West Country Water Resources

Emerging Regional Plan Stakeholder Summary

for consultation

January 2022

West Country Water Resources

The **West Country Water Resources** Group is one of five recently formed regional groups in England, responsible for producing a long-term strategic plan for managing water resources in the region for all water users.

Over the last 18 months we have been developing the first ever water resource plan for the West Country.

This report is the next milestone in that process. It sets out our Emerging Plan for the region and includes:

- **Overview of our region**
- **What outcomes we are looking to achieve?**
- **What does the future look like?**
- **What are the options for the future?**
- **Our Emerging Plan**
- **Best value planning**
- **Next steps.**

Your feedback

We are seeking feedback on the first draft from stakeholders and statutory consultees. The plan will then be developed further in liaison with other regions and used to support individual water company water resource management plans and regional plans. The timeline for these is a Draft Plan in september 2022 and Final Plan September 2023.

More information

More detail on our analysis of the regional needs and our plan for the future can be found **here**.

How to feedback

The questions we would particularly like your responses on can be found **here**.

Foreword

Water is often something we take for granted. But what if it wasn't there when we need it?

The UK has a strong track record in long-term planning to ensure that water is available now and in the future. However, it is clear the climate is changing.

According to the 2021 Intergovernmental Panel on Climate Change (IPCC), we are already experiencing many climate change impacts today, and these are expected to increase. It is anticipated global temperatures will be at least 1.5-2°C above pre-industrial levels this century, and possibly temperatures might go higher. We are already starting to observe the impacts of drought, rising temperatures, flooding, rising sea levels and storm surges, and coastal erosion on our operations.

We are also seeing the population grow placing more and more pressure on the need for water.

And as changes from climate change and population growth continue, the pressure for water on environment will increase if action is not taken.

The West Country Water Resources Group is one of five regional groups set up to develop long-term plans for managing water resources for all water users. Over the last two years the group has been developing forecasts of what the long term pressures could be for the region and what that means for its water needs.

This report is the emerging plan to tackle these pressures. The key messages in this report are:

- **The region is facing increased water stress and without action the need for water will exceed the availability**
- **Part of the proposed response is to reduce demand for water, but it is uncertain on how reliably this can be delivered**
- **Demand reductions alone cannot meet the projected future water needs suggesting it is prudent to plan for new strategic water sources for future generations**
- **The water requirements of the environment are increasing and are the main driver of increased water stress, however it is necessary to understand the needs for the environment better to inform future decisions for the region**
- **The region needs to better understand the non-public water supply needs.**

This emerging plan is intentionally not a full business plan but is instead focussed on the strategic questions. It sets out the big issues and how the region could or should respond to ensure water is available when required.

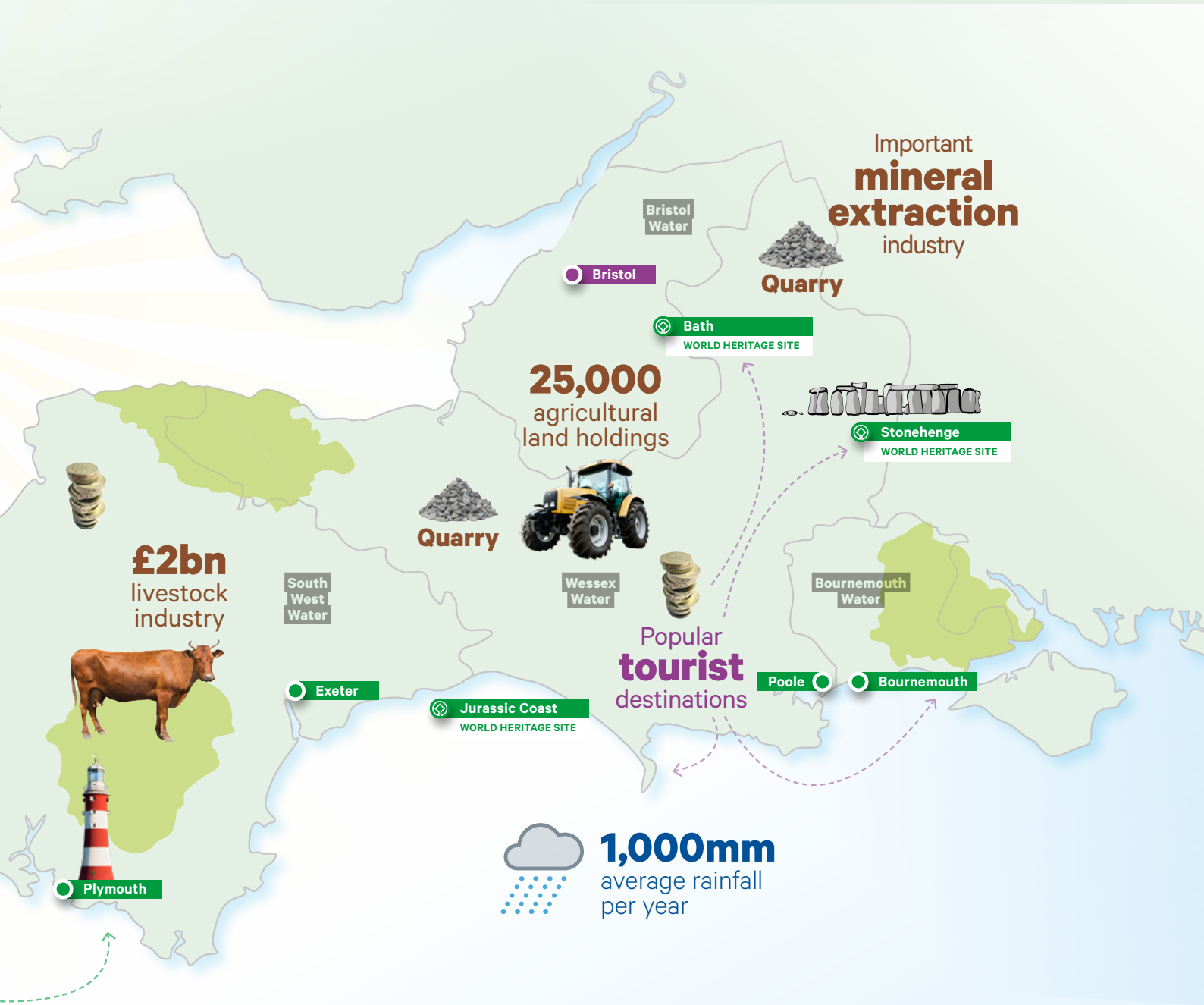
We welcome your comments and we will use these to develop the Draft Regional Plan in September 2022.

Overview of our region

Covering the Western Peninsula of the UK from Bristol and Wiltshire down to Devon and Cornwall, the West Country has a rich and diverse landscape with national and international importance with regard to the quality of the environment.

It is also a working landscape and a popular tourist destination. The region is home to over 4.7 million people. In total 1,400 million litres of water are used every day in our region, 85% of which is for domestic customers.

In the east of the region, which is dominated by chalk landscape and rolling downs, many of the watercourses are bournes or chalk streams supporting a rich habitat but with river and stream flows that vary naturally depending on the pattern of recharge to the chalk aquifers. Water use for industry, agriculture and in our homes is mainly from underground aquifers and from the larger rivers in the area. Water sources in the west of the region are predominantly from reservoirs and rivers.



What outcomes are we looking to achieve?

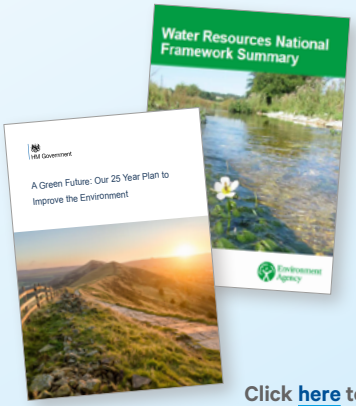
Having a clear view on what outcomes a plan is seeking to achieve is vital for success.

In March 2021 we published our **Updated Resource Position Statement** for the region setting out our forecasts of water needs. This also included the results of our stakeholder and customer engagement on the outcomes they wanted for the region.

Based on these requirements and those of the Defra 25 Year Environment Plan and the Environment Agency National Water Resource framework, we have three outcomes for the region that this plan is looking to deliver:

1. **Improving the environment**
2. **Ensuring water supply resilience**
3. **Delivering benefits for society.**

We have used these to develop and guide the plan set out in this report.



Click here to view the above reports online

What does the future look like?

Understanding what the future might hold and what that means for water needs is critical to developing the right plan for the region. These needs affect how vibrant our environment might be in the future and how sustainable our economy is.

Public water supply has a good track record in planning ahead and delivering resilient supplies. But this report is the first time total water needs for the region have been assessed. However, we only have a rudimentary understanding of the non-public water supply water needs.

Whilst overall the past record on meeting water needs for the region has been good, the future is looking different for a range of factors:

Improving the environment

- The Government's pledge in its 25-year Environment Plan that we would be the first generation to leave the environment in a better condition than we found it.

Climate change

- Climate change and its impact on water availability due to hotter, drier summers.
- A need to be adaptative to uncertainty.

Ensuring water supply resilience

- A desire to fully explore all opportunities for water transfers, within and between regions, of different scales and lengths. The need to plan for all water users not just public water supplies provided by water companies.

Government policy

- New planning requirements to enhance resilience to drought events with a probability of 1 in 500 years.
- An expectation in the National Framework for water resources that there should be long term reductions in water use by reducing consumption and leakage alongside the development of new sustainable sources of water.

Delivering societal benefit

- A continued requirement to ensure that our plans are affordable to customers.

All the factors that can affect both the availability of water and the demand for water. To address this, we have first looked at a starting forecast.

This forecast is built on the Government and Regulator policy requirements for the reducing the demand for water used including leakage, reducing abstraction from the environment, improving resilience to 1 in 500 and a central view of climate change. The forecasts are the overall view of public and non-public water supply water needs..

If the policy requirements are followed, demand reduction will largely offset the impact of climate change and the future needs of the environment, but there will still be a net deficit in 2050 as shown in the waterfall diagram below.

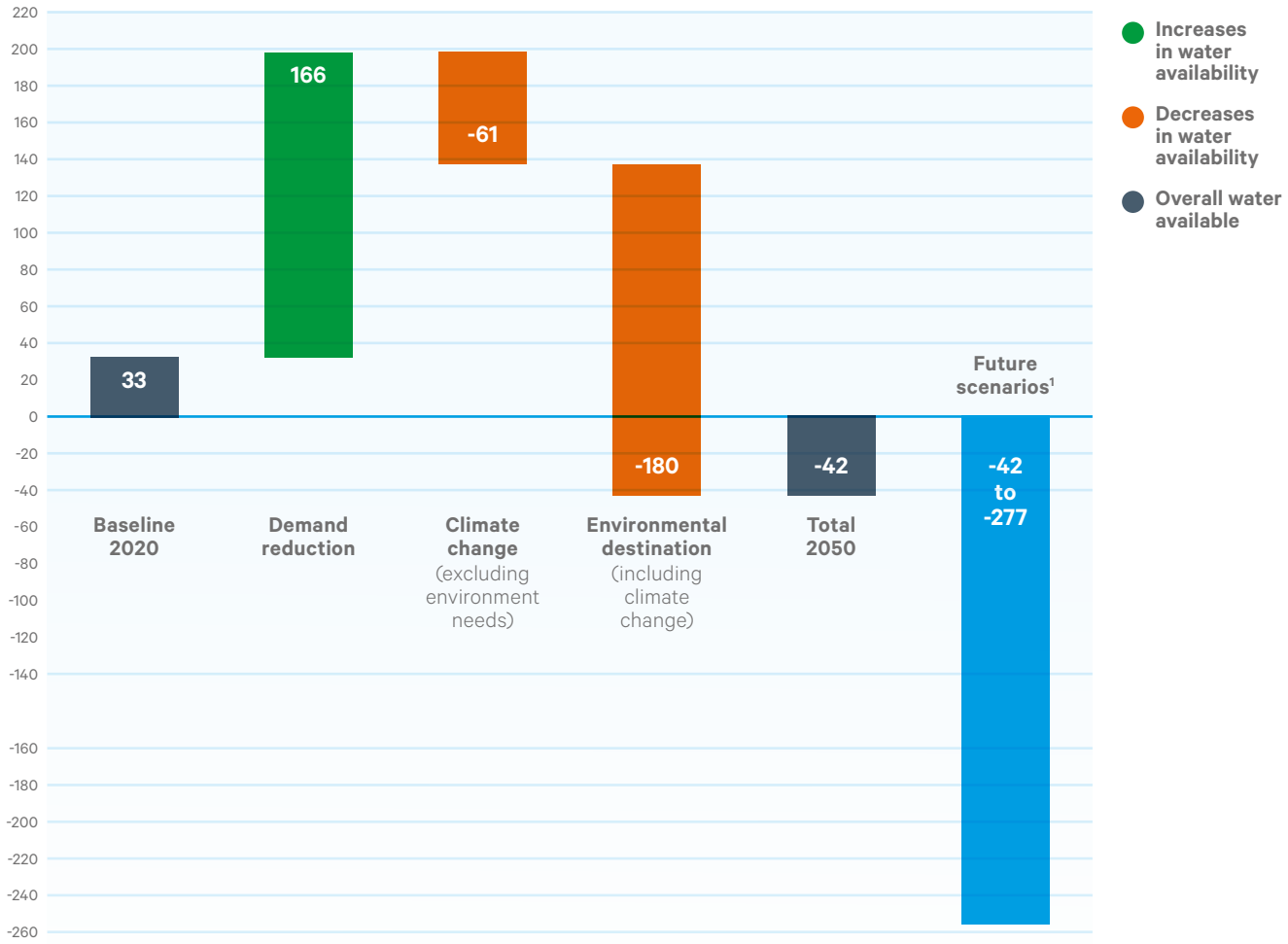
However, as the future is uncertain we have looked at five different futures such as enhanced environmental protection or higher carbon emissions and climate change scenarios. See the summary on the following page.

All these scenarios show the region faces significant deficits.

Of particular importance is climate change as this affects both the demand for water and the environment needs. The environmental needs are the key driver of water needs for the region.

The results show the starting position of the policy lead future could be highly risky for the region if the demand reductions do not happen or the environment needs more water than forecast. This is an important conclusion because the demand savings and environmental needs are both highly uncertain in terms of their delivery and estimation respectively.

Supply-demand balance: the starting policy future and the range of possible other futures (Ml/d)



1 Five different scenarios were tested: Policy future, High demand future, Bad future, Stretching future, Alternative future. Full details are given in **the main report**.

Future Scenarios

	Climate Change	Demand	Environmental Destination
1. Policy Future	Central emissions	Deliver 110 PCC and 50% leakage	BAU
2. High demand future	Central emissions	Deliver 50% of policy targets	BAU
3. Bad future	Higher emissions	Deliver 50% of policy targets	BAU
4. Stretching future	Higher emissions	Deliver 50% of policy targets	Enhanced
5. Alternative futures	Central emissions	Deliver 110 PCC and 50% leakage	Enhanced

In developing this emerging plan we have looked at five scenarios around the starting policy future. These are based on different assumptions on what the future could hold. The assumptions used are:

- Climate change: Central emissions is UKCP18 RCP6.0; Higher emissions is UKCP18 RCP8.5
- Demand: Policy assumption is 110l/p/d and 50% leakage by 2050; deliver 50% of targets is delivery of half the policy savings e.g. 25% leakage reduction
- Environmental Destination: Business-as-usual (BAU) is the regulatory approach unchanged, meaning that the same percentage of natural flows in the environment is protected; Enhanced assumes climate change reduces flows but the same volume of flow today is protected in the future.

What are the options for the future?

To meet the future water needs we have looked at both options to reduce demand and those to increase supply.

The options to reduce demand are part of government policy and have been included in our plan. There is, however, considerable uncertainty on their delivery.

The forecasts over the page show that despite these reduction the region could easily still face future deficits, suggesting that strategic water resource schemes are likely. There is a choice however on what options to increase supply could or should be, and when they should be planned for.

With increasing water stress in the region we no longer believe water transfers are available to move water outside of the region.

Demand reduction

Aligned with the requirements of the National Framework our plan includes:

- Reductions in consumption to 110 litres per person per day by 2050. This target relies heavily on Government policy actions, such as water efficiency labelling
- Reducing leakage from the public water supply network by 50% by 2050
- Water efficiency measures in the business sector.

For this plan the demand savings are assumed to be delivered evenly year on year until the target is met in 2050.

The measures are only partly in the control of water companies leading to large uncertainty in their delivery.

We have used the scenarios over the page to show the impact of the uncertainty in these savings. Without the savings there is a large increase in the water needs. This suggests gaining certainty on their delivery is strategically important.

New capacity

Potential strategic supply-side options that are being investigated include:

- New reservoirs
- Enhancements to existing reservoirs such as pumped storage
- Effluent recycling.

Future deficits driven by the environmental destination requirements and demand reduction savings will not be distributed evenly across the region, therefore additional intra-region transfers and infrastructure improvements will also be required.

The strategic schemes are not guaranteed as they face their own technical, environmental and consenting challenges.

There is therefore uncertainty on when they could be delivered.

The scenarios on the previous page show that even after the demand reductions, the water needs could be between 40 to nearly 300Ml/d depending on the different future. This suggests that schemes at least the value of 100Ml/d should be considered for the long term.

Our Emerging Plan

Drawing together what the future water needs might look like, the risks the region faces and type of options and responses available, has lead us to develop four strategic themes to frame our overall emerging strategy.

These themes have been developed to mitigate the risks. Our main technical report shows how these themes have been developed and their rationale mapped back to the analysis and supporting evidence.

Conclusions from our analysis

- **Understanding the future water needs of the environment is critical to decision making**
- **The impact of climate change is material to water availability**
- **The region only has a rudimentary understanding of non-public water supply needs**
- **Demand-side reductions are part of the solution for the region, but delivery uncertainty is large**
- **Strategic water resources schemes have been identified as needed but they not guaranteed in themselves**
- **Lead-times for strategic schemes are too great to adapt to demand-side delivery uncertainty**
- **Inter-regional transfers could happen but only if uncertainty in water availability is reduced**
- **We need to address the risks for the regional economy to be resilient**
- **A new strategic resource may be required in less than 15 years' time**

Our strategic themes

1 Reduce the uncertainty associated with environmental needs and demand reduction

The environmental needs are large but uncertain. In deciding any future schemes for the region reducing the uncertainty in these needs is strategically important.

2 Improve the use of existing water sources

With increased water stress forecast, the need to protect the environment improving how existing water is used is strategically important. This is specific to the West Country as it has large amounts of reservoir and groundwater storage. Wetter winters due to climate change could give opportunity to use these existing resources differently with low cost and low carbon impacts.

3 Ensure future strategic options can be implemented

The future scenarios show increased water stress. It is strategically important to have new schemes available to be implemented in future if they are needed.

4 Improve understanding of non-public water supply needs and improve connectivity and storage to support them

Whilst we have a good understanding of Public Water Supply needs, we don't for other users such as private water use including agriculture. It is strategically important to understand these other needs to ensure these sections of the economy are sustainable.

To illustrate how this emerging strategy could be delivered and to address the uncertainty on the demand reductions and environmental needs, we propose a plan that delivers it three phases. This approach would give a strategic focus for managing the regions water resources, whilst giving focus to delivery and being able to flex and adapt over time.

Our emerging three phase plan are set out below.

The first ten years we have termed a foundation phase. These are low regret actions that we are confident on - such as solving known environmental problems - and actions that are needed to mitigate future risks. The second and third phases focus on continuing environmental improvement but building resilience in the region. The final phase would focus on the achieving the final environmental improvements which currently are uncertain.

The digram on the following page shows how these phases could work in practice. It sets out how choices would be made on the actions needed as time passes.

2020-2030

Phase 1
Foundation phase – all outcomes commenced

- Low regrets actions required for all futures
- Leakage and demand reduction
- Using existing sources more effectively
- Assessing environmental needs to reduce uncertainty
- New reservoir pumped storage scheme live in Devon
- Local actions underway to reduce well evidenced environmental abstraction pressures through a catchment plan.

2030-2040

Phase 2
Supply resilience outcome met

- Deliver step change in resilience
- Commence construction of a strategic resource option and intra-regional transfers
- Deliver environmental improvements based on detailed assessments
- Demand and leakage reducing to 2050 targets
- Possible effluent re-use scheme operational
- Likely development of new reservoir underway
- Environmental abstraction reductions on target to 2050.

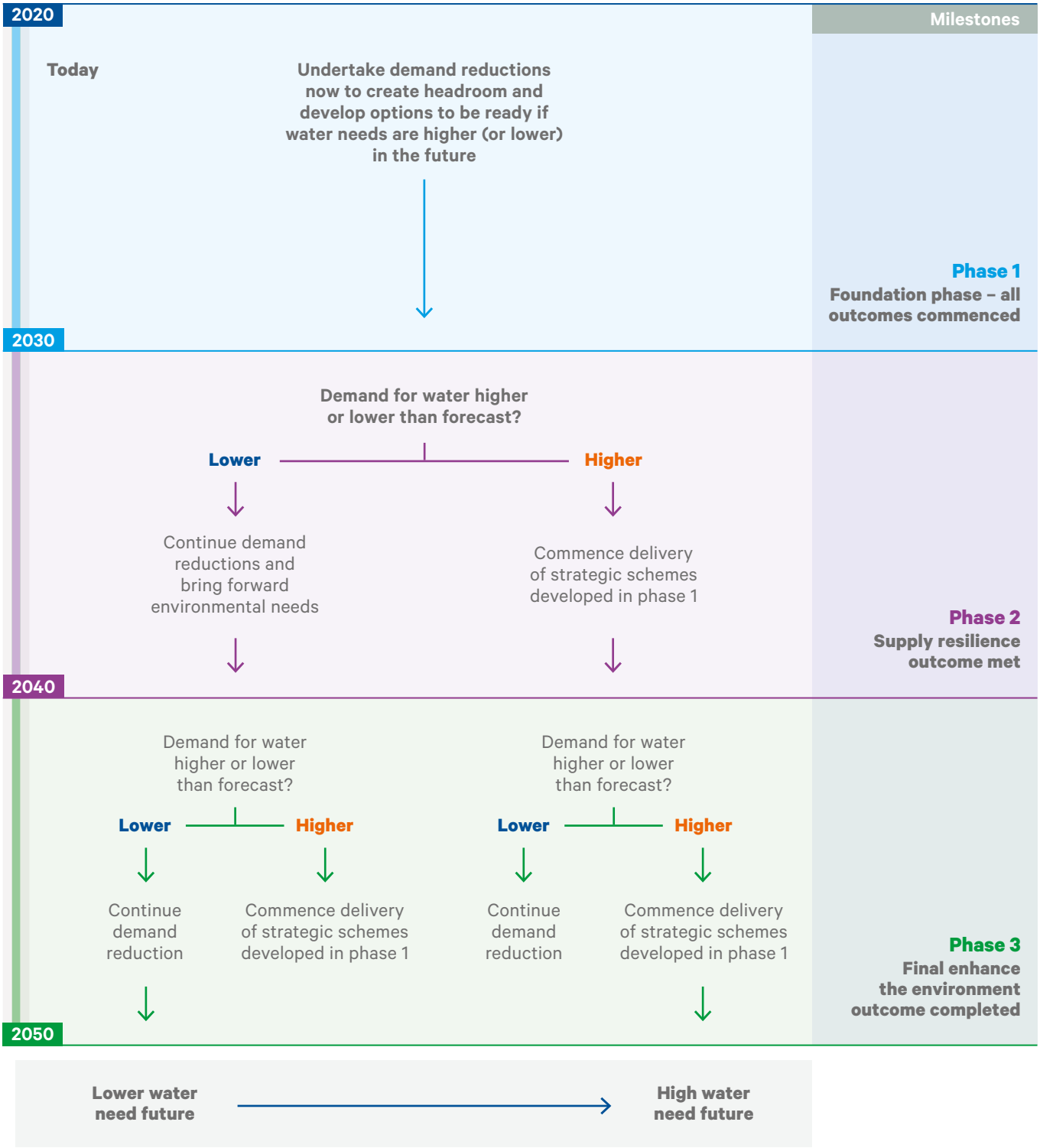
2040-2050

Phase 3
Final enhance the environment outcome completed

Adapt depending on how future unfolds

- Final environment improvements that require significant investment or have low benefit cost ratio
- Long-term environmental needs met
- Leakage reduced by 50%
- Per capita consumption reduced to 110l/p/d
- New reservoirs or large strategic schemes on-line)
- Strategic regional interconnectors live.

How the emerging plan may adapt over time as water needs change



Best value planning

Our forecasts for the future show that water is an increasingly scarce resource in the region. This means there are often trade-offs or choices to be made.

In our updated Resource Position Statement published in March 2021, we set out the work we had completed on developing a 'best value' framework to help develop this plan. Best value is the term we use to look at factors other than cost alone to understand what the best balanced plan is overall.

The framework set out metrics that assessed how well different choices delivered the three outcomes of:

1. **Improving the environment**
2. **Ensuring water supply resilience**
3. **Delivering societal benefit.**

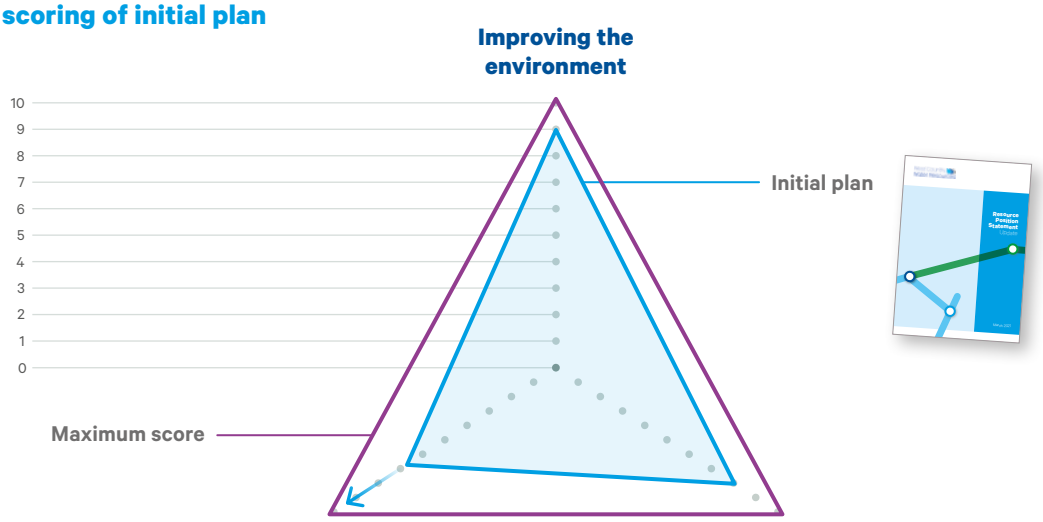
A scoring approach from low (score = 1) to high (score = 3) was used for each metric. All metrics for this emerging plan are weighted equally and converted to an overall score out of ten for each outcome. These are then added together to give an overall performance score for each outcome.

We have developed and applied that framework to the plan set out in the previous pages of this publication to understand how it performs. We have also applied it to the plans that would be needed for the different future scenarios we have tested.

We have intentionally not used this best value framework to for this report to produce an 'optimised' plan at this stage. This is because we think first a better understanding of the strategic choices facing the region is needed to give direction on what the plan and strategy. We have therefore applied the best value framework in a very simple and transparent way so the choices can be clearly set out.

The figure below shows the overall performance of the proposed plan. The table show the results of applying the best value framework to the to the different future scenarios we have examined. Full details are in the technical report and for brevity are not included here.

Radar plot for best value scoring of initial plan



Delivering societal benefit

Improve score by:

- understanding non public water supply use better
- maximising use of existing sources and infrastructure.

Ensuring water supply resilience

Improve score by:

- reducing uncertainty associated with environmental needs
- continue to develop strategic options.

Radar plot for best value scoring of initial plan

	Improving the environment	Ensuring water supply resilience	Delivering societal benefit	Total	Water needs (Ml/d)
0. Emerging Plan	8.9	8.0	6.7	**23.6**	**42-277**
1. Policy Future	8.9	6.0	6.7	**21.6**	**42**
2. High demand future	7.8	6	5	**18.8**	**125**
3. Bad future	7.8	6	4.2	**18.0**	**186**
4. Stretching future	8.9	4.7	4.2	**17.8**	**277**
5. Alternative futures	10	6	6.7	**22.7**	**132**

The work we have undertaken points to the following:

- The emerging plan has the best overall performance as it aims to meet all scenarios but in a staged way.
- Futures where there is increased need for water from more severe climate change or where demand reductions are not achieved have the lowest scores (scenarios 2, 3, and 4).
- The future where there is heavy investment in the environment but climate change is not severe but there is confidence in the forecast demand reductions, performs well (scenario 5).
- The results show across all different futures there is a trade-off – improved environment and resilience come with lower societal benefit. This is driven by higher cost and the increased supply-demand risk of not achieving demand reductions.

The results should be considered indicative, but they do point to the proposed plan being the best overall balance across the competing needs. The results show poorer performance for those scenarios where there is increased need for water (2, 3 and 4 in particular). This is because there are greater supply-demand deficits that require more investment to improve the environment and maintain resilience to droughts with higher cost and more risk.

As any one of these futures could occur, it suggests that our proposed plan that seeks to invest early on low regret actions is the best strategic response for the region as it allows time to mitigate the risks associated with these scenarios with higher water needs.

We will update this analysis for the final version of our plan due in the Autumn of 2022.

Next steps

This document is the emerging strategy and plan for the region. It is intentionally strategic and is a stepping stone in the process to building the Draft Plan to be published in the Autumn of 2022.

We have included a short survey which we would be pleased if you could complete so we can collate views on the emerging strategy and use it to shape the next version.

We would welcome your views on our emerging plan via our online survey. Click here to give us your feedback.

West Country Water Resources

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South West Water

BRISTOL WATER

Associate members

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Water Resources in the South East

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