

PART 4: WATER DISTRIBUTION

Water distribution is perhaps one of the simplest parts of the water system to explain, but one of the most complicated to achieve. Generally, a single Water Treatment Works and network would be able to supply as many as 10,000 homes. Here on island however, because of our hilly and steep terrain we have four Water Treatment Works and multiple small water distribution networks to serve a mere 4000-5000 people.

The extensive water supply network and the operation of four Water Treatment Works explains the significant cost associated with water supply on the island. More plants and longer pipe network systems present numerous problems.

The island's hills and valleys, mean that water has to be supplied through several radial water distribution networks - rather than a single circuit of piping. As such, if there is a fault upstream in the line it affects every house further down the radial water spine and supply cannot be diverted from elsewhere.

A similar issue to this has to do with the spatial positioning of many houses on the island. Many houses are built with large parcels with areas of undeveloped land between them. Long lengths of pipe are needed to only serve two or three houses, rendering the installation and maintenance high. It is not only expensive to connect these houses to a network, but also raises the potential for dead water, where a number of unoccupied houses are found near the end of the pipeline.



Ideally we prefer to bury our pipes, but historically, especially in Half Tree Hollow, pipes are not buried. Surface pipes can become brittle due to exposure to sunlight, and are at risk of external damage from vehicles, animals, etc. Another problem with unburied pipes is known as “kicking”. This is a result of changes in water pressure that cause a pipe to move violently. A buried pipe will generally be unaffected as the kicking is countered by the compacted soil around the pipe. However, kicking in an unburied pipe can cause fittings to disconnect resulting in water loss and the loss of the water supply to people's homes. Although burying pipes can be quite costly, the need for maintenance may be reduced.



One of the main problems any water company faces is water loss. No system is ever perfect and there will always be some water loss that is lost through maintenance or otherwise unaccounted for. Some loss through pipe bursts is inevitable but underground leakages are often more difficult to detect and may result in high losses. In order to better manage water loss, we are in the process of installing further bulk system meters to improve the monitoring of water usage on our water networks. This will enable us to detect less obvious leaks more quickly.

The issue of water pressure often affects water consumers. In most worldwide water distribution systems, water pressure is kept at roughly 12 BAR – which is an ideal water pressure for most modern plumbing fittings used in residential homes. Here on island water pressure has to be kept at between 4 and 6 BAR, as many older houses have inferior plumbing that could not cope with a full 12 BAR system. Having to maintain a lower network pressure means that when you run a tap whilst someone else is showering, the flow is reduced. This is obviously frustrating for some people with modern fittings. In the future as more homes are upgraded it may be possible to increase the flow but for now, we have to consider what is best for the majority of our customers.

13 August 2015

