

Annual water resources review

April 2021 – March 2022



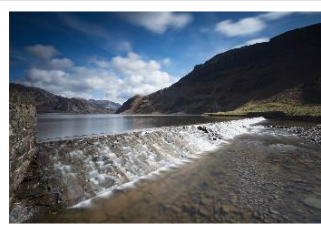
Summary



Supply and demand in 2021/22

- We have maintained a supply-demand surplus in all five of our resource zones.
- Our regional leakage level of 414 Ml/d is the lowest ever level of leakage in the company's history, beating our previous lowest level achieved last year. 2021/22 represents the sixteenth consecutive year that we have outperformed our regional leakage target.
- We have installed free meters at 21,301 households, but in light of a declining trend in terms of free meter option take-up and in the context of affordability challenges, we are promoting meters as the way to a cheaper bill for many customers through our Lowest Bill Guarantee scheme, personalised mailings to demonstrate actual savings, and through the introduction of a new proactive enhanced metering programme which allows customers to see what they would save on a meter, alongside what they pay for now on a fixed tariff (described in section 2.5.3).
- We are continuing to actively promote 'Get Water Fit' as a tool to help customers understand their own usage and ways to save with more than 100,000 customers registered so far.
- We have implemented several improvements to our supply system, including new boreholes and increased asset capacity.
- We have outperformed our target for unplanned outage in 2021/22, and continue to implement changes to reduce the risk of unplanned shutdowns of our assets.

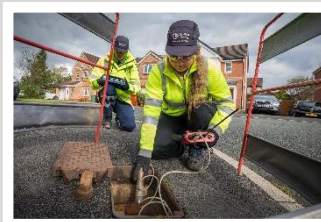
See sections 2.4 to 2.6.



West Cumbria

- Good progress has continued on construction of the Thirlmere transfer scheme, with the project currently in the commissioning and testing phase. There have been some minor delays related to the COVID-19 pandemic, however we expect to complete this major seven-year project in September 2022.
- On completion of this scheme, our West Cumbria Resource Zone will merge with our existing Integrated Resource Zone to form the new, combined Strategic Resource Zone.
- Completion of the Thirlmere transfer scheme will enable us to revoke our abstraction licences at Ennerdale Lake, Crummock Water and other minor sources in the area (see section 2.4) by the end of 2022, providing benefit to the environment.

See section 2.7.



Our plans for 2022 and beyond

- As part of the Water Resources West group, in January 2022 we published our emerging Regional Water Resources Plan for a period of informal consultation. Following any required updates, we expect to publish the draft Regional Water Resources Plan in October 2022.
- This annual review reports on our progress against the final Water Resources Management Plan 2019, however we are already working on the next update of our plan. We expect to publish our draft Water Resources Management Plan 2024 in October 2022, for a 12-week period of public consultation.
- Following a period of public consultation on our draft Drought Plan, in summer 2021, we updated the plan as appropriate and published our revised draft Drought Plan in August 2021. Following further feedback from regulators we have published a draft final plan. Once approved by Defra and the Environment Agency this will be published as our final Drought Plan 2022, covering the period from 2022 to 2027.

See sections 3.1 to 3.4.

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1. Introduction



In this Water Resources Review we report on our water resources position for the year 1 April 2021 – 31 March 2022 (2021/22). In compliance with the Water Industry Act 1991, the primary aim of this report is to provide an annual update to our current Water Resources Management Plan, published in 2019. We do this by assessing actual events and performance against the forecasts in our plan. This review describes progress made on implementing the plan and provides commentary on the key issues, following the Environment Agency guidelines¹.

We have included an overview of our plans for 2022 and beyond, covering our recent updates to our Drought Plan and the publication of our draft Regional Water Resources Plan, as well as our activities to prepare the next update of the Water Resources Management Plan. Our next plan is being developed in collaboration with the Water Resources West (WRW) regional group, in line with Defra's requirement for individual company plans to align with the relevant Regional Water Resources Plan (see Section 3.2).

We will submit a copy of this annual Water Resources Review to the Secretary of State, the Environment Agency, Ofwat, the Welsh Government and Natural Resources Wales. We are also publishing the review on our website for interested customers and/or stakeholders.

1.1 Background to the Water Resources Management Plan

Our current Water Resources Management Plan was published in August 2019 and became effective from 1 April 2020, superseding the 2015 Water Resources Management Plan as the formally adopted plan. In developing the plan we reviewed customer and stakeholder priorities and changes in our supply system,

¹ Water resource management plan annual review and annual data return, Environment Agency and Natural Resources Wales, March 2022

accounted for future effects of climate change and set out our proposed plan to secure the future for water resources in the North West.

Our previous (2015) Water Resources Management Plan was based on four water resource zones (areas in which water resources can be balanced, and within which customers experience the same risk of supply shortfall). During 2021/22 there were no changes in the boundaries of these four resource zones. However, following the completion of the Thirlmere transfer pipeline linking the West Cumbria and Integrated zones, in September 2022, these areas will be combined into a new zone known as the Strategic Resource Zone. In anticipation of this change in the early years of the planning period, our 2019 plan reflects the three zones: Strategic, Carlisle and North Eden (along with an additional zone, Barepot, which consists solely of non-potable supplies to industrial customers).

In this review, actual performance and events are compared to the 2019 Water Resources Management Plan forecasts for the second year of the plan, covering the period 1 April 2021 – 31 March 2022 (2021/22). However, to reflect our operational resource zones during 2021/22, we have retained some information from our 2015 plan relating to our Integrated and West Cumbria resource zones. This is presented alongside the forecasts for the new Strategic Resource Zone where appropriate.

We update the Water Resources Management Plan every five years to reflect the latest guidelines, methods and latest evidence, and our next plan, due to be published in 2023, will cover the period from 2025/26 and beyond.

The final Water Resources Management Plan 2019 is available at: unitedutilities.com/corporate/about-us/our-future-plans/water-resources.

1.2 Links to our other plans

Our Water Resources Management Plan is one of a number of plans that influence the provision of secure water resources for customers and the environment. As outlined above, this report also provides an update on:

- Our Statutory Drought Plan – see Section 3.1 for an update. Our revised draft Drought Plan 2022 is available at: unitedutilities.com/corporate/about-us/our-future-plans/water-resources;
- Our draft regional water resources plan prepared in collaboration with the Water Resources West regional group – see Section 3.2. Information on regional planning can be found at the Water Resources West website waterresourceswest.co.uk.
- Our latest Business Plan – see Section 2.1. A publicly available summary can be found at: unitedutilities.com/corporate/about-us/our-future-plans.

2. Our water resources in 2021/22



This section presents a summary of our performance against our Business Plan commitments and our 2019 Water Resources Management Plan forecasts.

2.1 Our customer performance commitments

We adopted Ofwat's common performance commitments as part of our Business Plan, as well as a number of additional bespoke measures. Our performance commitments are focused on customer priorities and we set ourselves stretching annual targets for the planning period covered by the Business Plan and the first five years of our 2019 Water Resources Management Plan (2020–25).


The performance commitments that closely align to our 2019 Water Resources Management Plan are summarised below. Our annual targets for the remaining years of our planning period (from 2021–25) are shown in Table 1, along with our performance against each measure for 2021/22. We will continue to report on our progress against these targets in our subsequent annual reviews of the plan from 2022/23 to 2024/25.

- **Leakage:** Leakage is a key lever for us to improve our resilience and environmental impact and is a significant issue for our customers and stakeholders. Our customers also place a high value on leakage reduction. Our target is to reduce our regional leakage (measured as a three-year rolling average) by 10.8% by 2024/25 (equivalent to a 15% reduction in leakage when measured on an annual basis).
- **Unplanned outage:** While unplanned outage does not necessarily result in interruptions to supply, it does reflect a rising likelihood of supply loss. It is measured as a temporary and unexpected loss of our maximum sustainable production capacity for greater than a 24-hour period, and reported as the average percentage loss in peak week production capacity over the year.
- **Per capita consumption (PCC):** This measure assesses the percentage change in the average amount of water used by each person that lives in a residential property, on a three-year rolling average basis. Our target to reduce PCC by over 6% by 2024/25 reflects the wishes of our customers and stakeholders for us to continue to promote water efficiency.

- **Drought risk resilience (DRR):** Our customers place a high value on continuous water supply, and avoiding the need for severe restrictions on use is a priority. This measure reports the percentage of the population at risk of experiencing severe restrictions (such as standpipes or rota cuts) in a 1 in 200 year drought, on average over 25 years. Currently this percentage is zero, reflecting our secure supply-demand balance in the region, and our target is to keep this measure at zero throughout the period to 2024/25.
- **Haweswater Aqueduct Resilience Programme:** This measure incentivises the timely and effective completion of a direct procurement process to deliver a scheme to improve the resilience of treated water supplies for over two million customers in the Manchester and Lancashire areas. The measure is reported as the number of key direct procurement control points (three in total over the five-year period) delivered by the target date within each reporting year.
- **Thirlmere transfer into West Cumbria:** Our Thirlmere transfer into West Cumbria is due for completion in September 2022 (see Section 2.7). We will continue to report on progress of this scheme in next year's annual water resources review.
- **Improving the water environment:** This performance commitment measures our progress in delivering our agreed Water Industry National Environment Programme (WINEP) water resources schemes. These schemes improve the natural environment by ensuring that water can be abstracted from rivers and lakes without any negative environmental impacts. It is calculated as the net number of days early or late against scheduled delivery dates, across all schemes combined (see Section 2.4.2).
- **Abstraction incentive mechanism:** The purpose of the abstraction incentive mechanism (AIM) is to protect environmentally sensitive sites by reducing abstraction when river flows are low. It is measured as the volume of water abstracted during these low flow periods, relative to the historic baseline level of abstraction. We have two AIM sites for 2020–25; Old Water and Ennerdale (see Section 2.4.4).

Further details of our customer performance commitments can be found on our website, please visit: unitedutilities.com/corporate/about-us/our-future-plans.

Table 1 Our performance commitments relating to water resources, 2020 to 2025

Outcome	Performance Commitment	Units of Measure	Performance 2020/21	Target 2021/22	Performance 2021/22	Target 2022/23	Target 2023/24	Target 2024/25
 You have a reliable supply of water now and in the future	Leakage	% change from baseline (3-year average)	-1.9%	-1.9%	-4.7%	-3.7%	-6.6%	-10.8%
	Unplanned outage	% of capacity	1.88%	3.26%	2.07%	2.95%	2.65%	2.34%
	Per capita consumption	% change from baseline (3-year average)	-1.7%	-2.6%	-1.5%	-3.9%	-5.1%	-6.3 %
	Drought risk resilience (DRR)	Percentage of customers at risk of experiencing severe supply restrictions during a 1 in 200 year event, on average over 25 years	0.00	0.00	0.00	0.00	0.00	0.00

Outcome	Performance Commitment	Units of Measure	Performance 2020/21	Target 2021/22	Performance 2021/22	Target 2022/23	Target 2023/24	Target 2024/25
	Haweswater Aqueduct Resilience Programme	Number of control points delivered	1	0	N/A	1 (Outline Business Case)	1 (Full Business Case)	0
	Thirlmere transfer into West Cumbria (2020–25)	% of project complete based on earned value tied to milestones	99	100	99	100	100	100
The natural environment is protected and improved in the way we deliver our services	Improving the water environment	Number of days early / late against the planned delivery date	0	0	62 (days early)	0	0	0
	Abstraction incentive mechanism	Megalitres (MI)	-695.9	0.0	-134.4	0.0	0.0	0.0



2.2 Levels of service

Our current minimum stated levels of service are:

- temporary use bans (often referred to as hosepipe bans, although their remit is broader than this) and drought permits/orders to augment supply no more than once in 20 years (5% annual chance);
- drought orders to ban non-essential water use no more than once in 35 years; and
- emergency drought orders (e.g. standpipes or rota cuts) no more than once in 200 years (0.5% annual chance).

The minimum level of service for emergency drought orders has been updated since last year in line with the water resources modelling undertaken for our latest Drought Plan update (see Section 3.1).

Our water efficiency strategies and leakage reductions over the period to 2025 will enable us to offer an improved level of service for the frequency of occurrence of drought permits and drought orders from 2025 onwards, from a 5% annual chance (or 1 in 20 years on average) to a 2.5% annual chance (or 1 in 40 years on average). Our plans to improve our levels of service are supported by customer research undertaken during the development of our 2019 Water Resources Management Plan, and we are continuing to consult with customers on this during the development of our next plan.

2.3 Weather

We have the highest ratio of surface water to groundwater in England, which means that our sources react quickly to dry weather, but also recover rapidly in wet weather. During the summer period, from April to September 2021, we experienced below average regional rainfall, with only about 84% of the long-term average occurring during this period. However, rainfall over the winter period, from October 2021 to March 2022, was above average so that over the full year regional rainfall was slightly above the long-term annual average. It should be noted that rainfall totals for November, January, March and April were all below average, however rainfall for October and February was significantly higher (Figure 1). This pattern of rainfall is not useful from a water resources perspective, particularly in a surface water dominated region. However,

comparing the monthly rainfall totals with reservoir storage over the same period (Figure 2) does show how, after months of dry weather, our system can recover within one month of high rainfall. This pattern of rainfall is becoming more common in recent years due to climate change.

Figure 1 Monthly rainfall since April 2021 compared to the regional long term average

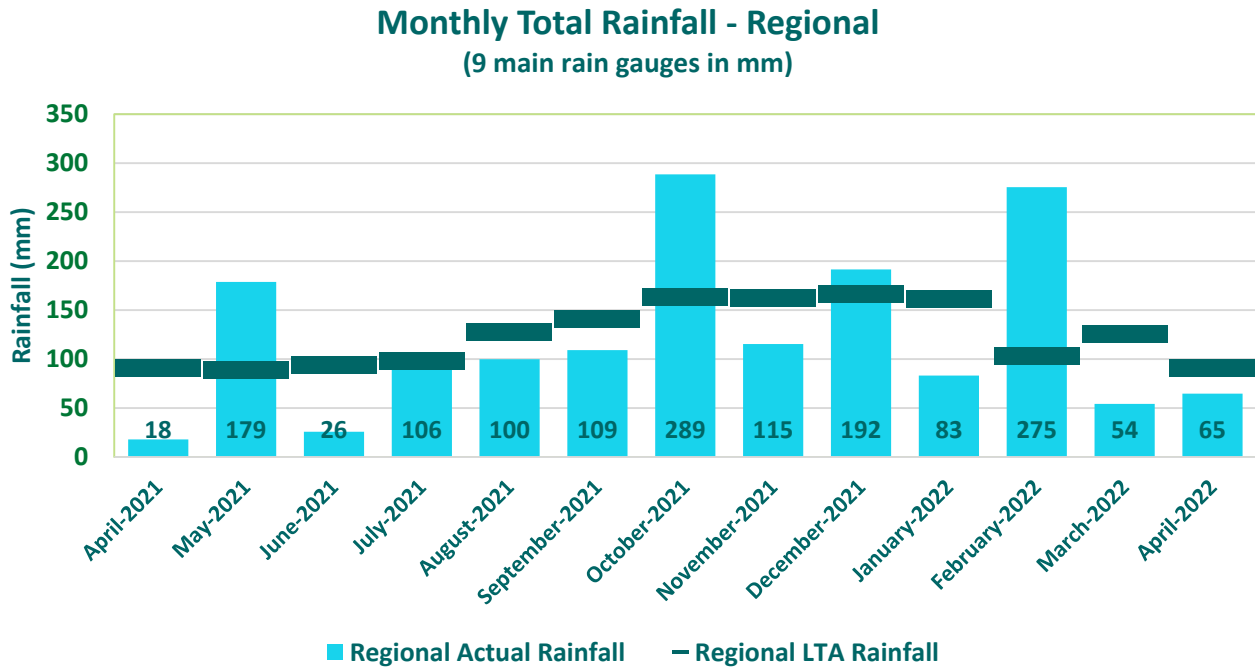
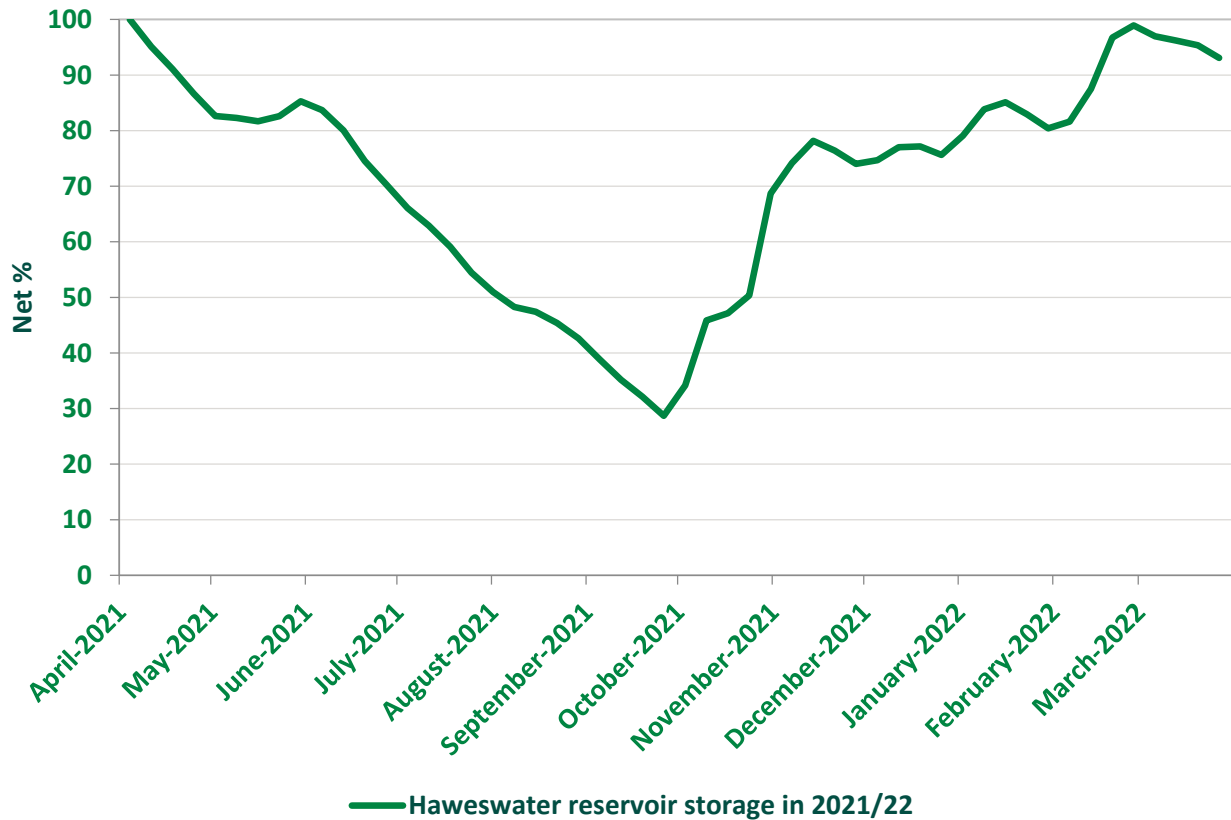


Figure 2 Haweswater reservoir storage (% full) in 2021/22



The average maximum daily temperature during the summer period was above the long-term average and only 0.5°C below that observed in 1995/96. Our region also experienced a mild winter, with average

maximum daily temperatures during this period more than 2°C above both the long-term average and the winter period of 1995/96. Overall, the average maximum daily temperature for the full year was higher than that experienced in 1995/96, and more than 2°C above the long-term average.

Figure 3 and Figure 4 below give a comparison of regional temperature and rainfall against the long-term averages and 1995/96. Details of how the weather we experienced impacted demands across the region is included in Section 2.5.

Figure 3 Comparison of rainfall in 2021/22 with long-term averages and 1995/96 values

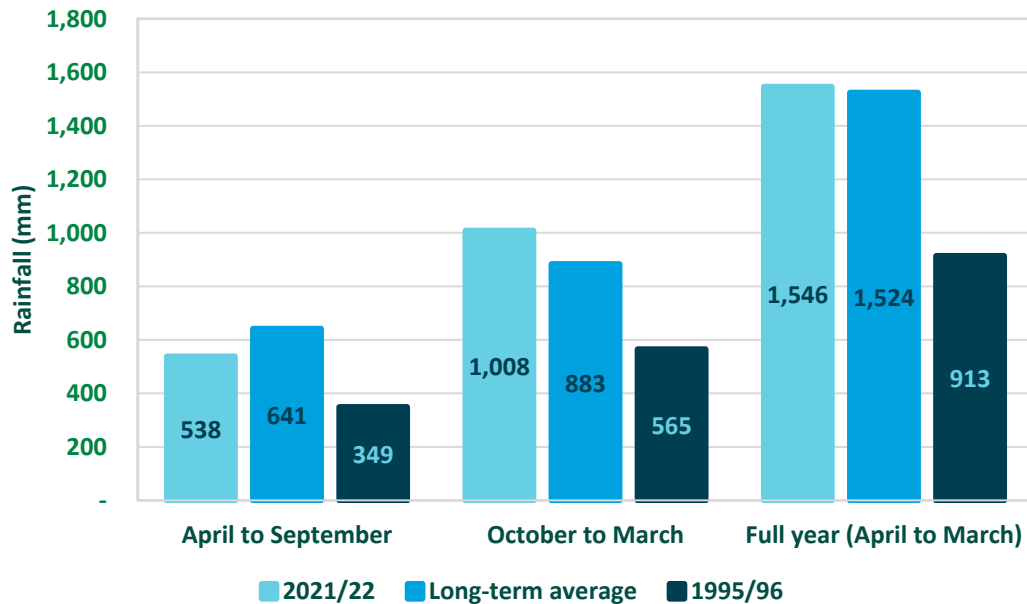
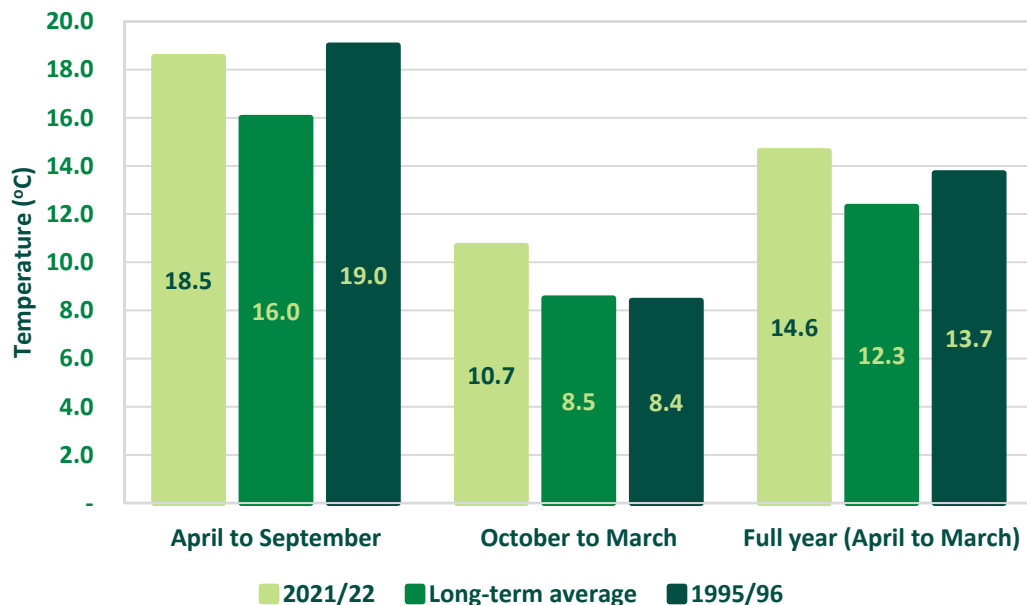


Figure 4 Comparison of average maximum daily temperatures in 2021/22 with long-term averages and 1995/96 values



2.4 Supply

In our 2019 Water Resources Management Plan we forecasted the Water Available for Use² (a term used to represent our available supplies in a dry year) across the 25-year planning period. However, there may be changes in Water Available for Use from these forecasts, reflecting factors such as variances in the delivery of our planned capital maintenance programme, the implementation of sustainability reductions or licence changes, operational changes and updated information on asset capability. To fully reflect the situation for the reporting year, and to ensure that an appropriate supply-demand surplus is maintained for the benefit of customers and stakeholders, we closely monitor and review Water Available for Use in line with changing circumstances.

For 2021/22, we have applied adjustments in Water Available for Use to reflect variances against the original supply forecasts. The supply-demand surplus is maintained (as detailed in Section 2.6) and these adjustments (Table 2) are not considered to be a material change from the 2019 Water Resources Management Plan assumptions. The values in Table 2 also reflect small decreases in Water Available for Use since 2019/20 due to the forecast year on year impacts of climate change. Further detail on sustainability changes affecting our Water Available for Use is given later in this section.

This adjustment does not account for any short-term reductions in asset capability that are associated with, and captured as part of, outage management. In 2019/20 we implemented a change in the method of calculation of Water Available for Use, by subtracting from our deployable output the actual outage experienced during the year instead of the outage allowance from the Water Resources Management Plan. This change was implemented in agreement with the Environment Agency and the approach was audited and assured by an external third party. We continue to use this approach for reporting on 2021/22.

In addition, we have implemented a change in the method of calculating raw water and process losses in 2021/22. In our 2019 Water Resources Management Plan we calculated an allowance for these losses, and this allowance was subtracted from deployable output (along with outage) to calculate the Water Available for Use. However, we have now developed a system to record and monitor losses at individual intakes and treatment works, and we can use this data to calculate and report actual losses experienced during the reporting year. The actual losses experienced are subtracted from our deployable output, in line with Environment Agency guidance, to calculate Water Available for Use for 2021/22. These latest methodologies for calculating actual values for both outage and losses are reflected in both the forecast and current Water Available for Use values shown in Table 2.

² Deployable output is a source yield assessment that results from consideration of a particular set of constraints and rules, for example abstraction licence limits and asset capabilities. From deployable output a number of deductions are made, including outage, raw water and process losses, and net exports. This is the calculation used to derive Water Available for Use.

Table 2 Summary of current Water Available for Use appraisal and adjustments from our forecast values

Water resource zone	Forecast Water Available For Use for 2021/22 (MI/d)	Current Water Available For Use appraised for 2021/22 regulatory reporting (MI/d)	Adjustment (Asset Assumptions) (MI/d)	Principal reasons for adjustments
Integrated	1889.18	1913.93	+24.75	Implementation of borehole scheme and increased asset capacities combined with variances to scheme delivery timescales.
West Cumbria	58.19	56.49	-1.7	Revised mode of operation of South Egremont Borehole Scheme.
Carlisle	34.64	34.54	-0.1	Emergency storage in the zone has been updated in line with our revised draft Drought Plan.
North Eden	8.49	8.49	0.0	N/A

In our Integrated Resource Zone, completion of a project to convert the Widnes group of borehole sources from a drought-only supply-side option to sources used in normal operation has provided a net benefit to deployable output during 2021/22 compared to the previous year. Following our lessons learnt from the 2021 dry weather we have reviewed and updated our modelling approach for Haweswater reservoir to better reflect current operating rules. We have also increased the capacity of the Denton to Hazel Grove main to improve the resilience of the Stockport and Macclesfield area. These changes have been reflected in our water resources models which we use to calculate Water Available for Use. This has led to an overall net increase in Water Available for Use, when combined with other variances to our forecasts as outlined above.

In West Cumbria, the South Egremont borehole project was completed in summer 2017 with a design capacity of 11 MI/d. However, due to issues relating to the aesthetic quality of the blended water from the boreholes with the supply from Ennerdale Water, a mode of operation was agreed with multiple stakeholders including the Environment Agency, the Local Authority, the Local MP and the Drinking Water Inspectorate (DWI) to maintain a blend of approximately 80:20 (ratio of Ennerdale water to Egremont boreholes water) during normal operation. This means that approximately 4 MI/d is normally supplied from the boreholes when the output is up to 27 MI/d, increasing to 7 MI/d as the maximum demand is reached. At times when Ennerdale Water is below drought trigger 2 it was agreed that the output from the boreholes would be increased to the full scheme capacity of 11 MI/d. This ensures a resilient supply of water, maintaining the agreed 80:20 water blend in normal operation and providing additional environmental protection through reduced abstraction from Ennerdale Water.

The agreed mode of operation implemented in 2017, combined with operational changes at Crummock Water and the removal of tankering at Ennerdale in line with our final Drought Plan 2018, led to a net reduction of 3.3 MI/d overall in the forecast Water Available for Use in the West Cumbria Resource Zone prior to 2019/20. However, operational enhancements implemented in 2019/20, enabling an increase in the normal rate of supply from the boreholes when demand is higher, provided a relative benefit of 1.6 MI/d. The net adjustment applied in 2019/20 and carried forward to 2021/22 is therefore -1.7 MI/d.

There is a small decrease to Water Available for Use in the Carlisle Resource Zone for the 2021/22 period, compared to our 2019 Water Resources Management Plan forecast value for the year. This figure includes the

benefit of previous Water Available for Use changes declared in previous Annual Water Resources Reviews, including an operational enhancement implemented in 2019/20 providing increased capacity for the pumped transfer from the River Eden to Castle Carrock Reservoir. The adjustment to Water Available for Use in 2021/22 is fractionally lower due to an update to the emergency storage value to align to our drought plan. This leads to a slight decrease in Water Available for Use compared to the forecasts in our 2019 Water Resources Management Plan.

2.4.1 Outage

Outages occur for a variety of reasons such as pollution events of raw water, poor raw water quality (due to reasons such as climate change, moorland fires or storms), asset failure (necessitating emergency repairs), routine maintenance and third party impacts. Outages may be planned (i.e. scheduled maintenance) or unplanned. Where planned, a risk assessment is undertaken for each outage request to consider hydrology, headroom, resilience and contingency. The outage planning process is designed to minimise the risk to water resources and the supply-demand balance whilst at the same time enabling essential repair and maintenance work to be undertaken. A significant amount of these instances are out of our control and we are working to reduce outages where possible.

The outage allowance determined for Water Resources Management Plan submissions takes into account any outage events which would affect the ability to supply during a 'dry year'. Similarly our assessment of actual outages during 2021/22 includes only those outage events that affected supplies during the year and is based on simulating the actual sequence of outage events over the year in our Aquator™ water resources model, to determine the overall impact on deployable output in a dry year. It should be noted that the impact on deployable output does not directly equate to the total loss of production capacity at water treatment works.

The level of outage experienced in 2021/22 was 83 MI/d for the Integrated Resource Zone. There were no outage events affecting supplies in the other resource zones, and therefore the overall regional outage level is 83 MI/d, as summarised in Table 3.

There were no outage events affecting supplies in our existing West Cumbria resource zone, therefore the level of outage experienced in the Integrated Resource Zone can also be considered as the overall outage experienced in the new combined Strategic Resource Zone. This is shown in Table 3 and compared against the forecast outage allowance for the new combined zone.

There were 22 sites affected by outage issues during 2021/22. 34% of the outages were planned, 34% were unplanned, 11% were due to raw water quality and 18% were proactive.

We have a strong production planning capability which ensures that each outage is planned and managed in a way that fully considers the impact on resilience, both from the perspective of maintaining customer supplies in the short term and the impact on water resources. With our drive for continuous improvement we are striving to improve our outage planning to ensure high asset availability. To facilitate this, we have brought together our hydrology and production planning capabilities into a single team to ensure better optimisation of the regional system throughout the year. In addition, we have introduced a new role with full accountability for overseeing the management of our water source to tap system, including management and reporting of outages.

As shown in Table 1 we have outperformed our target for unplanned outage in 2021/22. We continue to strive for improvement in this area, and have established an unplanned shutdown working group which collaborates across our engineering, operational and scheduling teams. The aim of this group is to analyse the root causes of shutdowns, develop operational best practice and identify ways to proactively reduce the risk of assets shutting down in an unplanned manner.

Table 3 Outage data for 2021/22 compared with the outage allowances for 2021/22 included in the 2019 Water Resources Management Plan

Water resource zone	Carlisle	Integrated	West Cumbria	North Eden	Barepot	Regional
Outage experienced (MI/d)	0.0	83.0	0.0	0.0	0.0	83.0
Outage allowance (MI/d)*	1.6	101.3 (Strategic Resource Zone)		0.05	0.0	102.9
Difference (MI/d)	-1.6	-18.3		-0.05	0.0	-19.9

*2021/22 dry year outage allowance from the 2019 Water Resources Management Plan

Note: numbers may not sum due to rounding

Included within our assessment of outage experienced during the year is the impact on supply (if any) of actions we are currently undertaking to address Drinking Water Inspectorate (DWI) statutory notices at several of our water treatments works. These are summarised in Appendix B.

This year we have been asked to supply two versions of reported outage. As this report is about our performance against our Water Resources Management Plan we have calculated the outage experienced based on our outage allowance approach used in the plan. Outage allowance is based on the outage we would experience in a severe drought. For the Supply Demand Balance Index (SDBI) calculation for 2021/22, which we have submitted to the Environment Agency, the requirement is to report 'actual outage', which is all the outage experienced in 2021/22. This includes some planned outages which would be deferred in a severe drought and is therefore higher at 91 MI/d. The supply-demand balance is therefore different in this annual review compared to the SDBI submission.

2.4.2 Sustainability changes

As a result of the Review of Consents process for sites protected under the Habitats Regulations, undertaken by the Environment Agency and Natural Resources Wales (with Natural England as a statutory consultee), we have incurred multiple changes to our abstraction and impoundment licences over recent years to ensure that our abstractions do not cause environmental damage. These changes are fully incorporated in the reported Water Available for Use.

To safeguard sensitive aquatic species and habitats we have a number of additional sustainability changes as defined and accounted for in our Water Resources Management Plan. Table 4 sets out the sustainability changes planned for the future; no changes have been implemented during 2021/22. The entries in the table refer to our final 2015 and 2019 Water Resources Management Plans, together with our 2024 Water Resources Management Plan which is currently being developed. The sustainability changes are primarily associated with the requirements of the Water Framework Directive and Habitats Regulations. As sustainability changes are implemented, we will reflect them in our Water Available for Use assessment in subsequent reporting years.

In partnership with our regional planning group Water Resources West, we are currently developing our proposals for abstraction licence changes as part of setting the long-term environmental destination to 2050. These proposals are not included in Table 4 below; further detail will be provided in our draft Water Resources Management Plan 2024 which will be published for consultation later this year.

Note that in Table 4 below, AMP7 refers to the period 2020–25 covered by our latest Business Plan while AMP8 refers to the subsequent five-year period, 2025–30.

Table 4 Sustainability changes included in our Water Resources Management Plans

Site	Driver	Sustainability solution	Expected implementation date	Water Resources Management Plan
Integrated Resource Zone³				
Dean Clough reservoir	Water Framework Directive	New compensation flow provided to downstream river	22 December 2024	2019
Pennington reservoir	Water Framework Directive	New compensation flow provided to downstream river	31 December 2027	2024
Eccleston Hill boreholes	Water Framework Directive	Implement licence changes following AMP7 no deterioration investigation	31 March 2030	2024
Corn Close boreholes	Water Framework Directive	Implement licence changes following AMP7 no deterioration investigation	31 March 2030	2024
Wirral and West Cheshire boreholes: Foxhill, Manley Quarry, Manley Common, Newton Hollow, Helsby, Eaton, Sandyford, Cotebrook 1, Cotebrook 2, Delamere, Eddisbury, Organsdale, Mouldsworth, Ashton and Hooton	Water Framework Directive	Implement licence changes following AMP7 no deterioration investigation	31 March 2030	2024
Schneider Road and Thorncliffe Road boreholes	Water Framework Directive	Implement licence changes following AMP7 no deterioration investigation	31 March 2030	2024
Bearstone boreholes	Water Framework Directive	Implement licence changes following AMP7 no deterioration investigation	31 March 2035	2024

³ In the Environment Agency's November 2020 version of the AMP7 WINEP there is an entry (NEP ID 7UU10072) for Clowbridge reservoir (Water Framework Directive driver with a 22 December 2024 date). However the scheme involves a redistribution of the existing compensation flow release to provide variable flows; due to the variability of the future flows it is not possible to model them and therefore it is not included in our Water Resources Management Plan 2019.

Site	Driver	Sustainability solution	Expected implementation date	Water Resources Management Plan
Fylde boreholes	Water Framework Directive	Implement licence changes (uncertain as depends on outcome of AMP8 no deterioration investigation)	31 March 2035	2024
Hug Bridge boreholes and River Dane	Water Framework Directive	Implement licence changes (uncertain as depends on outcome of AMP8 no deterioration investigation)	31 March 2035	2024
Trawden Springs	Water Framework Directive	Implement licence changes (uncertain as depends on outcome of AMP8 no deterioration investigation)	31 March 2035	2024
Langden/Hareden system	Water Framework Directive	Implement licence changes (uncertain as depends on outcome of AMP8 no deterioration investigation)	31 March 2035	2024
Longlands mine adit	Water Framework Directive	Implement licence changes (uncertain as depends on outcome of AMP8 no deterioration investigation)	31 March 2035	2024
Carlisle Resource Zone – No sustainability reductions planned				
North Eden Resource Zone – No sustainability reductions planned				
West Cumbria Resource Zone				
Ennerdale Water	Habitats Regulations	Revocation of abstraction licence	16 December 2022	2015
Crummock Water	Habitats Regulations	Revocation of abstraction licence	16 December 2022	2015
Quarry Hill system: Overwater	Site of Special Scientific Interest (SSSI)	Hands-off lake level in Overwater implemented from 1 April 2022	1 April 2022	2015

Site	Driver	Sustainability solution	Expected implementation date	Water Resources Management Plan
Quarry Hill system: Overwater	Habitats Regulations	Revocation of abstraction licence	16 December 2022	2015
Quarry Hill system: River Ellen and Chapel House reservoir	Habitats Regulations	Revocation of abstraction licence	16 December 2022	2015
Quarry Hill system: Dash Beck	Habitats Regulations	Revocation of abstraction licence	16 December 2022	2015
Quarry Hill system: Hause Gill	Habitats Regulations	Revocation of abstraction licence	16 December 2022	2015

2.4.3 Other supply components

Other factors which need to be taken account of in our supply forecasts are: bulk supplies (imports and exports, including non-potable exports), and the impacts of climate change on our Water Available for Use.

There are no changes to our existing bulk supply arrangements relative to the allowances we made in our 2019 Water Resources Management Plan.

We assessed the effects of climate change on source yields, demand and target headroom in our 2019 Water Resources Management Plan, utilising the UK Climate Impacts Programme climate projections ('UKCP09') in accordance with industry best practice. Climate change impacts on supply availability in 2021/22 are unchanged from our forecasts, and are relatively small given that the effects are lower in the early years of the planning horizon.

2.4.4 Abstraction incentive mechanism

Ofwat's abstraction incentive mechanism (AIM) is a way of encouraging water companies to manage their abstraction in a more sustainable way. AIM sites are in environmentally sensitive areas where abstraction at times of low river flow has the potential to cause harm. AIM measures the amount of abstraction that occurs at times of low river flow (when the AIM river flow trigger is reached and AIM applies) and compares this to abstraction over a baseline period (between 2011 and 2017), indicating whether current abstraction is higher or lower than the recent past.

AIM performance (MI) is calculated as: *[Average abstraction rate during 2021/22 when AIM applies (MI/d) - Average abstraction rate during historic baseline period (2011–17) when AIM applies (MI/d)] * number of days during 2021/22 when AIM applies*

Normalised AIM performance (no units) is calculated as: *AIM performance (MI) / [Average abstraction rate during historic baseline period (2011–17) when AIM applies (MI/d) * number of days during 2021/22 when AIM applies]*

A negative AIM performance represents good performance as abstraction is lower than during the historic baseline period.

For 2020–25 we have two AIM sites: Old Water (River Gelt, Carlisle) and Ennerdale (West Cumbria). However once we revoke our Ennerdale abstraction licence (see Section 2.4.2 for details), this site will no longer be part of AIM as the potential risk to the environment will have been addressed.

The AIM river flow trigger at Old Water was not reached during 2021/22, giving a zero AIM performance. The AIM river flow trigger at Ennerdale was reached on 29 days during 2021/22 and on these days we abstracted

less water compared to the historic baseline period, resulting in a good AIM performance. As well as the outcome for 2021/22, Table 5 below also reports on cumulative performance during the AMP7 period (2020–25) to date.

Table 5 AIM performance

AIM site	AIM river flow trigger (MI/d)	Historic baseline (2011–17) average abstraction rate (MI/d)	2021/22 AIM performance (MI)	AMP7 cumulative AIM performance (MI)	2021/22 normalised AIM performance (no units)	AMP7 cumulative normalised AIM performance (no units)
Old Water (Carlisle Resource Zone)	9.1	3.445	0.0	0.0	0.0	0.0
Ennerdale Water (West Cumbria Resource Zone)	80.0	24.819	-134.4	-830.3	-0.2	-0.6
TOTAL			-134.4	-830.3	-0.2	-0.6

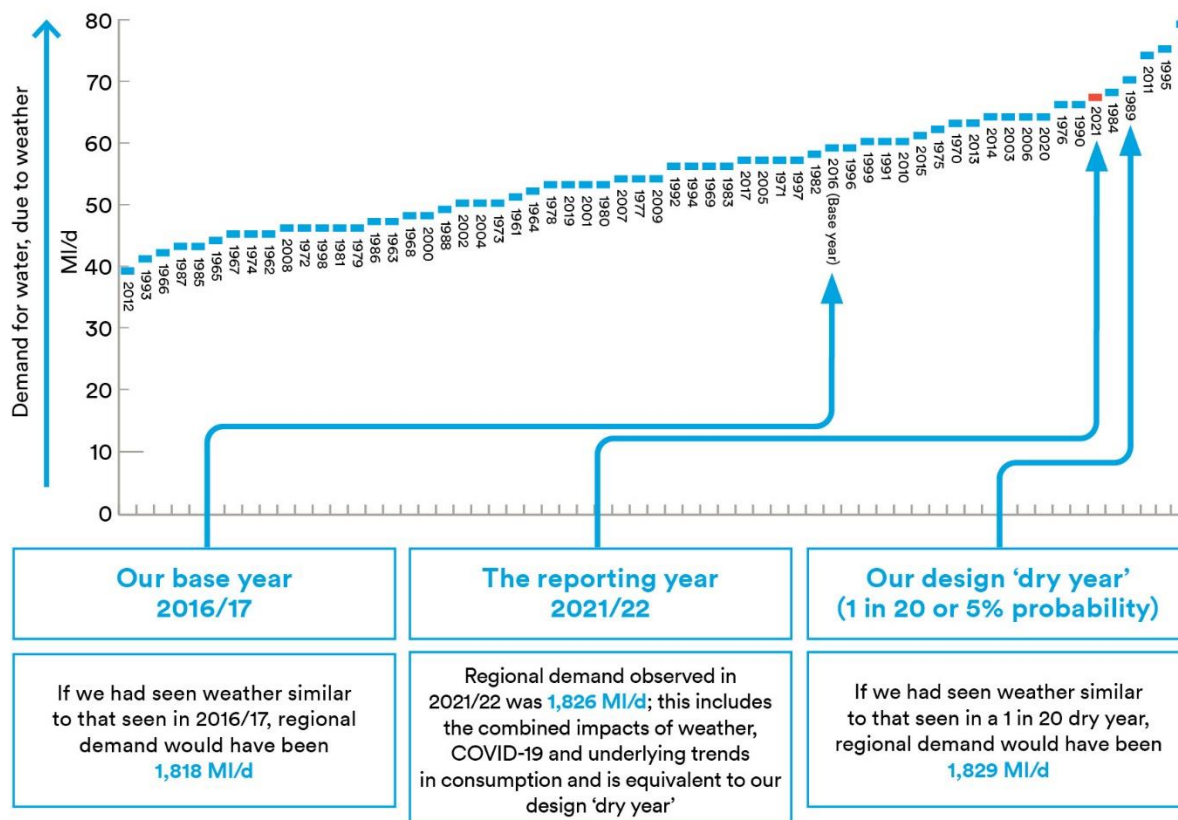
2.5 Demand

The Water Resources Management Plan focuses on ensuring an adequate supply-demand balance in a “dry year” and we therefore produced dry year demand forecasts for the 2019 plan (defined by the weather patterns experienced in a dry year of probability 5%, or 1 in 20 year average frequency).

Distribution input is the average volume of water put into the water supply network (the demand for water). Regional distribution input during 2021/22 was 1826 MI/d which is around 4 MI/d lower than in 2020/21 (excluding non-potable supplies). The influence of the weather on observed demand for the 2021/22 period is shown in Figure 5; the weather dependent usage for 2021/22 is ranked 6 out of 61 years and therefore no dry year uplift factor is applied based on Met Office analysis. The equivalent dry year uplift factor for 2020/21, using the latest Met Office model, was 1%. The regional dry year demand is therefore around 99 MI/d higher than the WRMP19 dry year forecast for 2021/22, as shown in Table 6, however to put this in context it is within only 6% of the forecast.

The influences of the global COVID-19 pandemic, which we covered in last year’s annual water resources review report, have continued to some extent during 2021/22. Although Government restrictions eased during 2021/22, increased levels of home working have continued compared to pre-pandemic levels, so that impacts on water consumption have continued to be observed during 2021/22 and are likely to continue to some extent into the foreseeable future (see Section 2.5.2).

Figure 5 Demand for water in 2021/22 due to weather, with Met Office analysis showing the influences of the summer of 2021 (red) relative to historic data



For each of our resource zones, we assess the supply-demand balance for the critical period, defined as the length of time between a reservoir being full and the reservoir reaching minimum storage during the worst drought on record. However, the catchments in our Carlisle and West Cumbria resource zones have a more flashy response to rainfall patterns and therefore the critical period for these zones is three months. The equivalent dry year and critical period demands for 2021/22 are compared with our forecasts for the year in Table 6 (although note that our 2019 plan does not have updated forecasts for the Integrated and West Cumbria resource zones, so the equivalent forecast for the combined Strategic Resource Zone is shown).

The equivalent dry year demand for 2021/22 has decreased slightly compared to 2020/21 in two of our resource zones (North Eden and Integrated) and in the region as a whole. The variation in demand for water is partly influenced by the impact of weather, but also reflects an underlying trend of increases in consumption due to population growth as well as ongoing changes in water use due to new working patterns since the COVID-19 pandemic, and other factors. At a regional level the overall decrease in dry year demand from 2020/21 is about 0.8%.

Table 6 Comparison of distribution input values to 'dry year' and 'critical period' forecast values

	Carlisle	Integrated Strategic	West Cumbria	North Eden	Barepot*	Region Total (excluding Barepot)
2021/22 actual data						
Key to table	2021/22 forecast data (Water Resources Management Plan 2019)					
	<i>Difference</i>					
Dry year distribution input (Ml/d)	31	1738	50	6	22	1,826
	28	1,693	6	27	1,727	
	+3	N/A	0	-5	+99	
Critical period distribution input (Ml/d)	32	1738	54	6	22	1,830
	29	1,693	6	27	1,728	
	+3	N/A	0	-5	+102	

Notes: numbers may not sum due to rounding; *Barepot figures are raw demand equivalent as resource zone does not have potable distribution input

2.5.1 Water efficiency activities

We continue with the implementation of our water efficiency programme for 2020–25. Our focus remains on domestic consumption and leakage. While physical resolution of issues such as leaks provides the most certain outcome, our insight and assessments have concluded that a suite of interventions are required to ensure that awareness of the importance of water efficiency remains high. To maximise water efficiency benefits the interventions need to be aligned to our metering installation programme and/or targeted at the current metered consumers.

Table 7 below provides an overview of the programme and how all elements have been used to inform our delivery plan.

Table 7 Overview of our water efficiency programme

Customer insight and engagement	Reconnecting customers with water as a vital resource is key to sustainable water resources. Therefore customer insight and engagement is a large element of the water efficiency strategy.
Prioritisation	Reducing consumption is a pivotal outcome of the strategy; to achieve this we must understand the region's customer base, asset condition and opportunity for the company to ensure that investment is targeted in the correct way. Regional prioritisation helps with this.
Remote monitoring	Remote monitoring (meter penetration) allows us to identify high consumers and gradually increasing water use. It also allows us to validate the effectiveness of our strategies and interventions.
Data led interventions	We will be able to select the correct combination of interventions by understanding the regional customer base, our assets and what customers say they need.

Customer communication strategy

Our plan was to build scale and momentum by taking an ‘always-on’, integrated approach, creating awareness and appreciation of the true value of water. This drives behaviour change by giving customers the knowledge, tools and motivation to make saving it worthwhile. For 2021/22, we’ve seen this approach increase awareness by 23.9%.

Putting the plan into action

We are using a multi-channel approach with a particular emphasis on radio advertising, sponsorship and direct communications (email and text) underpinned by the consistent use of ITV weather sponsorship. While limited to ten seconds or five seconds, the use of sponsorship for the ITV weather bulletins in both Granada and Border regions ensures we can reach just under 90% of adults across the North West with messaging relating to water efficiency and ‘stop the block’.

Regional prioritisation and intervention targeting

We continue to adopt a regional prioritisation model to target specific geographical areas for intervention e.g. focusing on engaging Lancashire and Greater Manchester residents about the source of their water, campaigns such as leaky loo or general water saving targeted messages for areas that are responsive to weather. The model uses specific information about each area, including:

- The number of household and non-household customers, as well as the number of vacant/void properties;
- The metering status of the customers, as well as some demographic information;
- The demand for water, as well as the likely per capita consumption; and
- Water resources resilience metrics.

Utilising consumer consumption data

Building on the regional prioritisation, subsequent meter data analysis (domestic customer consumption analysis) has enabled us to identify high consumption geographical areas. This information has been used to coordinate communications and home audit activity as part of the ‘always-on’ approach.

To provide a focal point for communications and as a means of ensuring the more efficient distribution of water saving devices, we tested and introduced the ‘Get Water Fit’ platform in summer 2021. To date over 100,000 customers have signed up to ‘Get Water Fit’ – they have provided us with information about their water usage and gone on to order free water savings devices, e.g. leaky loo strips, tap inserts and shower regulators. We plan to utilise the information provided to further target the knowledge, tools and motivation to save water, e.g. those who have advised that they have a leak or a leaking loo will be offered a home audit to detect the nature of the leak and a leak fix service. A total of 200,000 devices have been provided to customers free of charge.

Data driven water audits

Working in partnership with the ten Greater Manchester Combined Authorities (GMCA) and through metered consumption analysis, we determined that five out of ten GMCA areas were the highest consuming within our region. As a consequence, we introduced a rolling programme of in-person water audits targeting those customers who appear to have some form of leak within their property.

Post-audit analysis has shown that targeting these audits at high consuming metered customers or those with leaks provides a sustained water saving benefit of 60–85 litres per property per day. As we move through our plans, we’re looking at options to scale this offer either through more physical support, digital options or improved self-help customer journeys.

Innovative approaches

We are working with Northumbrian Water to test a new flow regulator product which aims to save water throughout a property. The product is fitted to a meter which is usually out of sight, and therefore not

affected by customers' aesthetic choices. We are carrying out a pilot to understand the potential water savings and also to ensure that the customer experience of using water in the home is not negatively impacted.

We have designed an all-utilities (gas, electric and water) approach to help raise awareness regarding consumption reduction through the production of a collaborative booklet and water audit. These products will be tested on our mutual customer base and water savings will be assessed.

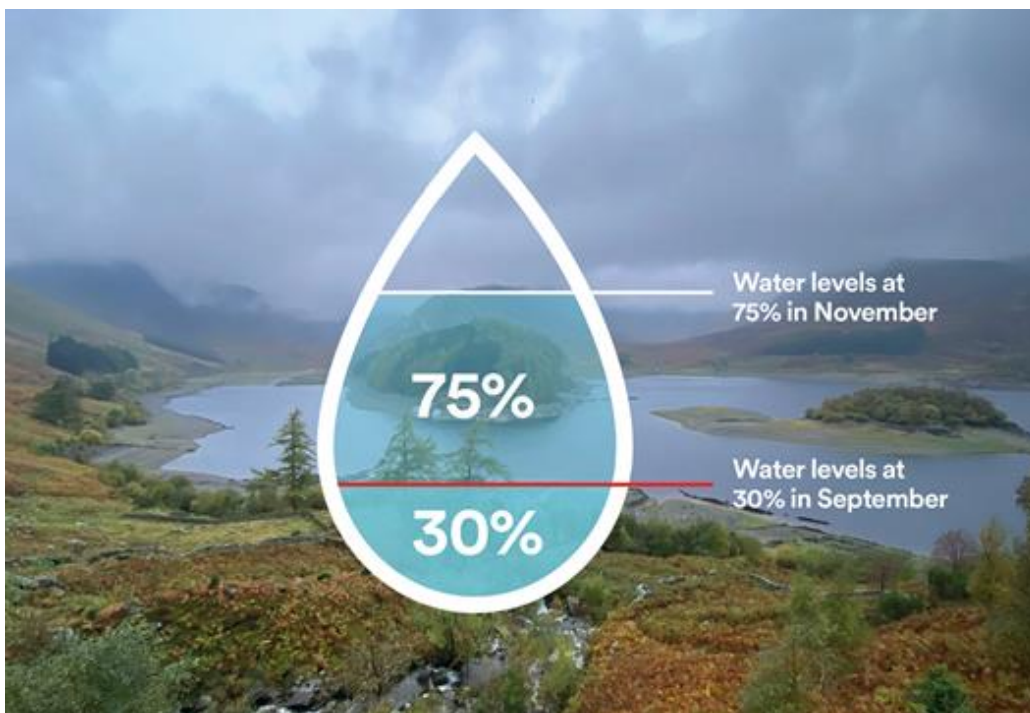
Campaign activity

As part of our 'always-on' approach, we continue to run a range of seasonal activities to provide customers with the tools to understand and reduce their consumption. Last April we launched a Leaky Loos campaign as we understood that between 5% and 8% of toilets are likely to be leaking and the majority of householders may not even notice. This six-week integrated campaign – radio, PR, door drops, digital, face-to-face and social media – aimed to raise awareness of the issue, giving customers the tools to spot if they indeed have a leaky toilet by providing 'Leaky Loo' strips and then giving hints and tips on how to fix it through YouTube videos.

On the back of the leaky loo campaign we launched new activities to save water in the garden in summer – sponsoring Cumbria in Bloom and using radio sponsorship to embed water saving tips into everyday behaviour, and running in-person events across West Cumbria, for example in Whitehaven and Workington.

As 2021 became drier we switched this activity to introduce communications that raised awareness and asked customers more directly to save water – this activity ran for four months across all channels. As part of the activity we introduced a 'resometer' (Figure 6) into print, social media and email communications. This icon graphically depicted how much water was remaining in Haweswater reservoir compared to where we would expect to be at that time of year, and appeared to capture consumers' imaginations through retweets and mentions in news bulletins.

Figure 6 Example of our 'Resometer' sent to customers during dry weather.



Primary school education

Whilst COVID-19 continued to hamper our face-to-face classroom sessions we switched to online provision through our two partners and continued to provide parents and teachers with engaging content packed with

fun and educational videos, worksheets and quizzes, continuing to provide engaging sessions to bring water to life for children across the North West. Once restrictions were lifted we were straight back into schools delivering 243 sessions to 6,396 pupils from November to April.

As part of ongoing sponsorship with RHS Bridgewater we also introduced water efficiency and sustainable urban drainage systems to 150 pupils in conjunction with RHS – delivered as part of the Green City Challenge.

Supporting our regional programme

As demonstrated above, the communications strategy continues to combine the activation of both targeted and segmented communications, with opportunities to raise more general awareness of why we need to save water together with the how-to, whether metered or non-metered. We aim to continue on this path in the coming 12 months and embed sustained behaviour change among our customer base in the North West.

Continuous learning – developing a business retail (non-household) water efficiency programme

During 2021 we have been developing a non-household water efficiency programme to bring learning from the consumer side to impact on Business Retail, and vice versa.

Through analysing Business Retail metered data, we are focusing efforts on three key sectors: Education and Health; Food and Drink (manufacturing); and Hotels, Bars and Restaurants. The activity within the programme is summarised below:

- Developed a United Utilities Water region research brief to understand how food manufacturers use water, establish what the opportunities to reduce water consumption are and what would incentivise these businesses to use water more efficiently;
- Completed water efficiency audits at eight schools in West Cumbria, and fixed leaks which were identified at four out of the eight schools;
- We have also offered water audits to 30 schools in Manchester in partnership with the Department for Education and water retailers. So far we have completed 14 school visits, installed 21 urinal controls, fixed 123 leaks (109 toilets, 14 taps) and installed water saving devices; and
- Provided a water harvesting solution to Brighton Grove Allotment in Manchester, which consists of individual plot water harvesting (1000 litre water butts) plus two communal watering zones and auto shut-off taps to prevent large quantities of potable water being used.

2.5.2 Per capita consumption

Per capita consumption (PCC) is a commonly used metric in the UK water industry, and is common to all water companies from 2020 onwards (see Section 2.1). In 2018, Ofwat produced guidance for the consistent reporting of both PCC and leakage across the industry. Since then we have implemented a programme to ensure that our operational data and systems comply with the guidelines, and we now report both PCC and leakage using the new calculation methods.

In 2021/22, our regional average household per capita consumption was 143 litres/person/day which shows a decrease (8 litres/person/day) since the previous year.

Table 8 below shows the average per capita consumption for each resource zone for this reporting year compared to the previous reporting year.

Table 8 Average household consumption from 2019/20 to 2021/22

Resource zone*	2019/20 (l/hd/d)	2020/21 (l/hd/d)	2021/22 (l/hd/d)	Change (l/hd/d)
Carlisle	147	159	156	-3
Integrated	144	151	143	-8
North Eden	160	184	171	-13
West Cumbria	150	161	154	-7
Region	144	151	143	-8

*Barepot is excluded as the resource zone consists of non-potable supply only.

After a relatively dry start to the year (April to September), which caused per capita consumption and overall demands to be higher than recent averages, the latter part of the year (October to March) was relatively mild and wet. Since the phased exit from lockdown, and combined with the milder weather in the latter part of the year, we definitely appear to be seeing a shift in consumption/usage patterns to what could be considered a 'new normal'. However, we have not yet experienced a hot and dry period without lockdown restrictions; this will provide more understanding of likely future consumption/usage patterns, enabling us to adapt our plans as we continue our efforts to reduce demand for water.

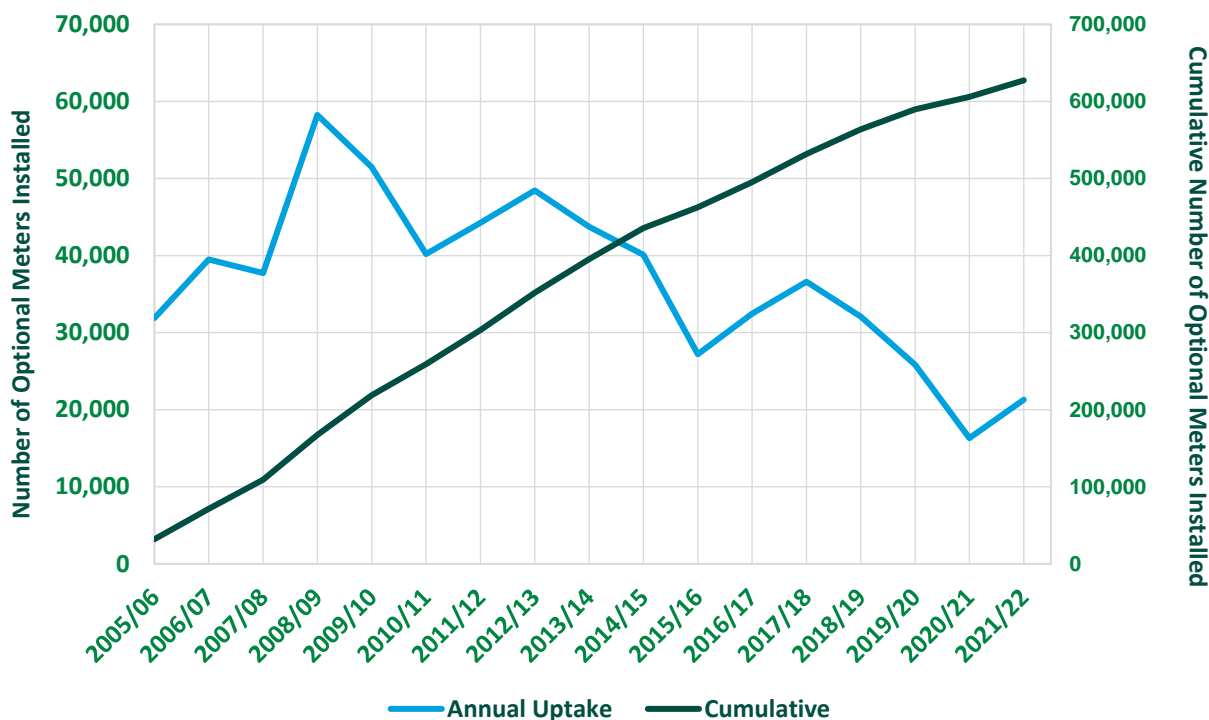
2.5.3 Metering

We operate 1.7 million meters: 1.52 million household and 0.18 million non-household. The metering activities that contribute to annual growth span across four main areas:

- **New properties** (developer services) – by law all new developments must be metered. 24,226 new properties were metered in 2021/22;
- **Free meter options** – customers have the right to request a meter for billing purposes. 21,301 free meters were installed in 2021/22, a 30% increase on the previous year;
- **Enhanced metering** – we introduced a progressive programme last year to increase meter penetration and encourage customers to switch to billed charges. We installed 70 meters and 6,822 meter boxes in preparation for a bigger roll out in year 3 (2022/23); and
- **Compulsory metering for non-household** – where practical to do so. 196 new meters were installed in 2021/22; 608 new business properties were metered in 2021/22.

We believe the 30% increase in our free meter option programme is in part due to the economic challenges that customers are facing following the pandemic and the steep increase in energy bills. We have also continued to promote the scheme, updating our literature to make it more impactful and ensuring the Lowest Bill Guarantee scheme is understood.

Figure 7 shows the uptake under our free meter option scheme over the last fifteen years. The number of free meter installations is generally expected to continue to decline in future within the forecasts; as the metering penetration increases, the number of unmetered customers who still stand to benefit most from a free meter reduces.

Figure 7 Free meter option uptake since 2005/06

We generated forecasts of future new development and free meter opting rates within our 2019 Water Resources Management Plan, which has been in effect since April 2020, and therefore we now compare performance against these new forecasts.

We continue to promote the Free Meter Option, Lowest Bill Guarantee and water saving help and information in regular articles in relevant consumer magazines. For example we regularly promote metering in 'All together now', a publication that is aimed at groups that are likely to be Priority Services customers, particularly those affected by disability, long-term health conditions or age. Copies are circulated by NHS trusts and community groups to hospitals, GP surgeries and supermarkets and an online version is also available.

Progress of the Lowest Bill Guarantee - Price Promise

The Lowest Bill Guarantee Price Promise was live from September 2020, and after initial trials proved promising the scheme was endorsed by the Consumer Council for Water and other customer advocates.

Lowest Bill Guarantee provides security and certainty of charges for the consumers whilst transitioning to a meter. By linking the Lowest Bill Guarantee with our overall water efficiency programme, which includes promoting our 'Get Water Fit' scheme, we can maximise affordability benefits, achieve demand reduction and deliver a great customer experience.

This is now being actively targeted to more customers across the region and is now embedded in the bill design which has been enhanced to illustrate and personalise savings for customers (Figure 8).

Figure 8 Promotion of our Lowest Bill Guarantee

You can't lose
With a water meter you always pay the lowest bill - guaranteed!

Water for the Fourth West

Statistics to date

- 110,049 customer bills have now been generated with a charges comparison done between metered and RV charges
- 89,073 have made a saving, in total of over £10.2m
- 20,490 customers have now reached the 2 year guarantee period and have been issued with a summary bill
- Of the 20,490 – 19,196 made a saving of £6.6m on their metered charges compared to their old RV bill

You can't lose with a water meter!

Our lowest water bill - guaranteed!

US\$5,072.6005

Your water and wastewater charges

Your charges

Your payments

Your water bill - guaranteed!

£722.32

Your credit payment

£72.25

This bill could be much lower

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Enhanced metering programme

Due to the general drop in Free Meter Option uptake, our enhanced metering programme which consists of proactive targeted external meter installations was developed to increase household metering penetration and help us achieve our 2020–25 target of 180,000 domestic meter installations. This programme of work began in autumn 2021, and significant progress has already been made with the development of a new customer journey covering the two stage installation process, as well as the dual billing that embeds the Lowest Bill Guarantee for an introductory period. We have also researched and drafted customer communications on the installation process, guidance and Frequently Asked Questions as well as calling cards. We will target high consuming customers, offering our 'Get Water Fit' health checks to reassure them that obvious leaks, such as from toilets or taps, can be addressed and water efficient devices can be installed around the home. Should there be a change of ownership, the property remains metered.

We identified six priority areas based on the potential for meters to reduce both demand and leakage. Extensive analysis informed the selection of those target areas, based on an index of key customer and network characteristics. We have started in Lancaster and Rossendale on the basis that these areas have a high proportion of customers who are likely to benefit financially from a metered bill, where we have high peak demand, high levels of leakage and higher levels of change of occupancy, enabling conversion to a metered charge on change of occupancy.

Evidence shows that providing customers with consumption information is the first step to engaging and changing water consumption behaviour so the programme is underpinned by developments within our consumer portal, My Account, which will help customers see how their usage compares with others and introduce incentives to further encourage sustained change. In addition, consumption information provides us with the evidence to assess effectiveness of water efficiency activities, and the ability to target communications to high use consumers and tackle customer side leakage.

Smart metering

We are in the process of setting up our large scale smart metering trial to help us fully understand and validate the benefits of smart metering and to establish the requirements for us to unlock its value. In the last year, working with the team running the ongoing Dynamic Network Management trial, we have selected two

district metered areas (DMAs), based on agreed selection criteria, in which to install or upgrade up to 3,000 meters this year.

2.5.4 Leakage

2021/22 marks the sixteenth consecutive year that we have outperformed our leakage target. We have achieved a new lowest ever level of leakage in the company's history at 414 MI/d, beating our previous lowest level from last year. So far we have achieved significant reductions from our 2017/18 leakage levels, and we are on track to achieve the 15% target reduction required across the period to 2025.

We continue to deliver leakage reductions supported by a network of around 70,000 acoustic sensors, installed over the last two years. These sensors combined with advanced analytics enable us to better target leaks.

The dry weather earlier in the year posed a potential risk of increased leakage due to ground movement caused by increased soil moisture deficit. We mitigated this risk with a substantial programme of pressure optimisation, as well as optimising response times for customer-reported leaks during these drier periods.

We have experienced a relatively mild winter. However, the changing COVID-19 restrictions had the potential to impact leakage performance which we mitigated in two main ways. Firstly, resourcing became a particular challenge through December, due to isolation periods as a result of the Omicron variant – we increased contractor resources to tackle this. Secondly, the changing patterns of night use, due to changes in working from home guidance and the return to offices, created uncertainty with leakage levels – we mitigated this with additional analysis and meter reading that enabled us to gain a better understanding of changes in usage patterns to enable more efficient targeting of leakage detection activity.

Table 9 summarises leakage levels in each of our resource zones in 2021/22, compared with both the previous year and our 2019 plan forecasts. This is specifically total annual leakage, as opposed to the three-year average view of leakage.

Table 9 Zonal leakage levels 2020/21 to 2021/22 and comparison with 2019 plan forecast (MI/d)

Resource zone	Carlisle	Integrated	West Cumbria	North Eden	Region Total
Actual total leakage 2020/21	6.0	398.3	17.1	3.2	424.7
Actual total leakage 2021/22	5.5	388.9	16.5	2.9	413.8
Change from 2020/21	-0.5	-9.4	-0.6	-0.3	-10.9
2021/22 forecast from our 2019 Plan	5.6	429.0 (Strategic Resource Zone)		2.8	437.20
Variance from forecast	-0.1		N/A	+0.1	-23.4

NOTE: Numbers may not sum due to rounding

The completion of our Thirlmere transfer scheme in September 2022 (see Section 2.7) will imminently combine the Integrated and West Cumbria Resource Zones and we will be reporting on leakage for the new, combined Strategic Resource Zone from 2022/23 onwards.

2.5.5 Other demand components

Other minor components of the overall demand for water include distribution system operational use (for example, water used for service reservoir cleaning and mains flushing) and water taken unbilled. Water taken unbilled includes water which is taken, but not charged for, either legally (for example, from fire hydrants for firefighting purposes) or illegally (for example, in occupied households which are not on our company billing system). We have been working with our partners Morrisons to 'patrol/police' illegal use of hydrants with unapproved standpipes.

Our Business Plan for 2020–25 includes a programme to significantly reduce the number of properties which are occupied but not billed, which will result in fairer charges between customers and lower bills for customers already paying. We are using a number of strategies, both industry leading data analytics and the United Utilities Water void app which has been rolled out to 1,500 of our operational employees alongside a blended communication approach to ensure that the verification of a customer's occupancy is robust and does not result in additional bad debt.

2.6 Supply-demand balance

In our assessment of the supply-demand balance in each of our water resource zones, we calculate a margin between supply and demand to allow for uncertainty in the various components of our supply and demand forecasts. This allowance is known as target headroom.

In the annual Water Resources Review for 2015/16 we outlined changes to the dry year demand and target headroom components of the supply-demand balance due to a revised method of calculating the dry year uplift factor. In the reporting years 2018/19 through to 2020/21 we carried out a further adjustment to remove the demand forecast uncertainty factor from the target headroom calculation in line with external auditor recommendations, reflecting the fact that higher than expected demands have in effect utilised this element of the headroom component. We have adopted a similar approach to adjust our target headroom for the reporting year 2021/22.

For each resource zone an adjustment has therefore been applied to the target headroom values reported on in our 2019 Water Resources Management Plan for the year 2021/22, as shown in Table 10. Note, however, that our 2019 plan does not include an updated assessment of target headroom for the Integrated and West Cumbria resource zones, as these zones are due to merge into the combined Strategic Resource Zone early in the period covered by the plan. The values shown for these two resource zones are those reported in our 2015 plan, therefore, along with the corresponding adjustment to remove the demand uncertainty factor.

Table 10 Summary of current headroom and adjustments from Water Resources Management Plan values

Water resource zone	Water Resources Management Plan Target Headroom for 2021/22 (MI/d)	Adjusted Headroom for 2021/22 regulatory reporting (MI/d)	Headroom Adjustment (MI/d)
Carlisle	2.20	2.12	-0.08
North Eden	0.22	0.20	-0.02
Barepot	1.41	1.40	-0.01
Integrated	73.13	48.84	-24.29
West Cumbria	2.51	1.90	-0.61

Note: Headroom values for the Integrated and West Cumbria resource zones are from the 2015 Water Resources Management Plan

Table 11 Supply-demand balance for the 2021/22 period by resource zone

Component description		Carlisle (critical period)	Integrated (dry year)	North Eden (dry year)	West Cumbria (critical period)	Barepot (dry year)
Supply	Water available for use (Ml/d)*	34.54	1,913.93	8.49	56.49	34.07
Demand	2021/22 Dry year demand (Ml/d)	32.23	1,738.26	6.36	53.62	21.67
Target Headroom	Target Headroom (Ml/d)	2.12	48.84	0.20	1.90	1.40
2021/22 Supply-demand balance	This is the supply-demand balance position for 2021/22 (Ml/d)	0.19	52.92	3.23	0.97	11.00

* Note: Environment Agency Water Available for Use definition minus process losses and actual outage

For the 2021/22 reporting period we have maintained a surplus in all of our water resource zones, as indicated in Table 11. This means that we have achieved a Supply Demand Balance Index (SDBI) score of 100.0 for 2021/22.

The supply-demand balance has changed due to a combination of reasons as outlined in the previous sections, the key factors being:

- Reported dry year equivalent distribution input for 2021/22 was higher than dry year demand forecasts in all of our resource zones except Barepot, reflecting underlying increases due to population growth, changes in water use patterns (particularly due to ongoing COVID-19 impacts) and other factors;
- Water Available for Use has decreased slightly since 2020/21 due to the year on year impacts of climate change; and
- In the Integrated Zone we have reviewed and updated our modelling approach for Haweswater reservoir to better reflect current operating rules. We have also increased the capacity of the Denton to Hazel Grove main to improve the resilience of the Stockport and Macclesfield area.

We plan to further improve our supply-demand balance during 2020–25 by:

- Reducing demand through leakage management and reducing customer usage;
- Development of new supply projects such as the connection of the Alston Spade Mill reservoirs (due for completion in 2022); and
- Increasing our transfer abilities such as increasing the capacity of our West East Link Main to 150 Ml/d.

2.7 West Cumbria

Our 2015 Water Resources Management Plan concluded that the Thirlmere transfer scheme (sometimes referred to as the West Cumbria Water Supplies Project) should be progressed to address the future supply-demand deficit in West Cumbria. From the start of construction in 2017/18 the project maintained excellent progress, however due to delays relating to COVID-19, there is a slight delay in the new water supply coming into service.

The project is currently in the testing and commissioning phase and the first customers will now start to receive their water from Thirlmere from September 2022. This seven-year project is one of the largest feats of engineering United Utilities Water has ever undertaken and it has been delivered against the backdrop of a global

pandemic, which has had an unprecedented impact on work forces and the supply chain. On completion of the scheme, our new, combined Strategic Resource Zone will come into existence and water from Thirlmere Reservoir will be supplied to West Cumbria.

To date on the West Cumbria Water Supplies Project we have already delivered:

- A major new raw water pipeline linking Thirlmere Reservoir to West Cumbria;
- A new water treatment works at Williamsgate capable of treating 80 million litres of water per day (now our 10th largest WTW), with a living green roof to help it blend in to the landscape;
- Four new pumping stations to move water to customers;
- Two new underground service reservoirs, at High Leys and Moota Hill, capable of storing 50 million litres and 21 million litres respectively;
- A total of 100km of new pipes;
- Refurbishment of 23km of existing pipes; and
- All buildings have been designed to complement the local landscape using local building materials where possible.

Throughout the planning and construction of the project we have engaged with the local community and stakeholders, and this is continuing through the implementation of our new operating system:

- Our engagement with customers, landowners and other key stakeholders has included over 130 parish council meetings and over 50 public exhibitions, as well as additional communication with a range of organisations and individuals;
- For much of the project construction period we hosted a drop-in visitor centre in Keswick, due to high visitor interest and a heavily populated area;
- During the COVID-19 pandemic we adapted our stakeholder and customer engagement approach to ensure that regular communication continued, using virtual platforms to demonstrate our progress on the scheme;
- We awarded £1.2 million to Woodland and Community legacy funds to support projects providing social and economic benefits in the local area, through partnerships with local organisations such as the Cumbria Community Foundation;
- We held a series of 'Working for you' open sessions during March 2022 for customers and stakeholders to learn more about the project. This included several face to face meetings and one live virtual event option;
- Prior to introducing Thirlmere water into supply in West Cumbria, we will send communications to every property affected by the change (about 80,000 properties); and
- Our project website at <https://uuhub.co.uk/westcumbriapipeline/> supports our engagement with customers and stakeholders and provides regular progress updates on the implementation of our new water supply system in West Cumbria. There are also testimonials and a virtual exhibition for anybody unable to attend the face to face meetings.

The creation of a new self-contained water supply system in West Cumbria provides us with a unique opportunity to apply, test and realise a new 'Systems Thinking' approach to be more joined up, planned, proactive and predictive in our work. We have incorporated innovative network monitoring technology into the project build and we are developing new ways of working, to maximise the benefits of the new technology and analytics capability:

- Installing new monitoring points and remote controllers across the West Cumbria system;
- Investigating network monitoring options such as additional acoustic loggers;
- Collecting and validating key site and asset data across West Cumbria;
- Completing a catchment monitoring model to predict impacts to raw water quality from heavy rainfall;
- Developing enhanced monitoring requirements for the new Williamsgate WTW;
- Establishing the proactive monitoring of site performance using Athena, a new monitoring and control platform which allows us to combine our network and process data in new ways;

- Establishing an integrated system team and developing new collaborative ways of working to ensure that we make the best decisions for our system and for customers; and
- Implementing a new operating model linking a dedicated model office based in the Integrated Control Centre with a regional system hub and field-based colleagues.

Following the successful completion of this scheme, our Ennerdale Water, Crummock Water and Quarry Hill licences will be revoked by the end of 2022, as set out in Section 2.4.2.

In conjunction with Natural England and the Environment Agency, we developed a package of compensatory measures that will reduce, or offset, adverse impacts on the River Ehen Special Area of Conservation (SAC) as a result of continued abstraction from Ennerdale Water, and a potential drought order, while the alternative public supply is put in place. This package includes both physical ecological measures and research measures and was submitted to Defra in February 2014. There is a legal agreement, signed in July 2015 between United Utilities Water, Natural England and the Environment Agency which describes each physical and research measure, programme and governance of the package. The aim of the agreed package of measures is to restore the habitat which enables the sustainable recruitment of freshwater mussels and salmon, primarily in the River Ehen SAC, and to undertake research and monitoring to understand how this outcome would best be achieved.

The COVID-19 pandemic has had minimal impact on the delivery and programme of the compensatory measures during 2021/22. Further progress made during the year on implementing the package of compensatory measures to the scope and the timescale agreed with the Environment Agency and Natural England has included:

- The River Ehen Project Officer, hosted by the West Cumbria Rivers Trust, has continued to facilitate the delivery of conservation actions in the River Ehen and Ennerdale Water catchments despite restrictions related to the COVID-19 pandemic;
- The EngD study hosted by Newcastle University investigating future flow regimes and visualisation to aid stakeholder engagement at Crummock Water has successfully completed. The five-year research assistant and part-time PhD post at Aberdeen University developing understanding of surface water and groundwater interactions on the upper River Ehen is progressing well and is due to complete in 2022; and
- A four year Research Officer post hosted by the Freshwater Biological Association is delivering a programme of research and trials of reintroduction techniques for freshwater mussels (*Margaritifera margaritifera*) and monitoring of their survival, primarily focused on the River Irt in West Cumbria. The research role is complemented by a River Irt Project Officer role which is hosted by the West Cumbria Rivers Trust. The Project Officer role is implementing catchment interventions to benefit reintroduced mussels and working with the Research Officer to undertake environmental monitoring.

The package of compensatory measures will provide additional knowledge and ecological actions over and above the actions that are normal practice for the management of the SAC. Outside this package of measures, considerable research, monitoring and physical action is currently being delivered by United Utilities Water working in partnership with other organisations, focused on restoring the River Ehen SAC to favourable condition.

2.8 Catchment management

Catchment Systems Thinking is our approach to managing catchments in a holistic, integrated manner. As a custodian of the natural environment, with 57,000 hectares of land in the North West, we have applied catchment-based approaches on our land to deliver environmental and water quality improvements for many years. From 2005–15 we delivered the groundbreaking ‘Sustainable Catchment Management Programme’ (SCaMP) which secured multiple benefits at a landscape scale.

The Catchment Systems Thinking approach encourages us to think differently and goes beyond our catchment land to look at the wider environment. Key elements of the Catchment Systems Thinking approach includes incorporating natural capital decision making to consider what is best for the environment, customers and communities by integrating risks and driving multiple natural capital benefits, and developing better ways of working through co-governance, collaboration and partnerships.

Drinking Water Protected Areas are in place across all of our abstractions. Where the water quality is deteriorating and is becoming harder to treat, a 'safeguard zone' can be established. Safeguard zones are used to target measures, advice and incentive schemes for landowners and managers to help improve water quality. Within the North West the Environment Agency has designated 20 surface water and seven groundwater catchments as Safeguard Zones. The zones have been designated to address issues with colour, turbidity, algae and pesticides in surface waters; and nitrates and pathogens in ground waters. We cannot solve all of the issues on our own so we are working with stakeholders such as Rivers Trusts, Wildlife Trusts, RSPB, Moors for the Future and Catchment Sensitive Farming who have overlapping interests. Many of the actions that benefit water quality also benefit the wider environment such as wildlife. We continue to monitor raw water quality in all drinking water protected areas and we work with the Environment Agency to designate new safeguard zones where a programme of voluntary measures would be beneficial for all stakeholders.

3. Our current and future plans



We are working on a number of inter-related plans covering key aspects of our business, and in developing these plans we are seeking to maximise the benefits of collaborating with customers and stakeholders. We have therefore launched an interactive online collaboration portal, to host updates and discussions on key schemes including: Catchment Systems Thinking (CaST), our Drainage and Wastewater Management Plan (DWMP) and our Water Resources Management Plan (WRMP).

Our collaboration portal can be found at: <https://collab-uu.co.uk/wrmp/>.

3.1 Our latest Drought Plan

Our latest final Drought Plan was published in June 2018 and covers the period to 2021. We published our updated draft Drought Plan, incorporating the latest Environment Agency drought plan guidelines, in May 2021. Following an 8-week period of public consultation to the end of June 2021, we reviewed the responses and updated our Drought Plan as appropriate. We published our revised draft Drought Plan in August 2021. Following a review by Defra and the Environment Agency we published our 'draft final' Drought Plan in May 2022; once this is approved by Defra and the Environment Agency we will publish it as our final Drought Plan for 2022.

Our Drought Plan is available at unitedutilities.com/drought-plan.

3.2 National and regional planning

In 2020 the National Framework for Water Resources was published, in which Defra confirmed their requirement for regional Water Resources Plans to be produced, to address the need for resilient and sustainable water supplies in a growing economy and changing climate. There are currently five regional groups across the UK, consisting of water companies, water industry regulators and stakeholders. United Utilities Water is a member of the Water Resources West (WRW) regional group, along with Severn Trent Water, Dŵr Cymru Welsh Water, South Staffs Water, the Environment Agency and a number of associate members.

As part of the Water Resources West group we published our emerging Regional Water Resources Plan in January 2022, for a period of informal consultation along with enhanced pre-consultation on our next company Water Resources Management Plan. This consultation took place from January to February 2022.

We are helping to address regional and national water resources planning needs, primarily through our involvement in the Severn Thames Transfer scheme via the North West Transfer Strategic Resource Option, although we will only undertake this scheme if it does not cause any reduction in water resources resilience for customers in our region. The scheme, which is potentially required from 2040, involves transferring up to 205 MI/d of water from our Strategic Resource Zone, supported by a number of sources including up to 180 MI/d of water licensed to United Utilities Water from Lake Vyrnwy into the River Severn for onward transfer to other water companies including via the River Thames to the South East of England. The scheme is one of a number of strategic resource options (SROs) which are being assessed through the Regulators' Alliance for Progressing Infrastructure Development (RAPID).

Our emerging Regional Water Resources Plan is available at: <https://waterresourceswest.co.uk/>

3.3 Updating our Water Resources Management Plan

Our final 2019 Water Resources Management Plan was published in August 2019, and is in effect from 1 April 2020. In parallel with our regional planning activities, we are currently developing the next update of the plan. We will publish our draft Water Resources Management Plan 2024 in October 2022 for a 12-week period of public consultation, following which we will revise the draft plan taking into account the consultation feedback received.

Our draft Water Resources Management Plan 2024 will reflect a number of key changes since our 2019 publication:

- We are now required to assess our supply systems against the new 1 in 500 year drought resilience standard, which is a significant step change for the UK water industry;
- Our plan now includes an ambitious Environmental Destination, developed in consultation with the Environment Agency;
- We plan to achieve the Government's challenging targets to halve leakage and reduce household water consumption to 110 litres per person per day by 2050 (whilst recognising the need for adaptive planning in this area);
- We plan to develop a range of options to support the Severn Thames Transfer scheme (outlined in Section 3.2 above) so that there is no impact on customers in our region; and
- The implementation of supply options to support a regional transfer, combined with our demand management plans, presents an opportunity to improve our levels of service for temporary use bans. We are consulting with customers to understand their preferences.

3.4 Forward look to activities in 2022/23

Table 12 gives an overview of some of our key activities in 2022/23; note however that this is not an exhaustive list. In 2022/23 we will continue to deliver our 2019 Water Resources Management Plan, but also focus on preparing for the future by implementing our updated Drought Plan in 2022, and developing the next update of our Water Resources Management Plan aligned with current regional water resources planning activity.

Table 12 Key items of activity in 2022/23

Item	Action
Thirlmere transfer scheme	<p>The project is currently in the testing and commissioning phase and customers will receive their water from Thirlmere by September 2022.</p> <p>During 2022/23 we will be linking all customers in West Cumbria to our new system whilst completing land reinstatement of pipeline easements including reinstating hedgerows and dry stone walls, and reseeded.</p>
Demand management activities	<p>We will continue to accelerate and target the most effective interventions to reduce leakage, with the aim of achieving or outperforming our Business Plan targets. At the same time our broader water efficiency communications strategy will continue to build scale and momentum through an always-on, integrated approach. This creates awareness and appreciation of the true value of water and drives behaviour change by giving customers the knowledge, tools and motivation to make saving it worthwhile. In addition we will continue to utilise customer insight to inform our data-led engagement, using our segmentation model to target messaging based on life-stage or likely consumer habits.</p>
Regional Water Resources Plan	<p>As outlined in Section 3.2, we published our emerging Regional Water Resources Plan in January 2022 for consultation. During 2022 we will review the responses to the consultation and update the plan as required; our revised Regional Plan will then be published in October 2022.</p>
Water Resources Management Plan	<p>Following a pre-consultation on our plan, undertaken in parallel with our consultation on the Water Resources West Regional Water Resources Plan, we will complete our first draft of the next Water Resources Management Plan for publication in October 2022. This will be followed by a 12-week period of formal consultation, following which we will review the feedback, prepare a Statement of Response and update our draft plan as appropriate.</p>
Customer metering	<p>Our strategy for 2020–25 and beyond is to maximise meter penetration and meter capabilities as a key enabler of demand reduction, customer engagement and network management objectives. This would be in conjunction with a communications campaign, to ‘nudge’ or encourage customers to moderate their usage around the home and in the garden. Continued promotion of our Lowest Bill Guarantee incentive, targeted at those segments of customers who would be financial winners through converting to a meter, together with a proactive enhanced metering programme designed to achieve scale in a tighter timeframe, underpins this strategy.</p>

4. Conclusions



We have made good progress during 2021/22, delivering the second year of our Business Plan and Water Resources Management Plan for the five year period 2020–25.

We have maintained a supply-demand surplus in all of our resource zones, despite a shift in consumption and water use patterns since the global COVID-19 pandemic. Our continued efforts to mitigate this increased demand include our leakage reduction activities, which have led to a reduction of 10.8 Ml/d in regional leakage since 2020/21. We have now outperformed our statutory regional leakage target for sixteen consecutive years. We have also continued to promote our Lowest Bill Guarantee meter scheme and implemented a new proactive approach to metering, achieving a 30% increase in the take-up of free meters across our region compared to the previous year. We have continued to develop and build on our water efficiency strategy, working collaboratively with other organisations to deliver a range of water saving initiatives.

Good progress has continued on the Thirlmere transfer scheme, which is now in the testing and commissioning phase. We are due to complete this scheme in September 2022, which will enable us to merge our existing West Cumbria and Integrated Resource Zones. The scheme also provides a unique opportunity to develop a new ‘Systems Thinking’ approach, by incorporating innovative network monitoring technology into the project build and implementing new proactive and collaborative ways of working, to maximise the benefits for customers.

During the last two years we have undertaken a major update of our Drought Plan, and in May 2022 we published our draft final Drought Plan 2022. We have also been working on updating our supply-demand balance analysis and preparing for the next update of our Water Resources Management Plan, in parallel with national and regional planning activities. In collaboration with Water Resources West, we published an emerging Regional Water Resources Plan in January 2022 for informal consultation; the final plan is expected to be published in October 2022. We expect to publish our company draft Water Resources Management Plan 2024 in October 2022, for a 12-week consultation period following which we will update the plan taking account of feedback from stakeholders and customers.

Our latest Drought Plan and Water Resources Management Plan can be found at the link below.



Water Resources Management Plan 2019
Final Drought Plan 2022

unitedutilities.com/water-resources-plan



Appendix A Key outturn data

Water Resource Zone	Barepot	Carlisle	North Eden	Integrated	West Cumbria	Region
Note: numbers may not sum due to rounding				(Forecasts for Strategic Resource Zone)		
Key to table	2021/22 actual data (Full Year values)					
	2021/22 forecast data (WRMP19) adjusted for weather in reporting year					
	<i>Difference</i>					
Water available for use (own water sources) (MI/d)	34	35	8	1,914	58	2,049
	34	33	9	1,878		1,954
	0	+2	-1	N/A		N/A
Total population (000's)	-	110	14	7,066	148	7,338
	-	119	15	7,356		7,490
	0	-9	-1	N/A		-152
Number of unmeasured households (000's)	-	29	3	1,561	46	1,639
	-	29	3	1,510		1,542
	0	0	0	N/A		+97
Number of metered households (000's)	-	21	3	1,400	21	1,444
	-	21	3	1,455		1,479
	0	0	0	N/A		-35
Total household metering penetration (incl. voids)	0%	40%	43%	45%	30%	45%
	0%	42%	44%	48%		45%
	0%	-2%	-1%	N/A		-1%
Per capita consumption unmeasured households (l/hd/d)*	-	171	203	159	164	159
	-	154	156	153		153
	0	+17	+47	N/A		+6
Per capita consumption metered households (l/hd/d)*	-	133	129	123	131	123
	-	108	108	114		113
	0	+25	+21	N/A		+10
Per capita consumption all households (l/hd/d)*	-	156	171	143	154	143
	-	134	134	134		134
	0	+22	+37	N/A		+9
Per household consumption all households (l/prop/d)*	-	332	366	326	331	327
	-	295	296	293		293
	0	+37	+70	N/A		+34
Water consumption by households (MI/d)*	-	17	2	966	22	1,007
	-	15	2	869		886
	0	+2	0	N/A		+121
Water consumption by non-households (MI/d)	0	8	1	332	9	351
	-	7	1	347		354
	0	+1	0	N/A		-3
Miscellaneous water use (MI/d)	0	1	0	48	2	51
	0	1	1	47		49
	0	0	-1	N/A		+2
Total leakage (MI/d)	-	6.0	3.0	389.0	17.0	414.0
	-	6	3	429		437
	0	0	0	N/A		-23
Distribution input (MI/d)*	-	31	6	1,738	50	1,826
	-	29	7	1,692		1,726
	0	+2	-1	N/A		+100
Security of supply	In Balance	In Balance	In Balance	In Balance	In Balance	In Balance
	In Balance	In Balance	In Balance	In Balance		In Balance
	No Change	No Change	No Change	N/A		No Change

Appendix B DWI statutory notices

Reference	Site	Description	Status
UUT 3480	Prenton Lower SR	Regarding the risks of cryptosporidium, <i>E. coli</i> , coliforms, taste and odour. No impact on supply	In construction. Completion by 31 March 2023
UUT 3499	Franklaw	Regarding the risk of cryptosporidium. No impact on supply.	Work completed in demonstration of benefit
UUT 3563	Service Reservoirs	Regarding the risks of cryptosporidium, <i>E. coli</i> , coliforms, taste and odour. No impact on supply	In construction. Completion by 30 June 2022
UUT 3574	Mitchells Ridgaling Worsthorne Poaka Beck	Regarding the risk of cryptosporidium. Impact on supply captured through outage with the production planning team.	Work completed in demonstration of benefit
UUT 3692	Hodder	Installation of rapid gravity filters to replace pressure filters. No impact on supply.	Filters in construction. Completion by 31 Jan 2023
UUT 3693	Sweetloves	Update to PLCs and Site SCADA. No impact on supply.	Work completed and now in demonstration of benefit
UUT 3930	Concessionary Supplies	Regarding the risks of cryptosporidium, <i>E. coli</i> , coliforms, copper, lead, nickel, colour, turbidity, iron, manganese, pH, taste and odour.	Work completed and now in demonstration of benefit
UUT 3948	Watchgate WTW	Installation of shut down and start up to waste. Impact on supply to be captured through outage.	In construction. Completion by 31 May 2022
UUT-2018-0003	Castle Carrock	Notice to address the risk of taste and odour caused by Geosmin and 2-MIB in the raw water. Potential impact on supply to be captured through outage.	Completion by 31 Jan 2023
UUT-2018-0004	Laneshaw	Notice to address the risk of taste and odour caused by Geosmin and 2-MIB in the raw water. Impact on supply captured through outage.	Completion by 30 Sept 2022
UUT-2018-0005	Mitchells	Notice to address the risk of taste and odour caused by Geosmin and 2-MIB in the raw water. Potential impact on supply to be captured through outage.	Completion by 30 Sept 2022
UUT-2018-0006	Rivington	Notice to address the risk of taste and odour caused by Geosmin and 2-MIB in the raw water. Impact on supply captured through outage.	GAC being installed in the filters. Completion by 31 Jan 2023
UUT-2019-00003	Huntington	Installation of shut down and start up to waste at Huntington WTW (complex solution). Any potential impact on supply to be captured through outage.	Solution being developed
UUT-2020-00002	FEO Vyrnwy LDTM	Notice to address the risk of breaching the standard for iron and discolouration	Solution being developed
UUT-2020-00003	Oswestry	Completion of the AMP6 upgrades and installation of shut down and start up to waste facility. Any potential impact on supply to be captured through outage.	Solution being developed
UUT-2020-00005	Discolouration	Notice to address the risk of breaching the standard for iron, manganese and discolouration	Completion by 30 April 2031
UUT-2021-00004	Franklaw	Installation of shut down and start up to waste at Franklaw WTW (complex solution). Any potential impact on supply to be captured through outage.	Solution being developed
UUT-2021-00006	Policy, Procedures, Standards and Training	If not correctly controlled or applied, could cause a risk to wholesomeness and constitute a potential danger to human health	Completion by 31 October 2023

United Utilities Water Limited
Haweswater House
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington
WA5 3LP
unitedutilities.com



Water for the North West