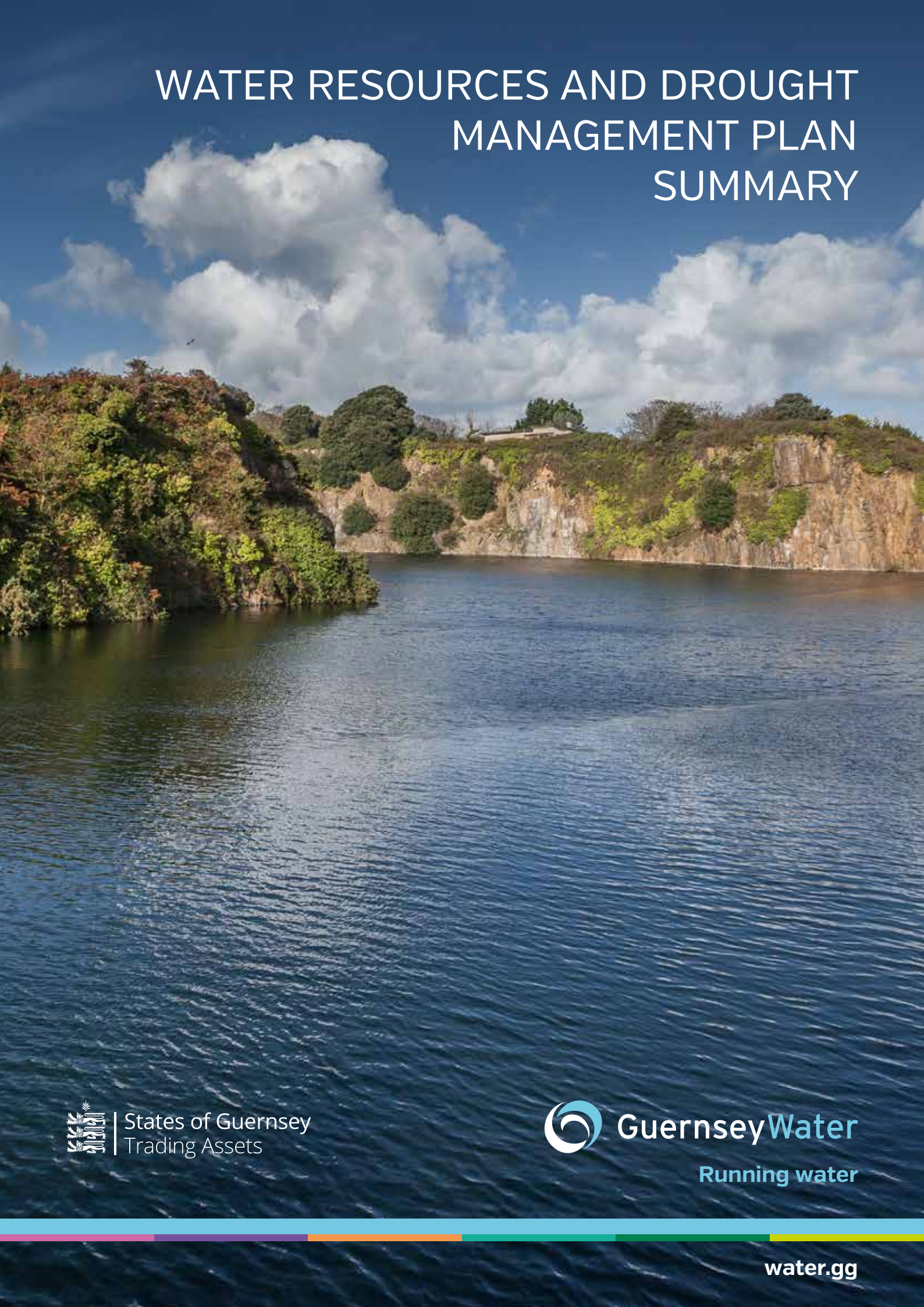
WATER RESOURCES AND DROUGHT MANAGEMENT PLAN SUMMARY



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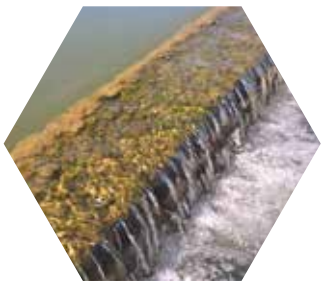


OUR OUTCOMES

Our vision is focused on the value of our core business which is water and wastewater service provision.

“Customers always value the quality of our drinking water and the safe return of our wastewater to the environment.”

PLAN OVERVIEW

Our water and wastewater systems are adapted to climate change and have sufficient capacity to meet the future needs of our island

- **Develop long-term strategies for water resources and drainage**
- **Invest in the resilience of our critical assets**
- **Plan to be ready for emergencies**

High quality and reliable water supplies to over 22,400 households and 3,100 commercial customers across the island.

Guernsey Water is responsible for providing secure, high quality and reliable water supplies to over 22,400 households and 3,100 commercial customers across the island. Water supplies are provided by an integrated water resource system comprising stream intakes, groundwater wells, raw water storage facilities, water treatment works and treated water storage reservoirs which together supply customers through our network of water distribution pipes.

We have a responsibility to ensure we have enough water for people and businesses, both now and into the future. We have therefore prepared a Water Resources and Drought Management Plan which covers the period between now and 2040, to make sure we continue to provide reliable and affordable water supplies to all of our customers.

The Plan identifies:

- How demand for water and our ability to supply it will change over time.
- How we will ensure there is adequate water to meet future demand in drought conditions.
- The risks and uncertainties, such as climate change and other events outside Guernsey Water's control, which may affect the balance between the availability of water supply and the demand for it.

This Plan only covers Guernsey and does not extend to the other islands within our Bailiwick.

Our Plan describes our assessment of the available water supplies and the demand for water by our customers over the period to 2040. The Plan sets out how we will ensure we have adequate water supplies for the future and how we will deal with any drought conditions that may occur.

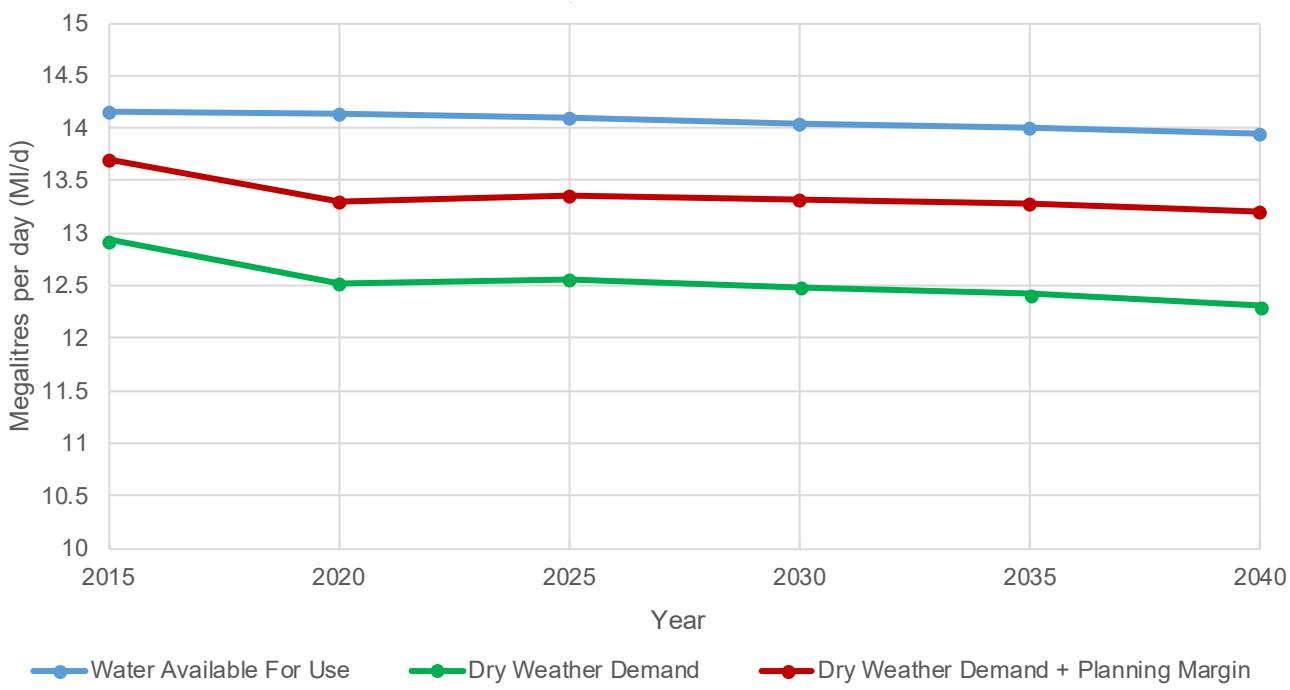
Water resource Balance

We forecast that overall demand for water will decrease very slightly over the period to 2040 and that the availability of water supplies in drought conditions will remain broadly constant. We have included appropriate planning allowances to provide a safety margin that accounts for the uncertainties in our supply and demand forecasts, as well as the risk of climate change. **Figure 1** shows that once these planning allowances are accounted for, there is a fine balance between forecast supply and demand.

This means that the following levels of service for water supply reliability could be provided to our customers:

- Temporary use bans: restrictions on the use of hosepipes and sprinklers 1 in every 20 years on average
- Drought orders: further restrictions on non-essential use 1 in every 35 years on average
- Rota cuts[1] and standpipes: we have planned for no standpipe use or rota cuts to ration water supplies. These measures may only be required if drought is more severe than the worst historic drought on record in Guernsey (1991-92).

Figure 1. Forecast supply-demand balance in severe historic drought conditions



This level of service for supply reliability is comparable with that provided by water companies in England and Wales, and currently exceeds those of some water companies in the south of England.

Our assessments concluded that the risk of rationing water supplies through rota cuts and stand pipes would be best managed by implementing temporary measures to increase supplies and reduce demand in a timely manner as a drought intensifies.

Drought Management Plan

Our Drought Management Plan aims to implement temporary measures in a timely manner to maintain essential water supplies to all customers as drought conditions worsen. We have assessed the feasibility, costs and benefits of a range of potential drought management measures to deliver the security of water supplies to customers under the worst historic drought conditions. Work has also been carried out to understand the water supply resilience risks should a future drought be more severe than the worst historic drought in Guernsey.

We assessed the cost and feasibility of bringing a temporary desalination plant of up to 5 Ml/d (million litres per day) into use during very severe droughts to maintain essential water supplies. This could be used to avoid the use of rota cuts and stand pipes in the event of a drought that is worse than we have ever experienced before.

> Our Drought Management Plan aims to implement temporary measures in a timely manner to maintain essential water supplies to all customers as drought conditions worsen.

[1] An interruption or reduction in water supply applied to different areas in rotation during serious shortages.

Our study concluded that sourcing, delivering and commissioning a temporary desalination plant in the timeframes required during such a drought was not realistically feasible or cost-effective, particularly given how unlikely it is to be needed. Additionally, the cost of constructing the necessary supporting infrastructure in advance of such a severe drought equates to a high proportion of the cost of a permanent installation. To be more efficient it would be better to invest in a permanent plant rather than a temporary one, at even greater cost. We concluded that at the present time this is unlikely to be in our customers' best interests. However, along with the rest of our Plan this option will be kept under review as circumstances change.

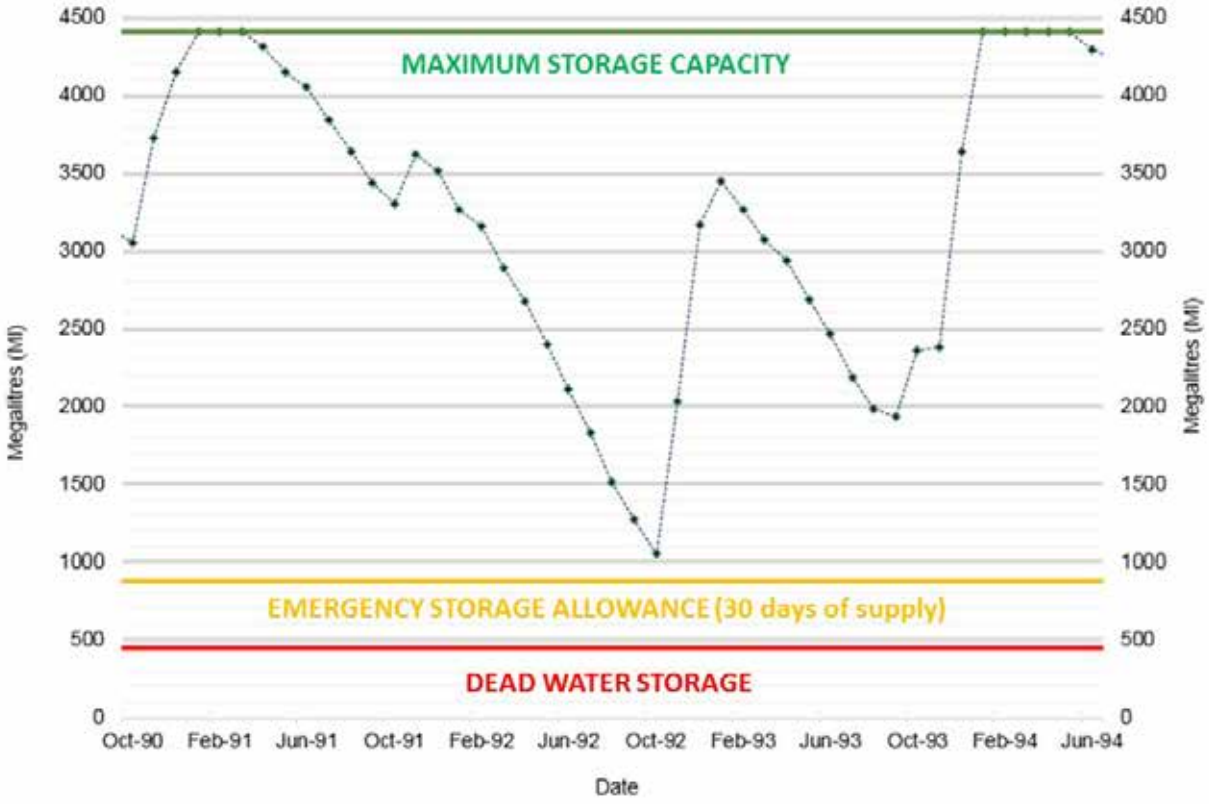
Instead, to help secure supplies in drought conditions, our Drought Management Plan includes measures like asking customers to conserve water as drought conditions intensify. If the drought were to continue then voluntary water use restrictions would be required, temporary use bans to restrict the use of hosepipes and sprinklers would follow. If necessary a drought order would then be used to ban a wider range of non-essential water use. The combined benefits of the appeal for voluntary water savings and the implementation of water use restrictions have been estimated at around 5% of average dry year demand. This level of savings is based on recent (2011-12) experience in south-east England. Inclusion of these savings in our drought risk assessment provides some additional resilience to severe drought.

Other drought management measures include:

- recycling of water used in operating our St Saviour's and Juas water treatment works
- enhanced leak detection and/or targeted temporary reductions in water pressure
- collecting water from streams that we don't normally collect from, depending on water quality and water flow conditions at the time
- temporarily using private water storage quarries and other water sources on the island.

With our Drought Management Plan measures in place, using forecast demand (to 2040) and appropriate planning allowances to provide a safety margin, there would be just enough water to maintain essential water supplies to all customers under a repeat of the worst drought on record in Guernsey (**Figure 2**).

Figure 2. Water storage under a repeat of the worst historic drought in Guernsey (1991-1992)



We have developed a series of drought management trigger levels, to indicate the level of water in storage throughout the year when our drought management measures need to be implemented. These trigger levels will ensure we take action in a timely manner to safeguard essential water supplies to our customers.

Our Plan also retains a small emergency water storage allowance, in case a future drought is more severe than ever recorded in Guernsey. However, depending on the severity of such an extreme drought, further restrictions on water use by customers might be required to safeguard supplies, including temporary rota cuts and standpipes.

UK Drought Management

The long term aspiration of the water industry in England and Wales is to ensure that rota cuts or stand pipes would not be required in a severe drought event. During 2017 water companies worked with regulators to examine their resilience to a drought event so severe that it would only occur on average 1 in every 200 years. In southern England, it is unlikely that any water company will be able to provide resilience to such an extreme drought event without carrying out investment to reduce water demand and develop new water resources.

The worst historic droughts on record in Guernsey are 1921-22 and 1991-92 (both 2-year droughts with a dry winter preventing refill of raw water storage capacity) before a dry summer. These are the same worst historic drought years experienced by Southern Water, who recently calculated that these droughts equate to approximately a 1 in 100 year severity. We have not planned to resort to the use of rota cuts and standpipes, even in an event as significant as this. However, if a 1 in 200 year severity drought were to occur it is likely that such measures would be required.

Unless an alternative use of greater long term value is identified for Les Vardes Quarry, it will remain safeguarded for water storage in the States' Strategic Land Use Plan and Island Development Plan. This allocation secures a future option to develop longer-term resilience to more severe drought than Guernsey has historically experienced, which is prudent given uncertainty over how severe climate change will be in the future. It will also secure an option to reduce the risk of severe disruption caused by the use of rota cuts and standpipes.

The use of compulsory metering of all remaining unmeasured properties would also be considered as a method of reducing overall demand, to increase the balance between supply and demand forecasts.

Our Water Resource and Drought Management Plan will be reviewed every five years or sooner if something changes that affects it. When it is reviewed we will consider whether we need to provide a greater level of protection from even more severe droughts, such as the 1 in 200 year droughts that water companies in England and Wales have recently been asked to consider.

Unless an alternative use of greater long term value is identified for Les Vardes Quarry, it will remain safeguarded for water storage in the States' Strategic Land Use Plan and Island Development Plan.

SUMMARY

- Guernsey has a well-developed and resilient water supply system, with an integrated water resource system and distribution network.
- Investment in recent decades in additional storage facilities and improving stream intake systems have provided secure water resources that are very resilient to single year drought events and have a good level of resilience to drought events that last for two years.
- Demand for water is forecast to fall slightly between now and 2040, from 12.93 million litres of water per day in dry weather to 12.31 million litres of water per day.
- Reliable supplies of water in a severe drought are forecast to remain stable between now and 2040. We have made a small reduction (0.2 Ml/d by 2040) to allow for the potential impact of climate change on the forecast reliable supply in a severe drought.
- We have included contingency allowances to address uncertainties in our long-term forecasts. This provides a planning safety margin to protect our customers from potential future risks to the supply-demand balance that are outside of our control.
- Our forecasts show that there is sufficient water supply in most years to meet demand without the risk of requiring water use restrictions.
- In some years drought conditions are likely to require action in a timely manner, including temporarily asking our customers to restrict uses of water. Our plan indicates that this could occur once in every 20 years on average.
- The forecast supply and demand for water would be very finely balanced if there were a repeat of the most severe historic drought on record in Guernsey (equated to a 1 in 100 year event). We have not planned to resort to the use of rota cuts and standpipes to maintain essential supplies to our customers, even in an event as significant as this.
- With a repeat of four other slightly less severe drought events over the historic record, raw water storage facilities would also reach very low levels and it would be necessary to introduce water use restrictions to help safeguard supplies.
- If a 1 in 200 year severity drought were to occur it is likely that we would need to resort to rota cuts and standpipes to maintain essential supplies to our customers.
- Given the high standards of supply reliability we have planned to provide to our customers over the period to 2040, we do not foresee the need to invest in new water sources or carry out major expansion to the island's water resources system during this period.
- There is considerable uncertainty beyond our current planning period (2040), particularly with respect to the impact of climate change which is expected to increase the frequency and severity of droughts.
- Unless an alternative use of greater long term value is identified for Les Vardes Quarry, it will remain safeguarded for water storage in the States' Strategic Land Use Plan and Island Development Plan. This allocation secures a future option to develop longer-term resilience to more severe drought than Guernsey has historically experienced, which is prudent given uncertainty over how severe climate change will be in the long term.
- Our water resource and drought management plan will be reviewed every five years or sooner if something changes that affects it.

In some years drought conditions are likely to require action in a timely manner, including temporarily asking our customers to restrict uses of water. Our plan indicates that this could occur once in every 20 years on average.

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