

# The Water

## RAINFALL

It is important that Guernsey Water collects as much precipitation that falls to the ground (rain, sleet or snow) as possible. Rainfall levels can vary substantially from year to year, and a dry winter can have a negative impact on the island's water resources.

As an example of unpredictable fluctuations in rainfall, in January and February of 1976, 74.9mm of rainfall was recorded; in 1990 for the same months, the figure was 267.6mm - a massive difference. Another example was in September/October 1976, when 287.5mm of rain fell, compared to only 127.8mm in 1990 for the same months.

The impact of climate change will start to produce different weather patterns in the future, and Guernsey Water must ensure that the infrastructure is able to collect, store and treat as much precipitation as possible. The expansion of the Water Catchment Area is one method of increasing the amount of water collected.

## CATCHMENT

The Water Catchment Area is the area around reservoirs and quarries, where precipitation is collected and flows into streams or is absorbed into the ground. Water absorbed through the ground sinks until it reaches a layer of waterproof rock - this creates a large underground water store called an aquifer. Any water collected is known as raw water.

If additional water is needed to augment the reservoirs and quarries, boreholes can be used to draw water from the aquifers - but this does not happen often due to the large reservoir capacity.

Guernsey Water staff work closely with horticultural/agricultural bodies to ensure that potential pollutants such as herbicides/pesticides are not allowed to contaminate the water supply, through being used near water courses in the Catchment Area. By taking a proactive approach, monitoring the Catchment Area acts as a first defence in protecting the water supply. The Catchment Area measures over 43km<sup>2</sup>, and takes up much of the Island.

## STORAGE

Precipitation collected from streams within the Catchment Area is transported into storage reservoirs & quarries through water pumping stations (of which there are 13 on the Island), where it is held until it is transferred by underground pipes to one of the WTW's.

What many people don't realise is that water being stored is also starting the treatment process - wave action and ultraviolet light from the sun removes some impurities from the water. Guernsey Water oversees 16 quarries and storage reservoirs. These are:

- Baubigny
- Capelles
- Carteret
- Grosse Hougue
- Hougue Ricart
- Irene and Robine
- Jamblin
- L'Epine
- Longue Hougue
- Marais
- Rue Mainguy
- Salt Pans
- St Andrews
- St Saviours
- Vale Mill
- Ville Baudu

# Treatment Cycle

## TREATMENT

Water from storage reservoirs & quarries is sent to one of the three WTW's at St Saviours, Longue Hougue and Kings Mills. Two methods of water treatment are used to reduce and eliminate impurities. The first of these is the traditional method used at Kings Mills, where the water is pushed through a large 'sieve' to remove large objects (e.g. leaves). Clarification then occurs, where chemicals are added to the water causing small particles to stick together, creating a layer called 'floc' which floats and is removed.

Water is then filtered through a layer of sand to cleanse it further, before it runs through a 'contact tank', which disinfects the water to ensure that it retains its high quality during its journey to customers' taps through the distribution system.

The second method utilises state-of-the-art membrane tubes with ultra-small spaces - the water is able to pass through the membrane, but impurities are left on the outside of the tubes and removed as 'sludge'. St Saviours and Longue Hougue use this technology. Kings Mills WTW is only used to meet summertime demand or as a back-up in the event of failure in one of the other WTW's.

## DISTRIBUTION

Depending on demand, once water has been treated it either travels directly through the distribution system to customers' taps, or is stored in one of two service reservoirs (Forest Road and Frie Plaidy).

Service reservoirs are large covered tanks situated on high ground so gravity can help the water flow through pipes to customers' taps. The purpose of these reservoirs is to balance the peaks and troughs of water demand over the course of a day, and maintain a steady output. Forest Road serves the south of the Island, whilst Frie Plaidy provides for the north and centre - between them they can hold 22.5ML of water. Guernsey Water supplies around 5,000 ML of water each year (5 billion litres).

When required, the water travels from the service reservoirs (and WTW's) through the Island's water distribution system, which contains over 400kms of pipework, to customers' houses. A stopcock valve controls water flow from the distribution pipe to a service pipe, which delivers the water to customers' kitchen, bathroom and garden taps.

## YOUR WATER!

Customer's now have access to clean, safe drinkable water, on tap, available 24 hours a day, 365 days a year. To ensure that Guernsey's water is of the highest possible quality, Guernsey Water carry out extensive water quality sampling and testing throughout the whole process.

Guernsey Water carries out a minimum of 7,000 water quality tests each year, and all of these samples have to adhere to the stringent UK and EU guidelines on drinking water quality. A large number of criteria are considered in each test, ranging from the pH of the water, to the number of bacteriological elements present.

Samples are taken from streams in the Catchment Area, the WTW's, both service reservoirs, the distribution pipe network and at customer taps.

Of the 7,000+ samples taken by Guernsey Water in 2007, 99.7% of them passed the strict criteria set - a very impressive result, and one that stands comparison to anywhere else in the UK or EU.

