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# WATER RESOURCES MANAGEMENT PLAN

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2024

EXECUTIVE SUMMARY

OCTOBER 2022



## INTRODUCTION

Dŵr Cymru Welsh Water provides an essential public service to over three million people across most of Wales, and adjoining parts of England. We are the sixth largest of the ten regulated water and sewerage companies in England and Wales and are unique in that we are a not-for-profit business with no shareholders. This means we are guided solely by what is in the best long-term interests of our customers and the environment

The service Welsh Water provides is essential to the health of people and the environment, and the normal functioning of everyday life. The Covid-19 pandemic has highlighted what we stand to lose when the services we often take for granted are disrupted by circumstances beyond our control. It is therefore essential that we do all we can to understand the risks to our service, mitigate them, and ensure that they remain at an acceptable level.

The basis for planning water resources is laid out in specific Welsh Government Guiding Principles and joint regulatory guidance. These documents are built upon and are directly linked to Government and regulatory authority legislation and policy.

## THE WATER SUPPLY TO OUR CUSTOMERS

Wales has a significant amount of rain: we estimate that our infrastructure captures only some 3% of the effective rainfall, leaving some 97% for agriculture and the environment, compared to the southeast of England where up to 50% is used for public water supply. Most of our water is supplied from our impounding reservoirs although we abstract significant volumes from our lowland river sources such as those on the Rivers Wye and Usk in southeast Wales, the Rivers Tywi, Cleddau and Teifi in southwest Wales and the River Dee in north Wales. Groundwater accounts for less than five percent of our supplies at a Company level but at a local level, may be the whole supply.

We take a progressive approach to Water Resource Planning as successive WRMP timeframes overlap so that each 5-year plan is an update of the last, based upon new drivers such as revised government or regulatory guidance, customer priorities and improved evidence.

The objective of this Plan is to ensure that Dŵr Cymru Welsh Water will always be able to provide sufficient water supply to meet our customers' demand for water over the next 25 years by making our water supply systems resilient to drought, particularly in light of a changing climate. The plan uses best available evidence to formulate a set of actions through analysing future risks and identifying how we might need to adapt to different future circumstances. We have been guided by our regulators, interested parties and our customers in selecting the most appropriate solutions to the challenges we face.

We have 23 discrete water supply systems across our operating region which we call Water Resource Zones. These are defined by the extent of the supply network that share the water resources within each zone, whereby the customers in each zone have the same level of service in response to drought conditions. Our water resource planning is based upon these zones. The figures below show our region and our water resource planning zones.



## THE WATER RESOURCE MANAGEMENT PLAN 2019

The key drivers for our WRMP19 plan were; the management of significant abstraction licence changes due to the implementation of the Water Framework and Habitats Directives, improvement to water resource resilience, and the mandating of demand management targets.

We set a target to reduce our overall company level of leakage by 15% by 2024-25 and we are on target to achieve this having made a c10.5 Ml/d reduction already. Of equal importance was the setting of a longer-term target to reduce the average per capita consumption (PCC) to 110 litres per person per day (l/p/d) by 2050. Although our average household PCC has risen as a result of the Covid-19 pandemic through an increase in home working and schooling and the associated behavioural change, with society moving back to more normal practices we are seeing demand patterns return towards pre-pandemic levels.

We have progressed the schemes to resolve these deficits in all three zones and this year's drought has emphasised the need for the Pembrokeshire scheme in particular. Due to the dry weather experienced between March and July that left storage in Llys-y-Fran at a low level we installed a temporary pumping scheme at Canaston Bridge, which will be made permanent in 2023 in line with our WRMP19 plan.

## PRINCIPLES FOR THE WATER RESOURCES MANAGEMENT PLAN 2024

Based on, and in response to regulatory guidance, the key goals and principles in developing our WRMP24 are that it will:

- Align with Long Term Delivery Strategies and outcomes
- Make substantive improvement to water demand management performance to support long term environmental policy and supply resilience
- Demonstrate that Welsh Water has enough reliable water resource and treatment capacity to meet future demand over the next 25 years
- Meet revised Government targets with respect to drought resilience and use industry leading tools to assess our ability to meet these
- Account for the latest climate change science using UKCP18 datasets and industry thinking within our assessments
- Actively engage with stakeholders and our customers in considering investment decisions
- Secure enough water for the environment over the long term by taking account of current environmental obligations laid out by our regulators as a minimum requirement and considering wider environmental interests
- Take a 'best value' approach to decision making around solutions to problems
- Robustly test our plans against alternative scenarios and where appropriate take an adaptive planning approach to mitigate future risk
- Consider the options available for trading water with third parties
- Build our Plan into, and maintain consistency with, the 'Water Resources West' Regional Plan

## WATER RESOURCE RESILIENCE

Water resource resilience is a measure of our ability to meet demand during a specified severity of drought. This is assessed through a comparison of how much water resource we can rely on during a particular drought event compared to the expected demand for water from our customers at this time (known as the 'supply/demand balance').

Our current preferred level of service is to impose significant supply restrictions upon our customers, through an Emergency Drought Order (water rationing via standpipes/rota cuts) no more frequently than once every two hundred years, on average. i.e. the risk of these significant restrictions is no more than 0.5% each year.

The target for implementing Temporary Use Bans (formerly hosepipe bans) is once in twenty years on average and for non-essential use bans it is no more than once every forty years. Within the WRMP24 we set out how we plan to increase our level of drought resilience for significant restrictions to a 1 in 500 year on average standard (0.2% annual probability) within the 25 year planning period.

To understand the 'supply' element of the 'supply/demand balance' we calculate the amount of water we have available during a drought through system simulation using our water resource models. These provide a representation of our supply systems and allow us to understand their capability during drought. If this capability during a severe drought event, i.e. one that is likely to occur no more frequently than once every 500 years on average, is greater than customer demand plus leakage, then we have a Supply/Demand surplus and are resilient at that drought level.

We have gained far greater confidence in our understanding of drought resilience through a step change in the techniques we are now using. These being:

- The development of 60 new catchment models that better represent inflows to our reservoirs and rivers.
- Use of a new systems modelling platform, which provides a better representation of asset operation and demand
- The generation of 20,000 years of weather pattern data using statistical models to allow us to understand the impact and return period of drought events more severe than seen previously.

However, there is uncertainty around many of the factors used to assess both the supply capability within a water resource zone and the demand forecast and so, in addition, we add a factor within the supply/demand balances to account for this, known as 'Headroom'.

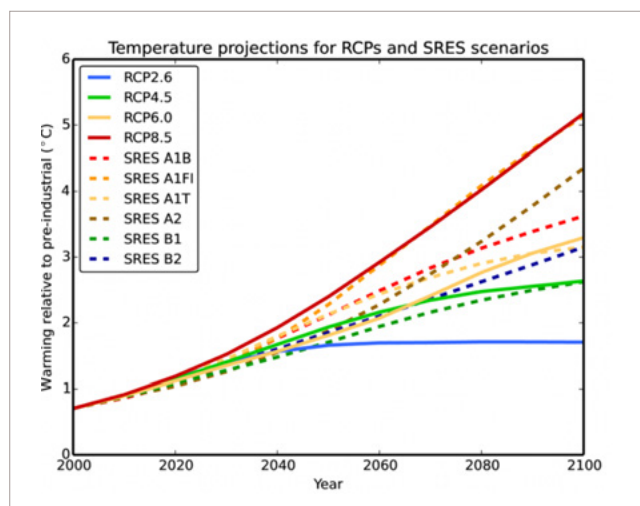
Where there is a supply/demand deficit, all feasible demand management and water supply enhancement options are developed with cost and benefit metrics calculated. A decision-making process is then followed to examine the trade-offs between performance metrics and generate a 'best value' societal and environmental plan.

The preferred programme of solutions is then tested against potential futures to identify any need for an adaptive plan that would lead us to deliver an alternative programme.

## SUPPLY ASSESSMENT – CLIMATE CHANGE

Guidance asks that we use UKCP18 climate impact data but that we should agree our approach to the assessment with Regulators, given the wide choice of climate change data sets related to future emissions and global temperature rise.

We have agreed with NRW to use a 'medium emission' scenario (RCP6.0) within our preferred investment plan, but that we will test our plan against a 'high emission' scenario (RCP8.5) to examine whether we may need to adjust our long-term investment should the future climate follow a path of greater warming and lower rainfall (See the Figure below).



This approach meets Welsh Government's requirements and Ofwat's 'high' common reference scenario. Ofwat also require a 'Low' emission common reference scenario (RCP2.6)

A large number of climate outcomes have been produced for each emission scenario and we use a representative sample of these to understand the possible range of impact on our supply capability. The impact on supply is taken as the central outcome from the sample with uncertainty/variance used in calculating the 'Headroom' allowance.

The climate change impact has increased in all zones from the WRMP19 assessment which was made using UKCP09 data. In WRMP19, climate change was forecast to reduce our supply capability in SEWCUS by 4.3% at 2050. In WRMP24, the equivalent impact at 2050 is 6.3% for a Medium emissions scenario, increasing to 9.2% under a High emissions scenario.

## ENVIRONMENTAL FACTORS

Guidance asks that the Plan should "deliver a protected and improved environment and provide benefit to society. You should demonstrate that your plan provides overall positive environmental benefit."

NRW's National Environment Programme (NEP) and the equivalent WINEP in England, identify the investigations and subsequent changes that need to be made to our abstraction licences to meet environmental obligations, including the Habitats and Water Framework Directives. The NEP in AMP6 and AMP7 resulted in significant expenditure to manage the impact of reductions in licence volumes at a number of our river abstractions. Through discussions with Regulators in the development of our PR24 WINEP and NEP, the only reduction in abstraction volume likely to be required during the AMP8 period is that at Leintwardine in Herefordshire. Studies completed in AMP7 indicate that summer flows are inadequate for ecological needs and so we will likely need to reduce our abstraction from the source during low flow periods.

In England, the Environment Agency has defined a policy whereby it seeks to limit abstraction licence quantities to that used over the recent past to meet the 'No Deterioration' requirements of the Water Framework Directive legislation, particularly under a changing climate. NRW are taking a different approach in Wales, and we have committed to work with them, through research in AMP8, to understand the potential future impact on river flows under climate change and how this may affect ecological needs.

This will be a significant piece of work which demonstrates our environmental integrity. This will also allow us to link the quantity with quality initiatives on the rivers from which we take water and develop catchment-wide solutions.

## DEMAND FORECASTING

The approach taken to demand forecasting is similar to that used in developing WRMP19. Our base year is 2019/20, as less impacted by the pandemic customer behavioural change. Outturn data is consistent with that provided in our Annual Performance Report to Ofwat. External consultants, Edge Analytics, have developed population and property forecasts following best practice guidance. The data used has been derived from Local Planning Authority projections as published by Welsh Government and apportioned to our water resource zones. New connection estimates have been projected from local development plans combined with GIS data. Occupancy is modelled using past observed trends for different property types at the WRZ level.

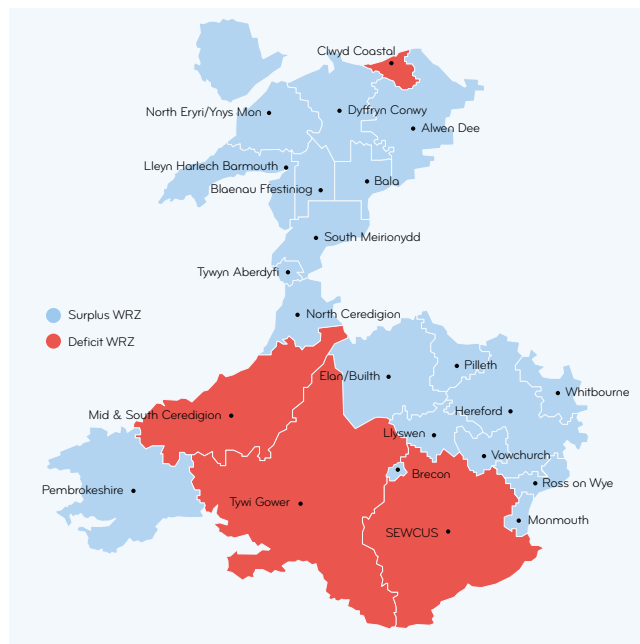
Household demand has been generated from a technique called multivariate regression and is built from detailed household water use surveys. The modelling accounts for demographics, house type, property and population forecasts and weather parameters.

Non-household demand forecasts are based upon the models developed for WRMP19 by CACI consultants. Non-households are split into 14 economic-based sectors and the model updated for recently observed demand data at WRZ level, with future projections taking account of econometric and climate change factors.

We are forecasting a 15% leakage reduction in AMP7 which is the starting point for our supply/demand balances. Our strategy to reduce demand is outlined in the 'Our Proposed Plan' section below.

## THE SUPPLY/DEMAND POSITION

Our initial Supply/Demand balances have been generated for each of the 23 water resource zones. We undertake these balances over both an annual period to understand the reliability of water resources from a hydrological perspective and during a peak demand week to understand our ability to treat and deliver enough water to our customers during the summer months. Four zones (see Figure overleaf) are not resilient to our preferred 1 in 200 year level of drought resilience under a medium emission climate change scenario within the 25-year period to 2050. The Tywi Gower zone (deficit up to of 16Ml/d), the Mid & South Ceredigion zone (Deficit up to 1.1Ml/d), the Clwyd Coastal zone (Deficit up to 0.4Ml/d) and the South-East Wales Conjointive Use System (SEWCUS)(Deficit up to 43.5Ml/d. Mid and South Ceredigion zone is forecast to be in deficit when tested against a peak week 'critical period' planning scenario, whilst the other zones are forecast to be in deficit under an 'annual average' planning scenario. The SEWCUS and Tywi Gower zones are the most populous with the four zones in deficit having just over 70% of our total population served.



## DEFINING A BEST VALUE INVESTMENT PROGRAMME

Guidance expects solution decisions to be based not solely on cost but on a wider range of social and environmental metrics. This is similar to a multi-capitals approach in terms of criteria but without full monetisation and weighting of metrics to explore the trade-offs between candidate options and programmes.

However, our approach is also aligned to our long-term delivery strategy with a key feature being the demand management policy which has been directed by Government, regulators, and customer expectations. This includes performance commitments on leakage and PCC as well as resilience to drought. To meet these targets and expectations we have set over-riding policies in AMP8 and 9 to reduce customer side leakage and water use.

This mandated policy is part of our preferred plan within all zones and acts to improve water resource resilience over time through the planned delivery of a 'Smart' metering programme. This provides a 'no regrets' solution to reduce customer-side leakage and will help our customers to reduce usage.

Where this policy does not secure resilient water supplies, we have looked at additional 'Best Value' options to ensure that each of our zones is resilient. To support our approach, we have built a decision making tool ('ValueStream') jointly with Water Resources West companies. The weightings around both financial and non-financial criteria such as 'social wellbeing' or 'carbon emissions' have been set through expert workshops including stakeholders and take account of customer preference work.

## CUSTOMER AND STAKEHOLDER ENGAGEMENT

Given our unique business model and the requirement of guidance, we have taken a collaborative approach to plan development through active engagement with regulators, stakeholders and customers.

To ensure acceptance of the WRMP24, we have held regular monthly progress meetings with NRW and EA to review and agree processes and planning assumptions. We have undertaken dedicated formal pre-consultation meetings with OFWAT, The Consumer Council for Water (CCW), NRW, EA and ran a full pre-consultation exercise contacting over 300 stakeholders including National and Regional environmental interest groups and all local authorities. Environmental engagement has also been completed through presentations to the DCWW Independent Environmental Advisory Panel.

Customer Engagement has included qualitative and quantitative preference survey work as well as in depth questioning of an online community over 4 weeks, to better understand customer rationale. We also held a series of online roadshows with the Water Resources West member companies with one focussed on our WRMP24.

As anticipated, stakeholder responses mirrored regulatory guidance to maintain and improve water supply resilience whilst requesting substantive improvement in demand management activity to reduce our impact on the environment.

## LEARNING FROM THE DROUGHT OF 2022

### THE DROUGHT EVENT OF 2022

Between March and August this year, Wales received just 56.7% of its expected rainfall, the third driest six-month period since records began in 1865. In August alone, Wales received just 38% of its average monthly rainfall with heatwaves in both July and August leading to very high demand for water especially in the tourist areas of west Wales.

The outcome of this has been very low reservoir storages across most of south Wales and parts of northeast Wales, culminating in the first restrictions being placed on our customers since 1989, whereby on the 19th August a Temporary Ban on Water Use (formerly known as a 'Hosepipe Ban') came into effect in our Pembrokeshire WRZ.

Experience gained through this drought period has substantiated the asset investment decisions made in our WRMP19 and current scheme delivery and also supports with good evidence the need for the asset investments presented in this Plan. The following sections describe the key schemes.

### THE PEMBROKESHIRE ZONE

We were aware of the supply risk in Pembrokeshire with investment in two schemes identified in the WRMP19. The upgraded link main between Preseli water treatment works from the Llys-y-Fran reservoir was completed earlier this year and has been vital in securing supplies to the local area. In addition, we accelerated the delivery of our planned Canaston Bridge scheme, through installation of a temporary solution. This has significantly reduced the rate of drawdown of the Llys-y-Fran reservoir but with the severity of this year's drought demand management measures were required aligned to our level of service promises. With both schemes fully operational we are confident that the zone is resilient to 1 in 200 year drought events without the need for emergency drought orders.

### THE TYWI GOWER ZONE

Although customer restrictions have not been put in place elsewhere, we have been closely monitoring the areas of the Tywi Gower zone supported by the Crai and Ystradfellte reservoirs. These concerns have significantly lessened in September with both reservoirs having responded relatively well to rain in early September. However, the assessment in this Plan shows that the areas supplied by these reservoirs will need water resource reinforcement to maintain supplies in the most extreme droughts. These schemes are now planned for delivery early in the AMP8 period. In the meantime, we will continue to take operational actions to manage the risk and lower level of resilience.

### THE SOUTH EAST WALES (SEWCUS) ZONE

We have similar concerns around low levels in the 'high level' reservoirs in the SEWCUS zone. Our experience from this summer and improved modelling has confirmed the pinch points in these areas of the system. This provides strong evidence for needing the schemes presented within this Plan which will enable us to better balance the available water resource across the zone.

### THE MID AND SOUTH CEREDIGION ZONE

Of particular concern has been the Mid and South Ceredigion zone, a tourism area, where we were unable to meet customer demand from the combined output from our Strata Florida and Llechryd treatment works. For both hot periods we needed to supplement the zone by supplies brought in by road tankers from the Capel Dewi WTW system in the neighbouring Tywi Gower zone. This is in line with our analysis which shows that our current peak supply capability is insufficient to meet peak demands. We are planning to invest in the Llechryd works and to make some network changes to overcome this issue.

## OUR PROPOSED PLAN

To meet customer and stakeholder aspirations, the WRMP24 needs to meet the demand management challenges of further significant reductions in leakage and customer water use as measured by PCC.

The work presented here does not show that demand management is needed in all zones as supply/demand deficits only exist in four areas. However, there is an over-riding expectation from our regulators, stakeholders, and customers that we should be ambitious around leakage performance and supporting our customers to reduce consumption, both of which will benefit the environment.

## DEMAND MANAGEMENT

Demand reduction options are driven by industry policy, customer and stakeholder expectations and build upon the work to date in managing demand through leakage reduction and water efficiency.

The water companies in England have set themselves a goal of tripling the pace of leakage reduction in the period 2020-2030, to match the same level of improvement achieved over the past thirty years (1990-2020). This is set within a longer-term ambition to halve leakage from 2020 levels by 2050.

Our plan is to follow a profile in-line with this commitment, whereby we will deliver the 15% leakage reduction commitment in 2020-25 with a further 10% reduction in 2025-30. Thereafter, the leakage reduction will follow a profile from 143MI/d in 2025 down to 86.6 MI/d by 2050 that meets our long-term delivery strategy outcomes.

Customer engagement has shown support for reducing leakage, seeing this as a 'social contract' between us and our customers, whereby customers will respond to the requirement to reduce demand if we play our part through reducing leakage.

We have used current costs and benefits data to assess our leakage reduction options and it is clear that a step change in approach is required to cost effectively meet increasingly challenging targets with our conventional 'find and fix' costs increasing as we attempt to trace ever smaller leaks.

Our proposed leakage strategy is closely aligned to metering policy whereby a 'Smart meter' will not only support our customers in reducing their demand for water but will also enable us to target customer supply pipe leakage which is becoming an increasingly large proportion of total leakage. We propose to make a 10% leakage saving in AMP8, of which the majority will be saved on our customers' pipes.

We are also continuing with our detailed investigations into 'background leakage' supported by the Ofwat Innovation Fund project which Welsh Water are leading. Background leakage is defined as a summation of all leaks which are too small to find using techniques currently available. Estimations of background leakage vary across the industry, with current understanding suggesting that it could represent over two thirds of total leakage by 2050. It is important that we understand the true level of background leakage so that innovative technologies and data science can be employed in future strategies.

## METERING

Our metering policy is to deliver a large-scale programme of customer metering from AMP8 onwards. Our approach to customer metering in WRMP19 and AMP7 is largely reactive, responding to customers' demand to switch to a meter (meter optants), installing in newly built properties, and replacing faulty/damaged meters (reactive replacements). Metering is promoted as an option to reduce bills for low occupancy low-income households. Approximately 47% of our customer base is metered (March 2021) compared to an industry average of 63%.

Our meters are mostly manually read, as are the meters that will be installed over the course of AMP7. Based on the plans that were submitted at PR19, by the end of AMP7 we will have the second lowest level of meter penetration in the sector.

However, the advance of smart metering in other sectors, and the control it gives consumers over usage, is driving customer expectation of this functionality for their water service. It is unlikely that customers in 2050 will consider our current approach to be acceptable and therefore change is required.

From 2025 we propose to move to a strategy of installing smart meters with Automated Meter Reading (AMR) on unmeasured properties by geographical area. In the first instance these will be unbilled meters and will remain so until there is a change of occupier; this approach is known as 'progressive metering'. We will continue to monitor developments in smart metering technology and move to Advanced Metering Infrastructure (AMI) meters as the technology matures and costs reduce.

Through our strategy we will increase the level of metering to 76% by the end of AMP8 and 95% by 2050 (no water company has yet to achieve 100%). Our demand forecasts include savings achieved from both better data and communication with customers and the identification of leakage on customers' properties. The metering strategy is forecast to reduce overall demand by 34.6MI/d at the end of AMP8 and 96MI/d by 2050.

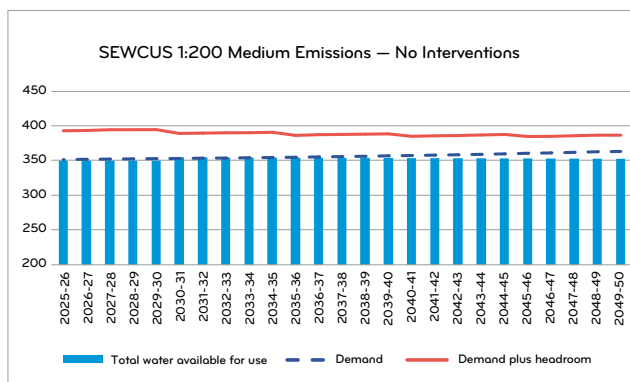
Our customer research supports this approach as customers recognise that better understanding their usage will help them reduce consumption. The progressive metering offers a stepped approach to adoption without making meters compulsory.

## SEWCUS

Our WRMP19 showed the SEWCUS system to be resilient under worst historic drought conditions, such as those experienced in 1976 and 1984, and likely to be resilient to a 1 in 200-year drought. However, using more accurate catchment and system models with greater granularity has identified variations in resilience across the zone, particularly when stressed by extreme drought. Under these conditions the 'high-level' reservoirs will have lower relative storage than Llandegfedd (the key 'low-level' reservoir). The existing network connectivity is the limiting factor in our ability to better balance water resource between the two systems.

The improvement in our understanding of catchment hydrology and reservoir inflows at all sites has meant that modelled drawdowns are now more accurate and show that during a drought it will be the lack of storage in our Taff Fawr and Taff Fechan reservoirs that would cause failures to meet customer demands.

This restriction in network capability to balance areas of 'surplus' resource against areas of 'shortfall' is exacerbated by climate change. Our modelling of the UKCP18 projections shows that the reduced inflows into our reservoirs means we see more years of 'failure' particularly in the Taff Fawr and Taff Fechan reservoirs. This supply capability, when set against our forecast baseline demand for water and an allowance for uncertainty, produced the starting supply demand position below.





The range of options considered include:

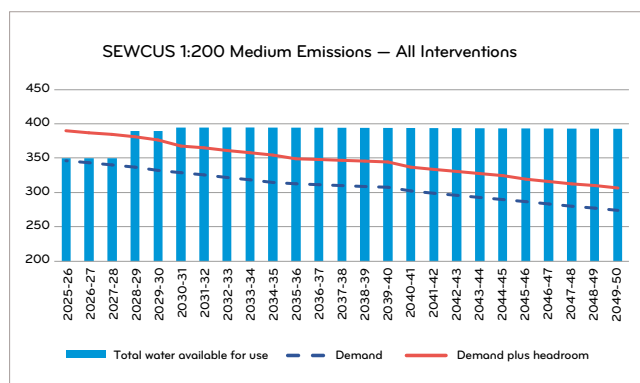
- Additional demand management;
- Network enhancement to optimise and balance water resources
- Making use of existing disused sources or under-used abstraction licences;
- Raising reservoir levels.

If financial cost and scheme yield are considered alone, then the least cost solutions would not include demand management options. These are driven by the requirements of Government and our Regulators desire for social and environmental improvement. The benefits of reduced leakage and water usage through metering have, therefore, been built into the SEWCUS programme prior to considering the other options to meet the supply/demand balance.

The only options that provide benefit to the system are those that improve the resilience of the SEWCUS high level area. Of three options available, increasing the capacity of the link from Talybont WTW is a costly option due to length of mains upgrade and operational cost. The two least cost options are:

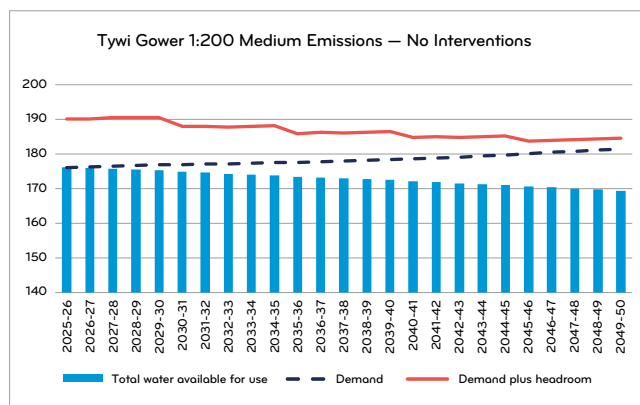
- Llwynon trunk mains minimum flow control;
- Cefn Mably/Memorial Pumping station enhancement.

Both are required to ensure resilience and form, alongside demand management options, the 'Best Value' Plan. The supply demand balance for the final plan is shown in the figure below.



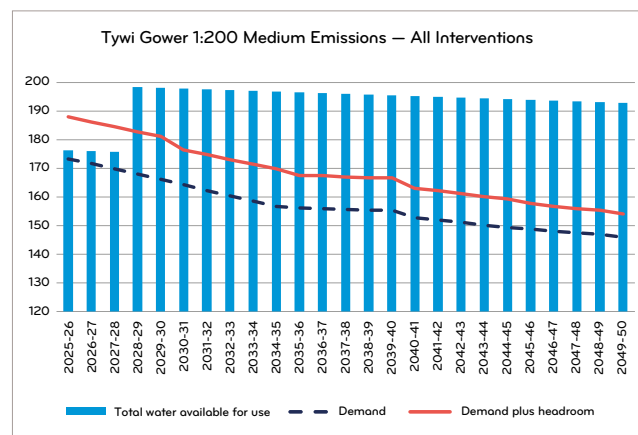
## TYWI GOWER

The position in the Tywi Gower zone is similar to that of SEWCUS with the WRMP19 indicating the system to be resilient but improved evidence has identified network connectivity limitations under extreme drought and climate change conditions.



The baseline supply/demand deficit is around 20 MI/d by 2050 due to localised water resource deficits. There is sufficient total water resource across the system with Brianne reservoir underutilised currently, however neither Crai or Ystradfellte reservoirs are sufficiently resilient to drought. Our preferred set of solutions is to reduce demand in line with our demand management strategy to reduce leakage and PCC and to reinforce the areas supplied by both Crai and Ystradfellte through increased connectivity to the Felindre system. Demand management alone is not sufficient to overcome the resource deficit in these localised areas.

From the set of available options, network investment is the best value option that provides long-term resilience across the zone, as shown in the figure below.

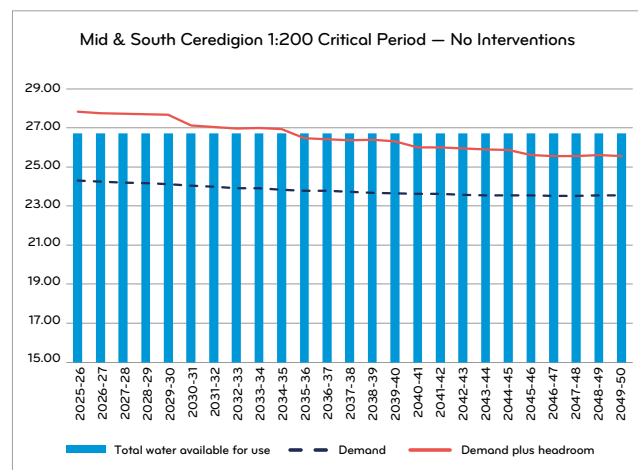


The plan for Tywi Gower not only meets the current day target of meeting resilience to 1:200 year droughts but generates increased capability to meet at least a 1:500 drought resilience by 2030 through demand management activity. As with all zones, this mitigates risk around future climate change impact pathway, customer usage behaviour, and environmental needs.

## MID & SOUTH CEREDIGION

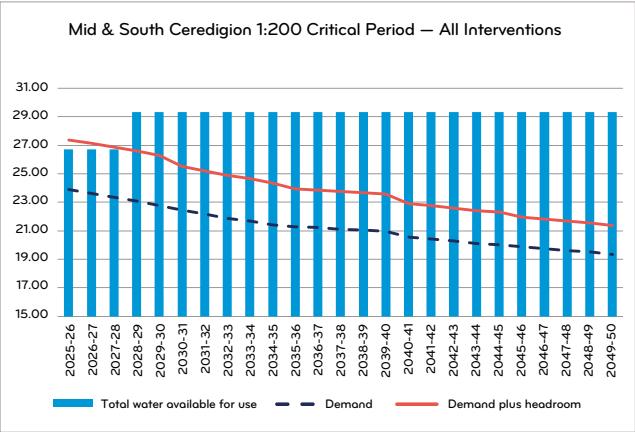
Analysis shows that the Mid and South Ceredigion meets resilience targets, as reported in the WRMP19, however improved evidence has identified issues meeting peak demands. Recent hot, dry weather events, including summer 2022, have tested the limits of our peak supply capability : the output from our Strata Florida and Llechryd treatment works needed to be supplemented by supplies brought in by road tankers from the Capel Dewi WTW system in the neighbouring Tywi Gower zone.

This confirms that our current peak supply capability is insufficient to meet peak demands, particularly in the light of the extreme high temperatures seen during July which pushed demands higher than ever experienced before and which are likely to be repeated more frequently as our climate warms (See figure below).



The most cost effective option is increasing the maximum output of our Llechryd WTW, which would provide us with the additional capacity and ensure we can adequately meet peak demands in the future. We have discussed with NRW their latest 'Abstraction Licensing Strategy' which indicates that additional water could be licensed for abstraction in the lower reaches of the Teifi.

With delivery of both our demand management strategy and the upgrade to Llechryd WTW, our investment will ensure long term resilience against climate change and more extreme drought events by providing sufficient treatment capacity to meet peaks in demand (See final plan figure below). At the same time we will seek to reduce demand although as the peaks are largely driven by tourism our metering programme may have less of an impact.



CLWYD COASTAL

The Clwyd Coastal zone in north-east Wales has a marginal supply/ demand deficit under a 1:200 year drought scenario and would be in deficit if the target were to have higher resilience. A further driver within the zone is the potential reduction in abstraction licence at Llanerch Park boreholes with investigation proposed in AMP8.

A small change to abstraction allowance would reduce the zonal level of resilience and drive the need for a solution. Given the risks around environmental needs, climate change and customer usage we propose to follow an adaptive plan whereby we will complete detailed design work for the network reinforcement scheme in AMP8 for delivery in AMP9 if required. This will mitigate scheme delivery risk.

HEREFORDSHIRE

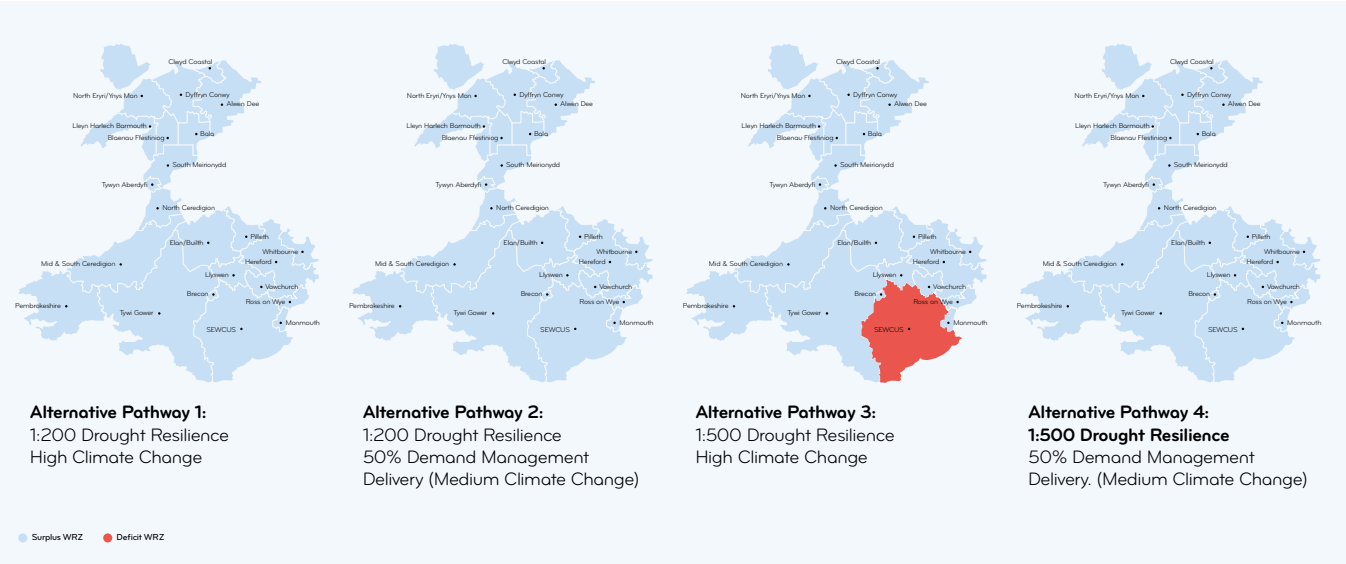
Environmental investigations show that the abstraction from our Leintwardine borehole could reduce local river flows below environmental flow targets during dry conditions. We will need to complete additional confirmatory studies in AMP8 to understand the licence conditions that will be needed to ensure sustainable abstraction. The worst case is that no abstraction will be allowed under very low flow conditions, and this would require network reinforcement to secure water supply to the Leintwardine area. The Environment Agency have asked that funding be secured to deliver both investigation and solution delivery in AMP8.

TESTING THE ZONAL PLANS

The long-term impact of leakage and customer usage policies generates an increased water resource surplus which over time provides greater drought resilience and enhanced benefit to the environment, as our take from the rivers and groundwaters is reduced. Our objective is to move to a 1 in 500 drought resilience position by 2040 to align us with the position being taken in England, ensuring that our customers receive at least an equal, if not better, Level of Service.

Assuming the full delivery of our preferred investment programme within the proposed timescales, we should achieve this higher resilience target across all zones by 2030/31. There are however three key risks that could impact the achievement of this. We have tested our preferred plan against various individual and combined future pathway scenarios. This confirms that the planned network investment is required to achieve resilience targets under all scenarios. Demand management will need to overcome the potential climate change impact over time to increase resilience from 1:200 year to 1:500 year droughts. If our customer behaviour reduces demand by 50 % of that estimated in our 'Core' plan, then the 1:500 year resilience target would be met under an RCP 6.0 climate change projection. Lower ambition on demand management increases the risk of meeting resilience targets under 'high' climate change impact.

We have also examined the investment requirements under the Ofwat common reference scenarios including a 'Low' climate change emissions scenario (RCP2.6). This would not eliminate the need for network improvements to secure resource zone integrity and with the potential impact between climate change scenarios in AMP8/9 being relatively low.



Supply/demand position at 2030 (end AMP8) with WRMP24 interventions. (Note The SEWCUS zone moves into a surplus position in 2031)



## BOARD ASSURANCE

WRMP Guidance requires an assurance statement from our Board to Ofwat and NRW/EA confirming that:

- We have met our obligations in developing our plan;
- Our plan reflects the Water Resources West (WRW) regional plan, which has been developed in accordance with the national framework and relevant guidance and policy, or provides a clear justification for any differences;
- That our plan is a best value plan for managing and developing our water resources so that we are able to continue to meet our obligations to supply water and protect the environment, based on sound and robust evidence including costs.

Jacobs consultants have acted as our independent auditors, to undertake assurance of our draft WRMP24 to determine if any elements of our approach are likely to be materially inconsistent with WRMP technical guidelines and Welsh Government's guiding principles. Jacobs have also considered how Ofwat's strategic priorities for PR24 are reflected in the WRMP.

The Jacobs assurance letter to the Welsh Water Board is included as Appendix 3 and confirms that:

- We have met our obligations in developing our plan;
- Our plan reflects the Water Resources West (WRW) regional plan, which has been developed in accordance with the national framework and relevant guidance and policy, or provides a clear justification for any differences;
- Our plan was developed according to the Water Resources Planning Guideline (WRPG) guidance for developing a best value plan for managing and developing our water resources, and is based on sound and robust evidence including relating to costs;
- Our plan adequately reflects the Welsh Government's guiding principles and Ofwat's key themes for the 2024 price review and that the processes incorporated appropriate levels of quality assurance;
- Our documentation is consistent with the processes reviewed;
- Data tables are competently sourced and processed.



Dŵr Cymru  
Welsh Water