This document provides details of our long term strategy and AMP7 delivery plans for the Water Resources price control. It provides details of our costs relative to customer outcomes and performance commitments and provides details of the activities we expect to undertake to achieve our targets.
Chapter 7: Supplementary Document - S6007

Contents

1 Executive Summary ................................................................. 4

2 Water Resources Business Context .................................................. 8
  2.1 Water Resources Activity ............................................................... 8
  2.1.1 Provide customer centric services ............................................. 8
  2.1.2 Deliver safe, compliant and resilient services ......................... 9
  2.1.3 To deliver efficient services at the lowest sustainable cost to generate the maximum financial benefit. 9

2.2 Overview of Our Operations .......................................................... 9

2.3 Current and Future Drivers .............................................................. 10

3 Strategic Overview ............................................................................ 12
  3.1 Current Performance ................................................................. 12
  3.2 Our Strategy for AMP7 and Beyond ............................................ 12
  3.3 Use of Markets ........................................................................ 13

4 AMP7 Delivery Plan ........................................................................ 16
  4.1 Introduction ............................................................................. 16
  4.2 How to navigate the detail of this business plan ....................... 18

5 Outcome: “You will have a reliable supply of water now and in the future” .............................................. 18
  5.1 Introduction ............................................................................. 18

5.1.1 Developing the Plan with Customer Views ............................ 18
  5.1.2 Risk and Resilience ............................................................... 19
  5.1.3 Activities and Cost .............................................................. 19
  5.1.4 The plan for 2020-2025 ....................................................... 19

5.2 Keeping Our Reservoirs Resilient ..................................................... 20
  5.2.1 Customer Views ................................................................. 20
  5.2.2 Risk and Resilience .............................................................. 21
  5.2.3 The plan for 2020-2025 ....................................................... 34
  5.2.4 Performance Commitments and Costs ............................... 34

5.3 Raw Water Infrastructure Resilience .............................................. 36
  5.3.1 Customer Views ................................................................. 37
  5.3.2 Risk and Resilience .............................................................. 37
  5.3.3 The plan for 2020-2025 ....................................................... 40
  5.3.4 Performance Commitments and Costs ............................... 44

6 Outcome: “The natural environment is protected and improved in the way we deliver our services”.............. 45
  6.1 Introduction ............................................................................. 45

6.1.1 Developing the Plan with Customer Views ............................ 45
  6.1.2 Risk and Resilience .............................................................. 46
  6.1.3 Activities and Cost .............................................................. 46

Copyright © United Utilities Water Limited 2018
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.4</td>
<td>The plan for 2020-2025</td>
<td>46</td>
</tr>
<tr>
<td>6.2</td>
<td>Catchment Management</td>
<td>47</td>
</tr>
<tr>
<td>6.2.1</td>
<td>Customer Views</td>
<td>48</td>
</tr>
<tr>
<td>6.2.2</td>
<td>Risk and Resilience</td>
<td>48</td>
</tr>
<tr>
<td>6.2.3</td>
<td>The plan for 2020-2025</td>
<td>50</td>
</tr>
<tr>
<td>6.2.4</td>
<td>Performance Commitments and Costs</td>
<td>55</td>
</tr>
<tr>
<td>6.3</td>
<td>Abstraction Incentive Mechanism (AIM)</td>
<td>56</td>
</tr>
<tr>
<td>6.3.1</td>
<td>Customer Views</td>
<td>57</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Risk and Resilience</td>
<td>57</td>
</tr>
<tr>
<td>6.3.3</td>
<td>The plan for 2020-2025</td>
<td>58</td>
</tr>
<tr>
<td>6.3.4</td>
<td>Performance Commitments and Costs</td>
<td>59</td>
</tr>
<tr>
<td>6.4</td>
<td>Improving The Water Environment</td>
<td>61</td>
</tr>
<tr>
<td>6.4.1</td>
<td>Customer Views</td>
<td>62</td>
</tr>
<tr>
<td>6.4.2</td>
<td>Risk and Resilience</td>
<td>62</td>
</tr>
<tr>
<td>6.4.3</td>
<td>The plan for 2020-2025</td>
<td>62</td>
</tr>
<tr>
<td>6.4.4</td>
<td>Performance Commitments and Costs</td>
<td>68</td>
</tr>
<tr>
<td>7</td>
<td>Forecast Totex to Deliver the Plan</td>
<td>69</td>
</tr>
</tbody>
</table>
1 Executive Summary

What we have delivered in AMP6

- We led the industry with the introduction of our reservoir risk management programme, which has delivered risk reduction projects at 18 reservoirs.

- Through our catchment management programme, we have introduced 31 drinking water safeguard zones, designed to protect raw water quality for customers.

- Introduced the Abstraction Incentive Mechanism at 4 sites, through which we protect the most fragile river habitats at times of low river flow.

- Our industry leading Sustainable Catchment Management Programme (SCaMP) has delivered improved water quality across 207,800 hectares of owned and non-owned catchment land.

What we are delivering in AMP7

- Management of 600,000 hectares of both owned and non-owned catchment land, protecting drinking water quality through 16 major land management projects.

- Two Abstraction Incentive Mechanism sites will be operated during AMP7, to protect vulnerable habitats.

- Delivery of 49 environmental improvement projects included on the Water Industry National Environment Programme.
This business plan provides details of our long term strategy and 2020-2025 (AMP7) delivery plans for the Water Resources price control. It provides additional details, at a price control level, of how we expect costs to map across customer outcomes and performance commitments and in particular provides detail of the activities we expect to undertake to deliver the targets we have proposed.

During the period 2020-2025 we expect to see a further development of competitive markets in the water industry. Our business plan for 2020-2025 will enable us to improve our core service to customers, reliably offering great quality raw water for an efficient price, whilst simultaneously enabling us to make maximum use of the opportunities that a competitive market will bring.

Our focus for 2020-2025 will be great customer service, delivering great quality water for an efficient cost. We will ensure that we are the supplier of choice for United Utilities Water Network+ and other current customers, and we will actively seek new customers. We will use innovation to drive efficiency, and we will ensure that we have the capacity and resilience to meet customers’ needs. We will also position ourselves to be able to take full advantage of future nationwide water trading opportunities, without disadvantaging existing customers.

The United Utilities Water Resources business area will continue to be an integral part of the water production chain, but we will also realise ‘added value’ for customers, by exploring opportunities around public recreational and commercial access to our land, and the role that our facilities can play in flood protection.

Through our current 2015-2020 business plan we have significantly improved the service that we offer. We made improvements in the raw water quality that we supply, through our Sustainable Catchment Management Programme (SCaMP). This programme saw active land use management across 207,800 hectares of catchment land, in order to minimise the impact of land use activities on water quality.

Similarly, our business plan for 2015-2020 included delivery of our industry leading Portfolio Risk Assessment pro-active risk management approach to dam safety. This programme also saw the rate of reservoir serviceability increase, with fewer reservoirs requiring a safety led reduction in stored water. By increasing the volume of water we are able to store, this has improved the resilience of our raw water supply.

Customers are at the heart of United Utilities business. We have listened to what customers have told us are their priorities over many years. We have also engaged with customers specifically in relation to the development of our business plans, to understand what customers expect from us in future.

Customers told us that their priorities were the safety and cleanliness of their drinking water supply, and the reliability of that supply. Customers also told us that they were unable to afford significant bill increases in order to fund service improvements. Our business plan for 2020-2025 is focussed on these things that matter most to customers.

United Utilities’ plans to deliver safe clean drinking water are primarily set out in the United Utilities Water Network+ business plan document S6006. However, the drive to ensure great water quality for customers begins before water is treated. By actively managing land use in the catchment we can prevent raw water contamination from pesticides and farming derived nutrients. By maximising raw water quality, we support our partners in United Utilities Water Network+. Great raw water quality ensures that our water supply can be cost-efficiently treated to the standards that customers rightly demand. Great water quality is an important part of the service that we offer, and helps to ensure that we are the supplier of choice as we move towards greater market competition.

---

**Customer Priorities:**

**Safe and clean drinking water.**

A reliable supply of water now, and in the future.

The environment protected and improved by the way we deliver our services.

No significant bill increase.
Our 2020-2025 Catchment Management programme is an evolution of previous SCaMP programmes, through which we will deliver projects in partnerships with other organisations in order to secure efficiency. Using partnership delivery routes we will deliver catchment management across 600,000 hectares of catchment land, almost 3 times more than during our previous business plan period.

In response to customer priorities, United Utilities has promised customers that we will deliver the outcome “You will have a reliable supply of water now and in the future”. We recognise the disruption and distress that a failure of the water supply would bring to customers, and we have identified a number of areas where we will improve the resilience of our operations to reduce the potential for future service interruptions.

We will build on the experience of delivering the Portfolio Risk Assessment, to continue to manage the risk associated with our fleet of reservoirs and to continue to ensure their performance. We achieved efficiencies in a number of areas associated with the Portfolio Risk Assessment in 2015-2020, and we will apply this learning to secure further efficiencies in future. [\(\Rightarrow\)] We have also reviewed the resilience of our wider network of raw water supply infrastructure, and we plan resilience improvements to ensure the continued operation of critical elements of our infrastructure.

Business Plan Key Activities For 2020-2025:
- Keeping Our Reservoirs Resilient.
- Raw Water Infrastructure Resilience.
- Catchment Management.
- Abstraction Incentive Mechanism.
- Improving the Water Environment.

Many customers told us that they valued the role that we play in environmental management across the North West, although there was less appetite for customers to fund environmental management through bill increases. We have committed to the outcome “the natural environment is protected and improved by the way we deliver our services”, and to deliver this outcome with minimum impact for customers. Our Catchment Management programme includes elements of environmental protection measures, in addition to the primary focus on drinking water quality. Beyond our catchment management programme we (along with other WASC) have obligations under the Water Industry National Environment Programme (WINEP). Recognising that customers cannot afford a bill increase to fund environmental activity, we offered regulators a strong, evidenced based challenge, which has seen the scope of our WINEP obligations significantly reduce. This was not solely a cost saving exercise, but also ensured that there was robust evidence that our planned environmental management activities would be focussed on those delivering the greatest benefit for the level of investment. Finally we will continue to operate the Abstraction Incentive Mechanism at vulnerable river abstraction locations, in order to minimise the potential for abstraction to cause environmental impacts.

The key messages from customers were that they expect improvements in the reliability and safety of their water supply, but that because of the economic challenges facing communities in the North West, they were not able to support a significant bill increase to fund improvements.

This business plan sets out how United Utilities will operate the Water Resources price control business area to meet customer expectations, delivering an efficient and resilient supply, and preparing ourselves for an increasingly open market. We will make investments across 2020-2025 to maintain and improve our services, at a total expenditure cost of £374.43m.

This plan will build on the successful delivery of our United Utilities Water Services business plan for 2015 to 2020 (AMP6). In AMP6 we have delivered our performance commitments to customers on schedule, and slightly below the costs that we forecast in our business plan, thanks to a commitment to ongoing efficiency. However, unlike previous business plans, the Water Resources price control business area plan for 2020-2025 will be our first to focus solely on our Water Resources operations.
Beyond 2025 we will continue to provide great service to customers, whilst seeking to expand our market share by attracting new customers for our service. We seek to play a major role in future nationwide water trading arrangements.

Water trading could potentially provide a new income stream, which may contribute towards future service improvements in the North West, helping to keep existing customers bills low. We will ensure that our water trading agreements do not place North West customers at greater risk of supply interruptions, nor at any other disadvantage.

We will maintain our supply demand headroom, primarily as a resilience measure for existing customers in the North West. This headroom will enable us to continue to maintain supplies in the event of a loss of a major water source (such as flood related contamination of a large reservoir). Any water made available for a national trade will be supported through the commissioning of new sources, so that existing customers in the North West will not see any reduction in the resilience of their supply.

The south east of England is projected to see significant population growth in the coming decades. The water resources currently available for water customers in the south east are unlikely to be able to meet this growing demand. There is a national drive by regulators and the Government to see a UK wide approach to the utilisation of water resources. The future vision is for the construction of national water transmission infrastructure to enable those regions with a resilient supply to be able to supply those areas of the country which are forecast to experience a deficit in coming years.

The exact methods as to how this national bulk transfer of water will be achieved are still evolving. Significant progress has been made with completion of the recent Water UK study and discussions between United Utilities, Severn Trent Water and Thames Water are in progress. Water trading scenarios will form some of the pathways that are considered in the next United Utilities Water Resources Management Plan.
2 Water Resources Business Context

2.1 Water Resources Activity

United Utilities currently serves 7 million people and 200,000 businesses across North West England. Communities in the North West have experienced significant economic challenges in the last 10 years. Customers in the North West tell us that they cannot afford significant increases in their water bills.

The United Utilities Water Resources business area obtains water from the natural environment, and makes that water available for treatment and supply to customers by our partners in United Utilities Water Network+.

We supply our partners in United Utilities Water Network+ with over 1,500 million litres of raw water a day. We also supply raw (untreated) water to agricultural and industrial customers across the North West. We recognise that our partners in United Utilities Water Network+ have developed a bid assessment framework, through which they will select preferred suppliers of raw water. We will seek to position our business area to ensure that we offer great value and efficiency, and that we can effectively compete in this emerging market system.

Furthermore, we will seek new customers for our raw water services to maximise the value that can be obtained from our business. In future, this may include novel arrangements involving the supply of water to customers outside the North West of England. Any water trading activity we undertake will be at no net cost for customers in the North West, and will not impact upon the resilience of the service that we currently provide.

The Water Resources business plan will ensure that our product, raw water services, is attractive not just in terms of cost, but also taking account of quality, quantity and resilience. We will manage our catchment land in a sustainable manner with the aim of delivering raw water of the highest quality possible, thereby lowering the cost of water treatment. We will work with farmers, managers and owners of non-United Utilities catchment land to deliver reciprocal improvements through our catchment partnership approach. Key to our business success will be the protection of our abstraction licence rights and ensuring that abstraction is undertaken in accordance with all regulatory requirements, especially environmental legislation. As well as quality, a key feature of the Water Resources business area will be its water resource capacity (with its associated maintenance and risk management requirements) and the resilience benefits which that capacity can bring.

This business plan was developed in the context of an evolving regulatory landscape. Ofwat has shared a vision of new markets in Water Resources, with alternative providers and long-term, stretching service commitments driven by customer needs and requirements.

Our business vision is “To run our existing service efficiently and ensure new capacity options are competitive in terms of cost, quality, quantity and resilience”. This is supported by three goals:

2.1.1 Provide customer centric services.

We aim to be a leading client centric water resources service provider who understands current and future customers’ requirements and delivers to their expectations.

Initially, our key focus will be on our relationship with existing clients who we provide a resource to. During 2020-2025 our key client will be United Utilities Water Network+. The interests of water bill paying customers will be reflected in the service level agreements and contracts we develop. Our client base may extend to include others who require water resource for their business interests such as other water companies, and additional industrial and agricultural customers.
2.1.2 Deliver safe, compliant and resilient services.
Our aim is for our customers to have trust and confidence in the services they receive. To achieve this we will continue to ensure safe and effective water resources management. We will protect our capacity through managing equipment outage and challenging the regulators where their decisions could impact our capacity (e.g. the Water Framework Directive no-deterioration regulations, and the proposed abstraction licence reviews). We will deliver services to meet existing safety and environmental regulations whilst managing the risk of potential future changes. To achieve this we will take a balanced approach to asset investment and market opportunities to provide safe, compliant and resilient services. This will help retain and build our market share.

2.1.3 To deliver efficient services at the lowest sustainable cost to generate the maximum financial benefit.
In the future we will maximise the financial benefits of Water Resources services to ensure that our business can fund its activities, keep water bills low and generate returns for shareholders. We aim to achieve the lowest cost to serve. We will have full visibility and understanding of costs, performance and value generation to maximise the value/profit from water resources. A low cost will protect customers, and will help us to compete on price, improve our profit margin, maintain and increase our market share where we know it to be profitable and provide financial returns.

2.2 Overview of Our Operations

United Utilities Water Resources business is the largest commercial land owner in England. We manage 55,000 hectares of catchment land across North West England. Much of our land is home to protected habitats, and we operate significant land holdings in the Lake District and Peak District National Parks.

Our land holdings are the ‘catchment land’ which drain to our abstraction points (reservoirs, boreholes and rivers) where we obtain the water that we supply for customers.

We actively manage our catchment land in order to maximise the quality of the water we supply. Our catchment land is also home to a large number of agricultural tenant farmers, and much of the catchment is open to public access and is widely used for recreation. Our catchment management programme seeks to efficiently maximise raw water quality, whilst delivering our obligations under environmental regulations and creating added value for our tenants and visitors.

Our property portfolio includes the largest fleet of reservoirs in the UK. We operate 165 reservoirs, some of which date back to the 18th century. Our reservoirs are key to our ability to supply water to our customers, as 64% of the water that we supply comes from our reservoirs. We manage our fleet of reservoirs to ensure that they can be operated in a reliable and safe way, providing great water for customers now and in the future.

In addition to our reservoirs, we also abstract water from 83 groundwater borehole locations, and from 31 rivers. We operate an extensive network of aqueducts and pumping stations to enable us to transport water to where it is required for customers. Our Water Resources business area is responsible for the management of this raw water supply infrastructure, and we will ensure the continued resilience and reliability of this system.

The way in which we manage our catchment land, and the act of removing water from the natural environment, can have an impact on sensitive habitats. We have regulatory obligations to manage our operations in a way that protects and enhances the environment.
2.3 Current and Future Drivers

Our business plan will be delivered against an evolving regulatory landscape that is changing at a fast pace. Ofwat has clearly described a vision for the water industry in England that will make far greater use of competitive incentivisation.

We will continue to develop business model options to determine the most appropriate to embed the Water 2020 vision of future market operations. Financial accounting separation is currently our preferred option. The significant costs involved in creating separate systems (e.g. business systems, asset management and project management processes, business support functions), mean complete business separation is not our preferred model. However, we are developing an agile and adaptable business model which will be responsive to future changes in customer priorities, regulatory frameworks and commercial pressures.

We are the custodians of some substantial Water Resource infrastructure, which has the capacity to be used to supply more water than existing customers usual daily needs. We believe that we are in a strong position to expand our customer base, and to engage with the market across a wider area than our current area of operations. We also recognise that our partners in United Utilities Water Network+ have developed a bid assessment framework, through which they will select preferred suppliers of raw water. We will seek to position our business area to ensure that we offer great value and efficiency, and that we can effectively compete in this emerging market system.

The United Utilities Water Resources Management Plan (managed by the United Utilities Water Network+ team) will demonstrate how it has developed options to “bid-in” to the Water Network+ supplier process. Water Network+ will make clear that it has not given undue preference to United Utilities Water Resources over third party supplier options.

We will publish information on our company website, which we understand Ofwat will link to in order to create a data platform for water resources markets. System Operator functions will be carried out by the incumbent water company (e.g. United Utilities Water Network+), rather than through an independent trading platform.

Information will be made available that will enable others to offer services if they can provide them at a lower cost and/or of a higher quality than existing providers.

In 2020-2025 United Utilities Water Network+ will be seeking to secure best value water for its customers. We will ensure that the options we put forward as part of the Water Resources Management Plan process (the bidding market) are as competitive as they can be to ensure we retain our market share. The process will be transparent and competitive. We believe that our bids will compare well against other providers’ options particularly when considerations such as water quality and reliability of supply are considered.

One of the themes that emerged from our conversations with customers was that customers placed a high priority on planning for the future. In particular, customers wanted us to ensure that we would have sufficient water supplies available for a growing population.

- The North West has seen a significant fall in demand for water in the period since privatisation.
- We reviewed the predictions of current and future customer demand that were developed as part of the draft United Utilities Water Network+ Water Resource Management Plan 2019.
- We will ensure that we have sufficient Water Resource capacity available to meet customer needs for the long term.

Business demand has reduced since the early 1990s, in part due to the closure or downsizing of a number of manufacturing businesses over this period, as many manufacturing firms have relocated operations overseas.
during this period. There have also been great strides made in reducing leakage from the network, which again has been a factor in reducing the demand for water in the region.

Figure 1: Trends in water demand since privatisation

![Water demand in the North West since privatisation](image)

Whilst various factors have caused water demand to reduce over the last 25 years, there are also inflationary trends emerging that may slow the rate of reduction in demand in future. The population of the North West is projected to grow by approximately 6% over the period 2016 to 2041, and this trend is set to accelerate due to changes in patterns of migration (for example the Office of National Statistics reports more people seeking asylum in the North West than any other region outside of London). The growing population may offset some of the future reductions in demand delivered through better water management by United Utilities Water Network+.

Figure 2

![Predicted future water demand (from draft WRMP 19)](image)

We will ensure that our long-term sustainable water resource capacity is capable of meeting forecast customer needs. We will work closely with our partners in United Utilities Water Network+ to ensure that future forecasts of demand are built into our plans, and that sufficient capacity is available.
3 Strategic Overview

3.1 Current Performance

This section sets out our AMP 6 performance and investments, which have been the starting point of our longer term strategy to respond to our external environment. It mainly provides new information not covered elsewhere in the submission but also summarises text from Use of markets and innovation – ref Chapter 6.

For the period 2015-2020 the Water Resources price control business area has 2 reportable performance commitments. These performance commitments relate to our programme of risk management of our fleet of reservoirs (Resilience of Impounding Reservoirs) and our progress with delivering projects on the National Environment Programme and Abstraction Incentive Mechanism (Km of Rivers Improved).

Table 1: Forecast end of AMP performance

<table>
<thead>
<tr>
<th>Performance Commitment</th>
<th>Incentive Type</th>
<th>Actual*</th>
<th>Forecast*</th>
<th>Projected AMP6 Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resilience of Impounding Reservoirs</td>
<td>Under-performance only</td>
<td>£0m</td>
<td>£0m</td>
<td>£0m</td>
</tr>
<tr>
<td>Km of Rivers Improved</td>
<td>Under and out performance</td>
<td>£0.0560 m</td>
<td>£0.1848 m</td>
<td>£0.1848 m</td>
</tr>
<tr>
<td>Water Resources Net: 2015/16-2017/18 (Excludes Water Network+ Measures)</td>
<td></td>
<td>£0m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Our AMP6 programme is on target to meet our performance commitments with no underperformance incentives expected. We are forecasting a positive outperformance of the Km of Rivers Improved measure, demonstrating our commitment to efficient environmental management.

3.2 Our Strategy for AMP7 and Beyond

UU is committed to delivering reliable, safe, clean and resilient water supplies to three million residential customers and around 200,000 business customers in the North West of England at a fair price. Our business vision is:

_to provide best value and sustainable water supplies to customers in the North West in the long term, supported by water trading opportunities where they are the most efficient option_

We have a strategy in place to deliver a long-term, best value and sustainable plan for water supplies. We have water resources to meet demand for the next 25 years, with sufficient capacity to ensure long term resilience. Our new bid assessment framework is aimed to stimulate water trading markets and our robust water resources position underpins our proactive approach to promote water trading. We will deliver a stretching 15% reduction in leakage over the 2020-25 period, a step change in our historic performance, and we will continue to operate with a strong focus on protecting and enhancing the environment.

Our ambition is to ensure focus at all stages in the production of a reliable and resilient water supply to customers in the North West of England and, in the longer term, to customers beyond our current boundaries. Our overarching principle focusses on continuing to improve water quality and sets our expectations that water quality is paramount no matter whether that comes from current suppliers in the North West of England or from other sources. Similarly, we expect to provide best quality water to other customers outside our boundaries.
The priorities for the Water Resources business in the long-term are:

- To maintain a reliable supply of high quality raw water, sufficient to meet the forecast needs of our Water Network+ business, along with an agreed headroom volume held in case of equipment outage or emergency (such as a freeze thaw event) and to make this raw water available at an efficient cost for customers.
- To maximise the added value that our operations can provide for customers, through recreational access, agricultural activity and environmental management for the benefit of customers now and in the future.
- To minimise costs for customers by rationalising our asset base, or exploring alternative markets for any surplus water resource beyond the forecast needs of our Water Network+ business, along with an agreed headroom volume.

The company has integrated its Water Resource Management Plan (WRMP) processes into its mainstream business planning and reflected as far as possible its WRMP into its business plan.

### 3.3 Use of Markets

At present over 95% of the raw water we produce is supplied to United Utilities Water Network+. We aim to maintain this relationship, continuing to supply United Utilities Water Network+ with great water, at an efficient price for the long term.

In addition to our main customer, United Utilities Water Network+, we also supply raw water to a number of industrial and agricultural customers, and to our partners in the Canal and Rivers Trust. We aim to continue to provide this service to customers, and we will actively seek additional customers for our services both across the North West, and further afield.

We recognise that increased use of markets will be a major factor in the future development of the water industry. United Utilities has developed a bid assessment framework, through which all potential suppliers of water will be assessed for efficiency of cost and reliability of supply. Our business plan will position United Utilities Water Resources price control business area to ensure that we remain competitive.

Taking water from third parties and supplying water to others, where it represents best value, is an activity that we currently undertake and we are seeking opportunities to do more in the future. We benefit from a robust water resources position, with appropriate additional spare capacity compared with the predicted demand requirements over the next 25 years to ensure long-term resilience. This enables us to continue to promote water trading with other companies, including potential significant volumetric trades with Severn Trent Water and Thames Water as outlined in our WRMP. These are real, practical examples of our strategy in action where we are seeking to ensure that national water trading is at the forefront of our thinking. Through continued bilateral engagement and our new bid assessment framework, we will continue to actively explore such opportunities for water trading into and out of our supply region.

---

Providing excellent, reliable and sustainable services to customers for an efficient price.

Securing our position in a competitive market.

Continuing to be the preferred supplier to United Utilities Water Network+ and other existing customers.

Actively pursuing nationwide water trading.
Case study – Nationwide water trading

The pressures of population growth and climate change are affecting the whole of the South East of England. Thames Water has selected a Severn Thames transfer as part of its long term preferred plan. This includes, (from 2081 onwards), 90 Ml/d of support from Vyrnwy reservoir provided by United Utilities, 60 Ml/d of which would be released into tributaries of the Upper Severn and 30 Ml/d would be provided to Severn Trent Water to offset their abstractions further downstream.

Customers have limited knowledge about the water scarcity issue, but quickly recognise the need for long term sustainable solutions

Informed reaction to water scarcity: 7 in 10 are concerned about water scarcity, particularly those in the Thames Water catchment area. Customers recognise that water scarcity is a long term issue requiring immediate nationally co-ordinated action. Customers call for widespread education on the issue. They assume that fixing leaks will be the major priority for water companies – the preferred demand management solution for all customers irrespective of region.

Preference for supply solutions: Water reuse is the most preferred supply solution across all water company regions, closely followed by building new reservoirs. Whilst regional transfer is the least preferred of the three solutions, 62% rank it as their first or second choice. Customers see sustainability (ability to provide water for the long term), environmental impact and the volume of water produced as the key evaluation criteria when choosing solutions to put in place.

Water trading, delivered cost effectively with assurances, works for customers

Level of support for water trading: Customers raise multiple concerns about water trading - the security of supply, environmental and financial impacts. Potential ‘donor’ customers are concerned as to the impact on their own supply, whilst Thames Water customers ask whether water will be available when needed. Despite concerns, 74% of all customers *agree they support water trading as part of the solution. Support declines for a proportion of Thames Water customers (from 80% to 70%) on being told the cost will be paid back through the bill over a long period of time – they are unable to assess fully without a figure. In donor regions, the proposed 40p bill reduction per customer is seen as better reinvested into future water resource management.

*agree is a total of those who agree strongly or slightly with the statement “I support water trading as part of the solution to the water scarcity in the UK”.

United Utilities plans to undertake the following activity in 2020-2025 to support a future Severn – Thames transfer project:

- Environmental studies for a number of supporting options, including a screening phase and more detailed investigations at a smaller number of sites.

- A study to assess the contribution that United Utilities transfer options will make to the well-being goals for Wales contained in the Well-being of Future Generations (Wales) Act 2015.

- A study to assess whether changes to the magnitude of timing of River Severn support would affect water levels at Vyrnwy reservoir and the environmental effects of any changes to water level.

- More detailed engineering assessments of the scope and costs of the supporting options, supported by multi-discipline site based investigations.
• Senior management coordination of the work on the transfer scheme across the various parties, ensuring effective governance arrangements are in place, and engagement with multiple stakeholders.

We forecast that this activity will cost £1.000m Totex in the period 2020-2025.
4 AMP7 Delivery Plan

4.1 Introduction

Customers told us that they expected service improvements, particularly in relation to the safety and cleanliness of their water supply, and the reliability of their water supply. Customers also told us to deliver those service improvements without a significant impact on water bills.

Our environmental regulators require us to maintain and enhance the natural environment, driven by a number of different environmental regulations. The environmental management expectations we are obliged to meet were set out to us in the Water Industry National Environment Programme (WINEP), a process by which environmental targets are set for every water company in England.

In other aspects of our operations, the Health and Safety Executive have set challenging targets for risk reduction in relation to our fleet of dams. Furthermore, the Environment Agency regulate the impact of our water abstractions through a strictly enforced licencing regime.

We have formulated a detailed plan for our operations for 2020-2025 which will enable us to meet customer expectations and regulatory obligations in a cost efficient way.

We have divided our planned activities into discrete programmes of work. This makes it easier to manage activity delivered by different contractors, and to report discrete areas of performance to different regulators and stakeholders. The graphic below shows the different programmes of work that we are planning to undertake, and how they will deliver the customer service improvements and regulatory requirements that we will make in 2020-2025.

Our key programmes of work for 2020-2025 are:

- **Keeping Our Reservoirs Resilient** – Activity around the risk management of our dams and reservoirs. This programme contributes to the customer outcome “You Will Have a Reliable Water Service”, and progress will be measured against the performance commitment B10-WR Keeping our reservoirs resilient.

- **Raw Water Infrastructure Resilience** – Activity concerning the management of key raw water pumping stations and aqueducts. This programme contributes to the customer outcome “You Will Have a Reliable Water Service”.

- **Catchment Management** – A programme of land management which aims to maximise raw water quality and improve the environment. This programme contributes to the customer outcome “The Natural Environment is Protected and Improved in the Way We Deliver Our Service”. This programme will also assist the delivery of the Water Network+ customer outcome “You Will Have Safe Clean Drinking Water”.

- **Abstraction Incentive Mechanism** – A process for managing abstraction at vulnerable environmental sites. This programme contributes to the customer outcome “The Natural Environment is Protected and Improved in the Way We Deliver Our Service”. Progress will be measured against the performance commitment C03-WR Abstraction incentive mechanism.

- **Improving the Water Environment** – A process for managing our obligations under the Water Industry National Environment Programme (WINEP). This programme contributes to the customer outcome “The Natural Environment is Protected and Improved in the Way We Deliver Our Service”. Progress will be measured against the performance commitment C04-WR Improving the water environment.
The Totex associated with delivery of the 2020-2025 Water Resources price control business plan is as follows,

*Figure 3: Water Resources totex build*

**Plan totex: £5.434bn**

**Water Resources totex: £374.430m**

- **Non controllable costs**
  - £172.332m

- **Outcome:**
  - £130.673m
  - You will have a reliable supply of water now and in the future.

- **Outcome:**
  - £44.821m
  - The environment is protected and improved in the way we deliver our service

- **Indirect costs**
  - £26.604m

Keeping reservoirs resilient: at the start of AMP6 we had an outline programme of risk reduction measures forecast to cost £62.3m capex. Thanks to the introduction of innovative solutions (such as our industry leading masonry spillway plucking solution); we have been able to secure efficiencies to reduce the capex outturn to £40.0m. The opportunities associated with that particular solution have all now been taken, however thanks to other innovations and efficiencies we have introduced our forecast AMP7 totex is lower than that we originally proposed for the AMP6 programme.

Abstraction Incentive Mechanism (AIM): there is no forecast capex expenditure associated with AIM and only limited opex. We would only incur opex on AIM if the flows dropped below trigger levels and we had to pump from alternative sources. The maximum theoretical opex position has been calculated as £67k.

Improving the Water Environment: the cost of delivery for the measure is aligned to the delivery of the water aspects of the Water Industry National Environmental Programme and catchment management (SCaMP) programme. There is a growth in direct opex due to an increase in delivery of catchment schemes on non-owned land for AMP7, in AMP6 a focus on owned land meant the catchment programme had a higher capex spend.
The expenditure for these measures total at the outcome level with the addition of other costs, which were not able to be attributed to a specific performance commitment such as Environment Agency fees and Business Rates.

4.2 How to navigate the detail of this business plan

Sections 5 and 6 of this plan provide information on how we will deliver the customer outcomes “you will have a reliable water supply now and in the future”, (Section 5) and “the environment will be protected and improved in the way we deliver our services” (Section 6). More detail is provided on the programmes of work that we will use to achieve these outcomes in Sections 5.1 and 5.2, and Sections 6.1 to 6.3.

5  Outcome: “You will have a reliable supply of water now and in the future”

5.1  Introduction

5.1.1  Developing the Plan with Customer Views
5.1.2 Risk and Resilience

5.1.3 Activities and Cost

5.1.4 The plan for 2020-2025
5.2 Keeping Our Reservoirs Resilient [×]
5.2.1 Customer Views

5.2.2 Risk and Resilience
Figure 6: [\[\times\]]
5.2.3 [✗]

[✗]

5.2.4 Performance Commitments and Costs

[✗]

Figure 13: [✗]
Table 2: \[ \leq \]

\[ \arctan \]

\[ \]  

Table 3: \[ \leq \]

\[ \arctan \]

\[ \]
5.3 Raw Water Infrastructure Resilience

Customer Outcome:
You have a reliable water supply.

Summary
Customers place a high priority on receiving a reliable water supply. The water supplied to customers passes through intakes, pipework, pumping stations and meters. All of this infrastructure is crucial to physically transport the water from source, to where it is treated for customers of the wider supply network, or used in its raw state by agricultural and industrial customers.

We plan a programme of maintenance and resilience improvements to ensure that our raw water infrastructure is able to continue supplying great quality raw water for customers now, and in the future.

Current Performance
At present the performance of raw water infrastructure is not a regular cause of customer supply interruptions. However, much of our raw water infrastructure is ageing, considerably pre-dating the privatisation of the water industry. Asset health checks indicate that the condition of some assets, including the strategic Lake District pumping stations, is deteriorating.

£30.577m Totex
Expenditure required to deliver this performance commitment

Efficiency
A robust engineering analysis has enabled us to reduce the scope (and costs) of resilience improvements at Lake District pumping stations

Customer Views
95% of customers said that unplanned supply interruptions were a concern.

Risks
We have relatively few strategic pumping stations in relation to other types of asset, and so historic data is limited. An unexpected equipment failure could necessitate a re-prioritisation of the programme.

In 2020-2025 we plan significant investment to improve the resilience and reliability of strategic Lake District pumping stations. These pumping stations feed the integrated water resource zone, which supplies over 5 million customers across North West England.

We also plan to invest in our ‘statutory meters’, ensuring that we are accurately measuring our abstraction and compensation flows to demonstrate regulatory compliance. Finally we plan further data gathering and investigations to determine the risks associated with key raw water aqueducts.

Future Performance

This programme is primarily concerned with maintaining service, rather than delivering a service enhancement. As such this programme represents part of our base activity, which will contribute towards our overall levels of serviceability (such as number of minutes supply lost) and so is not measured via a bespoke performance commitment.
Customer expectations

5.3.1 Customer Views

We know from our customer research that a significant priority for the future, identified by customers, is ensuring appropriate plans and resources are in place to deliver high quality water and sewerage services with a growing population, as prioritised by 72% of those asked. From other conversations with customers we have already identified that interruptions to supply is a significant concern, generating the most contacts (over 219,600 between April 2014 and January 2017) and was identified as being an important issue for 95% of customers that we spoke to during our dedicated customer panel session on supply interruptions. From this collective insight we know that customers expect continuous supplies of water and expect this service to continue with a growing population.

Raw water infrastructure is the systems and equipment that we use to abstract water from the environment and transport it to where it is treated for use by customers on the public supply network, or where agricultural and industrial customers use the water without treatment. The efficient operation of this infrastructure is essential to ensure that customer supplies can be maintained.

The main benefit of the raw water infrastructure programme is the reduction of the risk of failure of raw water infrastructure. This contributes significantly to the overall resilience of the business, as raw water infrastructure is right at the beginning of our value chain.

Other benefits of the programme include optimal operation of gravity systems, ensuring a unit cost benefit over pumped system alternatives.

5.3.2 Risk and Resilience

At present, failure of raw water infrastructure is not a regular cause of customer supply interruptions. However, if our raw water assets fail to reliably provide this water to the Water Network+ business, there are risks which could see supplies to a water treatment works cut off leading to an interruption to customers supply. There is also a risk of non-compliance with impoundment or abstraction licences if our statutory meters experience a failure. It is our role to identify the hazards on our raw water systems that could lead to these risks occurring and identify solutions to reduce the risks and ensure that our customers receive a reliable supply of water all of the time.

We manage the risks using a twin-track approach by understanding (1) the asset health through bespoke assessments of their condition (2) asset performance and required interventions based on data from our corporate databases of asset performance and to identify which elements of our infrastructure are most likely to fail. By combining this probability of failure data with an understanding of the consequences of failure, we have developed a prioritised programme of infrastructure improvements, designed to ensure that we can reliably supply water under a range of challenging circumstances.

Our water supply system is reliant on a number of large capacity raw water pumping systems. Around 40% of the water we supply is from our Cumbrian reservoirs at Haweswater and Thirlmere in the Lake District, the River Dee and Lake Vyrnwy in Wales. These sources of water are supplied both my gravity and supplemented by raw water pumping systems.
Our water sources are managed in accordance with operating and control policies to provide a secure safe and clean water supply to customers. These dictate the actions to be taken at different times of the year to protect water supplies against the worst drought conditions on record (such as pumping from rivers or lakes when river flows are high enough to enable the conservation of water stored in our reservoirs). We carry out frequent hydrological and hydrogeological monitoring in conjunction with the Environment Agency. Assessments of these data provide the basis for optimising the supply of water to customers, recognising drought conditions at an early stage and identifying the need for, and timing of, any drought management measures such as increasing the use of pumped sources.

Maintaining our raw pumping station systems is critical to ensure that we can fulfil our requirement to manage the water supply system effectively to meet the customer demand for water. Any partial or total loss of supply from these types of pumping stations increases risk. If we understand the risk and consequence of failure, it allows us to prioritise any investment to ensure that the supply system remains robust and is resilient to change. We can understand this risk using corporate performance and health data to identify which components of our raw water pumping systems benefit from proactive investment and the associated impacts of failure in terms of service levels. We can also understand the impacts on the water supply system in terms of reductions in deployable output by using our water resources modelling capability. This ensures that the latest data and predictions are included in our analysis, as will be reported in the Water Resources Management Plan 2019.

Both Ullswater and Windermere pumping stations provide support by offsetting abstraction from Haweswater to retain storage to reduce the risk of needing to implement drought powers. Following the dry winter and spring of 2016/17 we reviewed and amended our operational decision-making process for strategic pumping. As a result of this review, we have revised our approach to pumping from Ullswater and/or Windermere when storage at Haweswater is below a specified level and subject to certain other conditions in order to protect storage in Haweswater.

Haweswater Reservoir is our single largest and most critical water source. The figure below show how Haweswater storage varies in the two key drought years of 1984 and 1996. On these graphs are shown the four drought triggers that we use to define mitigation activities to protect water supplies along with the emergency storage (ES) level for Haweswater. Overlaid on this is the baseline storage position in these periods along with what the storage would look like with individual raw water pumping station failure. The criticality of each of the pumping stations not being available can be seen as the baseline storage is reduced and the drought triggers with their associated mitigation actions are crossed earlier in the year. That would have meant that drought management actions would have been required for longer duration compared to the baseline condition.

This is particularly evident for the 1995/96 drought where the non-availability of Ullswater caused drought trigger 4 to be crossed in March 1996 and recovery above this trigger was not seen until October 1996. Compared to the baseline position where drought trigger 4 was crossed for a short period in September 1996 and the criticality of the availability of Ullswater pumping station to support Haweswater storage is clearly seen. Although not as severe as the non-availability of Ullswater pumping station, without Windermere and Lune/Wyre pumping station, the drought triggers were crossed for a longer period if time compared to the baseline. Shap pumping station is very closely related to the baseline condition, indicating that it will help conserve Haweswater storage.
This data demonstrates the criticality of maintaining the fleet of strategic pumping stations, if a pumping station were to be unavailable during drought conditions then the effect on Haweswater would be severe, with drought actions being required earlier and for longer.

We maintain corporate databases of asset performance, recording instances of sub-optimal performance and asset failure. These databases can be used to forecast future asset performance and the likelihood of failure over a specified period. The larger the cohort of assets being monitored, the higher the confidence that we can have in forecasts of future asset performance. The relatively low number of pumping station assets means that forecasts of future performance are not as reliable as for some asset classes.

The strategic pumping stations are critical for supplies to the integrated water resource zone. A significant failure at one of the strategic pumping stations would require rapid rectification. Such a failure could carry a significant financial impact, and may cause us to reprioritise the actions planned under this programme.
5.3.3 The plan for 2020-2025

This programme has focussed upon pro-active investment in the resilience of the most strategically critical elements of our raw water infrastructure, with provision for the efficient and responsive maintenance of less critical infrastructure.

The most critical elements of the raw water infrastructure were identified as the strategic Lake District pumping stations. These pumping stations are able to pump from Ullswater to Haweswater, thereby increasing the resource yield of Haweswater (our largest and most critical water resource) particularly during dry weather. A further pumping station at Haweswater itself allows us to pump from Haweswater to Watchgate water treatment works, which is located some distance from the reservoir. Pumping to Watchgate enables us to operate Watchgate at its maximum capacity, which cannot be achieved with gravity flows from Haweswater alone. Finally, the Windermere pumping station enables us to take water from Windermere direct to Watchgate water treatment works, again reducing pressure on Haweswater during periods of high demand.

Over time the performance of these pumping stations has begun to degrade. Internal wear and corrosion has led to the pumps no longer being able to meet their maximum design capacity. These pumping stations are subject to a comprehensive maintenance regime, however these issues are not problems which can be remedied through routine maintenance. In addition, the ancillary equipment which supports the pumps (such as cooling equipment, fire protection, electricity supply etc.) dates from the 1970s and does not meet current standards. The ancillary equipment was not constructed with resilience in mind, and is vulnerable to externally induced failure such as a power supply loss, or a local flood. Loss of the ancillary equipment would cause the pumping stations to cease operation.
Case study – Lake District Pumping Stations

The three pumping stations described below are key strategic supply points, which supply the Integrated Water Resource Zone via the Haweswater Aqueduct. More than 2 million customers are supplied via the Haweswater Aqueduct, which is our most strategically important water distribution infrastructure.

These three pumping stations play a major role in ensuring that there is sufficient water available to supply the Integrated Resource Zone, particularly during times of low water level in Haweswater Reservoir. These facilities are strategically important to our supply system, and we will carry out interventions to improve their resilience.

Ullswater Pumping Station

Ullswater Pumping Station has been used to support the water supplies of the North West since its construction in 1971. The intake is located at Gale Bay at the eastern edge of Ullswater. The Pumping Station was constructed to transfer 360 million litres of water a day to Haweswater Reservoir (from where it is transferred to Watchgate WTW and then supplies the wider Integrated Network) in order to maintain levels in Haweswater with abstraction taking place depending upon levels at the River Eamont gauging station.

Windermere Pumping Station

Windermere Pumping Station has also been used to supply water to the North West since its construction in 1971. The intake is located at Calgarth Bay on the eastern shore of Windermere. The Pumping Station was constructed to transfer 204 million litres of water a day to Watchgate WTW via Banner Rigg Raw Water Service Reservoir with abstraction taking place depending upon levels at the River Leven gauging station.

Haweswater (Shap) Pumping Station

Haweswater (Shap) Raw Water Pumping Station is a strategically important pump that supplies Watchgate WTW, supports the integrated resource zone at times of high demand & drought and is the declared contingency for the failure of the Haweswater Aqueduct gravity supply to Watchgate. The Pumping Station becomes critical when high flows (>420ml/d) are required from Watchgate WTW and Windermere Pumping Station is unavailable (i.e. low flows in the River Leven).

In 2017 we undertook a detailed assessment of the performance of the pumping stations, and developed a comprehensive plan to bring the pumping stations up to modern standards, which was estimated to cost £15.278m.

Customers have clearly indicated to us that they are unable to support significant increases in their water bill. This clear customer preference drives us to review all of the business decisions that we make, and to pursue efficiencies throughout our investment programme.

We convened a ‘core group’ of subject matter experts in electrical and mechanical engineering, to review the outputs of the original engineering analysis on the pumping stations. The core group found that it would be possible to have a phased restoration programme, taking individual pump units out of service one at a time and reconditioning the pump motors and blades rather than replacing entire components. Whilst this process would require careful planning (to be undertaken at times when the full pumping capacity was not required) it would secure significant cost efficiencies. The estimated cost of this alternative pump restoration programme (along with planned resilience improvements in ancillary equipment) was £8.808m, just over half the original estimated cost of the programme.
We have similarly sought efficiencies in other areas of our raw water infrastructure programme.

In most cases water treatment works are located close to the source of raw water which supplies them. In some cases however, water treatment works are located remotely from their source, for example where multiple sources feed a single treatment works. In these cases our raw water aqueducts play a crucial role in supplying raw water.

One of our raw water aqueducts, the Brennand and Whitendale Aqueduct, transfers raw water from the rivers Brennand and Whitendale in north Lancashire, to feed the water treatment works at Fishmoor, in Blackburn in south Lancashire. The Brennand and Whitendale Aqueduct runs through the very hilly Forest of Bowland. At one point in Bowland, the aqueduct runs along the hillside of Beatrix Fell, a very steep sided mountain. Beatrix Fell has experienced a landslide, and some lengths of the aqueduct have become exposed as a result of the land movement.

Replacement of the aqueduct would be a very significant exercise, given the extremely steep and remote location of Beatrix Fell, and the high level of environmental protection offered to this area (the Bowland Fells are an Area of Outstanding Natural Beauty). A replacement of the aqueduct has been estimated at £20.400m.

However, our specialists working on the ‘Keeping Our Reservoirs Resilient’ programme (discussed earlier in this plan) have a great deal of experience of assessing the stability of sloped earth embankment dams, and stabilising those slopes where necessary.

We are currently amending our slope stability analysis tools to enable us to carry out a ‘dam style’ stability analysis of the Beatrix Fell Slope. The results of this analysis will enable us to identify the exact locations on the Fell where future land movement could cause the aqueduct to fail. Knowing the exact locations at risk will enable us to carry out a highly targeted slope stabilisation project, to protect the aqueduct.

This will be the first time that this dam risk assessment tool has been applied to a natural hillside slope. At present, it is not possible to determine the exact scope of the remedial work that will be required to stabilise the slope, however our engineering experts have estimated that the cost of targeted slope stabilisation will be between £1.040m and £0.540m depending upon the outcome of the investigation. This example demonstrates our willingness to adopt innovative strategies to drive efficient solutions throughout our 2020-2025 programmes. We anticipate sharing the results of our assessment with other water companies through industry forums.

During 2020-2025 we plan a number of investments to maintain our raw water supply service:

**Strategic Lake District Pumping Stations**

<table>
<thead>
<tr>
<th>Pumping Station</th>
<th>Planned Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haweswater (Shap)</td>
<td>Pump reconditioning, low voltage system update, operational technology (control unit) update.</td>
</tr>
<tr>
<td>Windermere</td>
<td>Pump reconditioning, valve replacement, operational technology (control unit) update.</td>
</tr>
<tr>
<td>Ullswater</td>
<td>Pump reconditioning, ancillary equipment resilience improvement, operational technology (control unit) update.</td>
</tr>
</tbody>
</table>
Other key North Area Pumping Stations

Table 5: Planned Projects at Other Pumping Stations

<table>
<thead>
<tr>
<th>Pumping Station</th>
<th>Planned Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caton</td>
<td>Pump reconditioning.</td>
</tr>
<tr>
<td>Lune</td>
<td>Improve resilience of high voltage supply to prevent power failure and transformer fire.</td>
</tr>
<tr>
<td>Wyre</td>
<td>Repair band screen.</td>
</tr>
</tbody>
</table>

Strategic Raw Water Aqueducts

Table 6: Planned Projects at Raw Water Aqueducts

<table>
<thead>
<tr>
<th>Aqueduct</th>
<th>Planned Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brennand and Whitendale Aqueduct</td>
<td>Beatrix Fell slope stability assessment, and targeted slope stabilisation as necessary.</td>
</tr>
</tbody>
</table>

In addition to our pumping stations and aqueducts, another key area of activity relates to our regulatory water meters. Our abstractions are regulated through Abstraction Licences issued by the Environment Agency. These licences place limits on the volume that we can abstract, and demand that we release compensation flows to downstream water courses.

It is essential that we accurately record our abstractions and compensation flows, both to demonstrate regulatory compliance, and to ensure that we are not over compensating (releasing too much water for compensation, therefore reducing the amount available for supply to customers).

We plan a campaign of recalibrating our regulatory meters in 2020-2025. New technology means that options are available for remote monitoring of our regulatory meters, and we will explore the possibility of installing remote monitoring where possible. This technology has the potential to reduce Opex, by reducing the need for staff to visit remote locations to take meter readings.

Regulatory Meters

Table 7: Planned Projects at Regulatory Meters

<table>
<thead>
<tr>
<th>Meters</th>
<th>Planned Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 regulatory abstraction meters</td>
<td>Recalibration and consider remote telemetry where feasible and cost beneficial.</td>
</tr>
<tr>
<td>16 regulatory compensation flow meters</td>
<td>Recalibration and consider remote telemetry where feasible and cost beneficial.</td>
</tr>
</tbody>
</table>
5.3.4 Performance Commitments and Costs

There is no specific performance commitment associated with this programme, as the reliability benefits delivered through the programme will contribute towards the performance commitments related to interruptions to customer supply.

The Totex associated with delivery of the 2020-2025 Raw Water Infrastructure programme is as follows,

**Table 8: Raw Water Infrastructure Totex**

<table>
<thead>
<tr>
<th>Raw Water Infrastructure Business Plan 2020-2025 Totex</th>
<th>2020-2025 forecast Totex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditure on raw water infrastructure</td>
<td>£17.090m</td>
</tr>
<tr>
<td>Operational expenditure on raw water infrastructure</td>
<td>£13.487m</td>
</tr>
<tr>
<td>Total</td>
<td>£30.577m</td>
</tr>
</tbody>
</table>
6 Outcome: “The natural environment is protected and improved in the way we deliver our services”

6.1 Introduction

Figure 14: The natural environment will be protected and improved in how we deliver our services

Further still, having also conducted a customer panel discussing the management of catchment land, we know that 78% of customers think that it is important that they have a say in how our catchment land is managed (some customers selected more than one priority, leading to the total percentages being higher than 100). The most important aspects of sustainable land management identified by customers focus on securing water supplies (identified by 57%) and reducing flooding (identified by 56%). More still, whilst there is some willingness to pay to extend the amount of catchment land managed in a sustainable way this was not extensive and the majority of customers were prepared to pay less than 88p per year on their annual bills.

In addition to this, through our innovative immersive research we explored with customers their thoughts and preferences towards ecosystem services. Through immersing customers in more interactive scenarios, participants were able to identify the improvements that were most important to them. From this exercise 86% of customers opted to ‘buy’ at least one service improvement and 55% ‘bought’ three or more. Green spaces for recreational activities and a healthy river to support wildlife were the most popular ecosystem services.

However from a broader perspective we are also mindful of vulnerable customers, who when discussing willingness to pay, were often prepared to pay 30% less than non-vulnerable customers to see improvements in service. Combining all of this information, we intend to support our Water Network+ colleagues in delivering the best possible water quality and service to customers at the lowest cost through smart catchment management, maximising the quality of raw water at source.
6.1.2 Risk and Resilience
Our catchment management programme supports the resilience of the raw water supply, by reducing the likelihood of impacts on raw water caused by environmental events. For example in December 2015 the ‘Storm Desmond’ severe weather event impacted large areas of Cumbria, with unprecedented rainfall and high winds occurring in many areas. Thirlmere Reservoir (one of our large strategic sources supplying Cumbria, Lancashire, Manchester and the wider North West) was badly affected, with flood run-off causing severe turbidity in the reservoir. This turbidity was beyond our ability to treat the raw water, and meant that we had to take Thirlmere out of service for a period of time. When such a large and strategically important source is taken out of service, it is important to ensure that customer supplies are not placed at risk. We plan to invest £5m in a programme of tree planting and land stabilisation around the Thirlmere catchment, to reduce the potential run-off impact of future flood events.

6.1.3 Activities and Cost
Activity in this area of our business plan is split into three main thematic programmes of service improvement delivery. These are ‘Catchment Management’ (Totex £18.290m), ‘Abstraction Incentive Mechanism’ (Totex £0.067m) and Improving the Water Environment (Totex £26.464m).

6.1.4 The plan for 2020-2025
Details of these investment programmes are set out in section 6.1 (Catchment Management), 6.2 (Abstraction Incentive Mechanism) and 6.3 (Improving the Water Environment).
6.2 Catchment Management

**Customer Outcome:**
You have a safe, clean supply of drinking water,  
The natural environment is protected and improved in the way we deliver our services.

**Summary**
Customers have placed a very high priority on receiving a safe, clean drinking water supply and catchment management is the first step in the production chain to maintain water quality. We have adopted the Drinking Water Safety Plan approach to risk management and identified a wide range of catchment based risks to water quality, which we are actively managing. Through catchment management we will minimise the amount of pesticides, nutrients and algae entering the raw water supply. This programme will also enable us to comply environmental regulations around protected habitats, and will offer added value by reducing flood run off, increasing natural capital value, and supporting rural communities.

**Current Performance**
Since 2005 our industry leading Strategic Catchment Management Programme (SCaMP) has delivered water quality benefits, preventing deterioration due to pesticides and colour. This catchment based intervention eliminated the need for treatment works upgrades, avoiding significant expenditure.

**£18.29m Totex**  
Expenditure required to deliver this performance commitment

**Efficiency**
Compared to 2015-2020, we will improve our management of 300% more catchment land area, for 13% less Totex cost.

**Customer Views**
78% of customers placed drinking water quality as their highest priority.

**Risks**
We are now beginning to focus upon non-owned catchment land, where our ability to influence farming activity will be more limited.

**Innovation**
We are pioneering new agricultural techniques to minimise the run off of harmful chemicals and nutrients e.g. our maize under-sowing pilot.

**Future Performance**
This programme will not be subject to its own performance commitment. Instead, progress in catchment management will contribute towards our performance commitment “C04-WR Improving the water environment”, which will be used to measure our performance against the Water Industry National Environment Programme.

**End of AMP Future Targets**

<table>
<thead>
<tr>
<th>AMP6</th>
<th>AMP7</th>
<th>AMP8</th>
<th>AMP9</th>
<th>AMP10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of added natural capital in £m</td>
<td>n/a new measure</td>
<td>£5m</td>
<td>£10m</td>
<td>£15m</td>
</tr>
</tbody>
</table>
6.2.1 Customer Views

Customers place a very high priority on receiving a safe, clean water supply which they can have confidence in. 78% of customers placed this as their highest priority in terms of the services they receive from United Utilities (some customers selected more than one priority, leading to the total percentages being higher than 100).

Nutrients, chemicals, algae and other contaminants can enter raw water sources due to run off from agricultural activity on catchment land. The traditional solution is to invest in ever more sophisticated water treatment equipment, to remove those contaminants during the treatment process.

The core purpose of our catchment management programme is to actively manage our catchment land, so that contaminants do not enter the raw water sources in the first place. The most effective and lowest cost way to treat contaminants is to prevent them from entering the water production process.

We also recognise that as our catchment land is open to access by everyone, then everyone who lives in the North West or who visit the area, is a stakeholder. We commissioned a customer panel to specifically discuss how customers thought we could add value to our catchment management programme.

At the customer panel 78% of customers said that they believed that customers should have a say in how catchment land was managed, again reflective of how widely our catchment land is used by our customers for recreation. Additionally 96% of customers we spoke to said they thought that they thought it was important for us to undertake environmental improvement initiatives, 57% said we should focus on securing water supplies, and 56% said that catchment should play a role in flood management such as through slow the flow initiatives, (some customers selected more than one priority, leading to the total percentages being higher than 100).

In summary, customers believed that we should manage our catchments in a way primarily focussed on managing water quality, but that we should explore opportunities for added value through environmental enhancements and flood management initiatives.

6.2.2 Risk and Resilience

The current SCaMP programme being delivered between 2015 and 2020 focuses on 31 drinking water ‘Safeguard zones’ across a much wider area of water catchment land (207,800 hectares) than we previously targeted. Although we are delivering water quality protection measures across an area ten times bigger than in previous business plan periods, we are spending ten times less by working in partnership with other land owners and funders to combine our areas of interest. The efficiency arising from this approach minimises any impact on customers’ bills.

Through the Moors for the Future partnership, we have been able to join forces with Yorkshire Water and Severn Trent Water to access European Union funding for peatland restoration across the South Pennines landscape, which provides a source of water for all three companies. United Utilities has 3 safeguard zones designated for increasing colour in this area including Arnfield.

The project, MoorLIFE2020, builds on the work and experience gained through the previous five-year MoorLIFE project which United Utilities was part of, restoring almost 2,000 acres of Peak District and South Pennine moorland between 2010 and 2015. This is a highly efficient way to deliver catchment benefits, as every £1 invested is matched with £2 of funding secured through our partnership.
The project will build resilience for water quality and biodiversity to the impacts of climate change by increasing the capacity of the land to absorb more water during wetter periods and store this through the drier months to create a more sustainable ecosystem, which in turn will produce a cleaner and more reliable supply of water to our clients.

We continue to be innovative and adopt new approaches to manage our catchments in the most efficient way to protect the environment and avoid the need for new water treatment processes. Over the past 5 years, we have explored the use of partnership working to deliver catchment management on a much larger scale. We have:

- Employed catchment advisors, hosted by third parties to provide on the ground engagement and advice to land owners and managers, specifically around pesticide usage and nutrient management.
- Targeted catchment and water quality monitoring through the use of models in order to target monitoring resources efficiently.
- Trialled nutrient trading to cost effectively reduce the amount of nitrate entering the groundwater at source.
- Promoted a range of free schemes to raise awareness and reduce pesticide and nutrient application on catchments.

Nitrate pollution from agriculture is one of the water quality issues driving the activities in safeguard zones. It is much more cost effective to reduce the nitrates at source: on average a nitrogen removal process costs £5 million per year whereas a catchment scheme can run for less than £50,000 a year. A new, innovative, resilient and efficient scheme that we have trialled is a reverse auction for nutrient trading.

In June 2017 we completed a trial in partnership with Wessex Water, using their nutrient trading platform EnTrade. EnTrade is a unique and innovative trading platform developed by Wessex Water as part of a scheme to reduce agricultural inputs of nitrogen in the Poole Harbour catchment. It is aimed at improving water quality in groundwater safeguard zones and to avoid investment in water treatment to remove nitrates. EnTrade works alongside a programme of awareness raising, monitoring, farm advice and information to incentivise farmers to adopt alternative practices.

EnTrade uses a reverse auction to encourage farmers to bid to grow cover crops over winter to reduce leaching whilst locking up nutrients that can be utilised by the subsequent crop. Environment Agency guidance specifies reverse auctions as an innovative approach for companies to adopt in safeguard zones.

The EnTrade website www.uu.entrade.co.uk allows farmers to create an account and enter their fields into an online auction for a payment to carry out an activity to reduce pollution (e.g. grow cover crops). It is the reverse of a normal auction and the farmer bids the price they are willing to be paid to carry out the activity. The successful bids are those which deliver the most nitrogen savings for the least cost. The farmers are paid the agreed rate upon submission of evidence.
We worked in partnership with the team at Wessex Water to learn from their experience to ensure a successful trial. Ahead of the auction, we sent leaflets to all the 150 farmers in the Cheshire groundwater safeguard zones and held drop-in sessions to offer information and assistance during the auction.

There was a good level of participation from the farmers and we received 32 bids (19 successful) from 9 farmers. The bids ranged from £50 per hectare to £190 per hectare. The average payment was £89 per hectare, which is lower than the £114 per hectare that is currently paid out to farmers for this activity via the Countryside Stewardship Scheme. In total we have made a 7.5 tonnes nitrogen saving and the total cost of the trial was £40,000 including the payments made to farmers. We do not currently have a water treatment works that removes nitrogen and therefore it is critical that we continue to reduce it through catchment management to avoid customers paying for a new treatment works.

We use innovative models such as SCIMAP to understand the connection between the land and the reservoir. Using this approach, alongside the SAGIS model of in-reservoir water quality we have been able to target tree planting around Spring Mill reservoir to reduce the connectivity between the land and the reservoir and therefore reduce nutrient inputs causing algal blooms. A grant was sourced to cover the costs of tree planting, which means there was no cost to the customer. The customer will benefit from the improved water quality, particularly in the reduction of taste and odour, which can be related to algal blooms in the raw water. The customer will also benefit from minimised bill impact as a result of the reduction in chemical treatment required to remove the algae from the water.

We are partnered with the Environment Agency, Natural England, the Rivers Trusts and Greater Manchester Combined Authority under a project called Natural Course through which we will deliver the Water Framework Directive in the North West.

This is a low-risk programme. The most significant risk to the delivery of investment in catchment management is in the ability of partner organisations to adequately resource their expect roles in future schemes. To mitigate this risk we ensure that we have input from our Natural Course partners (Environment Agency, Natural England, The Rivers Trust and Greater Manchester Combined Authority) catchment hosts and other third parties to ensure that our outcomes align with the ambitions and deliverables of the partners.

6.2.3 The plan for 2020-2025

Our long term vision is to become the catchment Systems Operator, this means that we will continue to maximise opportunities to deliver water quality improvements in the catchment. However, rather than being a partner in the delivery, United Utilities will be facilitating all the interactions in the catchment, from monitoring flow and water quality, to signalling for interventions to take place and creating a market for these to be funded by the downstream beneficiaries in the value chain.

Through an holistic and integrated way of working, we will take advantages of synergies between water quality and quantity to deliver more for less for our customers, through affordable, integrated schemes with multiple benefits. We are using a natural capital approach to consider what is best for the environment and then
trialling new approaches and promoting collaborative working through partnership, involving both customers and key stakeholders in the individual catchments.

We have worked closely with both environmental regulators and the Drinking Water Inspectorate to develop a programme for the period 2020-2025 that addresses statutory needs such as water quality compliance and SSSI condition improvement. In addition we will be providing benefit for access and wellbeing, resilience to climate change and flood risk management. We have made new partnership and made existing ones work harder in order to maximise the value of the contribution made by United Utilities. All of the schemes proposed will be delivered in partnership in order to bring external funding and engage customers and stakeholders in the delivery of schemes.

Catchment management interventions such as re-vegetating bare peat restore the ability of the peat to sequester atmospheric carbon and promotes storage as peat soils develop. Planting new woodland also delivers benefits for climate regulation as trees absorb carbon dioxide from the atmosphere and lock it away for decades or even centuries within the mass of the timber. Both of these interventions also have an impact on slowing the flow of water from the uplands to downstream reservoirs and the communities that live below them.

As part of SCaMP 2 we undertook gully blocking and created attenuation ponds on the catchment for Haslingden Grane reservoir. Although this work was primarily driven by the need to improve the condition of the SSSI, there have been additional benefits in terms of reduced run-off. This will help to manage the flood risk to our infrastructure as well as the community, which experienced flooding in 2015.

In the period 2020-2025 we will build on the previous work of SCaMP by undertaking work in partnership with other organisations who are investing in natural flood management. Maximising this opportunity across similar upland catchments will not only deliver protection of our infrastructure against storm events, but also help protect the customers that live downstream.

A slower flow of water will require less expenditure on water treatment and the natural services provided by the upland ecosystem will be more resilient to the impacts of climate change. As an example, we plan to invest £5m on catchment management schemes at Thirlmere Reservoir, which will slow the flow of run off from the hillside. This will both increase the response time of the catchment during a flood, and will benefit water quality by reducing the amount of soil and debris being washed into the reservoir, which has historically suffered from turbidity during storm events.

A strong focus for us in 2020-2025 will be our continued drive to reduce nitrate levels in the water supply. The south of our region is heavily reliant on groundwater sources (boreholes), unlike the rest of our region, which is primarily supplied from rivers and reservoirs. The south of our region is also the only area of the North West where widespread arable agriculture is practised, making our groundwater sources vulnerable to the nitrate fertilisers widely used by arable growers.

---

Catchment management will deliver ‘added value’, such as improved public access, and ‘slow the flow’ flood mitigation.
We will establish a number of nitrate groundwater safeguard zones to protect the raw water supply at borehole sources in the south of the region, building on the experience of our previous safeguard zones for colour, algae and pesticides.

*Figure 17: Safeguard Zones*

The nitrate safeguard zones involve the management of farming activity on catchment land which is not owned by United Utilities, and where we therefore have much less control over the activities that the farmers undertake.

To deliver nitrate protection we have entered into new partnership. For example maize is a widely grown crop in Cheshire, and one where the heavy use of nitrate fertiliser is common. We have formed a partnership with the agricultural specialists Rostons Land and Property and Paul Sweeney Agronomy Ltd to develop a process where maize can be under-sown with a second crop of rye. The rye captures nitrate from the soil whilst providing farmers with an additional crop of animal feed. This process requires specialist sowing equipment developed for the project. A current trial at Delamere in Cheshire is expected to be rolled out more widely, providing benefits to the water supply and farmers alike.

We plan to develop further partnership during 2020-2025, as we believe that these represent the most efficient way to deliver catchment management activity. Through partnership projects have access to grant funding and delivery routes that United Utilities alone would not be able to pursue. Partnership delivery will enable us to deliver further increases in efficiency. Our catchment programme in 2020-2025 is stretching in terms of the scale of activity required and the efficient use of resources to deliver it. In comparison to previous periods, the investment per area represents a step change in the value for money. We will be investing in the protection of water catchments covering an area of over 600,000 hectares at a lower cost than in previous business plan periods.
As part of SCaMP 2 we undertook gully blocking and created attenuation ponds on the catchment for Haslingden Grane reservoir. Although this work was primarily driven by the need to improve the condition of the SSSI, there have been additional benefits in terms of reduced run-off. This helps to manage the flood risk to our infrastructure as well as the community, which experienced flooding in 2015. In the period 2020-2025 we will build on the previous work of SCaMP by undertaking work in partnership with other organisations who are investing in natural flood management. Maximising this opportunity across similar upland catchments will not only deliver protection of our infrastructure against storm events, but also help protect the customers that live downstream. A slower flow of water will require less expenditure on water treatment and the natural services provided by the upland ecosystem will be more resilient to the impacts of climate change.

The Catchment Management programme for 2020-2025 will deliver the following benefits:

**Table 8: Improving Catchment Management Efficiency**

<table>
<thead>
<tr>
<th>Catchment Management project</th>
<th>Driver for the project</th>
<th>Benefit that will be delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thirlmere land holding + turbidity and colour safeguard zone</td>
<td>Drinking Water Protected Area (colour and turbidity).</td>
<td>Protection of water quality from colour and turbidity caused by run-off from the steep sided valley above Thirlmere, a strategically important water source.</td>
</tr>
<tr>
<td>Poaka Beck Reservoir pesticides and 2MIB safeguard zone</td>
<td>Drinking Water Protected Area (pesticides).</td>
<td>Protection of drinking water from pesticide and herbicide contamination. Poaka Beck supplies Barrow-in-Furness.</td>
</tr>
<tr>
<td>Stocks Reservoir / Hodder Aqueduct colour safeguard zone</td>
<td>Drinking Water Protected Area (colour).</td>
<td>Protection of water quality from discoloration. Stocks Reservoir feeds the strategically important Hodder Aqueduct.</td>
</tr>
<tr>
<td><strong>Bowscar Borehole nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Castle Carrock Reservoir geosmin safeguard zone</strong></td>
<td>Drinking Water Protected Area (algae).</td>
<td>Protection of water quality from algal blooms. Castle Carrock supplies the Carlisle Water Resource Zone.</td>
</tr>
<tr>
<td><strong>Winwick and Houghton Green Boreholes nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Delamere Boreholes nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Manley Common Borehole nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Five Crosses Borehole nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Rushton Spencer Borehole nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Pocket Nook Borehole solvents safeguard zone</strong></td>
<td>Drinking Water Protected Area (solvents).</td>
<td>Protection of water quality from solvents from a nearby former industrial land use.</td>
</tr>
<tr>
<td><strong>Bearstone Borehole nitrate safeguard zone</strong></td>
<td>Drinking Water Protected Area (nitrate).</td>
<td>Protection of water quality from nitrate contamination. Nitrate widely used by arable agriculture in Cheshire.</td>
</tr>
<tr>
<td><strong>Bowland Fells</strong></td>
<td>Site of Special Scientific Interest</td>
<td>The Bowland Fells are catchment land for Stocks Reservoir and the Brennand and Whitendale River intakes. The Wildlife and Countryside Act 1981 requires protection of SSSI.</td>
</tr>
<tr>
<td><strong>West Pennine Moors SSSI</strong></td>
<td>Site of Special Scientific Interest</td>
<td>The West Pennine Moors are catchment land for the Rivington chain of reservoirs. The Wildlife and Countryside Act 1981 requires protection of SSSI.</td>
</tr>
<tr>
<td><strong>South Pennine Moors SAC, SPA, SSSI</strong></td>
<td>EU Habitats Directive</td>
<td>The EU Habitats Directive requires us to prevent the deterioration of sensitive environmental habitats.</td>
</tr>
<tr>
<td><strong>Haweswater (Watchgate) land holding</strong></td>
<td>EU Habitats Directive</td>
<td>The EU Habitats Directive requires us to prevent the deterioration of sensitive environmental habitats.</td>
</tr>
</tbody>
</table>
6.2.4 Performance Commitments and Costs

The Totex associated with delivery of the 2020-2025 Catchment Management programme is as follows,

**Table 9: Improving Catchment Management Totex**

<table>
<thead>
<tr>
<th>Catchment Management Business Plan 2020-2025 Totex</th>
<th>2020-2025 forecast Totex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditure on United Utilities owned catchment land</td>
<td>£10.07m</td>
</tr>
<tr>
<td>Operational expenditure on both owned, and non-owned catchment land</td>
<td>£8.22m</td>
</tr>
<tr>
<td>Total</td>
<td>£18.29m</td>
</tr>
</tbody>
</table>

In previous business plan periods, SCaMP 1 and 2 were completely capital funded because the activities took place on company owned land. With the approach extending across the whole catchment area from 2015, the balance of capital and operational funding has shifted to reflect investment in activity on third party land.

These Catchment Management projects are included in the WINEP, and will contribute towards the performance commitment “C04-WR Improving the water environment”.
6.3 Abstraction Incentive Mechanism (AIM)

**Customer Outcome:**
The natural environment is protected and improved in the way we deliver our services.

**Summary**
We abstract water from rivers and streams at 31 locations across North West England. Some of these rivers are home to sensitive, protected habitats. During periods of dry weather and low river flow, our abstraction could cause environmental harm if we were to abstract at maximum rate. To protect these vulnerable sites, the Environment Agency may review or revoke our abstraction licences. The Abstraction Incentive Mechanism (AIM) financially incentivises to reduce abstraction during periods of low flow at a small number of the most sensitive environmental sites.

**Current Performance**
The Abstraction Incentive Mechanism has been in place since 2015, at 4 sites in the North West. During the period 2015-2017 (the complete reporting years available at the time of completion of this business plan) AIM low flows only occurred at one site (Ennerdale) for 9 days. We reduced our abstractions below the baseline flows during this period.

£0m to £0.067m

**Totex**
Expenditure required to deliver this performance commitment

**Efficiency**
AIM is an inherently efficient way to manage the environmental impact of abstractions, in comparison to major engineered solutions.

**Customer Views**
We know that increased river abstraction is least favoured by customers as an option to overcome a shortage in water supplies.

**Risks**
The triggering of AIM is weather dependant, and cannot be predicted with certainty over the course of 2020-2025.

**Innovation**
We were one of two water companies who adopted the pilot AIM performance commitment measure during 2015-2020.

**Future Performance**
The Abstraction Incentive Mechanism is a compulsory bespoke performance commitment. Ofwat expects every water company to have a performance commitment for AIM, but the details of the commitment will vary from company to company. For 2020-2025 we plan to abstract zero megalitres above or below the normalised AIM baseline abstraction flow at 3 identified sites. This commitment is set out in the “C03-WR Abstraction incentive mechanism” performance commitment documentation.

**End of AMP Future Targets**

<table>
<thead>
<tr>
<th>Flow compared to normalised baseline abstraction when AIM is triggered</th>
<th>AMP6</th>
<th>AMP7</th>
<th>AMP8</th>
<th>AMP9</th>
<th>AMP10</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Customer expectations
6.3.1 Customer Views

We abstract water from rivers across the North West. Some of these rivers are home to sensitive protected environmental habitats. When river levels are low, for example during a drought, our abstraction may cause the river level to fall below environmentally sustainable levels, and environmental harm could occur.

The Environment Agency may review or revoke our abstraction licences if they feel that our abstractions pose a significant risk to the environment. This would cause United Utilities serious difficulties, as we would need to put in place permanent alternative sources of supply for the customers who receive supplies from these river abstractions. Providing permanent alternative engineered supplies can be very expensive for customers.

The Abstraction Incentive Mechanism provides a system to offer protection to the environment, without us needing to build permanent alternative supplies for customers.

We measure our long-term ‘baseline’ abstraction volumes from AIM sites identified by the Environment Agency. If low river levels occur, then the Environment Agency will trigger AIM rules. At that point, if we increase our abstraction from the river above our baseline volumes, then we would face a financial penalty. If we reduce or cease our abstractions below our baseline abstraction volumes then we will receive a financial reward.

Reducing our abstractions involves providing temporary supplies for customers who are usually supplied from the river in question. In most cases the alternative supplies involve pumping from nearby resilient sources such as reservoirs. This pumping activity incurs additional Opex, and the financial reward is designed to offset the costs of increased Opex, so that customers are not penalised for providing environmental protection.

An alternative means of managing abstractions would be to apply for drought permits during periods of low flow, increasing our abstraction of water from sources such as the Cumbrian lakes and reducing the amount of compensation flow we provide to certain rivers. From our WRMP research, we know that customers do not have an appetite to increase drought permits. Of all water efficiency measures posed, this was least preferred option. This view was consistent across all North West regions and was consistent for both residential and business customers. More still, whilst increasing drought permits was the least preferred option selected for water efficiency, from an acceptability perspective it was also the least accepted option.

Finally a majority (52%) of customers are unable to afford a bill increase to pay for service improvements. Of those customers who were able to support a bill increase for service improvements, the option to fund “Taking water for consumption out of rivers and lakes in a responsible way that doesn’t harm wildlife or the environment” was one of the least favoured options, with only 8% of customers supporting this. AIM is a broadly cost neutral solution to this issue, and therefore enables us to meet regulatory obligations on environmental protection without undue impact on customers.

6.3.2 Risk and Resilience

There is a risk of new AIM sites being identified, however in developing our proposals for AIM in AMP7 we have reviewed all available information to identify possible sites and have had our proposals endorsed by the Environment Agency. Therefore, this risk is believed to be low.

Abstraction from Ennerdale is due to cease upon the completion of the Thirlmere West Cumbria Transfer scheme. When abstraction ceases, the site will be removed from the AIM scheme. Our West Cumbria supply scheme could deliver late, meaning that abstraction will continue at Ennerdale, resulting in the site remaining
in AIM for longer than expected. However, this risk is perceived to be small as we are currently on track to deliver this scheme ahead of schedule and are monitoring this scheme through our Thirlmere Transfer to West Cumbria AMP6 performance commitment. The date for revocation of our Ennerdale abstraction licence in the Environment Agency’s WINEPv3 for AMP7 is 16 December 2022. Once we revoke our Ennerdale abstraction licence then this site will be removed from AIM.

There is a potential that we are unable to reduce our abstraction at the AIM sites for example, due to an outage on the alternative water source. This could result in our AIM abstraction increasing, generating a financial penalty.

If flow data is unavailable for the Environment Agency’s river flow gauging stations used in the AIM assessment, then AIM will not be assessed for any such periods, as it will not be possible to determine if the AIM flow trigger has been reached. Therefore zero AIM performance will be assumed for these periods.

AIM is triggered when river flows fall to a set threshold. As future weather is unknown, we cannot predict whether AIM will be triggered in any given year and if it is, for how long that would be.

If new sites at environmental risk are identified during the business plan period, we will discuss their suitability for inclusion in AIM with the Environment Agency and Ofwat. We perceive this risk to be low as in developing our AMP7 AIM proposals we have reviewed all available information to identify potential AIM sites and our findings have been endorsed by the Environment Agency. If new sites are identified, we will agree them with the Environment Agency and Ofwat, along with suitable AIM flow triggers, and incorporate them in to the AIM assessment. Crucially, only if all parties agree will new sites be added. For new sites we will follow the same approach to setting AIM flow triggers and baseline abstraction rates as we have done for our existing AIM sites (i.e. Q95 of the historic river flow data set as the AIM flow trigger and baseline abstraction rate based on the 1 April 2011 to 31 March 2017 period).

AIM is commensurate with our long-term strategy to ensure all our abstractions are sustainable and adhere to regulatory requirements. It is also commensurate with our West Cumbria water resources strategy (the Thirlmere West Cumbria Transfer scheme) which will allow abstraction from Ennerdale to cease in 2022.

Where we have altered the management of our abstractions to protect the environment, we have sought to improve the resilience of the new or altered abstraction system that we operate. For example, where we are planning to cease abstraction from Ennerdale, we are instead providing customers with a reliable and resilient supply from Thirlmere, a major water body far less likely to be affected by drought or other environmental restrictions.

Through a long term programme we will address environmental concerns associated with our abstractions through formal operational changes (e.g. changes to abstraction licences, development of alternative sources). Where this has not been cost beneficial (e.g. at Old Water, River Gelt), AIM provides an appropriate approach to encourage us to reduce the environmental impact of our abstractions wherever possible. Changes in customer demand for water and climate change may result in new abstraction pressures being identified in the future.

6.3.3 The plan for 2020-2025

Managing our abstraction at AIM sites at times of low river flow will help us ensure our abstraction of water from the environment is sustainable, protecting sensitive environments at times when they are an increased likelihood of stress. The 2020-2025 AIM sites are located in areas that are particularly important for the environment:

- Old Water, which is a tributary of the River Gelt. The River Gelt is part of the River Eden SSSI and Special Area of Conservation SAC; and
- Ennerdale, which provides water to the downstream River Ehen, which is both a SSSI and a Special Area of Conservation SAC.
Managing our abstraction at these sensitive sites will help build a resilient environment for our current customers, and future generations.

We have dealt with the majority of our historic unsustainable abstractions during previous business plan periods, resulting in only two AIM sites (Ennerdale and Old Water) being included in AIM for 2020-2025. We are planning to cease abstraction entirely at Ennerdale during 2020-2025, leaving just one AIM site, Old Water on the River Gelt. The provision of a downstream flow at Old Water was considered by the Environment Agency for delivery in 2015-2020 (it was included in early drafts of the 2015-2020 WINEP) but was omitted as it failed a cost benefit test due to the significant costs involved in undertaking a capital build scheme in such a remote location with poor access, no power and no telemetry connection. Therefore, management of our abstraction at Old Water through AIM provides a cost effective approach to reducing the environmental impact of our abstraction.

For the AMP6 AIM sites that are continuing into the 2020-2025 AIM (i.e. Ennerdale and Old Water), to achieve a zero AIM performance (under the Ofwat method) will be more stretching. As time passes, and abstraction at AIM sites is reduced, the baseline should also reduce (although other influencing factors may affect this), resulting in outperformance becoming increasingly difficult to achieve. For example, at Ennerdale, the baseline abstraction rate has fallen from 26.0 Ml/d to 24.8 Ml/d, therefore our management of abstraction at times of low river flow are helping the watercourse to become more resilient, and targets are becoming tighter and tighter, reflecting the good performance we’ve seen to date and we expect to see this trend continue in the future. Performance will also be stretching as the river flow threshold that triggers AIM at Old Water is higher (i.e. it will be triggered more often), this is because the calculation of the AIM river flow threshold is based on a longer dataset which includes the early years of the 2015-20 business plan period when we have been managing our abstraction under AIM.

This programme will be subject to a performance commitment (C03-WR abstraction incentive mechanism), which is a compulsory bespoke measure.

The AIM river flow triggers have altered from AMP6 to AMP7; showing that the AIM trigger flow at Old Water has increased meaning that AIM will be triggered more often, and so represents a more stretching target.

**Table 10: AMP6 AIM Trigger Levels**

<table>
<thead>
<tr>
<th>AIM site</th>
<th>AMP6 (2015-20) Business Plan AIM river flow trigger (Ml/d)</th>
<th>AMP7 (2020-25) Business Plan AIM river flow trigger (Ml/d)</th>
<th>Rationale for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Water</td>
<td>8.8 Q95 of EA’s Hynam Bridge gauging station daily average flow data set for 28 July 1995 to 22 October 2013</td>
<td>9.1 Q95 of EA’s Hynam Bridge gauging station daily average flow data set for 28 July 1995 to 31 March 2017</td>
<td>Data set extended with more recent data</td>
</tr>
<tr>
<td>Ennerdale</td>
<td>80.0 Upper band compensation release required in the impoundment licence</td>
<td>80.0 Upper band compensation release required in the impoundment licence</td>
<td>No change</td>
</tr>
</tbody>
</table>

**6.3.4 Performance Commitments and Costs**

The performance commitment target for 2020-2025 is to have no abstraction above the long term baseline average whilst Aim is triggered (i.e. a target flow of 0).

**Table 11: AIM Performance Commitment**

<table>
<thead>
<tr>
<th>AIM performance (MI) normalised to baseline flow</th>
<th>AMP6</th>
<th>AMP7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
An outperformance and underperformance incentive rate will apply for this measure. The incentive rates are £779 per megalitre (above or below the baseline) at Old Water, and £358 per megalitre (above or below the baseline) at Ennerdale.

We are not planning to undertake any capital expenditure to achieve our AIM targets. There may be small increases in our operational costs to use alternative water sources to offset abstraction at an AIM site if flow triggers are met. AIM is a weather dependent measure, and therefore it is not possible to accurately forecast the level of expenditure that we would expect.

The forecast Opex cost for Old Water is based on abstracting more water at the pumped River Eden at Cumwhinton river intake and pumping this over to Castle Carrock. The cost of this is £633 per day and again we have assumed this is used for 18.25 days a year (i.e. 5% of the time) (annual Opex cost = £633 * 18.25).

The forecast Opex cost for Ennerdale is based on running the South Egremont boreholes which are a pumped source at a rate of 4 ML/d for 18.25 days a year (i.e. 5% of the time) at a cost of £66.09 per ML (annual OPEX cost = £66.09 * 4 * 18.25). We have assumed that due to the West Cumbria supply scheme, that abstraction from Ennerdale will cease from 1 April 2022 and hence no further Opex cost will be incurred due to AIM.

The forecast Opex has therefore been calculated as:

<table>
<thead>
<tr>
<th>Year</th>
<th>Old Water</th>
<th>Ennerdale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020/21</td>
<td>£11,552</td>
<td>£4,825</td>
<td>£16,377</td>
</tr>
<tr>
<td>2021/22</td>
<td>£11,552</td>
<td>£4,825</td>
<td>£16,377</td>
</tr>
<tr>
<td>2022/23</td>
<td>£11,552</td>
<td>£0</td>
<td>£11,552</td>
</tr>
<tr>
<td>2023/24</td>
<td>£11,552</td>
<td>£0</td>
<td>£11,552</td>
</tr>
<tr>
<td>2024/25</td>
<td>£11,552</td>
<td>£0</td>
<td>£11,552</td>
</tr>
<tr>
<td>Total for AMP7</td>
<td>£57,761</td>
<td>£9,649</td>
<td>£67,410</td>
</tr>
</tbody>
</table>

The Totex associated with delivery of the 2020-2025 Abstraction Incentive Mechanism programme is as follows,

<table>
<thead>
<tr>
<th>Abstraction Incentive Mechanism Business Plan 2020-2025 Totex</th>
<th>2020-2025 forecast Totex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditure on the Abstraction Incentive Mechanism</td>
<td>£0.000m</td>
</tr>
<tr>
<td>Operational expenditure on the Abstraction Incentive Mechanism</td>
<td>£0.067m</td>
</tr>
<tr>
<td>Total</td>
<td>£0.067m</td>
</tr>
</tbody>
</table>
6.4 Improving The Water Environment

Customer Outcome:
The natural environment is protected and improved in the way we deliver our services.

Summary
We abstract water from the environment. Both the act of abstraction, and the equipment that we use to obtain that water, can impact upon the natural environment. We have regulatory obligations under the Water Industry National Environment Programme, concerning how we manage and improve the environment. We have engaged in a robust, evidence led negotiation with the Environment Agency which has enabled us to balance the needs of customers with the expectations of regulators.

Current Performance
To date our environmental management activity has been measured as “KM of rivers improved”, a measure of the length of river benefitting from environmental improvement schemes. We are forecast to meet our 2020 target for the KM of rivers improved. As we move towards 2020-2025 we propose switching to a simpler performance measure, based on the number of days early or late that projects are delivered, compared to an agreed WINEP delivery schedule.

Efficiency
We have undertaken an evidence based challenge to the regulator, on customers behalf. This has seen the number of schemes we are required to complete reduce from 167 at WINEP1 to 49 at WINEP3.

£26.464m Totex
Expenditure required to deliver this performance commitment

Customer Views
We know that customers do not feel able to afford bill increases in order to fund environmental schemes.

Innovation
We are actively pursuing partnership delivery opportunities, where those secure efficiencies, such as our partnership delivery of environmental projects at Bleawater.

Risks
Environmental regulations are highly political, and the continued future implementation of regulations may depend upon the UK political landscape and our evolving relationship with the EU.

Future Performance
For 2020-2025 we plan to deliver 49 WINEP environmental management schemes, to an agreed timetable. We will measure our performance against a performance commitment to have no projects delivered late (performance commitment C04-WR Improving the water environment).

End of AMP Future Targets

<table>
<thead>
<tr>
<th>Net number of days early or late project delivery</th>
<th>AMP6</th>
<th>AMP7</th>
<th>AMP8</th>
<th>AMP9</th>
<th>AMP10</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a new measure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Customer expectations

6.4.1 Customer Views

We have spoken to customers regarding environmental management. We know that 92% of customers that we engaged with said that they wanted us to take good care of the land and reservoirs that we own. More still from our customer panel research discussing WINEP, 96% of customers that we spoke with said it was important for us to take part in environmental initiatives.

However, customers were less enthusiastic about funding environmental initiatives through their water bills. A majority (52%) of customers are unable to afford a bill increase to pay for service improvements. Of those customers who were able to support a bill increase for service improvements, the option to fund “Taking water for consumption out of rivers and lakes in a responsible way that doesn’t harm wildlife or the environment” was one of the least favoured options, with only 8% of customers supporting this. Whilst there was some willingness to pay to extend sustainable environmental management, this was not extensive and the majority of customers were prepared to pay less than 88p per year on their annual bills.

The need for investment in this area is driven by regulation. United Utilities does not have a ‘do nothing’ option, as this would place us at risk of prosecution. However we clearly have duty to customers to minimise the impact of environmental management activity on customer bills.

We have engaged with regulators to ensure that the impact of the WINEP programme on customers is minimised. We used robust scientific data to challenge assumptions being made by the regulator, and demonstrating that environmental benefits could be delivered more efficiently with a more refined programme.

Through our challenge, we have been able to reduce the number of schemes on the WINEP from 167 at WINEP1 in March 2017 to 49 at WINEP3 in March 2018.

As a responsible systems operator we will ensure that we minimise the environmental impact of our operations, whilst protecting customers services and keeping bills affordable.

6.4.2 Risk and Resilience

Investigations undertaken in Business Plan period 2020-2025 will inform the programme for business plan period 2025-2030. However, post-2025, future obligations due to environmental legislation are less clear. All relevant environmental EU Directives are transcribed into UK law, however, the regulatory environment and direction following the UK’s departure from the European Union is not currently clear. However, it is considered unlikely that any replacement legislation will be less stringent than that currently in place.

There is the potential that the requirement for fish screening and passage could extend to all fish species in the future through the planned revision of the existing salmon and freshwater fisheries legislation. The proposed ‘Free Passage of Fish Order’, would afford protection to all fish species and support achievement of WFD objectives. However, the proposed legislation to enact these measures has not yet been implemented and the timetable for this is not clear due to the evolving relationship between the UK and future EU regulations.

6.4.3 The plan for 2020-2025

We recognise the importance of balancing the need to provide water for public supply with the potential impact of those activities on the environment and the need to understand customers’ perspective to inform our business plans. The protection of customers’ interests is at the forefront of our planning process.

We have engaged in negotiation with the Environment Agency, to ensure that any regulatory requirements to improve the performance of our assets are based on robust evidence of environmental issues. This collaboration has not simply been an opportunity for us to avoid future projects, but to ensure we are
prioritising and investing in areas which have a well evidenced environmental need, and to ensure that we meet those needs in the most efficient way.

Figure 19: WINEP Development

As WINEP is a government led regulatory obligation, management control with regard to delivering this programme is limited. The WINEP is issued by the Environment Agency and defines the Agency’s and Natural England’s programme of obligations in AMP7. However, through effective evidence based negotiation we have been able to manage regulatory expectations whilst protecting customers’ interests.

Figure 20: WINEP Scope Reduction Through Evidence Based Negotiation
Water Framework Directive
The results of the cost benefit analysis, and our robust technical challenge to the scope of the Water Framework Directive (WFD) driven projects we were able to reduce the scale of WFD projects on the WINEP from 136 projects included in WINEP1 in March 2017 to 27 WFD projects in WINEP3 in March 2018.

Habitats Regulations
In Business Plan period 2020-2025 many of our Habitats Regulations commitments are related to the decommissioning of redundant infrastructure at sites where our abstractions will cease in 2022 following the completion of the Thirlmere Transfer Scheme.

Removing infrastructure has the potential to provide wide ecological benefits, as well as benefits to landscape and visual amenity associated with removal of man-made structures with the Lake District National Park and World Heritage Site.

In addition, removing the infrastructure at these sites will have financial benefits associated with removal on ongoing responsibility and liability for maintenance of compensation flows, fish passes, dams, and all associated infrastructure at these sites.

We challenged regulators in order to minimise the scope of WFD driven WINEP projects, in order to minimise the impact of these projects on customers. We successfully negotiated a reduction in the number of WFD projects from 24 in WINEP1 to 8 in WINEP3.

Eels Regulations
The Environment Agency has powers in relation to the Eels Regulations and may serve a notice on owners/operators to construct an eel pass or make improvements to existing passes and/or install an eel screen at an abstraction intake or outfall.

United Utilities were part of the steering group for a UK Water Industry Research project, which reviewed the implementation of the Eel Regulations and critiqued the Cost-Benefit-Analysis model applied by the Environment Agency. Water UK challenged the cost-benefit approach used by the Environment Agency. Subsequently the Environment Agency has confirmed a change of approach to implementation in their PR19 Eel Regulations guidance.

This challenge significantly reduced the expectations on us, as we had over 100 candidate low and medium risk Eel Regulation sites, which were successfully removed from the Eels Action Plan leaving just 6 Eels projects for our AMP7 WINEP programme.

Invasive Non-Native Species
Under the non-native species regulations, we have been required to carry out investigations into the risk of transferring invasive species from one location to another, during our raw water transfer operations. This data will assist us with the design and operation of any future nationwide water trading operations that we engage in.

Throughout the development of our business plan, we have focussed on maximising efficiency for customers.
Case study – Blea Water

For AMP7 we have sought innovative delivery mechanisms to enable us to increase our efficiency and pace. For example, in AMP7 we have a WINEP commitment to remove the impounding structure at Blea Water.

Blea Water is a natural lake located near the summit of High Street Mountain in the Lake District National Park. In 1930 a concrete weir was built across the stream (Blea Water Beck) that naturally drains the lake. The concrete weir artificially increased the depth of the lake, enabling us to install an intake pipe to take lake water for supply.

The water quality from Blea Water was poor. Abstraction from Blea Water ceased in 2005, and we now have a WINEP obligation to remove the weir, and re-naturalise the valley. We initially estimated the cost of weir removal at £1.2m. Part of the high cost was due to the very remote and mountainous location (with no formal vehicular access) which is not a type of project that our contractors have extensive experience of delivering.

We have now been able to agree a partnership approach through which Natural England will manage the weir removal project, utilising their local contractors (whom are experienced and equipped to deliver small scale projects in highland locations), and securing the efficiencies that their local contacts can bring. Through this partnership approach, we have been able to reduce the estimated cost of delivering this project to £0.60m.

Through the AMP we will continue to explore efficient delivery methods, and we will explore further partnership delivery approaches wherever that can achieve an efficiency.
During the development of the Water Industry National Environment Programme, we have worked closely with the Environment Agency to understand their requirements and worked with them to develop an appropriate list of projects. However, there may be instances where it is necessary to adjust the programme of work that has been agreed with the Environment Agency during the five year period. Any changes will be managed through a formal change control process. We will seek to ensure that changes that are made to the programme of work during the period are outcome neutral so there is no overall impact to customers. Where changes to the programme are formally agreed with the Environment Agency we will track against the revised scheme for the delivery date.

On completion of each scheme we will ensure detailed output in use packs are available for sharing with the Environment Agency to demonstrate completion of the work.

The projects included in the "Improving the water environment programme" for 2020-2025 are as follows:

**Table 14: WINEP 2020-2025**

<table>
<thead>
<tr>
<th>Project</th>
<th>Regulatory Driver</th>
<th>Delivery Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMWB Stage 3s under investigation by UU in 2016/17: compensation flow change at Dean Clough Reservoir.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>HMWB Stage 3s under investigation by UU in 2016/17: compensation flow change at Clowbridge Reservoir.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>HMWB Stage 2s still with the EA (for Stage 3 assessment by UU in 2019) - flow change at Grizedale Lea Reservoir.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Pre and post flow change monitoring at Readycon Dean Reservoir.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Pre and post flow change monitoring at Horse Coppice Reservoir.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>WFD no-deterioration investigations - GWB CAT3 Wirral and West Cheshire permo-triassic sandstone aquifers (groundwater abstraction and surface water flow).</td>
<td>Water Framework Directive, No Deterioration.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>WFD no-deterioration investigations - GWB CAT4 - Bearstone Borehole.</td>
<td>Water Framework Directive, No Deterioration.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>WFD no-deterioration investigations - SWB CAT3 - groundwater licences.</td>
<td>Water Framework Directive, No Deterioration.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>WFD no-deterioration investigations - SWB CAT3 - surface water licences (Langden/Hareden/Cowley/Dean system).</td>
<td>Water Framework Directive, No Deterioration.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>WFD no-deterioration investigations - SWB - impact of abstraction at Laneshaw, Corn Close boreholes and Trawden Springs on Colne Water.</td>
<td>Water Framework Directive, No Deterioration.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>WFD serious damage investigations at Eccleston Hill.</td>
<td>Water Framework Directive, No Deterioration.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>Investigation of fish passage solution at Hug Bridge abstraction weir, River Dane.</td>
<td>Water Framework Directive, Fish passes</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Taxal gauging weir fish passage.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Investigation of work to improve river morphology and minimise the impact of Stocks Reservoir on the River Hodder HMWB downstream.</td>
<td>Water Framework Directive, Heavily Modified Water Bodies.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Project Description</td>
<td>Directives/Acts</td>
<td>Implementation Date</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Thirlmere land holding, turbidity and colour safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Poaka Beck Reservoir pesticides and 2MIB safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Stocks Reservoir / Hodder colour safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Bowscar Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Castle Carrock Reservoir geosmin safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Winwick and Houghton Green Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Delamere Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Manley Common Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Five Crosses Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Rushton Spencer Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Pocket Nook Borehole solvents safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Bearstone Borehole nitrate safeguard zone.</td>
<td>Water Framework Directive, Drinking Water Protected Areas.</td>
<td>22/12/2024*</td>
</tr>
<tr>
<td>Bowland Fells SSSI.</td>
<td>Wildlife and Countryside Act, SSSI.</td>
<td>31/03/2025*</td>
</tr>
<tr>
<td>West Pennine Moors SSSI.</td>
<td>Wildlife and Countryside Act, SSSI.</td>
<td>31/03/2025*</td>
</tr>
<tr>
<td>Blea Water - weir removal implementation.</td>
<td>Wildlife and Countryside Act, SSSI.</td>
<td>31/03/2025*</td>
</tr>
<tr>
<td>South Pennine Moors SAC, SPA, SSSI.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2025*</td>
</tr>
<tr>
<td>Haweswater (Watchgate) land holding.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2025*</td>
</tr>
<tr>
<td>River Ehen Compensatory Measures - infrastructure removal Crummock Water.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2025</td>
</tr>
<tr>
<td>River Ehen Compensatory Measures - phase 1 infrastructure removal Overwater.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2025</td>
</tr>
<tr>
<td>River Ehen Compensatory Measures - infrastructure removal Chapel House Reservoir.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2025</td>
</tr>
<tr>
<td>Ennerdale Water - weir removal investigation and options appraisal.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2025</td>
</tr>
<tr>
<td>Yearl weir improvement to geomorphology and fish passage.</td>
<td>EU Habitats Directive.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Common Standards Monitoring Guidance (CSMG) changes.</td>
<td>EU Habitats Directive.</td>
<td>31/03/2022</td>
</tr>
<tr>
<td>Eel Regulations sites under investigation in 2016-17: River Dee: Heronbridge.</td>
<td>Eels Regulations.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Eel Regulations sites under investigation in 2016-17: River Dee: Huntington.</td>
<td>Eels Regulations.</td>
<td>22/12/2024</td>
</tr>
<tr>
<td>Eel Regulations sites under investigation in 2016-17: River Lune at LCUS (Halton).</td>
<td>Eels Regulations.</td>
<td>31/03/2025</td>
</tr>
</tbody>
</table>
### Eel Regulations sites under investigation in 2016-17:
- Poaka Beck and Harlock Reservoirs.
- Rivington Reservoirs.
- Grizedale Lea Reservoir.

### INNS biosecurity e-learning package.

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Regulations</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eel Regulations sites under investigation in 2016-17: Poaka Beck and Harlock Reservoirs.</td>
<td>Eels Regulations.</td>
<td>31/01/2025</td>
</tr>
<tr>
<td>Eel Regulations sites under investigation in 2016-17: Rivington Reservoirs.</td>
<td>Eels Regulations.</td>
<td>31/01/2025</td>
</tr>
<tr>
<td>Eel Regulations sites under investigation in 2016-17: Grizedale Lea Reservoir.</td>
<td>Eels Regulations.</td>
<td>31/01/2025</td>
</tr>
<tr>
<td>INNS biosecurity e-learning package.</td>
<td>Invasive Non-Native Species Regulations.</td>
<td>31/03/2025</td>
</tr>
</tbody>
</table>

* These projects marked with an asterix in the date column are reportable WINEP measures, the output of which will contribute towards this performance commitment. However, these asterix marked projects are catchment management projects which are funded separately via the Catchment Management programme and the Totex for those asterix marked projects are not included in the Totex values below.

The purpose of separating these two elements of WINEP project delivery is that catchment management projects are delivered by different areas of the United Utilities business, and will be delivered through different partnerships and contractors compared to the Improving the Water Environment programme.

### 6.3.4 Performance Commitments and Costs

Our plan for 2020-2025 is focussed on the delivery of our obligations under the WINEP. We will measure our performance in this area through our performance commitment “C04-WR Improving the water environment”.

This measure protects customers from late delivery of our environmental improvement programme through incentives. Each project listed in the WINEP has an identified delivery date, chosen by the Environment Agency. We will assess the number of days early or late each scheme is delivered and the cumulative view of early or late delivery will be reported annually.

The Totex associated with delivery of the 2020-2025 Improving the Water Environment programme is as follows,

**Table 15: Improving The Water Environment Totex**

<table>
<thead>
<tr>
<th>Description</th>
<th>2020-2025 forecast Totex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditure on WINEP environmental management activity (excluding catchment management).</td>
<td>£21.012m</td>
</tr>
<tr>
<td>Operational expenditure on WINEP environmental management activity (excluding catchment management).</td>
<td>£5.452m</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£26.464m</strong></td>
</tr>
</tbody>
</table>
# Forecast Totex to Deliver the Plan

The Totex associated with delivery of the 2020-2025 Water Resources price control business plan is as follows,

<table>
<thead>
<tr>
<th>Water Resources Price Control Business Plan 2020-2025 Totex</th>
<th>2020-2025 forecast Totex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditure on the management of United Utilities owned catchment land, to deliver excellent water quality and to meet environmental regulations.</td>
<td>£10.07m</td>
</tr>
<tr>
<td>Operational expenditure on both owned and non-owned catchment land, to deliver excellent water quality and to meet environmental regulations.</td>
<td>£8.22m</td>
</tr>
<tr>
<td>Capital expenditure on risk management activity associated with dams and reservoirs, to meet HSE regulations.</td>
<td>£54.650m</td>
</tr>
<tr>
<td>Operational expenditure on risk management and routine maintenance associated with dams and reservoirs, to meet HSE regulations.</td>
<td>£45.446m</td>
</tr>
<tr>
<td>Capital expenditure on raw water infrastructure, to ensure the resilient and reliable supply of raw water for customers.</td>
<td>£17.090m</td>
</tr>
<tr>
<td>Operational expenditure on raw water infrastructure, to ensure the resilient and reliable supply of raw water for customers.</td>
<td>£13.487m</td>
</tr>
<tr>
<td>Operational expenditure on the Abstraction Incentive Mechanism.</td>
<td>£0.067m</td>
</tr>
<tr>
<td>Capital expenditure on WINEP environmental management activity (excluding catchment management).</td>
<td>£21.012m</td>
</tr>
<tr>
<td>Operational expenditure on WINEP environmental management activity (excluding catchment management).</td>
<td>£5.452m</td>
</tr>
<tr>
<td>Local authority business rates.</td>
<td>£87.749m</td>
</tr>
<tr>
<td>Abstraction licence charges set by the Environment Agency.</td>
<td>£90.980m</td>
</tr>
<tr>
<td>Telemetry communications charges.</td>
<td>£2.960m</td>
</tr>
<tr>
<td>Management and general overhead (IT support, office space rental, legal and financial services etc.).</td>
<td>£11.490m</td>
</tr>
<tr>
<td>Preparatory investigations and development work contributing towards future water trading.</td>
<td>£1.000m</td>
</tr>
<tr>
<td>Other general operational expenditure, which cannot be directly mapped to an investment programme (e.g. vehicle fleet costs).</td>
<td>£4.757m</td>
</tr>
<tr>
<td><strong>Total Forecast Expenditure</strong></td>
<td><strong>£374.430m</strong></td>
</tr>
</tbody>
</table>