooding to normally occupied buildings covering schools, offices, commercial premises and public buildings. The measure does not include flooding caused by assets transferred to us through legislation in October 2011, because there is not enough data on this asset base to allow meaningful analysis.

We recognise that no flooding is welcomed, but acknowledge that there will always be cases where it would be uneconomic to design collection systems which cater for every weather event we could experience. So, while we do not count events of flooding in exceptional rainfall return periods or where flooding via the sewers is caused by flooding of watercourses, we will still seek to mitigate the effects of flooding on our customers and work together with flood management agencies to deliver holistic solutions.

This measure is a step change from the way in which the industry has previously considered internal flooding. By placing the focus on numbers of incidents of flooding rather than number of properties we are recognising and measuring the direct impact on customers.

We have set our annual performance commitment target of no more than 927 internal flooding incidents using Monte-Carlo uncertainty analysis. We think that this measure has such an impact on customers that it is appropriate for a financial incentive. We have set bounds on the range over which the penalties and rewards apply to recognise the inherent variability in performance due to events outside of our control. These are shown in figure 8G. The penalty value for each unit of under delivery is £136,000. The reward value for each unit of over delivery is £35,000.

Figure 8G
Internal Sewer Flooding Performance
Commitment and Incentive Range

Target	927
Upper bound	1070
Lower bound	798
Cap	1143
Collar	516

All of the activities and investments which we undertake to achieve this outcome will help to limit the risk of sewer flooding. Specifically, our plans to manage instances of internal property flooding include consideration of impact prevention techniques, where a permanent solution to the root problem cannot be provided. For example, this could take the form of a non-return valve or flood gates, rather than conventional storage solutions. This change in approach whereby we focus on the effect rather than the cause could bring a significant benefit to customers whose properties are at risk of internal flooding.

A key part of our long term approach to ensuring the collection systems provide a sustainable waste water service is to ensure that they are appropriate for the flows they receive and transport.

Storm water management

The impact of storm water on our waste water infrastructure is an issue that directly affects our customers and the environment. 80% of our network is made up of combined sewers which carry both foul and storm water flows. With an ageing infrastructure, often designed for different economic, social and climatic circumstances, it is not surprising that the network becomes overloaded in storm events, causing escapes of sewage leading to both sewer flooding and pollution.

We plan to focus on storm water management techniques to reduce the risk of sewer flooding and pollution. It can also provide many other benefits for society, such as enhancements to aesthetic value, biodiversity, health and recreation. Storm water management can be achieved through a range of traditional and new approaches including Sustainable Drainage Systems (SuDS) and 'green infrastructure'. The Flood and Water Management Act and Flood Risk Regulations set duties for Water and Sewerage Companies to co-operate with other agencies on the management of storm water.

Storm water management cannot be considered or delivered in isolation. We recognise that we can deliver the greatest benefits of storm water management by working together with our customers, delivery partners and stakeholders, such as the Environment Agency and Local Authorities. Partnership working may be essential in many cases.

Partnership is already happening and we plan to continue our commitment to multi agency studies; we have worked in partnership with the Environment Agency and several local authorities on multi-agency studies which have informed our business plan. The studies assess the integrated flood risk in key locations by bringing together models, data and expertise from all the relevant organisations involved with, or having responsibilities for, an area's drainage. Relevant organisations work together to develop an effective, joined-up approach to priority flood risks.

We plan three themes of action to drive consistency and clarity in our approach to storm water management

- We will develop and publish a storm water management strategy by the end of 2017
- We will integrate storm water management into our intervention planning and decision making processes
- We will continue to develop relationships and work in partnership with other local flood management authorities.

8.3.5 Measure of success: external flooding

This measure counts the number of times each year that waste water causes flooding to gardens, roads and other outside areas. This includes property curtilage, highways, car parks, footpaths, public open space, fields, agricultural land, woodland and flooding to buildings not defined as internal flooding. The measure does not include flooding caused by assets transferred to us in October 2011 because there is not enough data on this asset base to allow meaningful analysis.

As with our internal flooding measure, we do not count events of flooding in exceptional rainfall events or where flooding via the sewers is caused by flooding of watercourses, but we will still seek to mitigate the effects of flooding on our customers and work together with flood management agencies to deliver holistic solutions.

Our performance commitment is to have no more than 2602 incidents each year. By exceeding or achieving this performance level we will be maintaining stable service and ensuring no deterioration of the environment. This commitment has a reputational incentive. However, the Environment Agency may also use its powers to take enforcement action for pollution.

Figure 8H
Examples of operational tools used to assess the risk of spills from the sewerage network



8.3.6 Measure of success: pollution incidents

This measure reflects the number of times sewage escapes from our waste water assets and causes pollution of water courses or other water bodies each year. We count all category 1, 2 and 3 events, resulting from both consented and unconsented intermittent discharges.

We aim to prevent all pollution incidents. Where problems do occur, and there is a potential impact on a watercourse, we do all that we can to limit the extent of the impact and restore the watercourse to its natural state as quickly as possible. We specifically seek to understand and improve the condition of our assets in areas where there is a risk of pollution, especially where proactive operational intervention is difficult.

Our performance commitment is to have no more than 260 incidents each year. By exceeding or achieving this performance level we will be maintaining stable service and ensuring no deterioration of the environment.

Here are some of the key things we are proposing to invest in to deliver our committed level of performance between 2015 and 2020.

NEP intermittent discharges (storm overflows)

The NEP requires us to gain a better understanding of the impact of intermittent discharges on the water environment.

We plan to invest £6.0 million in technology and associated works to monitor the duration of intermittent discharges from combined sewer overflows (CSOs). We intend to provide monitoring at the vast majority of our overflows over the next five years. A risk-based approach has been taken to understand which CSOs could impact on the health and safety of the public, these are typically in areas where the public use or interact with a water body or those areas which are judged to be environmentally sensitive.

At high amenity sites, which are environmental priority sites, the technology will give us the ability to monitor at a two minute resolution or better. Event duration monitoring represents a significant step forward in real time understanding of our network.

NEP – Urban Pollution Management

In addition to the investment in telemetry for storm overflows, and following the investigation works carried out during AMP5 on the impact of discharges from CSOs, a number of sites were identified for improvement works to enable the downstream watercourses to progress towards Good Ecological Status. To address these sites, we will invest £48.2 million in AMP6.

Predictive Tools

We plan to continue to develop predictive operational tools to help us to assess the risk of spills from the sewerage network based on trends from telemetry data. Making live information visible to all colleagues, all the time, is a key area of focus as it means we can prevent or resolve issues before they impact on customers and the environment.

One predictive tool we have recently developed is the Asset Performance Viewer as shown in figure 8H. This shows the areas of the network where there is a risk of sewage escapes by considering whether the assets are operating normally, how full the sewer is, and rainfall data from radar systems. This means emerging risks are dealt with in a timely manner to ensure our sewerage network is resilient to changes, such as increased rainfall.

8.3.7 Measure of success: long term stability and reliability factor: sewer network

This is an overall assessment of the long term stability and reliability of our sewer network based on a basket of indicators. Without a stable and reliable network we will not be able to deliver the waste water service and meet our performance commitments in the long term.

This factor represents a measure of effective asset management. To ensure that our sewer network allows us to continue to deliver stable service levels now and in the future, we must understand the condition of our asset base and how to mitigate its associated risks through operational activity, maintenance, repair and replacement.

Our performance commitment for year 4 of the AMP (2018-19) is to be Stable. This target is based on the recent trend of the indicators and the impact of our planned investments. We have identified this measure as being suitable for a financial incentive, as described in Section 6. The penalty for not achieving Stable performance is capped at 10% of the totex for this outcome.

The headlines of our plans to meet this performance commitment are described below.

Understanding the condition and operation of the network

In the next five years we will continue to challenge ourselves to develop tools which help us to understand and predict the performance of our huge, but hidden, portfolio of sewerage assets.

We maintain records of our network asset performance and condition using SAP and GIS. This includes data on blockages, collapses, CCTV, structural condition, age, material and maintenance, as well as the actual effects of failure.

Figure 8I

Capex, Opex and Totex Expenditure on P2P Sewers (£m)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	TOTAL
Capex	0.260	4.005	4.006	4.053	4.008	4.005	20.3
Opex	0.000	5.726	5.726	5.726	5.726	5.726	28.6
Totex	0.260	9.731	9.732	9.779	9.734	9.731	48.9

We will continue to use and develop our corporate systems to determine and prioritise interventions based on risk, cost and observed performance. Investment in assets is justified on the basis of risk of failure, which is the financial exposure as estimated by multiplying the probability of asset failure by its estimated impact. This approach is valid for total cost optimisation and also aligns to the UKWIR “Capital Maintenance Planning: A Common Framework”.

Drainage Area Plans

We will build on the progress we have made to date to deliver Drainage Area Plans (DAPs) for prioritised catchments. These allow us to better understand network performance and condition to identify risk and direct work more effectively. This improves our ability to proactively address any shortfalls in network performance and improve customer service. We have recently worked with national hydraulic modelling experts, HR Wallingford, to produce future rainfall time-series and antecedent wetness conditions specific to the Yorkshire region. The data include uplifts to account for the impacts of climate change. We are working to use this data in our future DAP work to quantify the risks that climate change presents to our sewerage service.

We will invest £25 million between 2015-2020 to progress our DAP programme. By the end of 2020 our DAPs will cover 64% of the Yorkshire population. This is a significant step towards full coverage of the Yorkshire region which is our long-term goal.

Sewers transferred to Yorkshire Water in 2011 (Private to Public Sewers)

In 2011 approximately 22,000 km of private sewers were transferred into our ownership as a result of new legislation. We have very limited information about the condition of the newly transferred sewers. The majority are believed to be small diameter sewers situated close to properties and laid since 1936. The materials and construction methods will have varied over time and the condition of these assets may not bear relation to those of our existing pipes.

We expect that it will take a considerable amount of time to gather knowledge about the transferred sewers. Therefore we have planned for data collection and interventions during 2015-2020 using a risk based approach. We have reviewed performance and expenditure on these assets to date and projected this into the next investment period. Since 2011, activity levels on the transferred assets have continued to grow and follow a similar profile to the seasonal three year average on the original network.

Because we have little information about them, the transferred assets are not included in our performance commitment for Stable Reliability and Stability factor. We will monitor them separately to establish how they perform against the basket of metrics, so that we can understand when they can be included in the overall measure.

Our plan includes £20.3 million of capital investment and £28.6 million of operational investment in AMP6 of which we will bring forward £0.3 million for transitional spend in 2014-15 to give us earlier understanding of the condition of the newly adopted pipes. This is shown in figure 8I.

Figure 8J

Use of cameras and SewerBatt to monitor high risk sewers



Pumping Stations due to transfer to Yorkshire Water in 2016 (Private to Public pumping stations)

The same legislation means that privately owned sewage pumping stations will be transferred into our ownership on 01 October 2016.

We predict that there will be 720 privately owned pumping stations which will transfer to us. This is based on a predictive algorithm which uses our GIS data to predict locations where there are properties which are at a level lower than the adjacent sewer network invert level. Following transfer we will need to assess each of these pumping stations, carry out detailed surveys, secure formal access arrangements for operation and maintenance, and undertake any necessary repairs.

We have estimated the costs associated with these assets using survey information from a sample of private pumping stations which have been identified as likely to transfer. The totex requirement in 2015-2020 for the transfer and subsequent operation of private pumping stations is £38.89 million. This comprises £33.4 million capital expenditure and £5.5 million operating expenditure.

Operating the network

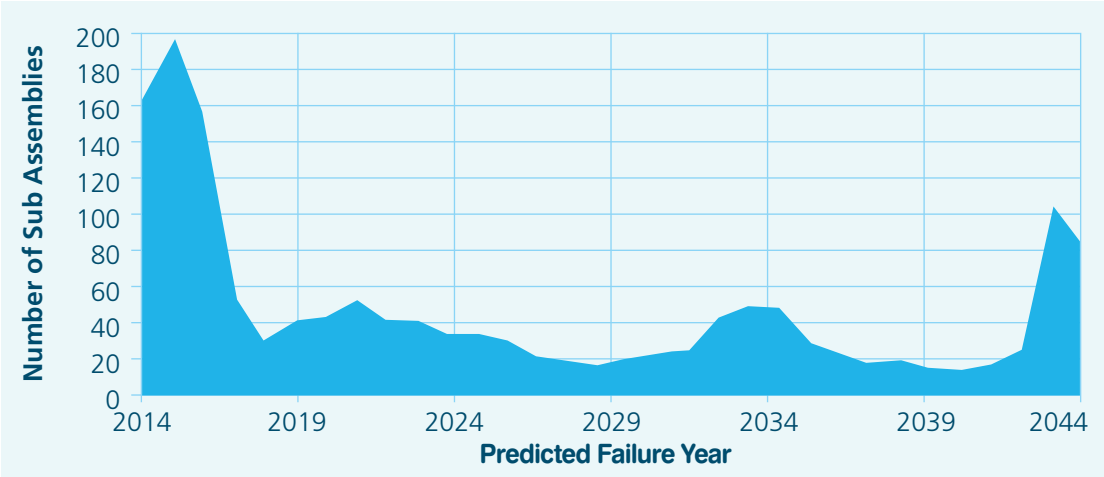
We have included operating costs which enable us to continue to identify and mitigate risks on the network, and to respond to failures when they do occur.

We operate the network in an efficient manner which seeks to identify issues before they cause an impact on customers or the environment. We proactively jet sewers and inspect them to find blockages before they result in a service failure. This is managed by predictive modelling which determines network quadrants to target and survey, and facilitates immediate repairs. Typically reduction in incidents is achieved in 62% of the quadrants surveyed and remediated.

We use CCTV to survey sewers in high risk areas and raise schemes of work to address any issues found. While camera schemes provide comprehensive data, they can be time consuming, resource intensive and therefore expensive. Following a 10 year programme of research led by Bradford University, we have identified and invested in a new technology called SewerBatt to facilitate rapid survey and condition assessment of sewers. This means that our inspection rates can increase, allowing us to inspect and understand more of our network for the same cost.

SewerBatt is an acoustic sensor technology that enables us to quickly quantify network deterioration and defects. The technology offers benefits in proactively locating blockages, identifying structural issues and prioritising further camera work. The technology also provides a rapid condition grade assessment which can be used for asset deterioration monitoring and investment planning. In partnership with DrainsAid, six of these units have recently been deployed in the field to proactively identify issues in a timely manner and drive interventions prior to asset failure providing greater resilience in our sewerage assets.

Figure 8K
Predicted failures for Sewage Pumping Stations



We heard our customers tell us that they don't think about the waste water service often, if at all, and that when they are told about the service we provide they consider it to be important and value for money. In response, our operating costs include for continuation and enhancement of our successful communications campaigns in AMP6. This is becoming a fundamental part of our approach to maintaining our waste water service. Tackling problems at source has been demonstrated to be effective by our recent 'Doing the Dirty' campaign where we have raised customers' awareness of the problems they can cause by inadvertent sewer misuse. We used a variety of communication methods, including specific advice to parents, articles in local community action leaflets and realistic videos.



Click to watch our 'Doing the Dirty' campaign video

Maintenance Investment – rehabilitation and renewal

Maintenance of the sewer network in 2015-20 will cost £218.6 million.

We continually repair and replace underground pipework as failures occur or significant defects are identified. The sections below highlight particular areas of detail within our plans for the next five years.

Maintaining sewer pumping stations

These assets ensure a continuous transfer of waste water to our Waste Water Treatment Works (WwTWs) and are vital in preventing sewer flooding and pollution events.

Throughout AMP6 we plan to invest £28.9 million in the maintenance and refurbishment of sewage pumping stations.

During the last five years we have made an increased amount of investment in these assets, and we are now anticipating a reduced number of equipment failures as the benefits materialise. Figure 8K shows we expect an overall decrease in the number of pumping station failures during AMP6 and this is helping to offset the cost to customers of running the waste water network and absorbing the transferred assets. Future investment will be targeted at those sewage pumping stations which present the greatest risk of failure, causing flooding or pollution, and which require work to maintain compliance with Health and Safety and Electricity at Work Regulations.



Sewer rehabilitation

A large proportion of our waste water network investment targets sewer rehabilitation to resolve risks which are forecast to occur. This totals £169 million and will deliver repairs or replacements of sewers that are no longer able to provide an effective service, focusing on those where there is a risk of property flooding or pollution.

This increased investment reflects the condition and performance of our existing assets. We have seen an increasing trend in collapses and blockages which we have stopped from having an adverse effect on service by increasing operational activities. This approach is not sustainable in the long-term and the increased maintenance expenditure reflects our intention to have sustainable operations, which was supported by customers.

Sewer diversions and new development

In our plan we have included supply demand investment for Sewer Diversions and New Development.

It is not easy to quantify the typical amount of expenditure for this asset type as there is no 'typical' asset. New development investment is carried out in response to an application from a single or group of customers, and is very reactive. We have assumed that the level of activity is likely to be the same in 2015-20 as it has been in preceding decades and have based the expenditure requirement on this.

The Water Act requires us to provide a public sewer to resolve environmental problems if they occur in limited circumstances where existing private drainage systems are causing, or are likely to cause, adverse effects on the environment. Any request we receive to provide a public sewer is subject to an economic assessment. We ensure that customers receive value for money by using cost benefit assessment, and we do not progress projects that are not economically justified unless they are promoted by the regional Environment Agency. We have allowed £2.2 million within our plan to continue to provide this "first time sewerage" service, based on a review of historic expenditure.

8.3.8 In summary

We heard our customers tell us that it is important to have waste water removed from properties effectively, and for properties and the environment to be protected from sewer flooding. Our programme maintains current service levels while absorbing the future cost and activity of maintaining an extra 22,000 km of sewers and 720 sewage pumping stations.

The environment is also important to customers. We, as a company, have legal and moral obligations to understand and manage the impact our services have on the environment. Our plans to do this are reflected under our long-term objective 'We protect and improve the water environment', which are presented in more detail in the following section.

8.4

We protect and improve the water environment

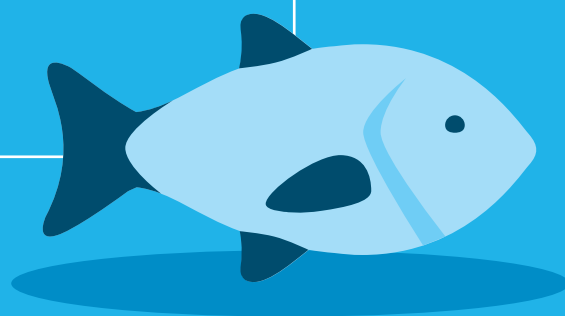
Section summary:

Customers value our role in protecting the water environment and recognise this is an important part of delivering sustainable water and waste water services. Over the next 25 years we plan to invest £6.8 billion to secure the environmental improvements delivered to date, and to deliver further enhancements to comply with requirements like the Water Framework Directive.

In AMP6 we plan to invest £1.3 billion. We have agreed a range of investment needs with the Environment Agency in the National Environment Programme (NEP), including our approach to Phase 5 which will be confirmed by Defra in 2016.

This is the largest single area of service enhancement investment in our Blueprint for Yorkshire plan. It will ensure our ability to meet our legal obligations and play our part in improving the water environment, by:

- Maintaining and enhancing our waste water and sludge treatment facilities to meet the needs of the NEP, new legal requirements and the growing population
- Addressing storm overflow discharges to enable the receiving watercourses to achieve Good Ecological Status as required by the Water Framework Directive
- Protecting critical assets at imminent risk from coastal erosion
- Improving 379 km of river (and a further 100 km in our Wholesale Water Business Plan).
- Controlling invasive species listed in the Wildlife and Countryside Act
- Maintaining recreational access to our land and reservoirs, something which is highly enjoyed by customers
- Investigations to inform future needs
- Innovating new approaches and working in partnership to maximise the benefits for our customers and for the environment.





This section describes how our plan will meet the outcome 'We protect and improve the water environment'. We set the long-term context and our five year objectives and costs.

8.5.1. Outcome objectives

Delivery of both our wholesale water and waste water services is inherently reliant on a healthy and abundant water environment.

This outcome seeks to protect and improve the water environment, thereby safeguarding our services in the future and ensuring that the Yorkshire region continues to enjoy a wide variety of natural environments that are nationally and internationally recognised for their beauty and biodiversity. We have delivered dramatic improvements in river and coastal water quality by enhancing waste water treatment over the last 20 years and we will be delivering further enhancements in response to legislative drivers now and in the future.

We recognise that working in partnership will help us achieve this outcome. We have been working with the Environment Agency to jointly understand and plan for the needs of our water environment and the requirements of European legislation. We've been a key member of the Yorkshire Bathing Water Partnership, which comprises the Environment Agency, East Riding of Yorkshire Council, North Yorkshire County Council, Scarborough Borough Council and Welcome to Yorkshire. The partnership seeks to bring sustainable environmental and economic improvements to the coastal region. We will continue and expand these activities in the coming years to make sure we carry on protecting the environment.

We recognise and value the importance of our role as custodians of the natural environment. For many years we've been inviting customers and stakeholders to share their views through the independent Environment Advisory Panel. The panel has monitored and commented on our activities, and we have regularly sought its opinion on upcoming issues, particularly changes in regulation.

This is a broad outcome, covering activities that make up both the wholesale water and the wholesale waste water business plans. Waste water activities will benefit customers and the environment by

Our 25 year plan to achieve this outcome

- Improved river water quality which will increase the fish population and other wildlife
- Surface, ground and coastal waters and wetlands that achieve or are improving towards good status or good potential under the Water Framework Directive (WFD)
- A coast renowned for the excellent standard of its bathing waters
- Natural resources, biodiversity and landscapes that are restored and enhanced
- Partnership approaches to waste water catchment management, working with businesses, partners and agencies to ensure that our ability to treat effluent to high standards is maximised and as efficient as possible
- Prioritised environmental outcomes that are jointly agreed and delivered collaboratively
- Rivers in our region that have sustainable populations of fish.

Figure 8L
25 year investment profile for the outcome “We protect and improve the water environment”

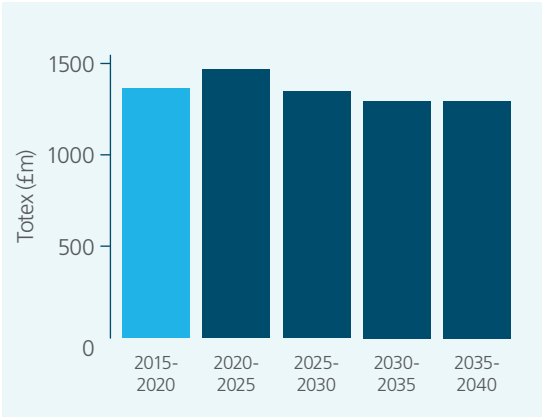


Figure 8M
Split of Waste water NEP expenditure by outcome

Outcome	TOTEX £m
We protect and improve the environment	245.3
We take care of your waste water and protect you and the environment from sewer flooding	54.5

Between 2015 and 2040 we plan to invest £6.8 billion in our wholesale services to ensure that the environmental improvements delivered to date are maintained, and to continue to enhance the environment to meet European and Government expectations for improved water habitats for fish and other aquatic species. Our long-term plan is that, by 2027, we will have played our part to ensure that our rivers, lakes, estuaries and coast are as near as possible to their natural condition, known as Good Ecological Status. We will do this by cost-effectively delivering the requirements of the WFD, which will help protect sources of public water supply and improve the natural environment.

The investment in relation to the Wholesale Waste water service is £1.4 billion and will be targeted at:

- Improving the performance of our waste water treatment works (WwTWs) and overflows, and contributing to the improvement of rivers to meet the requirements of the Water Framework Directive by 2027
- Improving the resilience of our assets to flooding
- Managing risk within our WwTWs deliver enhanced treatment prior to safely discharging treated effluent to the water environment.
- We are planning for a significant uplift in Wholesale Waste water services investment to enhance the environment during 2015-2020, compared with 2010-2015. This increases further during 2020-2025. This is essential to achieve the benefits of the WFD. At the same time we will need to see our investment in maintaining assets increase by 20% over the period 2020-2030 as we start to address the long-term sustainability of our WwTWs.

The 25 year profile of investment to deliver this outcome is shown in figure 8L.

8.4.2 Our five year plan to achieve this outcome

Investment to protect and improve the water environment is the largest single area of enhancement of services in our whole Yorkshire Water plan. We are confident that we have taken an industry leading approach to allow our region to deliver the NEP in a manner which is both efficient and timely, spreading the effect on customer bills, while meeting the requirements of the WFD. The waste water investment required to deliver the NEP is £299.5 million.

The majority of the Wholesale Waste water expenditure required for this is related to this outcome. Figure 8M below summarises the split by waste water outcome.

Our NEP activity includes delivery of NEP phase 5. The requirements of this phase will be confirmed by Defra in 2016. However, due to our forward thinking approach to planning for the impact of legislation, we have anticipated phase 5, carrying out investigations during 2010-2015, so that we, together with our regional Environment Agency, have a high degree of confidence in both the environmental needs of phase 5, and our interventions which will deliver them.

Figure 8N
Outcome Summary Table (totex)


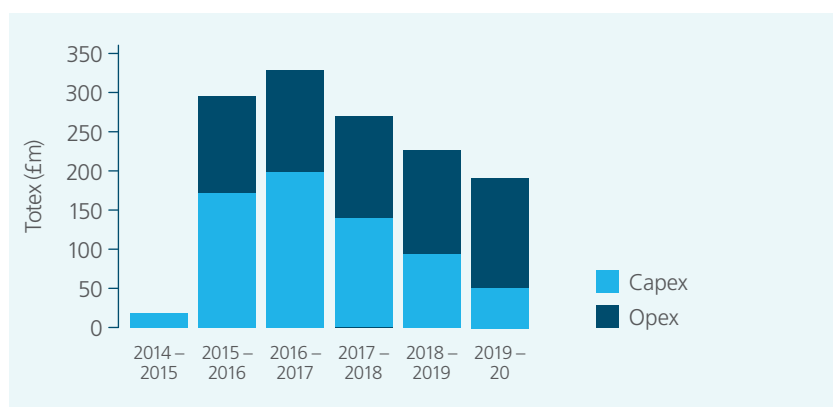
Wholesale Waste water				
Outcome	Measures of Success	Units	Service Level	Value (£m)
We protect and improve the water environment 	Length of river improved	km	379	£231.7
	Number of solutions delivered by working with others	No.	N/A	£0
	Number of Yorkshire's bathing waters that exceed the required quality standard	No.	15	£38.7
	Long term stability and reliability factor: Waste water quality	Stable/Improving	Stable - Year 4	£1054.7
	Amount of land we conserve and enhance	Hectares	16,349	£11.9

Figure 8O
Five year investment profile for the outcome “We protect and enhance the water environment”



This unique approach continues our successful relationship with our environmental partners in Yorkshire and the North East, as demonstrated by our approach to bathing water quality in AMP5. We are the only company which has delivered ‘excellent’ in bathing water quality in anticipation of the revised Bathing Water Directive and in response to our customers’ views. This means that we do not need to make further investment in bathing water quality in AMP6, allowing us to keep prices down for customers, and giving us the opportunity to include NEP phase 5. This is particularly important when we consider that the cost requirements of environmental legislation will continue after 2020, continuing to put an upward pressure on bills, when our customers tell us they prefer us to keep bills flat. Phase 5 capital expenditure will be £209 million, all of which is deliverable by the Wholesale Waste water.

We will also continue to operate and maintain our WwTWs to ensure that we deliver treatment services which ensure that the effluent is of sufficiently high quality to be returned to the rivers and water bodies. This will cost £1,055 million. This can be seen in figure 8N under the Long term stability and reliability factor for waste water quality.

Expenditure Summary

In total we expect to invest £1,337 million to ensure we continue to protect and improve the water environment. We will invest £677 million in capital solutions and £660 million in operational expenditure. Of this we have identified £19.1 million of transitional expenditure.

8.4.3 Meeting our performance commitments for each Measures of Success in AMP6

Over the following pages we describe the measures and performance commitments. We provide an overview of the activities and investments we plan to undertake in the next five years.

8.4.4 Measure of success: length of river improved

This measure reflects the length of river improved against the WFD's component measures. Investment to achieve this measure is the largest single area of enhancement of services in the whole Yorkshire Water plan. We will assess the improvement that we are directly responsible for, under the following categories

- Physico-chemical elements and pollutants
- Hydrological impacts
- Morphological impacts

The target we have set against this measure of success for Wholesale Waste water is to improve 378 km of river during AMP6. This measure has a reputational incentive. However, the Environment Agency may also take enforcement action if we do not deliver our obligations.

We have a longstanding and good working relationship with the North East Region of the Environment Agency. Together we have produced an environmental plan which sets out how we will play our part in delivering the requirements of the WFD over the next 15 years. By 2027, we will have made our contribution to ensure that the rivers, lakes, estuaries and coast in our region are as near as possible to their natural condition. The WFD classifies this as Good Ecological Status.

To achieve Good Ecological Status and deliver the committed length of river water quality improvements in AMP6, we need to understand how we impact on the environment and make appropriate interventions. These are detailed below. As with all of our studies, we have worked closely with the Environment Agency to gain this understanding.

Phosphorus

Too much phosphorous in rivers can lead to excessive plant growth which absorbs oxygen and suffocates other life in the water course.

Identification of failing water bodies is based both on the failure of the appropriate within-river water quality standards and identification of an associated adverse impact on the ecology of the river system. Investment in AMP6 is required to achieve the associated United Kingdom Technical Advisory Group standards for all water bodies.

Our long-term strategy is to phase this investment over three AMP periods. In AMP6 we plan to invest at 12 sites where investment will result in those sites moving to compliance. The total cost is £39 million (£38.5 million capital and £0.6 million operational cost). The sites and associated capital costs are shown in Figure 8P below.

Figure 8P
Water Framework Directive –
Phosphorous interventions

Site	Totex (£m)
Oxenhope	1.56
Skipton	3.69
Keighley Marley	5.73
Colburn	2.62
Northallerton/Romanby	4.14
Thirsk	3.50
Dowley Gap	5.95
Gargrave	2.37
Richmond	2.37
Bishop Wilton	1.62
Sherburn in Elmet	2.66
Wilberfoss	2.91
TOTAL:	39.12

The WFD requires the development and delivery of a series of River Basin Management Plans, some of which require phosphorous standards of 0.1 mg/l. From work we have already carried out and shared with the Environment Agency, it is clear that the river standards that relate to phosphorous cannot currently be met for a large part of our region, due to technological limitations in the levels to which we can currently treat sewage effluent.

To understand whether the level of treatment can be improved and the cost of doing this, we, and other Water and Sewerage Companies, are taking part in national trials to develop new treatment technologies for phosphorous removal. This activity will take place at three WwTWs, as shown in figure 8Q, at a total cost of £5.6 million, of which £4.9 million will be capital expenditure and £0.7 million operational expenditure.

Figure 8Q
**Water Framework Directive –
Phosphorous Trials**

Site	Cost (£m)
Bentley WwTW	2.0
Bolsover WwTW	0.9
Staveley WwTW	2.7
TOTAL:	£5.6m

Chemicals Investigation Programme

The WFD requires us to understand the risks from the most potentially polluting chemicals, and to find ways to address such risks. Over the last five years, as part of a national programme, we have been investigating how different waste water treatment processes reduce or remove such substances. The results of that work has led to the identification of further work that is required in AMP6, both regionally, and nationally, to provide similar information at a wider geographical spread of sites and for a wider range of substances, including those that are likely to be designated as priority substances within the near future.

During AMP6 we are planning to undertake sampling activities at 17 sites, full scale trials at two sites and enhanced sampling at 42 sites, at a total cost of £16.5 million; £14.4 million of capital expenditure and £2.1 million of operational expenditure.

We believe that by starting this work early we will gain a more timely understanding of our requirements and allow future investment decisions to be made sooner. This follows our philosophy for anticipating and understanding the impact of quality enhancements driven by legislation. We plan for transitional spend of £1.3 million in 2014-15 which takes availability of resource and flow monitors into account.

Ammonia

The classification of Good Ecological Status is made up of a number of components, one of which is ammonia. Ammonia is important, as in large quantities it is toxic to fish and other wildlife.

We have built models of effluent quality and receiving river water quality for the majority of Yorkshire's rivers. These have been used as the basis for identifying which WwTWs need improvement, and to what level, to achieve the associated ammonia standards. These models have been put together in a way and to a standard that has been agreed with the regional Environment Agency.

Our modelling has identified 17 sites where investment of £71.7 million (£70.8 million capital and £0.9 million operational expenditure) is required to ensure appropriate targets set by the United Kingdom Technical Advisory Group for the WFD are achieved.

Biochemical Oxygen Demand (BOD)

Our approach to BOD mirrors the approach taken for ammonia, using models to identify the improvements and associated investment required at each site. For BOD, identification of failing water bodies and the appropriate within-river water quality standards to achieve are based on chemical standards.

Our modelling has identified six sites, one which has only a BOD driver, four which are dual ammonia and BOD drivers and one which has ammonia, BOD and phosphorous drivers. Investment of £25.5 million (£24.9 million capital expenditure and £0.6 million operational expenditure) is required to ensure they meet the appropriate targets set by the United Kingdom Technical Advisory Group for the WFD for BOD.

2015-2020 Sound Science Investigations

Our philosophy is to make investment to enhance the water environment where the need is confirmed by sound science, and preferably where it is also cost beneficial. This ensures we use our customers' money for demonstrable benefit.

We have been working alongside the Environment Agency to understand current river quality and where it needs to be improved. While the understanding is clear for some water bodies, for others, further investigations are required to be clear on the cause of problems and how they may be fixed.

Where a failure is being attributed to Yorkshire Water's operations, but the evidence is not yet sufficient for us to invest with certainty, we propose to carry out further sampling, analysis, modelling and interpretation to ensure we can act with confidence. This work will be carried out in conjunction with the Environment Agency's own further investigations into failing water bodies as part of NEP phase 5, with a proposed investment of £15 million.

Crayfish

The Environment Agency has identified 18 sites where it believes that our intermittent discharges may be having a negative impact on the presence of white-clawed crayfish. The majority of these sites have only a handful of intermittent discharges and a small number of these have five or more discharges.

We will carry out desk-top studies, supplemented by ecological surveys and sampling on all sites to determine the impact of our assets. At the sites which have five or more discharges, full investigations into discharge performance will be carried out. The investment required to carry out this work is £2.2 million.

Flow Monitoring at Waste water Treatment Works

The Environment Agency is extending the scope of flow monitoring requirements to all WwTWs which serve a population greater than 250 people and those with 'other significant discharges'. We have identified 37 sites which require flow monitoring under the extended scope. The total investment required for flow monitoring in AMP6 is £3.5 million.

Water Framework Directive – No Deterioration

All WwTWs have permits to discharge treated effluent to the receiving water course. The Environment Agency has reviewed whether deterioration of any effluent quality, while still meeting the terms of the permits, would lead to deterioration in river classification. This has identified 10 WwTWs at risk of causing deterioration of river classification and which require investment in AMP6 to meet the requirements of this part of the WFD. In addition to this, three sites have been identified for investment to address NEP phase 5 requirements.

The total investment required is £42.7 million; £42.4 million capital and £0.3 million of operating costs. Of this, £11.9m is related to NEP phase 5 requirements..

Yorkshire's holistic river improvement strategy

European legislation drives improvement in river water quality. At Yorkshire Water we believe we need to stand back from the detail of the legislation and look at the outcome for our customers and the environment as a whole. We can see that we can make a difference by thinking in a wider sense. We believe we can deliver more by working together and looking at catchments and interactions of water corridors and communities. Three examples of this are described below.

Improving water quality in the River Aire

We intend to make improvements to our WwTWs that discharge along the stretch of the River Aire, from Gargrave near Skipton to the outskirts of Bradford. This means that along this significant length of river our customers will enjoy good river water quality and the associated positive impacts on their local environment.

Downstream of this stretch the river receives treated effluent from Bradford and Leeds. We cannot currently achieve sufficient improvements with existing technology. Over the next few years we'll be carrying out trials to help us understand whether we can achieve more stringent standards, and how much this will cost. The results will inform our discussions with the Environment Agency about future investment, and will help us to ensure there are discernible environmental improvements for the large number of customers who live in these urban areas, and that the required investment is affordable.

Urban Waste Water Treatment Directive (UWWTD)

There are three small schemes planned to ensure compliance with the UWWTD which requires enhanced performance standards for increasing levels of population equivalent (p.e.). These are at Aldbrough WwTW, where the p.e. now exceeds 2,000, and Atwick and Flask Inn WwTWs where the p.e. exceeds 250, and there is environmental impact as a consequence. The investment proposed for these sites in AMP6 is £3.9 million.

Innovation and Integrated Catchment Planning – rtRIVERi

We are pioneering an integrated approach to catchment management and water supply, known as rtRIVERi. The objective is to integrate all our abstraction and discharge permits and consents using a dynamic, optimally controlled system. We have investigated this concept during 2010-2015 and have undertaken site trials at a WwTW in Leeds, along with an evaluation of seasonal discharge consents and consent trading.

We believe that the rtRIVERi concept will help us deliver our business in a more sustainable way and that it aligns with both our outcomes and our objectives under the WFD. During 2015-2020 we are planning a second phase to deliver rtRIVERi across an entire river catchment. This will benefit customers and the environment by helping us to deliver increased river quality, improved water supply security and environmental improvements. The planned investment to deliver rtRIVERi is £5.2 million.

Innovating how we treat waste water in the future

Our customers tell us that they want us to continue to provide the same level of waste water services, and to meet legislation, but that rising bills are difficult for them to afford. We recognise this challenge and are continually seeking new ways of working and new technologies which will allow us to meet the challenges of providing the same or better effluent quality at lower cost.

An example of our innovation is our AMP5 trial with Cranfield University to find alternative forms of waste water treatment and to develop new technology. The Full Flow Anaerobic Sewage Treatment (FFAST) represents a potential step-change for waste water treatment whereby no oxygen is required. Sewage is treated anaerobically through an anaerobic membrane bioreactor to reduce the chemical and biochemical oxygen demand and solids, producing a high quality effluent. FFAST has the potential for high energy savings and improved quality treatment.

Our trials have shown us that the process could be an energy positive process if applied at the right scale, and could deliver significant cost efficiencies. In AMP6 we will design, build and construct a large scale demonstration plant, creating a design for future deployment of the technology across the business if successful.

8.4.5 Measure of success: solutions delivered by working with others

We recognise that by working with others we will be able to deliver more and wider benefits for customers and the environment.

We will measure our progress by the number of solutions we deliver by working in partnership with other agencies, organisations or individuals. This may be through joint funding, partnership and shared resources; however it does not include our traditional research and development, or capital programme activities delivered with our contract partners.

We have also considered our outcomes and the effects of this measure in the wider context, and reviewed what behaviours we wish to encourage within our own business.

We consider it appropriate to positively and financially incentivise this measure. This is because this measure drives a common and enhanced benefit for our customers, and also because we consider there may be a need for a driver to help overcome the risk and difficulties of working with others to deliver wider benefits (albeit at lower cost). We do not hold willingness to pay information for this measure, and instead have developed an alternative methodology which derives a one-sided reward only incentive, as described in Section 6.



8.4.6 Measure of success: amount of land that is conserved and enhanced

We own around 29,000 hectares of land, making us one of the biggest landowners in Yorkshire with responsibility for the health of a variety of landscapes. The extensive scope of our day-to-day activities gives us a responsibility to look after the moorland, rivers and coast we come into contact with. Protecting and improving the Yorkshire landscape means we need to continue to recognise the importance of working in partnership with external organisations, regulators and policy makers.

This measure describes the amount of land we conserve or enhance in AMP6. This will include work on our land and land belonging to others. It includes actions undertaken under programmes for Biodiversity 2020, Ancient Woodlands, Sites of Special Scientific Interest and Moorland restoration. For more detail on these programmes, see the Section 8 of the Wholesale Water plan.

The contribution of the wholesale waste water service to this measure comes from activities which are planned at or near our WwTWs. This includes maintenance of previous biodiversity investment and removal of invasive species.

The expenditure requirements to meet the needs of this measure of success is supported by the following investment business cases:

- National Environment Programme
- Land, Property, Planning and Facilities – part of the Management and General business case

Managing invasive species

Invasive species have two main effects; they impact on our assets and operations and they impact on native species and the natural environment. They are also reasons for failure to meet the WFD's Good Ecological Status, and spread of invasive species is an offence under the Wildlife and Countryside Act.

Our waste water assets are affected by Japanese knotweed, which is also classed as a controlled waste. Japanese knotweed is known to cause significant damage to concrete assets, which puts waste water treatment services at risk. Our policy on invasive non-native species is to eradicate high risk species and control the others where they pose a significant local issue. We are undertaking risk based programme to control and eradicate pest species listed on Wildlife and Countryside Act 1981 Schedule 9.

The contribution of the wholesale waste water service to this measure comes from activities which are planned at or near our WwTW. This includes maintenance of previous biodiversity investment and removal of invasive species.

8.4.7 Measure of success: bathing water quality

This measure reflects the number of Yorkshire's designated bathing waters that exceed the required quality standard.

We have made significant investment to improve bathing water quality to meet the revised Bathing Water Directive and bring the waters at Yorkshire's coastal resorts to the excellent standard. In 2015-2020, we will seek to embed the work we have delivered in AMP5 to ensure that the bathing water quality continues to be maintained at the 'excellent' standard. Therefore the focus of investment will be on a programme of monitoring and sampling at the designated bathing water sites.

We plan to extend our overflow monitoring and prediction system which we developed to assist beach managers in their role to inform the public about bathing water quality. We will extend this to all of Yorkshire's bathing beaches under a low cost solution (£0.5 million) which extends the value of previous learning to benefit more customers, holiday makers and the local economies.

All our sea outfalls (and any associated structures) were inspected in 2012 to identify any defects which could become a risk to our investment in bathing water quality over the last five years. We intend to invest £27 million to maintain two sea outfalls. We will replace the Wheatcroft outfall and improve the outfall at Scalby in Scarborough.

To enable us to deliver the benefits of this work as early as possible and maintain 'excellent' standards we are proposing to invest £5.1 million of transitional expenditure in 2014-15. This will enable us to carry out detailed investigations and design at both these outfalls to understand the best options for delivering this work.

8.4.8 Measure of Success: long term stability and reliability factor: Waste water quality

This is an overall assessment of the long term stability and reliability of our waste water and sludge treatment works based on a basket of indicators. Without stable and reliable treatment assets we will not be able to deliver the waste water service and meet our performance commitments in the long term.

This factor represents a measure of effective asset management. To ensure that our waste water and sludge treatment assets allow us to continue to deliver stable service levels now and in the future, we must understand the condition of our asset base and how to mitigate its associated risks through operational activity, maintenance, repair and replacement.

Our performance commitment for year 4 of AMP6 (2018-19) is to be stable. This target is based on the recent trend of the indicators and the impact of our planned investments. We have identified this measure as being suitable for a financial incentive, as described in Section 6. The penalty for not achieving Stable performance is capped at 10% of the totex for this outcome.

We own, operate and maintain 640 WwTWs, treating over 1 billion litres of waste water every day. In conjunction with these, we own, operate and maintain 22 key sludge treatment facilities (STFs). STFs are an essential and integrated part of the waste water treatment process, providing a continuous route for sludge removal as the waste water is cleaned.

Our WwTWs vary significantly in size from small sites serving a handful of houses to those which serve the urban conurbations and have a population equivalent of more than 100,000 each. We have 19 WwTWs which are highly critical assets, where the associated STFs have the ability to generate large amounts of renewable energy. Sludge is transported by road from smaller sites to larger sites where it is more economical to provide enhanced treatment, and where the WwTW has the capability to receive and treat the sludge treatment liquors.

8.4.9 Understanding the condition of the assets in the next five years

We will continue to challenge ourselves to develop tools which help us to understand and predict the performance of our large number of WwTWs and STFs.

We maintain records of our asset performance and condition. This includes data on the characteristics of the incoming waste water, site performance, biology, chemistry, breakdowns, odour, structural condition, age, material and maintenance, as well as the actual effects of failure.

We will continue to use and develop our corporate systems to determine and prioritise interventions based on risk, cost and observed performance. Investment in assets is justified on the basis of risk of failure, which is the financial exposure as estimated by multiplying the probability of asset failure by its estimated impact. This approach is valid for total cost optimisation and also aligns to the UKWIR “Capital Maintenance Planning: A Common Framework”.

Maintenance Investment

We have identified five schemes where benefits to the environment and customers will be seen through early delivery at a cost of £1.95 million. This includes feasibility and design of the rebuilding of Beverley WwTW, the feasibility of relocating Withernsea WwTW (see below), working with the Environment Agency and Local Authority to identify benefits of a coastal defence scheme, and feasibility studies examining the roll out of greater telemetered visibility to WwTWs with numeric permits or consents.

We continually repair and maintain our assets as failures occur or significant defects are identified. The sections below highlight particular areas of detail within our plans for the next five years.

Waste Water Treatment Works

Our aim for the next five year period is to invest to maintain performance and compliance of our works and minimise the risk of pollution from these assets. The capital expenditure for waste water treatment base maintenance is £230 million.

Historic performance and serviceability has been variable on our WwTWs asset base. Future investment will be targeted at works which have failed to comply with their permits or consents during 2010-2015 and works that are predicted to be at risk of failing during 2015-2020. The key measure for WwTWs performance is its overall compliance as measured by the numeric non-compliance parameter in the site's discharge permit. We aim for 100% compliance with environmental permits and consents; however we know that risks emerge on our assets which we must manage. Therefore our tolerance range for this metric is zero to eight non-compliances in each year, with a historical reference level of five, (or 1.66% by population served) in the AMP6 period.

The total proposed expenditure to maintain the WwTWs asset base is £666 million. A large proportion of the capital expenditure is driven by our Above Ground Asset Surveyor Predictor (AGASP) Model. This accounts for 49% of the requirements and is a risk based approach to generating process level 'failure scenarios' and replacement solutions to mitigate waste water treatment asset risks.

There are specific capital investments to address identified risks in the plan. These include;

- Investment in 14 assets that pose a compliance risk in AMP6; Beverley WwTW, Halifax Copley WwTW and Folkton WwTW, and a number of small numeric works that pose a risk where the final effluent contains high levels of residual iron.
- Beverley WwTW poses a significant odour risk, with over 15% of our customer contacts related to odour due to this asset. A large proportion of the investment is in the transitional plan and we hope to start construction in 2014.

Base operating costs for WwTWs in AMP6 is forecast to be £431 million and will be stable year on year at £86.3 million per annum. Operational maintenance will be targeted at critical assets through intelligent maintenance plans and criticality assessments.

Figure 8R

Coastal erosion 60m from Withernsea WwTW



Coastal erosion

Yorkshire has one of the fastest eroding coastlines in Europe and we need to be aware of the potential impact this could have for us and our customers. We have been working to understand where our infrastructure could be affected by coastal erosion and what we need to do to minimise any risks this could cause to our services. We have included specific investment of £17 million to maintain our waste water treatment capability on the east coast at Withernsea.

Withernsea WwTW has a p.e. of around 8,000, increasing to 12,000 in the summer months. In 2011, the WwTW was 77 m away from the cliff edge and is now only 63 m away. We have used past erosion rates and future projections to inform our investment need, and we predict that this asset will start falling into the sea by 2020.

We plan to rebuild the WwTW further inland and provide a new sea outfall. In developing this solution, we are keen to work with others to develop the best outcome for the environment and the community. We are working with East Yorkshire County Council and the Environment Agency to discuss an option whereby a new WwTW would be located closer to the south of the town and, as part of the scheme, we would contribute to an extension of the current sea defences, thereby protecting our assets and also parts of the local community and holiday homes for a further 100 years. We plan to continue to work in collaboration to determine the best solution for the local area and have promoted a small amount of feasibility expenditure into the transitional plan which will commence in April 2014.

Figure 8R shows a picture of the coast line, just 60 m from the works.

Smaller Sites

As part of our investment focus on higher risk smaller works with numeric consents, we propose to roll out a suite of instrumentation and telemetry at a sample of sites in each operational area. Greater visibility of the asset base will help us to manage the risk pollution and compliance failures.

The capital cost of instrumentation is £10.7 million with additional operating costs of £2.6 million. We will measure the benefits of this programme with a view to extend it to all works with numeric consents in future.

Growth – Serving future populations

We expect the population of our region to grow by approximately 855,000 between 2015 and 2040. We forecast that this growth, and new housing development, will increase demand on our existing WwTWs. If we do not invest to secure treatment capacity to meet these demands we will significantly increase the risk of pollution incidents and we will not be able to meet the necessary discharge permit or consent standards.

The proposed investment of £29 million for 2015-2020 manages growth pressure in two distinct programmes:

- Site specific standalone schemes where the expected growth in population cannot be met by the existing treatment process, and additional capacity is required to ensure compliance with the discharge consent.
- Sites where there is planned investment in environmental improvements and additional growth in demand is expected.

Sludge Treatment Facilities (STFs)

Our aim for the next five year period is to invest to maintain performance and compliance of STFs, and to minimise the risk of impact on WwTW operation and pollution from these assets.

Since 2009, we have developed our sustainability strategy and have pursued technologies to maximise the energy we get from our wastes. This has meant that we have built and commissioned a Thermal Hydrolysis Plant at Esholt, capable of treating 30,000 tonnes dry solids (tds) (a new technology for Yorkshire Water), a new Digester at Blackburn Meadows which treats 16,000 tds and a conditioning pad at Knostrop that allows processing of 14,500 tds. In doing so, we have closed two of our four incinerators at Esholt and Blackburn Meadows, leaving Knostrop and Calder Valley operational. In 2013-14 our STFs treated 146 thousand tds of sludge, with the remaining 13 thousand tds being processed by third party disposal routes.

We have listened to our customers' need for us to keep costs as affordable as possible. As such, we are proposing to deliver the least cost strategy, deferring our plans to replace our remaining incinerators with more sustainable and lower cost technology until after 2020. This supports our strategy of maintaining stable prices for customers in AMP6. It also ensures that we extract the maximum asset life from our existing asset base.

Our proposal for AMP6 investment can be summarised into four areas. The first three reflect our Base Maintenance programme, and the last area represents our proposed Enhancement activity:

1. Phase 2 of the Digester Refurbishment Programme – this activity will address 11 sludge digesters, prioritised by risk, at a cost of £60.8 million.
2. Incinerator Maintenance – extension of incinerator asset lives through AMP6 and into AMP7. This includes enhancements to our spares strategy to prevent outages, and application of criticality assessments. This will cost £49.2 million including approximately £8 million specifically to ensure safe operations. A small amount of operational expenditure (£0.025 million) is also required to support these solutions.
3. Third Party Disposal - a projected deterioration in treatment capacity means we forecast a requirement for third party disposal routes, at a cost of £32.9 million.
4. Investment for increasing sludge production from NEP and Growth schemes - Provision of a new digester to accommodate the increased sludge associated with enhanced treatment processes at WwTWs. The total cost is £26.9 million.

We intend to promote the feasibility and planning of the new digester at Knostrop WwTW, along with digester refurbishments at Dewsbury WwTW and Aldwarke WwTW as part of the transition programme in 2014-15 as we believe these are the three most critical assets at a cost of £3 million.

8.4.9 In Summary

Delivery of this outcome is dominated by the NEP and the requirement to maintain our waste water treatment and sludge treatment assets. We will be investing significant amounts to protect and improve the water environment, but in doing so we are committed to maintaining our status as a trusted, responsible and sustainable company that considers the environment, economy and social needs of customers when making all our long-term decisions. We've listened to what our customers have told us and will deliver our objectives for this section in the most efficient manner possible.



Our first energy neutral waste water treatment works, Esholt



8.5

We understand our impact on the wider environment and act responsibly

Section summary:

Customers value that our services are sustainable for the long-term. Over the next 25 years we plan to invest £0.7 billion to help ensure we are a sustainable business.

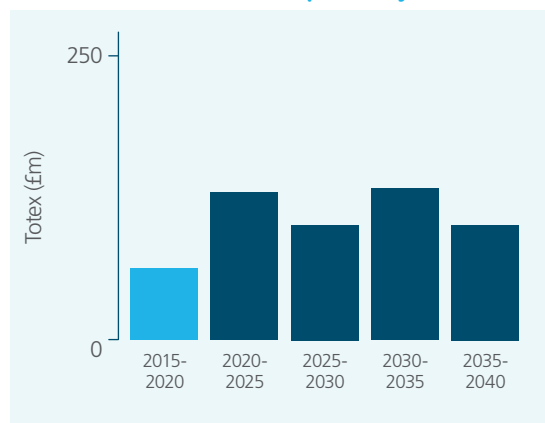
This investment will ensure we meet our moral and legal obligations to play our part in creating a more sustainable world, and therefore secure our water and waste water service for the long-term, by:

- Maintaining our strong environmental governance, including retaining our ISO14001 accredited Environmental Management System.
- Mitigating the impact of growing energy and resource costs on our customers' water and waste water bills, and further reducing our carbon footprint.
- Reducing the waste we send to landfill.
- Working in partnership with others to maximise the potential benefits to our customers and the environment.



Figure 8S

**25 year investment profile for the outcome
'We understand our impact on the wider
environment and act responsibly'**



This section describes how our plan will meet the outcome 'We understand our impact on the wider environment and act responsibly'. We set the long-term context and our five year objectives and costs.

8.5.1 Outcome objectives

Our business has an integral relationship with the natural environment. It is built on and around the water cycle and the water environment, but we are becoming increasingly aware of the need to look after the wider environment to secure the integrity of the water environment for all.

Climate change is forecast to have a noticeable effect in our region, bringing changed weather patterns and rising sea levels. Furthermore, rising resource costs, natural resource depletion and a growing demand for our services, together with the need to remain a financially sound business all put pressure on our ability to deliver the services customers want in the long-term and the achievement of all outcomes.

This outcome reflects our aspirations to make environmentally informed decisions in every aspect of our business to limit our impact on the wider environment and to secure the sustainability of our operations and services.

Our customers and regulators expect and support our continued investment to achieve this outcome. Our outcome research and customer and stakeholder support can be found in the supporting document 'How customers have helped shape our Business Plan'.

This outcome benefits customers and the environment by providing:

- Reduced environmental impact with less waste and responsible energy consumption
- Reductions in our greenhouse gas emissions
- Sustainable assets which allow us to continue providing the services that customers want and need into the future
- Offsetting the impact of rising energy costs by producing sustainable and renewable energy.

8.5.2 Our 25 year plan to achieve this outcome

Over the next 25 years we plan to invest £0.7 billion across our whole business to manage our impact on the wider environment.

A significant proportion of our long-term plans feature a gradual change of our approach to sludge disposal. We need to move from disposal of sludge using incinerators to a less costly, more environmentally sustainable disposal route which extracts green energy from the treatment process and produces end products which have further value and can return nutrients back to the soil. This will reduce the amount of material we send to landfill and keep bills as low as possible to protect our customers from variability in the energy markets.

We currently dispose of approximately 25% of our waste water treatment sludge via incineration. These assets were necessary when sludges contained large quantities of metals from the heavy industries of West and South Yorkshire. However recent industrial decline means that we now produce better quality sludge which is suitable for recycling.

Figure 8T

8.19 Outcome Summary Table

Wholesale Waste water				
Outcome	Measures of Success	Units	Service Level	Value (£m)
We understand our impact on the wider environment and act responsibly	Energy generated through renewable technologies	%	12	£17.9
	Waste diverted from landfill (re-used and recycled)	%	94–96	£45.8



The 25 year profile of waste water investment to deliver this outcome is shown in figure 8S.

Wider investment in our assets will see us moving to technologies which generate more renewable energy, reduce waste sent to landfill and enable sustainable recycling of nutrients. The key elements of our long-term plan are:

- Increasing renewable energy generation through wind and water turbines and the generation of biogas
- Reduction of carbon emissions by cutting the amount of energy we use
- Innovation in the way we manage and operate our waste water assets
- Making environmentally informed decisions about how we operate
- Promoting regional sustainability by building partnerships with businesses to grow the green economy
- Limiting our environmental impact, striving for carbon neutral and zero waste
- Helping customers to understand the wider environmental implications of disposal of their waste water.

8.5.3 Our five year plan to achieve this outcome

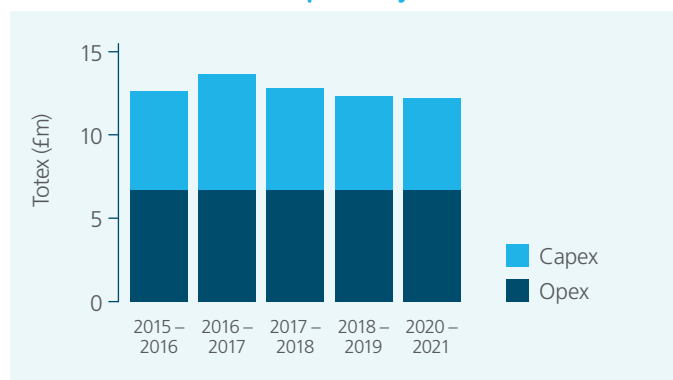
Environmental management is a priority across our business. We'll continue to govern and assure our environmental performance through our Integrated Management System. This includes the company-wide Environmental Management System which is accredited to the international standard ISO14001 and our Quality Management System, accredited to the international standard ISO9001. Our Integrated Management System contains a register of all our potential environment impacts which we monitor, manage and minimise through a broad range of controls and activities.

We are committed to ensuring that all of our colleagues have the right training and tools to allow them to make environmentally informed decisions. In 2012 we launched our colleague engagement programme, "CO2llaborate to use less". The campaign raised awareness and engaged our people on the nature and scale of our energy and emissions challenge. We have successfully reduced our operational emissions by 8% since 2010-11 and will continue to play our part in reducing future climate change by seeking to further reduce our emissions.

We established a cross-business climate change co-ordination and strategy group in 2011 and began integrating climate change into our corporate risk management systems and internal Key Performance Indicator (KPI) reporting systems in 2012. We will continue to evolve our training and engagement activities and we plan to extend it to our delivery and supply partners. We will also continue to embed climate change into our policies, procedures and design standards to ensure it is considered 'business as usual'.

Figure 8U

**5 year investment profile for the outcome
'We understand our impact on the wider
environment and act responsibly'**



8.5.4 Expenditure Summary

In total we expect to invest £63.6 million to ensure we continue to understand our impact on the wider environment and act responsibly. We will invest £29.9 million in capital solutions and £33.7 million in operational expenditure.

The following section provides more information on how we will deliver this outcome for our customers.

8.5.5 Meeting our performance commitments for each measure of success in AMP6

The following section describes each of the measures of success, the key activities we are planning to undertake to deliver this outcome and the associated benefits for our customers and the environment.

Our performance commitments for this outcome are the targets for the whole Yorkshire Water business, of which Wholesale Waste water is a component part. We consider that it is appropriate to hold our commitment at the Yorkshire Water level as our energy and waste strategy and procurement activities are progressed on behalf of the whole business to drive economies of scale.

8.5.6 Measure of success: renewable energy

This reflects the amount of energy we generate from renewable sources expressed as a percentage of our total energy consumption. In 2012-13 we generated 6.8% of Yorkshire Water's energy needs from renewable sources, mainly using combined heat and power engines powered from sludge digestion. Our aim is to continue our performance in this area at no additional cost to our customers as they have told us they cannot afford any increase in bills.

Our performance commitment is to generate 12% of our energy needs (Yorkshire Water total) during 2015-2020. We intend to meet this commitment by the end of AMP5, and plan to maintain this level throughout AMP6. Our policy is to consider the opportunity for energy generation or energy reduction for any intervention which is made. In this way we will ensure that we always consider our energy use, looking for both small and large ways to make a difference, spanning solutions from small photo voltaic generation to allow telemetry connections, to larger optimisation projects and equipment upgrades.

The expenditure requirements to meet the needs of this measure of success are supported by the following investment business cases:

- PR14 Sludge
- PR14 Waste Water treatment works base
- Innovation Delivery



Wholesale waste water will continue to generate renewable energy from a number of sources including water and wind turbines and combined heat and power plants at our WwTW and STF sites. Combined heat and power provides the majority of our energy generation and uses the waste gas from our waste water treatment process. We plan to maintain our current wind and water turbine assets during AMP6 but are not seeking any additional investment for increasing our generation portfolio.

Our plans include maintenance of our sludge digester assets at 11 sites, including internal inspection and repair or replacement. This will ensure these assets are suitable for on-going use for the next decade.

Esholt Waste Water Treatment Works and Sludge treatment facility

Our WwTW at Esholt was built in 1924 and we aim for the Esholt site to be completely self-sufficient in energy by 2015. We've already installed two combined heat and power generators which cost £1 million each. These can create around one third of the energy required to power the plant each day by turning methane into heat and power.

We have recently commissioned the biggest Thermal Hydrolysis Plant (THP) in the UK. Generation from the THP, added to the existing generation capability at Esholt, gives us a total annual generation capability of 23.6 GWh from the Esholt site alone. This will allow Esholt to become our first self-sustaining WwTW in terms of energy.

The THP has a number of benefits and will help us to:

- Offset and reduce energy needs by generating more and buying less from the grid. This will keep our costs down and protect customers from future energy price rises

- Reduce our carbon footprint by using more energy from a renewable source
- Avoid disposal of 12,000 tonnes of sewage sludge by incineration.

8.5.7 Measure of success: waste diverted from landfill

This will measure the amount of waste from all our activities (office, operational or construction) that is recycled or re-used as a percentage of total waste produced. It does not include sludges produced as a by-product of waste water treatment, which are treated as a product which can generate energy (this is reflected by the first measure).

There is no specific investment proposed to increase the amount of waste we divert from landfill. However we will continue to improve our operational excellence to drive this measure and deliver benefits to our customers and the environment at zero additional cost.

Our performance commitment is to gradually increase the amount of waste that is recycled to 95% (all Yorkshire Water total) during 2015-2020.

Case Study

We have conducted research into six large redundant filter beds at Esholt WwTW. Initially, these were classed as a potential waste liability with a substantial disposal cost. However, analysis has shown this material to be a resource that can be recycled into aggregate products. By identifying the correct legislative pathway to move a waste material to a commercial product, there is potential to use the material for creation of new assets or to sell it on the open market. Redundant media at other sites will also be considered..

East Coast Zero Waste. This received a Zero Waste Award in recognition of the waste and resource efficiencies which we and our delivery partner were able to make. These resulted in diversion of thousands of tonnes of material from landfill and a saving of over half a million pounds on waste management costs and reuse of material.

Over the last five years we have steadily reduced the amount of waste we send to landfill and in 2012-13 we recovered, reused or recycled 89%, our best performance yet. We are helping our business and our contractors to rethink how we use, manage and dispose of materials to transform our resource efficiency. We aim for the sustainable procurement, management and disposal of all things we use. This is a central part of our strategic thinking in relation to the use of sustainable resources which also recognises the business risks associated with finite resources, escalating costs and a diverse supply chain.

We will continue to drive reduction of waste during 2015-2020 by employing and sharing best practice through our successful Environment Forum which has been running since 2003. This facilitates shared learning and optimal ways of working between us and all our contract partners. Its initiatives will carry on. These include a full time waste manager serving all partners, a materials and facilities sharing database and a working group designated to improve and understand performance data.

8.5.8 In Summary

This section has detailed how we proposed to deliver the Wholesale Waste water outcomes and achieve the associated measures of success. However we must also recognise the challenge to do all this and not increase bills by more than inflation gives if we are to deliver a financially viable plan that meets the needs of our customers, stakeholders and investors.

The following section provides an overview of our financial strategy for the next five years which will allow us to meet these needs and provide a stable platform for delivering an affordable and acceptable plan.

9.

Financing the plan

Section summary:

It is vital for us and the water industry to remain financially viable if we are to continue delivering essential water and waste water services. Customer bills need to generate sufficient income to cover our day-to-day operations, the interest on borrowings taken to invest in assets, and our tax and equity return obligations. All this has to be carefully balanced when setting prices.

Affordability is a customer priority so we have done everything we can to keep bills as low as possible. Our average household combined water and waste water bill will not increase above inflation in AMP6. To achieve this, our AMP6 plan:

- Requires borrowing of £1.4 billion.
- Reduces and delays our investors' returns, lowering the average combined household bill by £47 per annum in 2015-2020
- Provides our investors with a weighted average cost of capital (WACC) of 4.2%.
- Will maintain our investment grade ratings so that we can ensure low borrowing rates.
- Includes a notional gearing level of 62.5%.
- Recognises the industry-leading efficiencies we've recently delivered and incorporates further savings.



This section provides an overview of our financial strategy, including our proposed Wholesale Waste water returns, cost recovery rates and forecast future efficiencies.

We are proposing to invest £2.1 billion to deliver our Wholesale Waste water five year plan. To do this we need find the right balance between the investments needed to maintain our everyday operations, to provide fair returns to our investors and to ensure bills are affordable.

9.1 Introduction

In developing the proposals to fund the delivery of our outcomes and core business functions between 2015 and 2020 we have aimed to make costs affordable and bills acceptable to our customers.

We need to be able to deliver the investment proposals in this plan from income generated by the bills we charge to customers. We also need to be able to generate sufficient income to cover our day-to-day operations while ensuring, like most companies, that we can still meet our interest, tax and equity return obligations. All this has to be carefully balanced when setting prices.

9.2 Financial Strategy

Our financial strategy is embedded across our business, with each of our four price control plans reflecting the core elements applicable to that plan to show that each is a viable plan in its own right.

The principle aim of our financial strategy is to ensure we remain a viable business that can provide effective services. We need to secure a return on investment which is both sufficient to raise the necessary capital to fund future investment and acceptable to our customers. It is essential for us and the industry as a whole to remain financially viable. Returns need to provide the financial stability required to deliver the current service and any service improvements which customers have said they are willing to pay for.

9.3 The need for long term stability

The water and sewerage industry is a long-term industry requiring a long-term approach to the financing and management of its assets. Our proposed outcomes, which have been accepted by our customers, show that there is a need for significant new investment in the future. Our owners are established international investment groups committed to the continued stability of the regulated business.

The sections that follow outline our:

- Evidence-based assessment of allowed Wholesale Waste water returns
- Approach to cost recovery for Wholesale Waste water services
- Future productivity and efficiency assumptions for Wholesale Waste water.

Figure 9A

Allowed returns for the Wholesale Waste Water business

	PR09 assessment	PR14 assessment
Gearing (notional)	57.5%	62.5%
Cost of debt	3.6%	3.1%
Cost of equity	7.1%	6.0%
WACC (real, vanilla)	5.1%	4.2%

Figure 9B

Cost of embedded and future debt

Parameter	Our assessment
Cost of embedded debt	3.3%
Cost of new debt	2.6%
Debt weighting (embedded:new)	75:25
Cost of debt	3.1%

9.4 Assessment of wholesale water returns

In our business plan we have proposed an allowed rate of return (post-tax, real) of 3.8% on the regulated capital value (RCV) for the Wholesale Waste water price control. This is equivalent to a 'vanilla' weighted average cost of capital (WACC) of 4.2% and is based on a robust, evidence-based, assessment of the cost of capital. Our proposed WACC has been estimated for Yorkshire Water's standalone, regulated, Wholesale Waste water business.

Our approach to assessing the appropriate WACC involved examining a range of evidence for the following elements:

- The notional level of gearing
- The cost of debt, including embedded debt and future debt
- The cost of equity.

The evidence from our assessment suggests that both the cost of debt and cost of equity could be lower now than they were when Ofwat last set companies' allowed returns in 2009. We have reflected this in our proposed WACC, which we believe will ensure that the Wholesale Waste water business is securely financed and customer bills remain broadly stable.

Figure 9A: below shows how the financial parameters we have estimated compare to the company's current allowed returns. We detail our approach to assessing the WACC and the associated financial parameters in the evidence base.

The sections that follow detail our approach to assessing each parameter.

Gearing (notional level)

In proposing a notional gearing level of 62.5%, we have considered a range of evidence including:

- PwC's report on 'Cost of capital for PR14: Methodological considerations'
- Advice we have received from First Economics
- Regulatory precedents.

Our proposal lies within the range that was proposed by Ofwat in its final methodology and recommended in PwC's report. We consider this to be a prudent assumption that is broadly in line with regulatory determinations in other utility sectors.

Cost of debt

In the final business plan methodology it was confirmed that the current approach to assessing the cost of debt will be retained. We have continued to adopt this approach, and based our estimate of the cost of debt on the weighted average cost of embedded and future debt (assuming a ratio of 75:25 between embedded and future debt).

The cost of embedded debt and our estimates of the cost of new debt are shown in figure 9B.

The real cost of embedded debt has been calculated using the cost of our existing debt as at March 2013, which was 3.3%. This is based on the indicative weighted average nominal interest on debt as at 31 March 2013 and the forecast average retail price index (RPI) over the period 2015-2020.

Figure 9C

Summary of cost of equity assessment

Parameter	Our assessment
Gearing	62.5%
Risk-free rate	1.5%
Equity-risk premium	5.0%
Equity beta	0.90
Cost of equity	6.0%

Figure 9D

Cost recovery rates for Waste Water services

Cost recovery rates	2015-2020	2020-2025
Run-off rate – wholesale waste water	3.62%	4.35%
Totex average life – wholesale waste water	28 years	23 years

The cost of future debt has been estimated as 2.6%. In assessing the future cost of debt we have considered evidence from a range of sources, including:

- iBoxx non-financial A rated and BBB rated 10 year real cost of debt indices
- Current spot rates
- Recent regulatory determinations.

Our estimate of the cost of new debt lies within the range of regulatory precedent and is supported by long-term cost of debt indices, which have been used by Ofgem. It is also broadly in line with the Competition Commission's (CC's) provisional cost of new debt estimate of 2.7% for the Northern Ireland Electricity (NIE) price control.

Cost of equity

In line with the final business plan methodology we have used a range of evidence to estimate the cost of equity for the WACC. Since the value of the cost of equity cannot be directly observed, we have used the Capital Asset Pricing Model (CAPM) as the primary tool for estimating the cost of equity. We have assessed each CAPM parameter, based on a 62.5% gearing level. To support this we commissioned First Economics to assess the latest available evidence on the cost of equity and compile a report.

We have assessed a range of evidence for each parameter. This includes First Economics' cost of equity range, which has been adjusted for our proposed gearing level of 62.5%. We have also taken into account recent regulatory estimates of the cost of equity, in particular, the Competition Commission's (CC's) provisional findings in the Northern Ireland Electricity (NIE) price control.

Overall we have estimated a cost of equity of 6.0%. While we recognise a direct read across from the CC's cost of equity estimate of 4.8% is not appropriate, given the different assumptions around notional gearing, our assessment of each parameter is within the CC's range (based on 62.5% notional gearing).

We have set out our assessment for each CAPM parameter in figure 9C.

9.5 Cost recovery for water services

Within our business plan we have included our planned run-off rates and pay-as-you-go (PAYG) rates that are applicable to the projected Wholesale Waste water totex. These are shown in the figure 9D.

In the final methodology, Ofwat included the option of reducing balance depreciation on companies' 2015 regulatory capital value (RCV). We have used a reducing balance method for both the existing RCV and the future investment RCV, this has benefit of keeping the recovery of revenues smooth, and consequently avoids step changes in customer bills.

As part of our financial modelling process, we have also considered the totex average life that is applied to both the run-off rate for the '2015 RCV' and for the 'post 2015 totex RCV additions'. Our initial position was to use the asset lives that Ofwat adopted to calculate the current cost depreciation (CCD) charge for waste water at PR09 (i.e. 23 years). However, in the interest of maintaining stable customer bills over the next five years, we have adjusted the totex average life to 28 years for Wholesale Waste water over the period 2015-2020. These adjustments have allowed the cost recovery period to be extended and therefore have helped towards keeping prices stable for customers.

Figure 9E

Average PAYG ratios for wholesale waste water services for the period 2015-20 and 2020-25

Price Control	2015-2020 average	2020-2025 average
PAYG % – Wholesale waste water	49%	49%

Figure 9F

Annual PAYG ratios for wholesale waste water services over the period 2015-20

Price Control	2015-16	2016-17	2017-18	2018-19	2019-20	Average
PAYG % – Wholesale waste water	46%	43%	45%	51%	62%	49%

We anticipate that we will be able to revert back to the unadjusted assessment in the future and have therefore assumed a totex average life of 23 years for Wholesale Waste water over the period 2020-2025.

In addition to our proposed run-off rates and totex average life we have also included our average pay-as-you-go (PAYG) ratios that are planned for both 2015-2020 and 2020-2025. These ratios are shown as a percentage of totex in figure 9E.

In arriving at these planned recovery rates, we have analysed historical PAYG ratios which were applied in AMP4 and AMP5. Our analysis showed that over this period the average PAYG ratio, at the company level, was approximately 55%. This is equivalent to PAYG rates of 49% for Wholesale Waste water. While we have maintained these averages over the period 2015-2020, due to the profile of totex over the period, we have applied annual PAYG ratios that vary year to year. This facilitates the smoothing of wholesale wastewater revenues, which in turn contributes to customer bills remaining stable over the period.

Figure 9F below shows both the notional and adjusted annual PAYG ratios that we propose for the period 2015-2020.

We consider the application of annual PAYG ratios necessary to keep customer bills stable, while ensuring that the company can still remain financeable.

9.5 Productivity and efficiency

This chapter sets out our approach to assessing the operating expenditure and capital expenditure efficiency targets. Our assessment for Wholesale Waste water focuses on the following key areas:

- Wholesale operational expenditure
- Wholesale capital expenditure.

In each key area we have undertaken a thorough assessment of forecast price input inflation and the scope for productivity growth for the period 2014-2020. To support this assessment we commissioned First Economics to assess the latest available evidence on productivity growth and cost escalation.

The report takes the following approach:

Identifying the different streams of costs that can be found in a notional water and waste water company

- Investigating the price trends affecting each individual stream and forecasting
- Aggregating the line-by-line estimates obtained into overall measures of input price inflation
- Benchmarking the scope for productivity growth in a number of different activities. This is based on evidence of historical productivity growth in a selection of comparator industries
- Aggregating the productivity benchmarks into an overall estimate of the rate of productivity growth.

This approach is in line with that used in a number of other price control decisions. Figure 9G shows First Economics' estimates of average price input inflation and frontier productivity growth for the period 2014-2020.

Figure 9G
First Economics’ estimate of average input price inflation (nominal, % per annum)
and rates of on-going productivity growth (% per annum)

	Average price input inflation	Productivity growth
Wholesale Waste Water operational expenditure	0.9 above RPI	1.0%
Wholesale Waste Water capital expenditure	0.7 above RPI	0.6%

For wholesale operational expenditure, the First Economics report shows that the annual real price effect (RPE) is, on average, forecast to be 0.9% above RPI over the period 2014-2020. From component analysis the report also shows that a frontier company will be able to improve wholesale operational productivity by 1.0% per annum. This implies that wholesale operating efficiencies will in part offset rising input prices and keep operating expenditure broadly in line with RPI.

For wholesale capital expenditure, the First Economics report shows that the annual real price effect (RPE) is, on average, forecast to be 0.7% above RPI over the period 2014-2020. The report also shows that a frontier company will be able to improve wholesale capital productivity by 0.6% per annum. This means that wholesale capital efficiencies will in part offset rising input prices and keep capital expenditure broadly in line with RPI.

On balance, across totex for Wholesale Waste water, the cost escalation, before RPI, is offset by the challenging productivity improvements included. The efficiencies for wholesale operational expenditure and capital expenditure have been applied in our plan.

Our plans to meet the challenges of the future involve considerable investment, and we’ve taken a long-term view of the best way to finance it. Ensuring that our bills remain affordable for our customers is a key consideration in planning our investment as we have set ourselves the objective of putting their needs at the heart of our plans. The next section explains why our plans represent a good deal for customers.

10.

A good plan for customers

Section summary:

Our plan is good for customers and stakeholders because it:

- Keeps bills as low as possible, ensuring no rises above inflation before 2020. This has been achieved through our industry-leading efficiency and by delaying and reducing returns to investors
- Delivers our customers' long-term priorities which we call the seven outcomes for Yorkshire
- Ensures our legal compliance and incorporates the priorities of the Environment Agency and many other stakeholders
- Is robust, based on latest data and risk assessment, and follows national guidance
- Secures our reliable waste water service for today and the long-term, for example by continuing our preparations for the changing climate and population growth.

This section explains why this is a good value, balanced plan that delivers the priorities of our customers and stakeholders, ensures our legal compliance and our ability to maintain high quality services.

Over the last two years we've engaged widely with a range of stakeholders to help us build this plan. They have told us what they need and we have built this plan to reflect those needs. We have worked to properly understand the costs of delivering environmental improvements through to 2020, so that we can avoid unexpected cost and price shocks in the future. We worked hard to balance the upward price pressures from a growing and deteriorating asset base, meeting the reasonable expectations of our quality regulators while keeping customers' bills as low as possible. We believe this is a finely balanced plan that meets all our stakeholders' needs.

10.1 A plan built on customer views

In sections 5 and 6 we detail how we've engaged with customers, regulators and stakeholders and what they told us they needed from us. Our engagement with over 6,700 domestic customers and 1,700 business customers told us that customers wanted us to focus on delivering core services while maintaining bills as low as possible. Our plan is built upon delivering customer-articulated outcomes.

Throughout all of our engagement activity we have opened our processes, procedures, results and conclusions from our research to scrutiny from the independent Customer Forum which has ensured that we make faithful interpretation of our research and that we build our plan in line with customer and stakeholder needs. We tested our plan with customers. Over 90% said they agreed with the intent of our Blueprint.

Over 77% of customers we surveyed agreed with the outcomes and activities we are proposing at the price we are proposing.

10.2 Meeting government and regulator needs

We have taken a proactive approach to defining environmental improvements needed for the Yorkshire region.

The National Environment Programme (NEP) has been developed in partnership with the Environment Agency and Natural England. Extensive partnership modelling has been carried out to understand the link between environmental effect and company asset cause. This has resulted in clear understanding of where the environment needs improvement, and that this can be delivered through investment in our assets. As a result we have been able to make

robust estimates on every phase of the NEP, even phase 5. We believe it is important that we do this now, so that we can give greater confidence and assurance of our intention to avoid unexpected price increases for customers after 2016 when Ministers determine the final list of obligations for the second round of the River Basement Management Plans. We have included all of these costs in our customer research so that we can be sure that customers accept the need for these costs. The Environment Agency and Customer Forum have endorsed our approach and support the transparency we have shown with customers.

10.3 Built on sound estimates of cost

Our total expenditure (totex) estimates are based on our most up-to-date costs. Our operating cost base reflects the current year and is adjusted to only account for the additional costs we expect to experience from the transfer of private to public pumping stations, operational expenditure of capital expenditure, operational solutions that are more efficient than capital solutions, pension costs and retail implementation costs. We have removed one-off costs associated with current company restructure.

For capital costs we have captured costs from our current capital programme through robust cost data capture tools and cost modelling. This ensures that our unit costs are reflective of the efficiencies we are driving through this period.

10.4 Reflecting past and future savings

Our operating cost estimates have been developed from our current base year of expenditure, reflecting the real efficiencies we have driven in the period. At a total company level we have discounted all atypical costs from our recent restructuring activities and included only legitimate additional costs associated with private to public transfer of pumping stations, the introduction of retail competition, changes to our pension arrangements and the operating effects of future investment. Our total operating costs reflect real savings of £106 million (6%) compared with the determination in 2009.

Our capital costs are based on the outturn value of assets procured during the period 2005-2015 and are reflective of the capital efficiencies we are experiencing in this period. Overall, at a total company level we are delivering the current programme for £198 million (10%) less than assumed in the determination, and these efficiencies are reflected in our costs.

It is becoming progressively challenging to reduce costs as we rebase our costs at each price review. However, we believe that the incentives in place, plus the introduction of new and innovative ways to challenge the company to improve, retains sufficient incentive for the company to drive further. We have investigated the scope for further outperformance in the future, the productivity gains we expect to make in the future, at a total company level, amount to a further £106 million.

We have passed these cost efficiencies through to customers.

10.5 Reflecting AMP5 Performance

In the current period we have had a stretching programme to deliver. We set ourselves the objective of raising standards in a number of areas of our business at the same time as responding to incentives to outperform on costs.

In delivering the programme, we have identified planned investment at Knostrop (Leeds) which was not required. We have agreed the removal of this obligation with our regulators and are passing back £11 million to customers.

Similarly, we are returning money back to customers where we have not needed to deliver as many outputs as planned or where we have not managed to meet the ambitious service improvement target we proposed. This is in the areas of sewer flooding improvements, and pollution reduction. We are passing back £26 million to customers.

10.6 Investor returns are set to maintain financial stability

Within our plan we have provided a robust assessment of the cost of capital for wholesale price controls and net margins for retail controls. Our proposed weighted average cost of capital (WACC) and net margins are reflective of the risks faced by different parts of the business and will enable an efficient company to finance its functions.

A key component of the WACC is the cost of equity. The cost of equity reflects the risks faced by investors, through the equity risk premium and equity beta. The equity risk premium indicates the return that an investor would expect over and above the return on a risk free asset. This return remunerates or rewards the investor for the additional risk of investing in a company over the risk free asset. Equity beta, on the other hand, measures the volatility of water companies in comparison to the market as a whole. Together, these parameters ensure that the risks faced by investors of water companies, relative to both the risk free asset and economy as a whole, are reflected and remunerated through the allowed returns.

As part of our scenario modelling we have analysed the overall balance of risks to returns on regulatory equity (RORE). Our analysis shows that the risks and consequential remuneration for exposure to risk are fairly balanced, illustrating the fact that the potential rewards earned by investors are proportionate to the level of risk they are exposed to. This analysis is detailed in Section 11.

The plan includes for a significant reduction in the WACC. This reflects the work we have undertaken to estimate the cost of future debt and equity plus our actual cost of embedded debt. The result is that real returns are being reduced from the current 5.1% to 4.2% equivalent to approximately £200 million across the whole business. These lower returns are factored into the plan.

10.7 Bills will remain stable in real terms

Our bills are some of the lowest in the industry at £192 (2012-13 price base) for waste water services for an average household customer in 2014-15. Our plan means that while the costs of waste water service provision increase, we will not be increasing the average total bill by any more than inflation right through to 2020. We have tested this proposal with our customers and they have told us that they support our plan to deliver all the outcomes within our Yorkshire Water plan at a price that rises only with inflation.

After accounting for all the costs we can foresee, including a robust estimate of the NEP, we are able to offset all of the upward pressures on costs and keep total bills in Yorkshire low. We think, and our customers told us, that's a good deal for them.

After accounting for all the costs we can foresee, including a robust estimate of the NEP we are able to offset all the upward pressures on costs and keep bills in Yorkshire low. We think, and our customers have told us, that's a good deal for them. In the next section, we explain why this is a fair plan for our customers because it ensures that, in return for delivering improvements and keeping their bills low, it also allows us to remain a financially stable business that's attractive to investors and stakeholders.



11.

A fair plan for customers

Section summary:

Our plan is fair for customers and stakeholders because it:

- Our plan is fair for customers and stakeholders because it:
- Keeps bills as low as possible, ensuring no rises above inflation
- Delivers our customers' long-term priorities, which we are calling the seven outcomes for Yorkshire
- Ensures our legal compliance and incorporates the priorities of the Environment Agency and many other stakeholders
- Is robust, based on latest data and risk assessment, and follows national guidance
- Shares risk and reward between investors and customers, with a larger portion of cost uncertainty and risk borne by our shareholders than by our customers
- Excludes uncertainties like the costs of the Water Framework Directive River Basin Management Cycle Round Two, the number of sewage pumping stations transferred into our asset base through the Private to Public transfer programme in 2016, and the revaluation of Business Rates after the Price Review is finalised.

This section describes how we have ensured we have a plan that is fair for customers, stakeholders and investors by sharing risk and reward, proposing incentives and how we share them, and proposing a way of sharing gains through investment in outcomes.

Our plan is built on robust assessments and efficient costs meaning that we can deliver a balanced plan that is good for all stakeholders and particularly customers, because it allows us to drive significant environmental improvement within the region while keeping total bills down.

The overall risk of the industry and subsequent reward for managing that risk is reflected in the Weighted Average Cost of Capital (WACC). There are mechanisms in place that share the risk between companies and customers; these mechanisms have worked well and remain appropriate. Incentives are in place for service performance, which is enhanced by the Outcome Delivery Incentives (ODIs). Incentives are in place for cost performance to push the industry forward. Most importantly, the mechanisms in place ensure that the benefits of rewards are passed onto customers in the long run.

Our plan includes for a fair sharing of risk and reward between the company and our customers. We work on the principle of placing the risk where it is most efficiently managed for the benefit of customers.

11.1 Risk and reward

We consider that the current overall framework and mechanisms for allocating and mitigating risks have worked well and we do not propose any major changes to them. We will continue to respond to all incentive mechanisms in order to meet our outcomes for customers, and thereby maximise rewards and avoid penalties.

11.2. Framework for risk and reward

The current regulatory framework includes a number of mechanisms for mitigating or allocating risks and rewarding companies that deliver services efficiently. We believe that the majority of mechanisms have, to-date, provided a good balance of allocation of risks and rewards between companies and customers.

These include:

- Review of costs and prices on a five-year basis
- Indexation of prices (i.e. linked to RPI)
- A mechanism for the reopening of prices in specific and exceptional cases once thresholds have been met (e.g. interim determinations)
- A mechanism for amending allowed costs at subsequent reviews (e.g. logging up or down, short-falling and change protocol).

Overall, we consider the mechanisms within the current framework ensure that risks are allocated to those best placed to manage them. The mechanisms also ensure that the rewards gained from the efficient delivery of services are shared between companies and customers, in a way that is reflective of the risk allocation.

11.3 Managing Uncertainty

There are three areas of uncertainty affecting the Wholesale Waste water plan, where the lack of definition of a future requirement is beyond the control of Yorkshire Water. If interventions to address these areas were included within the plan they would potentially lead to conservative and inefficient costs being passed through to customers. These are:

- The scale of the implementation of the Water Framework Directive, River Basin Management Cycle Round Two, which is to be determined by Ministers in 2016. We plan to manage this uncertainty through the licence by reference to a Relevant Change in Circumstance (RCC1)
- We plan to manage the uncertainty around our central forecasts as Notified Items. The continuing impact of private to public transfer legislation, including length of sewer and all pumping stations to be transferred in 2016
- Revaluation of business rates. We have not included any additional costs for changes due to the revaluation of business rates. We plan to manage the uncertainty around business rates as a Notified Item.

11.4 Sharing of risk and RORE

Within our plan we have provided a robust assessment of the cost of capital for wholesale price controls. Our proposed WACC is reflective of the risks faced by different parts of the business and will enable an efficient company to finance its functions.

As part of our scenario modelling we have analysed the overall balance of risks to returns on regulatory equity (RORE). Our analysis shows that the risks and consequential remuneration for exposure to risk are fairly balanced, illustrating the fact that the potential rewards earned by investors is proportionate to the level of risk they are exposed to.

Figure 11A
Changes in wholesale waste free cash flow due to specified input factors

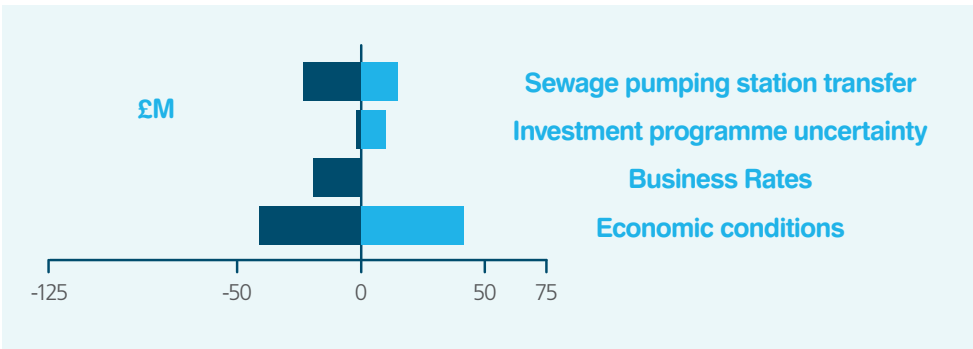


Figure 11B
Description of the major cost impacts to Yorkshire Water in AMP6

Potential Risk	What the scenario represents
Economic conditions The state of the economy affects us in a number of different ways. A strong economy generally leads to increased growth in the number of households and higher rates of energy cost and construction inflation. In addition a strong economy will lead to a higher base inflation rate, which will increase the amount we pay in reducing our pension's deficit. The overall effect of the economic conditions is that a weaker economy will lead to a decrease in operating costs.	Realistic upside and downside economic scenarios provided by Ofwat
Business Rates For our wholesale waste water business we currently pay around £20 million in non-domestic rates every year. We expect a revaluation to occur in 2017, although it is possible that this will not occur. The effect of any revaluation on the amount we pay is uncertain. For this reason we have included business rates as a Notified Item at PR14, and asked that this cost is not included as part of our cost performance assessment. The reason there is no upside for this scenario is that if a revaluation were to occur then our wholesale waste water rates would definitely increase.	80% confidence interval of spend over AMP6. Confidence intervals based on multiple scenarios created using expert judgment.
Private sewage pumping station transfer On 01 October 2016 (Year 2 of AMP6) a number of private sewage pumping stations will be transferred into public ownership. The exact number and location of these pumping stations is unknown. Therefore the extent of our expenditure on these transferred assets is unknown. We have assessed the likely, minimum and maximum number of assets to be transferred and used these estimates to produce approximate 80% confidence intervals for our expenditure on these assets. Because of the uncertainty, we are submitting this risk as a Notified Item.	80% confidence interval of spend over AMP6.
Investment programme uncertainty In order for a solution to be considered for investment, an estimate of its cost must be made. All cost estimates have uncertainty attached to them, with the level of uncertainty varying depending on the detail of the initial assessment and also the type of solution. We have analysed the risk to Yorkshire Water from individual solution cost uncertainty using our industry leading Monte-Carlo Analysis system. This analysis does not include systematic changes such as construction cost inflation or innovation resulting in reduced costs.	80% confidence interval of spend over AMP6.

11.5 Risk Analysis

At PR14 we have carefully analysed the existing risk and reward package for fairness and concluded it is fair to both customers and shareholders. It drives us to increase service and decrease costs resulting in overall lower prices and better service for customers.

In previous price control periods we have aimed to be the frontier company in terms of efficiency and ensured our costs are as low as possible. While maintaining focus on efficiency and continuing to drive down costs we are now aiming to be the best company in the industry at risk management.

We have carried out a thorough analysis of the risks to our business in AMP6. This analysis suggests that shareholders bear a greater financial downside risk than customers. We believe this is fair, as it reflects the returns earned by shareholders. Without any incentive mechanisms, customers would bear a risk due to uncertainty in service performance. However this service risk is translated into a financial risk by the outcome delivery incentives. This financial risk is largely borne by shareholders, with a small portion borne by customers.

Figure 11A shows the effect on free cash flow (expenditure less income) of various factors that affect our Wholesale Waste water expenditure and income over AMP6. The dark blue half bar represents a decrease in free cash flow due to that factor; the light blue half bar represents an increase in free cash flow due to that factor. The full bar represents either an 80% confidence interval or realistic upside and downside cases for the impact on free cash flow. A description of each factor is given in figure 11B.

The overall risk analysis shows that the risk is not symmetrically balanced. Instead, in Wholesale Waste water we are more likely to see an increase in expenditure than a decrease. The business rates revaluation for waste water assets will not decrease our expenditure, but could increase it.

In summary in AMP6 a larger portion of cost uncertainty and risk is borne by our shareholders than by our customers. We believe this is a fair balance to shareholder returns.

11.6. Incentives

The new and existing incentive mechanisms are designed to encourage companies to deliver their services efficiently. The current regulatory framework uses financial and reputational incentives to encourage companies to deliver services efficiently. The incentives ensure that the benefits or rewards of efficient delivery of services are shared between companies and customers, and the allocation of rewards reflects the allocation of risk.

11.7. Incentives for cost performance

Our plan is based on efficient costs and it is important that companies are incentivised to continue to innovate and become more efficient.

The use of cost incentive mechanisms such as the capital expenditure incentive scheme and operating incentive allowance has created a financial incentive for companies to become more efficient. These financial incentives are enhanced for the industry as a whole when the most efficient companies cause the frontier to shift.

These incentive mechanisms also ensure that the rewards from increased efficiency are shared between companies and customers. The majority of efficiencies that we have made have been passed back to our customers through these mechanisms, with customers typically receiving 70% of the realised efficiencies. We consider this level of efficiency sharing to be fair to customers, while still providing an incentive for companies to continue driving further efficiencies for their customers. It is important for these incentives to continue.

11.8. Other factors

For financing efficiencies, although a formal mechanism does not exist, we strongly believe that the rewards of cheaper financing are passed onto customers. This has been observed through the ratchet effect, whereby allowed returns have fallen at each price review since privatisation and this has been passed through to customer bills. At the industry level the cost of embedded debt has also been passed to some extent onto customers through the cost of capital and allowed returns. If companies are able to raise debt at low rates this feeds through to WACC assessment and is reflected in allowed returns and customer bills.

While setting limits on the levels of returns that are available to companies may appear to be an attractive concept, the use of caps and collars or ex-post adjustments leads to a transfer of financial risk away from companies and onto customers. Although we recognise that market interest rates and RPI inflation are outside of the control of companies, we still consider companies to be best able to manage these risks. The current framework provides a strong incentive for companies to mitigate risks, for example by investing upfront and in sustainable solutions, and customers benefit as a result. The allocation of risk away from companies and onto customers through ex-post adjustments dilutes this incentive and introduces greater uncertainty around investments, which could be detrimental to customers.

Exposing customers to greater financial risk makes customer bills inherently less stable and predictable. Our customer research, which is corroborated by findings at previous periodic reviews, shows that customers place significant value on stable and predictable prices. While evidence may suggest that customers could have benefited more immediately from lower borrowing rates, customers have equally benefited when financial markets have been volatile and customer bills have been relatively insulated from this volatility.

Overall we consider the allocation of financial risk, and reward for exposure to the risk, is best placed with companies. This ensures that companies have a strong incentive to deliver efficient outcomes and prevents customers from being exposed to financial risk. The result is that customer bills are kept as low as possible and are more stable and predictable, which is what our customers have said they want.

12.

Delivering the plan

Section summary:

We will deliver our plan and make our progress visible to our customers by:

- Publishing an Annual Performance Statement of our commitments, performance, financial penalties or rewards, and any actions we are taking to address areas of concern
- Continuing to assure our annual reporting through our ISO9001 accredited process
- Working in partnership with regulators, stakeholders and our delivery partners to deliver more and wider benefits for our customers and the environment
- Giving something back through our ambitious community initiatives
- Contributing to a £6 billion ripple effect on Yorkshire's economy. As a large regional organisation we pump billions into the local economy. For every £1 we invest the knock-on effect in the wider Yorkshire economy is almost double.

This section outlines how we will transparently report our progress in delivering our plan and achieving our measures of success. We also discuss our approaches to partnering and giving something back to the communities we serve.

12.1 Monitoring and reporting our progress

To demonstrate our progress towards our outcomes, and show how we are delivering our performance commitments, we will publish an Annual Performance Statement. This will clearly set out our commitments and our performance for each measure, together with any associated financial penalties or rewards. We will be clear about the actions we're taking to address areas of risk or concern, and will highlight the service we've delivered within the year. This will take a similar form to the current Risk and Compliance Statement and Key Performance Indicators report, which we currently publish in July each year.

To reinforce our commitment to transparency, we'll continue our rigorous approach to reporting of information and maintain our ISO9001 certification, the international standard for quality management, for our annual reporting process. We have a programme of external audits throughout the year which ensure we meet the letter and the spirit of the law and are compliant with the requirements of ISO9001. We have clearly defined each measure of success and we will maintain clear reporting definitions and processes, which are regularly reviewed and improve our processes where necessary each year. We maintain a 'three lines of defence' approach to assurance, meaning that we check and validate our information, and subject it to review by an independent party.

Consistent with its assurance of this plan, our Board will continue to assure its Annual Performance Statement. This will ensure that our reporting is correct, and our application of outcome delivery incentives is correct.

12.2 Preparing the company for the future

We have a history of working with partners to deliver our services to customers. They have expertise we need and we will continue to use partnership working in the delivery of outcomes between 2015-2020.

We have a history of working with partners to deliver our services to customers. They have expertise we need, and we will continue to use partnership working in the delivery of outcomes between 2015-2020.

We need to deliver on our promises, so we carefully select our partners, considering not only commercial advantage and efficiency, but also culture and company ethos. We only work with partners who share the same high standards for doing what's right for our customers and the environment. For this reason, we have entered into long-term arrangements with the following group of highly expert partners. They have worked with us for the last four years and they will be with us for the next six years.

Figure 12A
Collaborative working – our partners



Looking beyond our own programme of outcome delivery through formally contracted partners, we see partnership as a real opportunity for us to work with other agencies nationally and across the region, to deliver the best outcomes for society and the environment. For this reason we have set ourselves a performance commitment and a financial incentive to encourage partnership working with other organisations.

We recognise that we need to work closely with the Environment Agency, Natural England and bodies such as the Rivers Trusts if we are to maximise the benefits from our National Environment Programme, particularly the Water Framework Directive improvements.

We are approaching the problem of sewer flooding of property differently in the future. We will be even more active in our engagement with the other flood risk management authorities in the delivery of co-ordinated or integrated solutions to multi-source flood risk where these involve our customers. We also see an opportunity to tackle flood risk proactively by following the principles of the Drainage Strategy Framework. Consequently, we have included approximately £8 million within the plan to work with other flood management agencies.

We've worked to understand what 'partnership working' means for us and how to develop practical help and advice for colleagues. We've learnt that it is important to identify very clear, shared objectives at the start of prospective partnership, and to allow sufficient time for an effective working relationship to develop.



There are other practicalities to consider as well, for instance the timing and availability of funding may not easily align..

12.3 Giving something back

As one of Yorkshire's biggest employers, we are keenly involved in working with local communities and the environments they live in. We believe one of the best ways we can make a difference is through volunteering. Our people love getting out and doing their bit, so we've built our most ambitious community initiative to date, 'Hands Up'. This will operate across four inspiring themes and provide our colleagues with a number of different opportunities to get involved while helping them to gain valuable new skills.

Water and Beyond focuses on volunteering initiatives that allow our colleagues to go out into their local communities and really make a difference. Our Right to Read programme allows our volunteers to help primary school children improve their reading. Our STEM ambassadors introduce pupils to Science, Technology, Engineering and Maths (STEM) in a fun and interactive way that encourages life-long learning. We train our people to be School Governors where we offer support and advice to schools. We also run Speakers Panel where colleagues talk to our customers and community groups about local issues and activities that relate to Yorkshire Water.

Water Force involves us going into partnership with a number of organisations including the Royal Society for the Protection of Birds, the Yorkshire Wildlife Trust, Sheffield Wildlife Trust and the Aire Rivers Trust to conserve and enhance the Yorkshire region.

Water Exchange is a great opportunity for us to engage with local school children about issues facing the water industry such as water treatment, water conservation, pollution and water in the developing world.

WaterAid in Action sees us continue to support WaterAid in Yorkshire's fundraising activities. We've also joined forces with WaterAid Ethiopia to help ensure that vital work continues to provide clean water and sanitation to those who desperately need it.



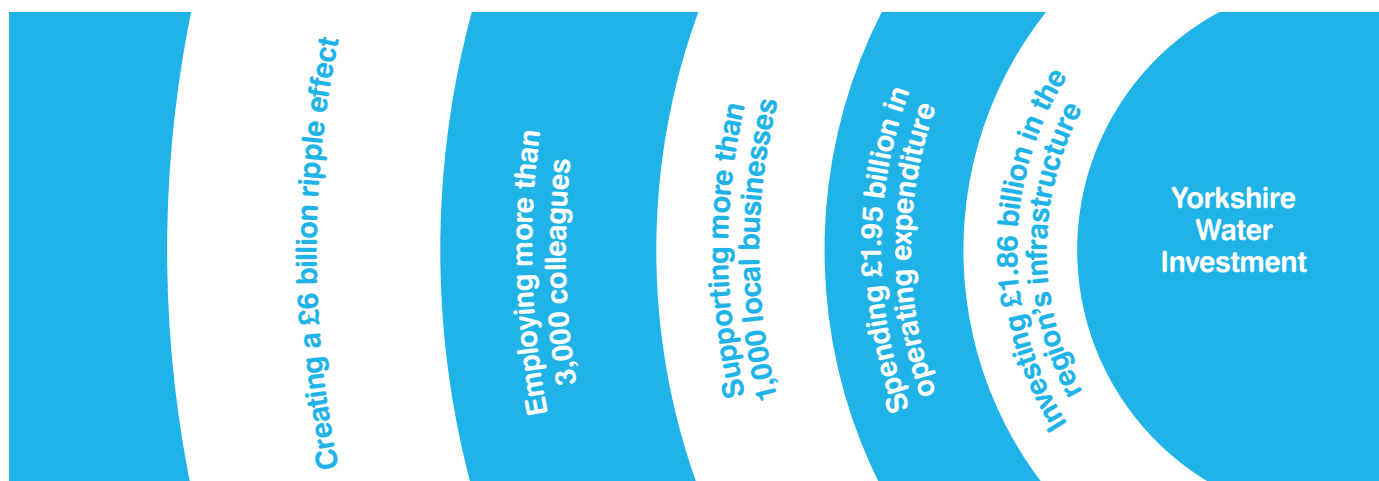
Case study

Working in partnership with WaterAid Ethiopia

Here in Yorkshire, taps run and toilets flush. We take safe water for granted and believe it's a basic human right. However, globally 783 million people don't have access to safe water and 2.5 billion people don't have access to adequate sanitation.

Diarrhoea kills around 2,000 children a day, more than AIDS, malaria and measles put together. So far we've raised more than £4 million for WaterAid and we believe we can do more. We believe that we can help to change this by donating skills as well as through our fundraising activities. We want to champion safe water globally so we've joined up with the WaterAid team in Ethiopia to make a difference to the 37 million people there who don't have access to clean safe water and the 55,000 children who die each year from diseases caused by unsafe water and poor sanitation. Through remotely sharing our expertise and knowledge we can help to create a lasting impact.

Figure 12A
The Ripple Effect on Yorkshire's economy



12.4 The Ripple Effect – Our impact on Yorkshire's economy

Yorkshire Water plays an important role in underpinning the economic wellbeing of our region. We don't just pump water across our region, we also pump millions of pounds into the local economy. We are proud to serve Yorkshire and unlike many other large organisations, we're regionally focused and the majority of the money from our investment will end up in the pockets of the people of Yorkshire.

Across our whole business we employ just over 3,000 staff with the biggest concentration of staff in Bradford, Leeds and Sheffield. Our operational teams are based in local offices where they can take responsibility for local programmes of work and respond quickly to local issues. We also work with around 1,000 individual suppliers across the Yorkshire region.

For every £1 we invest, the knock-on effect in the wider Yorkshire economy is almost double. This ripple effect is a major contributor to Yorkshire GDP. Our current investment in bathing waters also gives a massive tourism boost to the region, with the potential for more Blue Flags and cleaner seas. Our land and reservoirs, so much a part of the fabric of our Yorkshire landscape, are visited by millions of walkers, cyclists and bird-watchers every year. As a company we are proud to play our part in leading Yorkshire's economic, environmental and sustainability agenda.

13.

What happens next?

Thank you for taking the time to read our Wholesale Waste water plan for the next five years. We hope that our plan inspires you about the future of Yorkshire's waste water service.

In addition to this plan, we have produced a summary of our five and 25 year plans, as well as the main Yorkshire Water Business Plan, plus a plan for each of the other three price controls we will operate. We have also published key documents that have contributed to the development of our plans. Please feel free to view these documents by clicking on the links below or visiting our website **Blueprintforyorkshire.com**.


We submitted our plans to Ofwat on 02 December 2013. Ofwat will announce its initial assessment of our plan in spring 2014, and in late 2014 finalise how much we will charge customers for the next five years.

The new prices will come into force on 01 April 2015. We will continue to update customers and stakeholders on our progress and publish Ofwat's final determination of our prices, and what it means for them, in a clear customer guide in 2015.

In the meantime, we will continue to work closely with the Customer Forum to ensure that we listen and respond to customers views and use them to shape the direction of our business. We believe our plan is well evidenced and balances investment in customer priorities and the environment, at a price customers are willing and able to pay. We have consulted with customers and other stakeholders every step of the way in developing the Right Outcome for Yorkshire and welcome any further feedback you may wish to share with us.




**Our Blueprint for Yorkshire
The next 25 years**

 [View this document online](#)




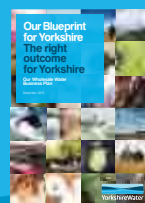
The Yorkshire Water Business Plan

 [View this document online](#)




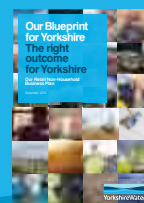
The summary of our five year plan

 [View this document online](#)




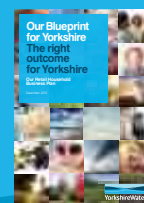
The Wholesale Water Business Plan

 [View this document online](#)



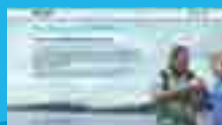
The Retail Non-household Business Plan

 [View this document online](#)



The Retail Household Business Plan

 [View this document online](#)



Supporting Documents

 [View supporting documents online](#)

14.

Contact us

Want to find out more about our Blueprint for Yorkshire?



Visit our website
blueprintforyorkshire.com



Write to us
Yorkshire Water Services
Western House
Halifax Road
Bradford BD6 2SZ



Email us
blueprint@yorkshirewater.co.uk



Call us
0845 1 24 24 24



Speak to one of our online team
yorkshirewater.com/contactus



Find us on facebook
facebook.com/yorkshirewater



Follow us on twitter
[@YorkshireWater](https://twitter.com/YorkshireWater)

Other useful Links

Yorkshire Water
yorkshirewater.com

Ofwat
ofwat.gov.uk

Consumer Council for water
ccwater.org.uk

Environment Agency
environment-agency.gov.uk

Drinking Water Inspectorate
dwi.defra.gov.uk

Natural England
naturalengland.org.uk

Appendix 1

Wholesale Water and Wholesale Waste Water Service Interaction

Our Wholesale Waste water business commits to working together with all other areas of the regulated business (Wholesale Water and retail) in times of business stress to minimise any impact on services received by customers. We envisage this may be in times of extreme weather events, or at times when focused resources are required to help ensure service is maintained. In reality, this means flexible use of our resources across the whole of our business, mitigating the impact of extreme or unforeseen events on continuous delivery of services to customers

The main area of interaction between Wholesale Waste water and Wholesale Water is delivery of the outcome 'We protect and improve the water environment'. There is an incentive for Wholesale Waste water and Wholesale Water to be more effective and efficient in delivery of this outcome by jointly developing RTriveri. This allows us to consider the total water environment, using the natural watercourses as links between the water network and the sewerage network. By understanding the interaction of the whole system, efficiencies can be made which can benefit our customers through reduced use of energy and chemicals, and/or which improve the water environment.

Wholesale Waste water commits to work with Wholesale Water to further develop RTriveri, specifically by understanding the opportunities to alter or control releases from the sewer network and waste water treatment works, and the interaction this can have with Wholesale Water activities of water abstraction and release. Wholesale Waste water is perhaps best placed to lead this activity as the cost saving and benefits are most likely to be reflected in the costs experienced by Wholesale Waste water. However, we also consider that this is for the benefit of all our customers who would see lower bills overall. Wholesale Waste water considers that the impact of RTriveri delivered in 2015-2020 has potential opportunity to reduce some Wholesale Waste water costs (for improvements which relate only to Wholesale Waste water activities), but is likely to be immaterial for Wholesale Water costs.

Wholesale Retail Service Interaction

Wholesale Waste water is dependent on Retail Services for provision of the following:

- Meter readings (water and waste water where installed)
- Collection of wholesale revenues and transfer to wholesaler
- Customer behaviour influencing and communications to avoid sewer abuse
- Communication of service information to customers (real-time reactive, proactive and general information)
- Network call handling.

These services will specifically enable Wholesale Waste water to deliver its performance commitments for the outcome 'We take care of your waste water and protect you and the environment from sewer flooding' by contributing to the following measures:

- Internal flooding – maintaining service levels
- External flooding – improving data
- Reliability and Stability factor – waste water networks: maintaining service levels for blockages, flooding and pollution.

Wholesale Waste water will work closely with Retail Services to ensure they help us deliver our outcomes for customers. We will also ensure that they are appropriately funded for these activities

Wholesale Waste water recognises Retail Services will require information or services from Wholesale Waste water for:

- Meter replacement or provision (waste water meters)
- New development connections
- Wholesale tariff billing and information
- Good customer service in wholesale activities
- Wholesale product information, including business customer service provision and industrial waste consenting
- Provision of service information (real-time reactive, proactive and general information).

Appendix 2

Customer Forum Membership

Organisation	Representing	About the Organisation/Individual
Independent Chair	Chair of the Forum	Chairs the forum, ensuring that Yorkshire Water is properly challenged over the quality of its engagement with customers, the integrity of interpretation of customer views and the proper inclusion of customer views in Yorkshire Water's business plan. The chair is responsible for issuing a report, on behalf of customers, to Ofwat on the development and acceptability of Yorkshire Water's business plan
Andrea Cook		
AgeUK	Domestic Customer Representative	Aims to improve later life for everyone through its information and advice, services, campaigns, products, training and research. It works for a world where, among other things, older people are equal citizens with equal rights, have enough money for a secure and decent life, have access as consumers to the products and services they need at a price they can afford, have the opportunity to live healthier, longer lives and to enjoy a sense of well-being and live in homes and neighbourhoods that are safe and comfortable and which enable them to lead fulfilling lives.
Citizens Advice Bureau	Domestic Customer Representative	Aims to provide the advice people need for the problems they face and improve the policies and practices that affect people's lives. It provides free, independent, confidential and impartial advice to everyone on their rights and responsibilities. The Bureau values diversity, promotes equality and challenges discrimination.
Local Government Yorkshire and Humber Region	Local Government Representative	Represents the Yorkshire and Humber Local Authorities, and is currently Cabinet Member for Planning, Transport & Sustainability at the City of York Council and is also an active member on the Yorkshire and Humber Regional Flood and Coastal Committee.
Confederation of British Industry	Business Customer Representative	Aims to deliver results for business by lobbying and campaigning by keeping business interests at the heart of policy in Westminster, the devolved administrations, across the UK regions and internationally. It works to deliver benefits for consumers and communities
Consumer Council for Water	Customer Representative	Representing water and sewerage consumers in England and Wales, its job is to make sure that the consumers' collective voice is heard in national water debate and that consumers remain at the heart of the water industry. It will take up consumers' complaints if they have tried and failed to resolve issues with their water companies

Organisation	Representing	About the Organisation/Individual
Drinking Water Inspectorate	Regulator Representative	Aims to help protect public health and maintain public confidence in drinking water through independent, effective and proportionate regulation of the quality of drinking water supplies, and by providing independent technical advice on all aspects of drinking water quality. Its main job is to check that the water companies in England and Wales supply safe drinking water that is acceptable to consumers and meets the standards set down in law
Environment Agency	Regulator Representative	Aims to protect and improve the environment, and to promote sustainable development. It plays a central role in delivering the environmental priorities of central government. Its job is to create a better place for people and wildlife and to do it in an environmentally sensitive way
Environment Advisory Panel	Environment Representative	Chair of Yorkshire Water's independent Environment Advisory Panel and has a good understanding of the environmental issues and challenges that Yorkshire Water faces, having participated in PR09 and PR14 planning. Awarded an OBE for Services to the Environment. Minister-appointed chairman of the statutory Environment Agency's Fisheries, Ecology and Recreation Advisory Committee for the North East and Yorkshire regions. Is the Managing Director of Tyne Team Ltd, a consultancy business providing innovative services to public and private sector on rural issues, sustainable communities and environment conservation. Current honorary appointments include the elected chair of chairs for the Regional Rural Affairs Forums, leading the chairs' interface with ministers and government, and also serving on the Rural Development Programme England performance monitoring committee. Serves as elected chair of North East Rural Affairs Forum as well as serving as vice chair of the North East Regional Development Board, the SustainE board, and the North East Commission for Rural Health, and acts as an adviser to the regional committee of the Country Landowners Association. Previous relevant professional experience includes Chief Executive of Northumberland Wildlife Trust and Area Manager for the National Trust.
Federation of Small Businesses	Business Customer Representative	Aims to be the most effective organisation promoting and protecting the interests of the self-employed and small business owners within the UK. Formed in 1974, it has 200,000 members and is committed to delivering a wide range of high quality, good value business services to members
Natural England	Regulator Representative	Its remit is to ensure sustainable stewardship of the land and sea so that people and nature can thrive. It has a responsibility to see that England's rich natural environment can adapt and survive intact for future generations to enjoy. It provides practical advice, grounded in science, on how best to safeguard England's natural wealth for the benefit of everyone
University Professor	Independent Academic	Has specific interest in the areas of water security and water balance. Research interests focus on environmental management, with particular emphasis on the following fields: resource assessment, natural hazards, microbial dynamics, water colour processes and control, catchment planning and risk, decision support systems, and water demand assessment. Previous research experience also includes diffuse pollution assessment and forecasting, biofuel futures in the energy economy and alternative disputes resolution
Strategic Management Consultants	Report Advisor to the Forum	Although not a member of the Forum, they provide technical support in documenting the challenge the Forum has undertaken and produces the report to Ofwat.

Appendix 3

Wider stakeholder engagement programme

The table below summarises the wider engagement activities that we have undertaken for PR14 business planning.

Engagement Project	
Through the eyes of a Yorkshire Family	<p>To engage our customers in our daily operations and plans for the future we decided to do this through the eyes of a Yorkshire Family who were encouraged to talk about their water usage and their aspirations for the future. During summer 2013 we took the family out on a series of experience days to show-case the wide range of services which we provide.</p> <p>The experience days were filmed, both by ourselves and by the family. We made extensive use of social media, especially twitter, to promote their experiences and used the video footage of the four experience days to help promote our plans on our website and at events. The videos promoting the experiences of our Blueprint Family have been viewed to date by 385,673 people.</p>
Awareness raising through existing campaigns	<p>Yorkshire Water has for many years run a number of campaigns that interact with customers to raise awareness such as our water efficiency and sewer flooding campaigns.</p> <p>The PR14 engagement campaign has utilised both of these campaigns to raise awareness about the services we provide and the value customers get from their water bills and to highlight how customers can share their views about our plans.</p>
Speakers' panel	<p>As part of strengthening our engagement with customers we have proactively attended meetings of local organisations such as community groups, parish councils, residents groups and businesses to present information about the price review process and highlight how customers can share their views on our plans. This programme has reached 55 local groups and approximately 1,100 customers.</p>
Education visits	<p>We also want to hear from our customers of the future and have encouraged feedback through our education tours for primary school children using a video booth at Esholt Education Centre to capture children's views.</p>
Face-to-face Events	<p>We held events in a wide range of our towns and cities as well as in market towns across the region such as Market Weighton, Hawes and Maltby. We have also attended a number of shows and festivals including the Great Yorkshire Show and the North Yorkshire County Show to talk to customers about what we as a company do, the price review process and how customers can get involved. Staff attending the events was briefed on recent and future planned investment in the area, so that when talking to customers we were able to tailor our discussions to what the future really means for that area.</p>
Online advertising	<p>We also promoted some of the key messages from 'Blueprint: The right outcome for Yorkshire' through targeted online advertising.</p>
Wider stakeholder engagement	<p>To ensure our plans are reflective of our region, we also consulted Members of Parliament, Local Authority Leaders, regional and environmental representatives such as Visit Yorkshire and Groups which represent our most vulnerable customers. In July 2013 we shared our vision for the future at our Blueprint for Yorkshire stakeholder conference. This was an opportunity to share our vision for the future with our key partners and to get their feedback on our plans for the next 5 and 25 years.</p>