WATER RESOURCES MANAGEMENT PLAN: NON-TECHNICAL SUMMARY

COPING WITH FUTURE CHALLENGES

Our Water Resources Plan sets out how we will cope with future challenges and continue to provide our customers with a safe, secure and affordable water supply in the decades ahead.

The plan covers these topics:

- The policies putting customers at the heart of our planning process and ensuring that the security of the water supply is maintained
- The current position on the water we have available, present demand, and security of the supply
- How the forecast housing growth of 35% and population growth of 20% or higher in our supply area will increase the demand for water over the next 30 years
- What measures we have considered to cope with the projected growth in demand and what social and environmental consequences these may have
- How climate change will reduce the availability of water that can be abstracted from the environment without causing damage
- The strategy we propose over the next 25 years to cut leakage, increase water efficiency and enhance existing sources of water -- ensuring an affordable, secure and sustainable water supply in future

YOUR WATER SUPPLY NOW

Bristol Water has supplied customers for well over 160 years. Over all that time, the Company has continuously invested in water resources, reservoirs and treatment works to meet the requirements of a successful and growing region.

We serve a population of approximately 1.1 million people and associated businesses in an area of 1000 square miles centred on the city of Bristol. The area of supply stretches from Tetbury in the north to Glastonbury in the south and extends east to west from Frome to Weston-super-Mare.

The water we provide comes from a mixture of sources. Half is imported from Wales via the River Severn. A third is taken from three major reservoirs in the Mendips (Chew, Cheddar and Blagdon). The remainder comes from small wells and springs across the company area.

These resources are sufficient to meet a total system demand for water of 300 million litres per day (300 Mld). Most of this consists of household use. On average, each person in the company area uses over 150 l/d, the same as the average for the whole of England (over one tonne of water per person each week).

Our past investments in water resources and water distribution systems have provided customers with a high level of supply security. Restrictions to customer demand from hosepipe bans or other measures are only required in the most extreme circumstances. It has been our policy to ensure a sufficiently robust system so that demand restrictions are not required more than once in every 15 years, on average. This is our stated level of service commitment to customers.

Representative customer groups have consistently told us that a reliable supply is one of their key priorities. As well as a secure supply of water, the others requirements are for a safe and affordable water supply. Customers have defined these priorities as:

- **SAFE –** water that is always safe to drink, is regularly monitored and consistently meets or exceeds regulatory standards.

- **SECURE -** resources and backup systems are in place to cope with abnormal conditions and proper planning is in place to ensure demand growth is dealt with effectively.

- **AFFORDABLE –** customers value the service more than the cost and that charges continue to compare favourably with other household costs.

We have set these three clear priorities as the fundamental criteria for planning the future water supply for the company area.

YOUR WATER SUPPLY IN THE FUTURE

We have always met our customers' expectations regarding the three criteria outlined above. We want to ensure that this continues to be the case. However, as society changes, many pressures are beginning to have an impact on public water supply. These include:

- Population growth and housing development
- Increased personal use of water
- New and existing sources of water pollution
- Reduction of water abstraction to protect the environment
- Ageing of water mains and domestic plumbing
- Climate change and need to reduce greenhouse gas emissions

Over the next 25 years we can reasonably expect to see a social and economic environment broadly similar to today, based upon a stable democracy, increased globalisation and economic growth continued at the long term average rate of 2.5% per annum.

But there will be changes; and among those predicted are:

- Much greater water efficiency and development of new water resources will be needed to supply more water to a rapidly growing population base.

- Improvements in system capacity and flexibility will be needed as climate change brings greater volatility in both weather and demand for water.

- Climate change will result in a decline in water available from existing sources and seasonal reductions in water quality and quantity.

- The increasing age of public and private mains infrastructure means the economic control of leakage will become ever more challenging.

- Increased awareness of environmental issues will bring pressure to reduce abstraction of water for public supply.

- The upward pressure on bills will mean customers seeking better and fairer ways to pay for water services. In turn, this will result in a greater acceptance of household water metering.

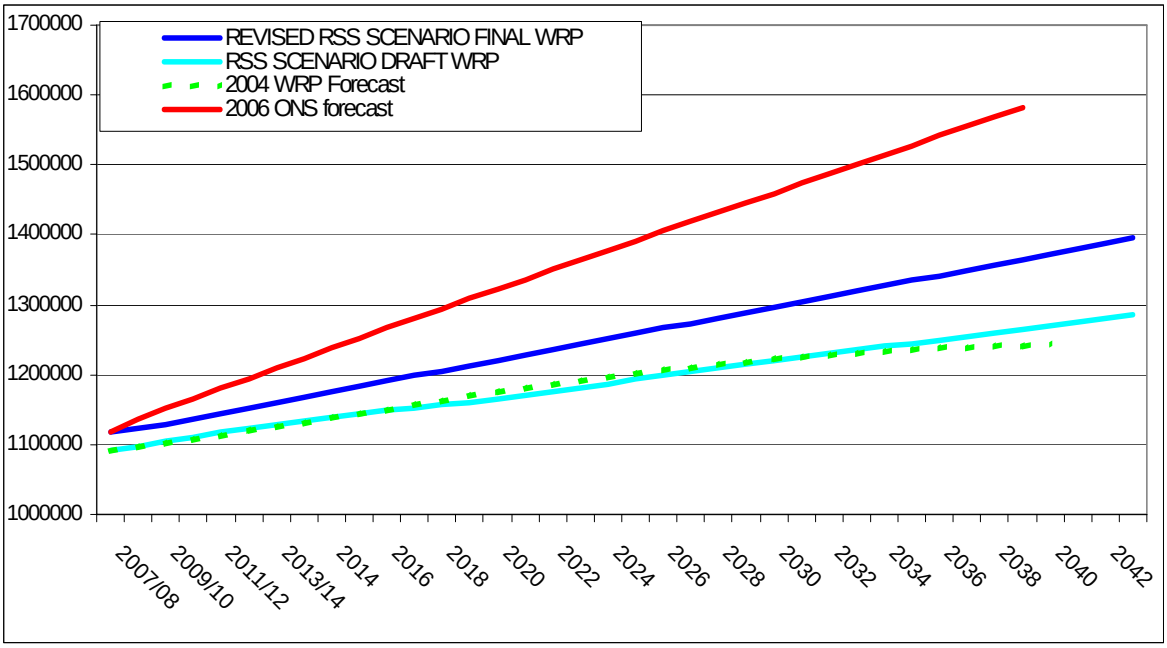
WHY DOES ALL THIS AFFECT ME?

The south-west region has been relatively successful economically, attracting a significant inward population migration from other areas of the UK. According to the Southwest Regional Assembly, it is now established policy to significantly increase growth in population and housing within the areas including Gloucester, Bristol and Weston super Mare. The magnitude of growth planned is similar to that predicted for the Thames Gateway area in the south-east. As a consequence of this high growth policy, the demand for water is likely to increase.

The latest Southwest Regional Assembly policy implies that the number of houses in the company supply area will rise from 450,000 to over 620,000 by 2035.

The population is also forecast to increase from 1.1 million to 1.35 million if the policy forecast is achieved or even to 1.5 million according to the latest projections from the Office of National Statistics (ONS).

Central and regional Government projections for population growth



Unfortunately, there are not enough water resources available within our area at present to provide a guaranteed supply of water under all circumstances. To provide such a guarantee would result in very high bills and could be environmentally unsustainable. However, we do provide customers with a clearly defined level of supply security. This is based upon the probable frequency for interventions to restrict customer use of water during dry periods. These are set out below:

Hosepipe ban and appeals for restraint	once in 15 years on average
Drought order to ban non-essential use	once in 33 years on average
Drought order to modify abstraction licences	once in 33 years on average
Partial supply or rota cuts	expected less than once in 100 years

We would only carry out these actions during periods of drought in order to conserve water supplies in our reservoirs for as long as possible. This action would minimise the possibility of a complete supply failure if the drought were very severe.

Chew Reservoir during the 1976 drought

This commitment to a planned frequency of restrictions on customers' water use is often referred to as our 'level of service'. We know that customers expect to retain or improve their security of supply if this can be achieved without excessive cost or environmental damage.

If we have a drought, we may need to ask customers to cut their use of water to save supplies. If the drought is severe we may need to resort to extra measures that could lead to customers experiencing hardship, inconvenience and costs.

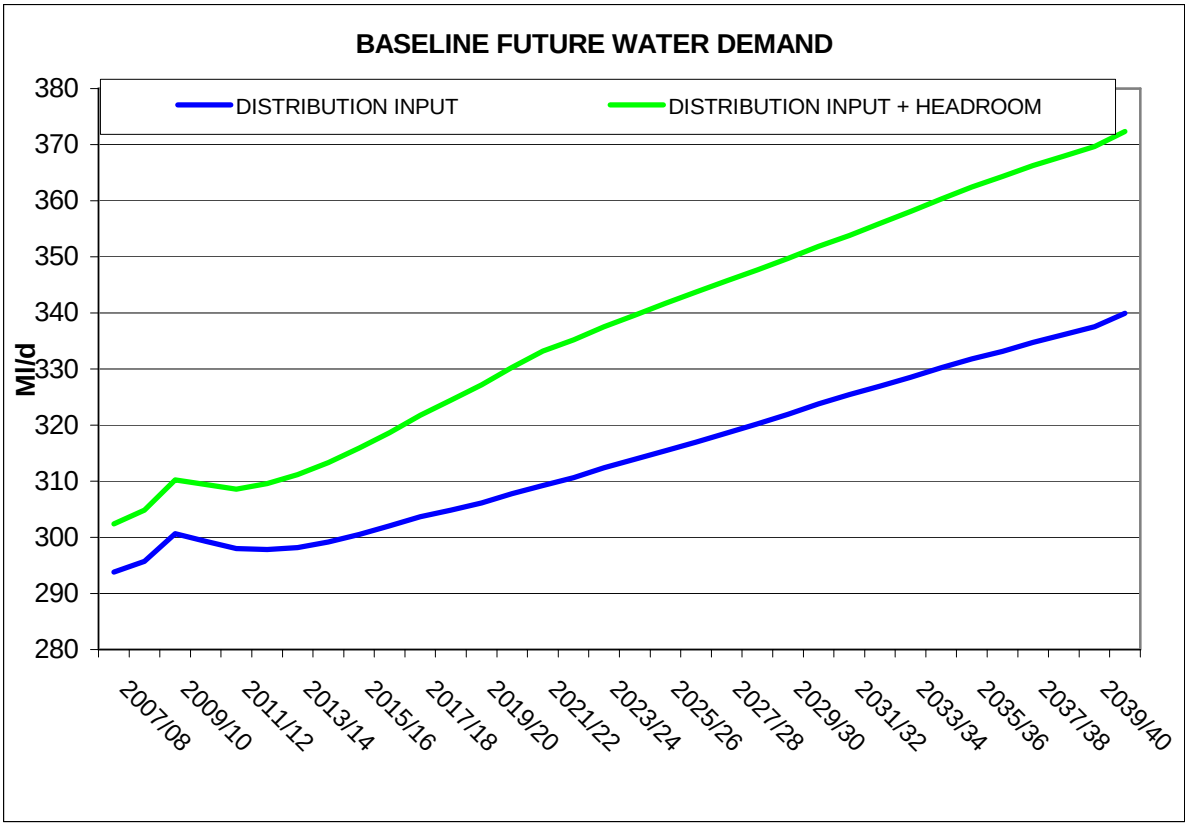
The types of action we would take to control demand are fully described in the publicly available company Drought Contingency Plan.

If demand for water grows excessively, we could have insufficient water, making restrictions to customers' water use more frequent in future. We want to minimise this possibility as far as is practicable.

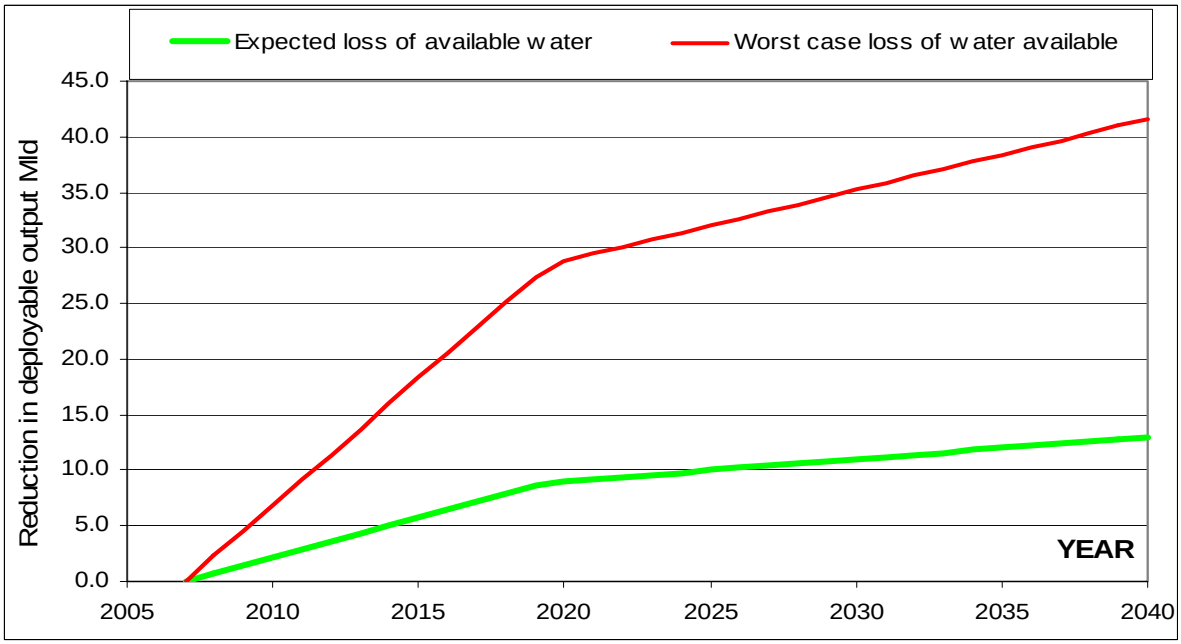
Over the next 25 years, demand for water will grow, even when we allow for all of the best government estimates of water efficiency in new homes. The present target is for new homes to limit water consumption to 105 litres per person per day (not including garden watering or other external water use).

Our existing water resources will be sufficient to meet this growth in water demand only for the next five to six years at the current level of supply security expected by customers.

Demand for water and planning headroom if no action is taken to curb demand



All water in the environment ultimately comes from rainfall. Long-term changes to temperature and patterns of rainfall may reduce the amount of water in the environment. This will then reduce the availability of water that we can safely 'harvest' from reservoirs and boreholes.



The forecast impact of climate change on our system will be to reduce the water available by between 3% to 10% of present yield by 2035. We believe that prudent action by individuals and government will result in reduced carbon emissions and limit climate change impacts to the low end of the range. Even so, this will result in a steady decrease in water resource available to the company over the planning period.

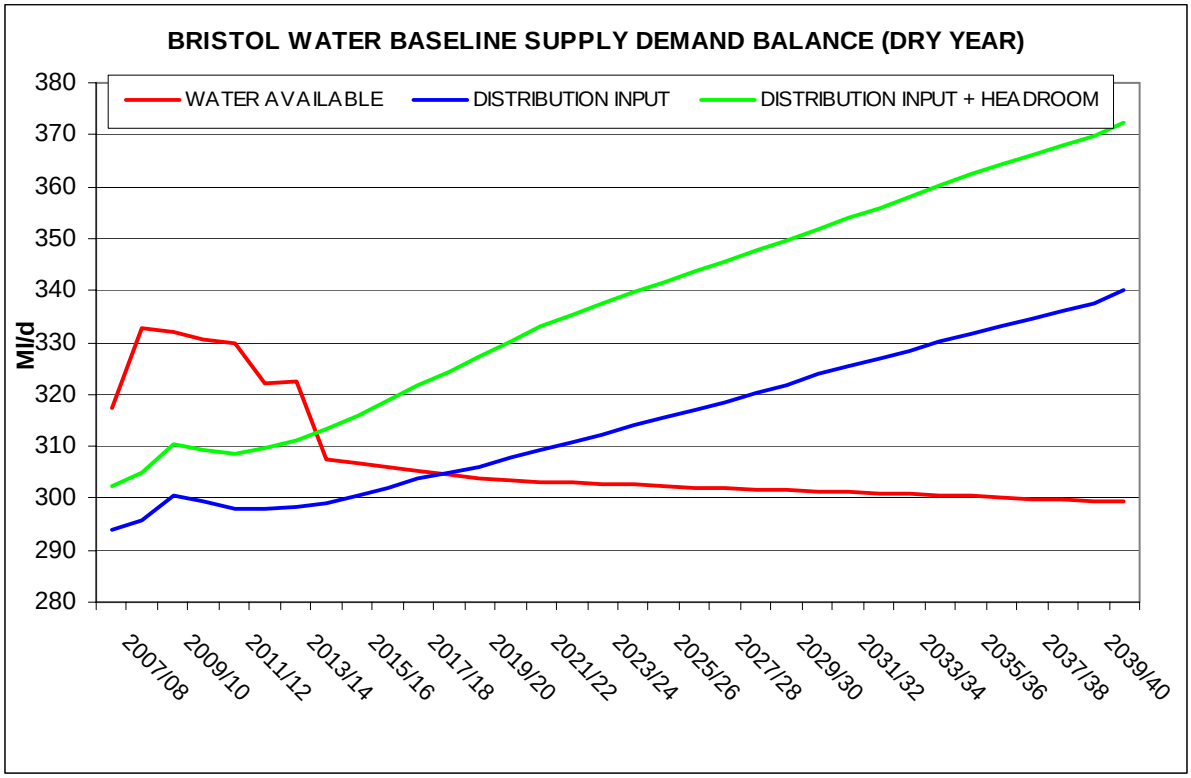
In general, the UK climate is expected to become hotter and drier in the summer and warmer and wetter in the winter.
Other effects predicted are:

- **Up to 20% less rainfall in the summers**
- **Temperatures on average rising by 3 degrees centigrade**
- **Increase in frequency of extreme events such as floods or droughts**

These effects may reduce the amount of water that can be taken from existing sources as well as increasing demand for water during warm summers.

The effect of the increase in water demand from population and reduction of water available due to climate change will eventually mean the is not sufficient water to meet demand in the area. If we did not take steps to address this issue, customers would face more frequent restrictions in use and an increasing risk of supply failure during a drought.

Water available for household and commercial use *vs* increase in demand for water



Eventually demand for water could outstrip the capacity of our available water resources if we do not take mitigating action now.

We need a margin of safety above the actual demand for water to allow us time to take action. If population grows as projected, we will need to begin implementing our plan between 2010 and 2015 to ensure we can maintain secure water supplies in the future.

WHAT CAN BE DONE TO STOP US RUNNING OUT OF WATER?

We don't believe that customers should be expected to accept a situation that results in a decreasing security of supply. However, as a company, we have no influence on population growth or where and what type of housing is built. Likewise, any actions we undertake alone would not materially mitigate the rate of global climate change.

This leaves us with only two options we can pursue to ensure that supply security can be maintained at the current level. These are:

- **Increase water efficiency and reduce the demand for water**

- **Seek out and develop additional sources of water**

This is sometimes called the 'twin track' approach because it focuses on both the management of demand and improvement of supply in a joined-up way. To improve water efficiency we have considered solutions that would result in:

- Increasing the metering of households to develop more awareness of water use
- Investment to encourage customer water efficiency and use of other tariff structures
- Faster replacement of ageing water mains to reduce leaks and bursts
- Reducing water pressure in mains to reduce leaks
- Increase the activity to find and fix leaks

Promoting the efficient use of water

As there is a limited amount of water in the environment, extra sources of water are not easily found. However, there are alternative sources of poor quality water that could be used with modern treatment processes. Water is also abundantly available at certain times of year and more of it could be captured and stored in reservoirs.

We have considered increasing the water resources available to the company in the following ways:

- Returning small sources to use and improving source outputs
- Innovative schemes to use sewage works effluent for industrial water supply
- Use of water from the Severn Estuary from springs or for desalination
- Enhancement of existing reservoirs and building of new reservoirs
- Catchment management to prevent loss or damage to sources from pollution
- Abstracting water from the River Avon and other alternative sources

We have looked at all of the options and chosen the most appropriate and most effective in terms of the amount of water saved or produced.

In our analysis we have taken into account a wide range of social and environmental impacts. These will include issues such as:

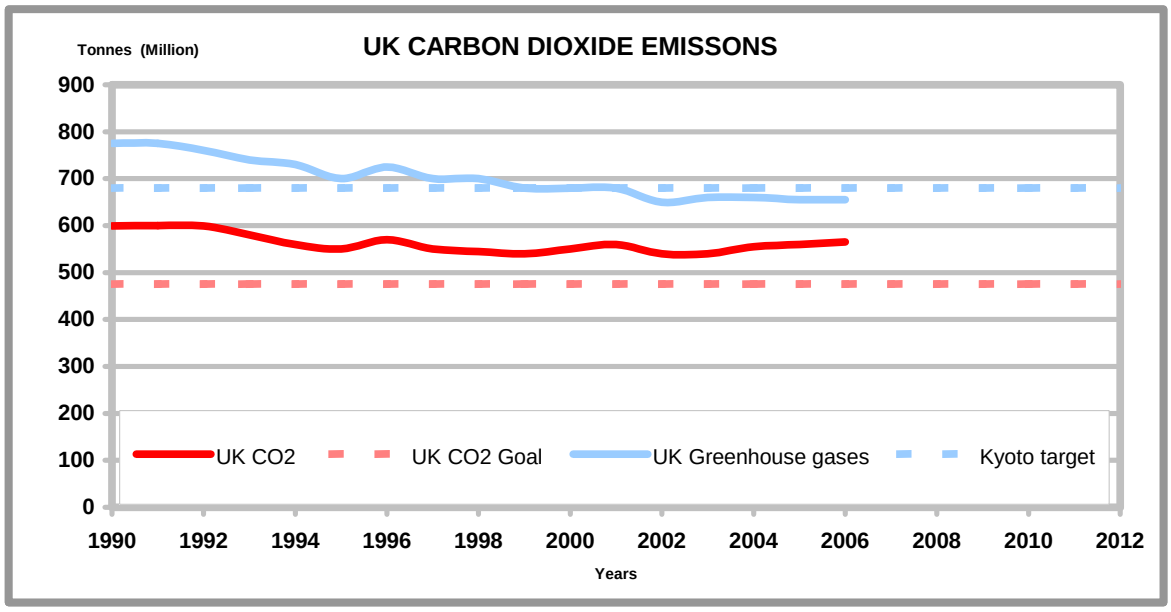
- Visual and environmental impacts of developments
- Whether there will be an adverse impact on 'designated' sites, such as Sites of Special Scientific Interest.
- Carbon value of materials used in construction
- Benefits to recreation and habitat (as might be the case with a reservoir)
- Impact on traffic congestion, accidents and social issues such as higher bills

As an example of these interactions, controlling leakage through replacing infrastructure has a surprisingly high social cost due to congestion effects - but a low environmental cost and results in a reduction in power used to pump water and ultimately of carbon emissions over time. The balance of these costs and benefits are analysed when comparing options.

Reservoirs as environmental assets

By contrast, construction of a reservoir may deliver very high social benefits but may have a significant short-term impact on carbon emissions during construction. The balance of these costs and benefits are carefully analysed when comparing and selecting options.

The carbon footprint of the options or strategies over the long term has also been analysed and included in the process of determining the most suitable options to maintain security of supply. In this way options that might have unduly negative impacts on the environment or emission of greenhouse gases can be avoided. Our preferred strategy will help to reduce company carbon dioxide emissions from power use by 6% at 2015 (and by 12% in 2035 relative to the expected emissions if no action was taken).



The Government wishes to see the level of UK carbon dioxide emissions fall in future as this may help to reduce the rate of global warming.

We support this objective and that is why we have taken care to analyse and compare how much carbon dioxide could be generated during construction and operation of our strategy options.

WHAT ARE WE GOING TO DO NOW?

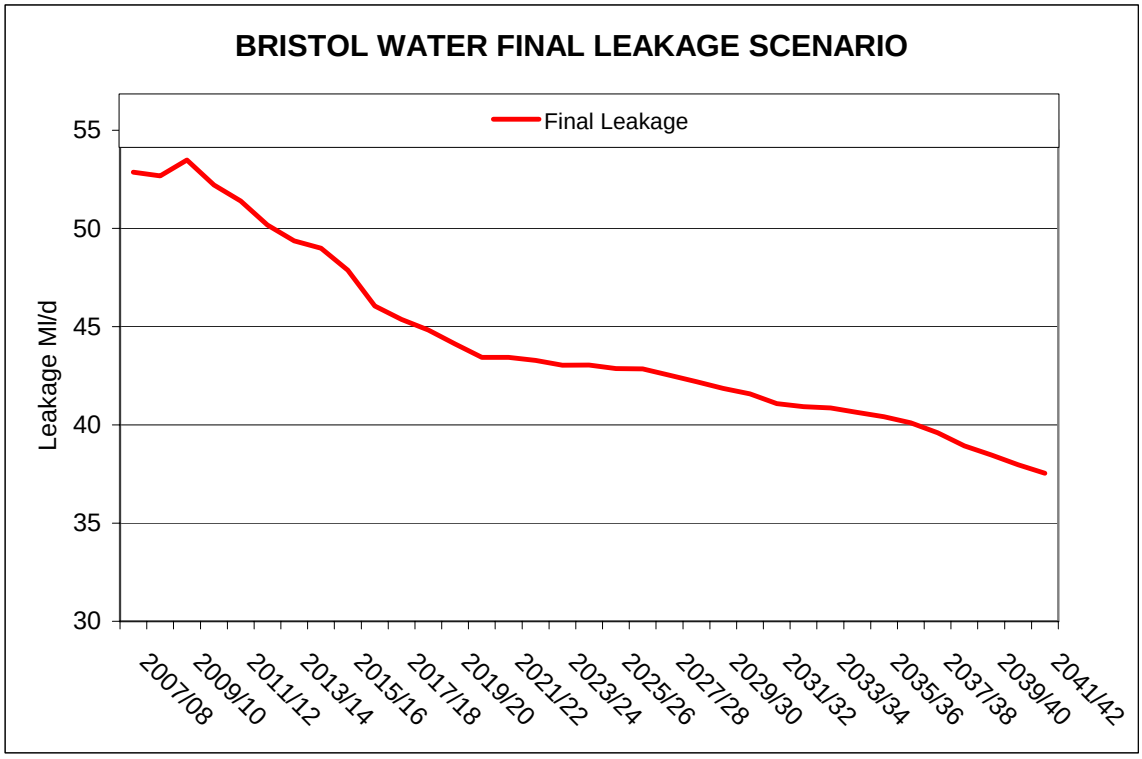
We already carry out a significant amount of work to cut leakage, encourage water efficiency and replace infrastructure. Our strategic plan requires a major increase above the level of current activity in these areas.

There is no single option that will restore and maintain the security of supply all the way through the 25 year planning period. We have developed an integrated package of options that will be implemented at various points in the future. This is the basis of our strategic water resources management plan.

The approach used to select the options that make up our strategic plan ensures that the total solution is one that delivers the best long-term value for customers and the environment. The solution we propose focuses on improving the efficient use of water by customers and within our networks together with some work to reinstate or develop existing sources of water.

We propose to maintain supply security at the current level over the next 25 years by implementing and carrying out the actions listed below as part of our strategic water resources management plan.

The centrepiece of this plan will be a substantial reduction in leakage over the next 25 years, made possible by the complete replacement of the worst performing mains and service pipes.



From 2010 we propose to:

- Maintain the baseline water efficiency activity required by Ofwat
- Create 60 new pressure reduction zones to cut leaks and bursts
- Invest in a step change to substantially reduce leakage by approximately 20%
- Begin a programme of metering and auditing of larger business customers
- Targeted replacement of ageing service pipes and mains
- Targeted installation of meters at the same time as service pipe replacements
- Selective metering large household customers on change of occupier
- Trial programme of 'smart' metering using remote reading radio networks
- Re-develop and increase water output of three small existing water sources
- Plan the enhancement of Cheddar reservoir required at a later date

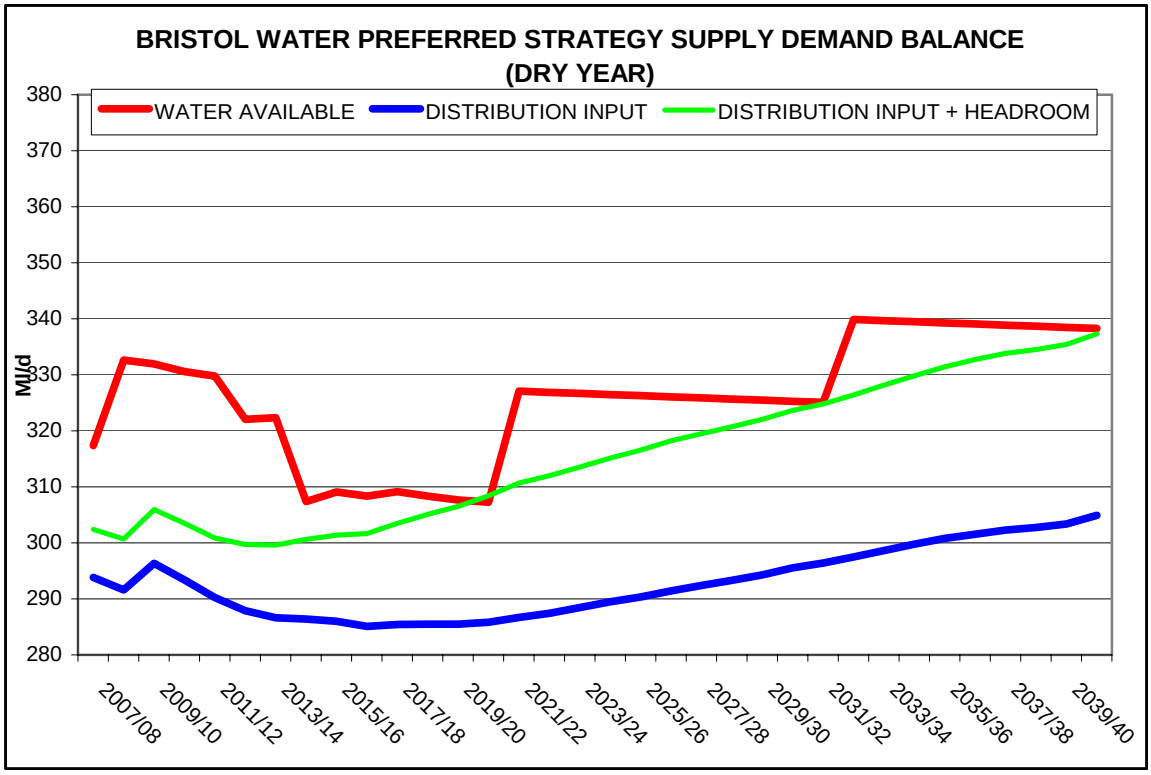
From 2015, in addition to the work programme above, we propose to:

- Double the number of free repairs to customers' leaking supply pipes
- Offer to subsidise replacement of customers' water supply pipes
- Re develop an existing small groundwater source near Shepton Mallet

From 2020, in addition to the activities above we, propose to:

- Universally meter all domestic properties by 2035 as part of zonal maintenance
- Construct Cheddar reservoir enhancement
- Trial differing ways of charging for water to promote customer efficiency
- Begin the planning of an additional water resource required for 2035 and beyond

The impact of all of these proposals is to restore balance between supply and demand over the 25 year planning period as indicated in the graph below, which should be compared with the plot of the baseline position.



We plan to reduce the demand for water from 2010 by reducing leakage, increasing metering, replacing ageing pipes and implementing a range of water efficiency measures.

We also plan to increase the amount of water available between 2010 and 2025 by re-developing existing unused water resources and by the development of the second phase of Cheddar reservoir.

Our plan will ensure that future demand for water is constrained within the resources available and supply security can be maintained at the current level. If population continues to grow beyond 2030, additional water resources may be required.

IT ALL LOOKS VERY EXPENSIVE - WHAT ABOUT WATER BILLS?

Doing nothing is not an option. If it were, we would eventually arrive at a situation where frequent supply restrictions were inevitable with all the stress, inconvenience and cost these would mean for business and household customers.

The success of our plan in delivering the benefits at the least cost depends upon the implementation of all of the options proposed in the correct order at the correct time. Taking a short-term view by not carrying out essential work such as mains replacements at an early stage, will only serve to increase the amount and cost of work to be carried out in future. As the backlog of work builds up over time, the scale of the activity eventually required will become increasingly impracticable to carry out within a shorter timescale.

Quick fixes are rarely the best long-term solutions. Throughout this process we have been mindful that affordability is one of the key issues for customers. Our process of selecting the final options ensures that they provide the greatest benefits at the least cost and least environmental impact.

We are also confident that a strategy that is well thought out, prepared for in advance and implemented at the appropriate times will be the best value for customers.

None of the options we propose such as demand management or leakage reduction are cost free. However, our basket of options represents the lowest overall cost when compared to a wide range of other combinations we have considered. The reason we need to do this work is to satisfy the demand for water from the unprecedented increase in properties and housing in the area projected for the next 20 years. This growth in population effectively reduces the impact on the bills of individual customers.

We believe that future water bills will compare favourably with trends in price rises in other household sectors expected over the next 20 years, considering the benefits delivered which include:

- Maintaining water supply security and 'peace of mind' over the next 25 years
- Integrating environmental issues as part of our planning process
- Managing catchments to enhance water quality and reduce future costs
- Helping customers save water reduce their bills and meet environmental targets
- Reducing our carbon footprint to meet government targets

….and all being delivered at an affordable price.

Our long-term strategy ensures demand for water will be met by a balanced combination of increased water efficiency and resources development.

The plan will mean that customers will not be exposed to an increased risk of supply failures, demand restrictions or hosepipe bans in future.

We expect that the revenue from the enlarged population base will meet much of the future cost of water resource developments such as the enlargement of Cheddar reservoir.

Our strategy for the future is based upon the latest planning information and assumptions that are currently available. However, the future is always uncertain. If actual events vary significantly from forecasts, we would have to modify our plan accordingly. Critical issues include:

- There is a probability of a yet higher regional growth strategy than the one we have used following the revised Office of National Statistics population projections.

- There is a possibility that climate change impacts on water availability during dry conditions may already have occurred, or turn out to be much greater than forecast.

- There is a considerable risk that customers' use of water may vary significantly from the assumptions made in our plan.

In the main body of our Water Resources Plan, we have explained how these issues could affect the plan in terms of the timing of actions required and overall costs.

If you have other queries or issues regarding our Water Resources Plan, you may contact us directly at the address below:

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