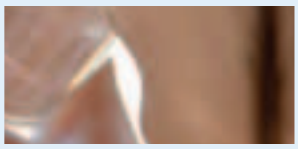
JerseyWater

Managing the Island's Water Resources

Planning for the future





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Executive summary

The Water Resources Management Plan identifies the effects of climate change and population, on the water resources available and the demand for water in Jersey, over the next 25 years.

Jersey Water plans to reduce the demand for water, through further control of leakage, renewing old water mains, extending meter installations to all water supplies in the Island and providing general advice on water efficiency and audits for commercial customers.

We aim to increase the supply of water through additional abstraction of water from the ground water sources that exist in St Ouen's Bay and investigate the possible future extension of the storage capacity of Val de la Mare Reservoir.

The information in this report identifies that as a result of the likely effects of climate change and the predicted increases in population, if no action is taken to reduce the demand for water and increase the supply of water, then by 2032, there will be a shortfall of 26% (6.5 million litres per day) in the availability of water, in the event of 1 in 50 year drought.

The Water Resource Management Plan will be reviewed and up-dated in 2014. By that time we will have had the opportunity to see the effects of proposals that have been implemented since 2010, in particular the effect of increased metering. We shall also be able to review and update our plans taking into account any changes in projected future population and climate change predictions that may have occurred.

The Water Resource Management Plan provides a robust and continuing framework to enable Jersey Water to provide the Island and our customers with a safe and secure water supply in future years.

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Background

Jersey Water is planning the Island's water supply for the future.

The world's climate is predicted to change. This will affect rainfall patterns, temperatures and the availability of water resources. The Population in the Island is also forecast to increase and with these factors in mind we have produced plans on how we propose to maintain a secure and adequate water supply.

We have commissioned a leading water and environmental consultant, Montgomery Watson Harza Ltd to model and prepare a Water Resource Management Plan for Jersey Water covering the next 25 years (until 2032). The report was partly funded by the States of Jersey Planning & Environment Department.

The Plan uses the guidelines prepared by the UK Environment Agency and used by water companies in England and Wales. The water supply model used the mid-range climate change and mid range population increases (+250 persons per year) over the next 25 years. The model assumes water availability as would be experienced in a 1 in 50 year drought. This allows the Company to plan for sufficient water resources to be available to cater for any period of drought up to and including a 1 in 50 year drought without the need for restrictions on water use. In the event of a drought in excess of a 1 in 50 year severity, additional measures would need to be considered to ensure sufficient water availability (e.g. water restrictions).

The plan will be reviewed and updated every five years. This will allow us to incorporate any refinements in climate change and population forecasts into our forecasts.

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The situation in Jersey

In Jersey we rely on the collection and storage of surface water for the majority of our water resources. This is because the Island's physical structure and geology does not provide enough ground water for public supply.

There are six main storage reservoirs and water catchment areas in the Island. The total storage capacity of useable water when all the reservoirs are full is limited to 120 days, based on the current average daily demand.

There are five small boreholes located in St Ouen's Bay, which presently supply on average, 3% of our total water resources. This water is pumped into the nearby Val de la Mare Reservoir.

Given our dependence on surface waters and limited storage capacity, we also have a standby desalination plant to augment natural water resources when rainfall levels are low. The plant can produce up to 6 million litres of water per day from sea water, but this equates to only 30% of the current average daily demand.

As a last resort Jersey Water has legal powers to prohibit the use of mains water for non-essential use, but we try to avoid these measures being introduced by encouraging the sensible use of water through awareness campaigns, to remind customers we only have a finite supply of water.

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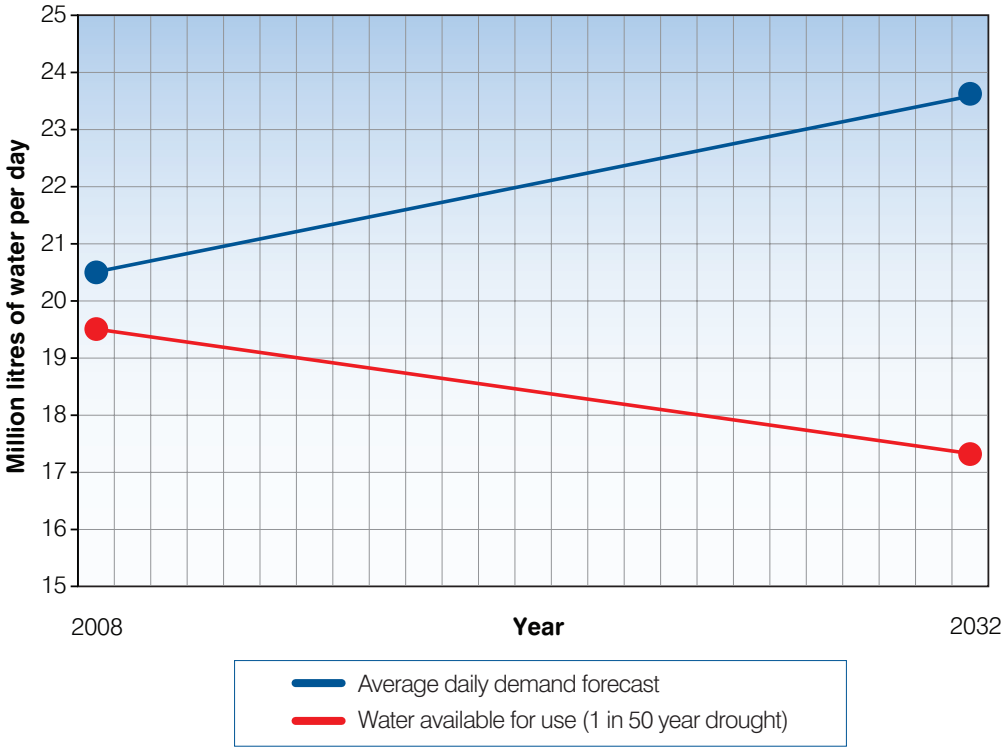
Balancing the supply and demand of water - the challenge until 2032

The following graph illustrates the widening gap between the water available for use and the water demand over the next 25 years, assuming nothing is done to reduce the demand for water and increase water supplies. The graph is modelled on a 1 in 50 year drought, which is used in England and Wales for water supply forecast modelling. This is the same as a 2% probability of having that degree of drought in any one year, and on average we expect this severity of drought to occur once every 50 years.

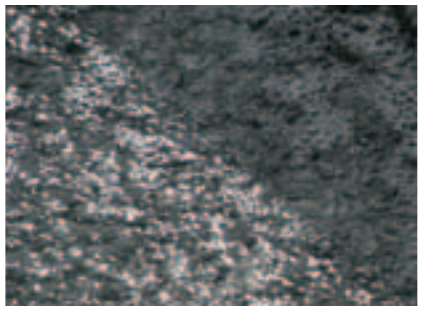
The following table shows when the last significant drought periods were recorded.

Year	Drought return period
1990	1 in 140 years
1976	1 in 30 years
1950	1 in 50 years



Our predictions indicate that there will be an 11% reduction in water available and a 15% increase in the demand for water over the next 25 years. The total shortfall therefore increasing to 26% or 6.5 million litres per day by 2032.





Ways to reduce water consumption and increase resources

The plan identifies measures which we can take to reduce water consumption (demand) and projects to increase water resources (supply) in the future years, which will assist in maintaining the balance between supply and demand.

The proposed supply options available to us in future years will ensure we have sufficient water available to meet the needs of our customers over the next 25 years; but only if we also manage and reduce the demand for water at the same time.

Supply side options	Demand side options
Increase ground water abstraction in St Ouen's Bay	Leakage reduction
Increase reservoir storage	Mains renewals
Increase capacity of the desalination plant	Metering
	Water efficiency measures

The approach

A two fold approach will be taken.

Jersey Water will put in place measures to further control the demand for water first. This is because these are achievable in a shorter timescale and are least costly. We also have to undertake these measures, as to simply increase water supplies available would not by itself reduce the predicted shortfall over the next 25 years, nor would this be a sustainable approach.

With ongoing leakage reduction, mains renewals, increased metering and more efficient use of water, we can see the overall effect this will have on total water consumption. This will allow us to balance the demand against the more costly and time consuming changes to the water supply which also need to be made in the longer-term.

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Options to manage demand - the detail

Jersey Water has a comprehensive system to monitor water flows and pressures throughout its distribution network. In order to estimate the levels of leakage in the distribution network District Metered Areas (DMA) have been set up. This allows the measurement of water flows into discrete areas and rapid identification of abnormal flows and possible leakages. The DMAs coupled with improved pressure regulation, has led to significant reductions in consumption and leakage. This is demonstrated by the fact that the annual demand for water has remained practically the same for the past ten years, even though we have 8,000 additional supply connections during the same period.

Further DMAs are planned to be introduced in the next five years to help reduce water use and identify leakage.

In the central parts of St Helier, it is more difficult to set up DMAs, due to the density of other underground services. Therefore we have opted to use some relatively new technology in the form of portable noise logging equipment. This has proved very successful and we plan to extend the use of this equipment in future years.

With further DMAs and noise loggers, it is estimated that leakage levels could be reduced by 25% or 1 million litres per day, which is 5% of the average daily demand.

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Options to manage demand - the detail

Metering

Charging for water by meter is the fairest way of paying for water and means that customers only pay for volume of water consumed.

From experience in England and Wales, customers use on average 11,000 to 13,000 litres (10%) less water per year, per household when paying for water by meter.

In July 2003, we implemented a policy of metering all new connections and from January 2009, meters are installed where there is a change of account holder (e.g. when customers move house). We also fit meters free of charge at the customers' request. At the present time 35% of all connections are metered.

Applying the savings experienced in England and Wales to the whole of our domestic customer base, would result in a 4% (0.8 million litres per day) reduction in the demand for water.

Metering will also help reduce leakage, through the identification of leaking private pipe work and service pipes. This is not easy to do when a connection does not have a meter fitted. It is estimated in England and Wales that 25% of all leakage can be attributed to leaking private pipe work.

In order to help prevent water from being wasted and to ensure customers only pay for the water they use, from April 2010 we will introduce a programme of compulsory metering of all properties connected to the mains water network. It is estimated that within a five year period, 90% of properties will be charged for water using a meter. Meters will continue to be fitted free of charge.

On properties where a meter cannot be installed (e.g. where they are connected by a shared supply pipe and cannot be individually metered), water will be charged for on an assessed volume charge, based on the occupancy level.

The water meters that are now being installed are referred to as 'smart' meters. These are low power radio enabled meters, which are read quickly and accurately by radio transmission, minimising inconvenience to customers.

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Options to manage demand - the detail

Water efficiency measures

Water efficiency measures go hand in hand with the use of meters. We have plans to appoint a Water Efficiency and Education Officer, who shall be responsible for promoting water efficiency measures, carrying out water audits for commercial customers and providing advice for all customers on saving water.

We cannot estimate the volumes of water to be saved by the adopting this policy. However, given the relatively rapid change to a customer base where the majority are metered, every effort will be made to promote water efficiency, reducing waste and providing water saving advice to all our customers.

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Options to manage supply - the detail

Increase in abstraction of ground water from St Ouen's Bay aquifer

We presently operate five small boreholes located in the southern part of St Ouen's Bay area. These boreholes abstract on average 1 million litres per day from the water bearing sand aquifer. It is estimated that the present rate of water abstraction represents only 20% of the total underground flow of water that ends up in the sea.

The abstracted water is pumped into the nearby Val de la Mare Reservoir, for blending with surface waters, prior to undergoing normal treatment and distribution to customers.

We will investigate the possibility of increasing the volume of water taken from this source, including the sinking of additional boreholes in the adjacent area. Preliminary work indicates that an additional 1, or possibly 2, million litres of water per day can be abstracted sustainably and with no detriment to the environment or ecology of the area.

Any works will be subject to obtaining the necessary consent under the Planning and Water Resource Laws.

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Options to manage supply - the detail

Increase the storage capacity at Val de la Mare Reservoir

The most significant supply side measure under consideration to improve the water supply is to increase the storage capacity of the Val de la Mare Reservoir.

We are considering raising the height of the dam at Val de la Mare Reservoir by 9 metres. This will increase the storage capacity of the reservoir from the present 900 to 2,100 million litres. Based on the present average daily demand of 20 million litres per day, this extra storage capacity will provide an additional 60 days of water.

The timescale for undertaking this project has not yet been decided. However, we will undertake preliminary design work and investigations in the next five years, which will allow the initial design, planning approvals, construction timescale and cost estimates to be established

The project will then be re-assessed in 2014, when the Water Resource Management Plan is next reviewed. At this time we will have had the opportunity to see the effects of the demand side measures, particularly metering and also review and update predictions on climate change and population.

This proposal will be subject to obtaining Planning Permission as well as an Environmental Impact Assessment (EIA).

Increased capacity of the Desalination Plant

The desalination plant has a maximum daily output capacity of 6 million litres per day. The plant uses the 'Reverse Osmosis' (RO) membrane process, which converts sea water into fresh water. As the water produced contains few minerals and is not ready for distribution to customers, the water is transferred to Val de la Mare Reservoir for blending with natural fresh waters, before being transferred to the treatment works for treatment and distribution.

The major disadvantage with desalination is the process is energy intensive and therefore expensive to operate. No matter how efficient the process, the energy required to remove salt and dissolved solids from sea water will always be relatively high, compared to other types of water resources and treatment. Therefore the operation of the desalination plant for prolonged periods is not an environmentally sustainable or financially viable proposition.

The expansion of the desalination plant is presently not being considered as one of the supply side options at this time.

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Jersey Water is the trading name of
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