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The Water Story

WILLMOTT DIXON

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This Briefing Note was produced on behalf of Willmott Dixon by WD Re-Thinking Ltd

The Water Story

Water, along with food and air, is one of the basic requirements for life. In fact, water is the most 'consumed' resource on Earth. We are extremely fortunate that in the developed world we can take for granted the fact that good quality water is delivered into our houses and dirty water is taken away.

We use water every day in our homes, our offices and on our construction sites. Our ambition as a responsible business is not only to use water more efficiently in the way that we work, but also to deliver more water efficient buildings for our customers too.

Willmott Dixon has a duty to do this because despite over two thirds of the planet being covered in water it is a scarce resource; 97% is salt water leaving a little under 3% as fresh water, of which, only 0.01% is available for drinking, sourced from our aquifers, lakes and rivers. The rest is locked away in glaciers, ice sheets and as ground water.

Many factors contribute to scarce levels of drinking water throughout the world, for example; changes to rainfall patterns caused by climate change mean reservoirs and lakes are not being sufficiently replenished and a growing population has led to increasing demands for water: the world population has doubled since 1950 and water-use has increased six-fold.

The challenge we now face is having enough water for all our human needs.

It has been estimated that 1.1 billion people throughout the world do not have clean water for drinking or sanitation; that's about one in every six people and many have to walk miles to collect only as much water as they can carry. Poor water quality and sanitation contribute to nearly 2 million child deaths every year.

So what is the water situation in the UK?

The UK has less available water per person than most other European countries. London is drier than Istanbul, and incredibly the South East of England has less available water per person than the Sudan and Syria.

Increased population densities mean greater demand for water. For example low rainfall and high population densities could lead to shortages in the South East of England of up to a billion litres of drinkable water a day within the next 20 years if new measures to conserve and recycle water are not introduced.

All our mains water is of drinking quality - the demand for water has never been higher. The average mains water usage in England and Wales is about 150 litres a day per person; we wash the car with it, we water the garden with it, we even flush the toilet with it, which is inefficient both economically and environmentally as rainwater could be used for nearly half of this.

We are taking some steps in the right direction – the requirement for efficient water use in buildings is being tightened through the Building Regulations. Furthermore the Code for Sustainable Homes (CfSH) and BREEAM also set demanding targets for more efficient use of water, including water recycling and rainfall capture. At level three of the CfSH, water use has to be reduced on average by one-third to just over 100 litres per person per day.

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So what does this mean for Willmott Dixon?

In the education sector, our schools are beginning to benefit from water efficiency. Rainwater is often harvested for non-drinking purposes, typically toilet flushing, within the building and the grounds. Grey water can also be collected from sinks and recycled to flush the toilets or used to maintain landscaping. In housing projects low-flow taps and showers, and reduced volume baths are helping to reduce average water use to 105 litres per person per day for homes built to level three of the Code for Sustainable Homes, and 80 litres at levels 5 and 6.

Construction creates large areas of buildings and hard standing through which rainwater cannot easily permeate to the water table. Traditionally large amounts of rainwater have been directed through man-made drains, in some cases causing localised flooding. The use of Sustainable Urban Drainage Systems, (SUDS), such as green roofs, permeable paving and soak away landscaping, allows water to percolate away steadily through the ground. Designing in SUDS can gain additional credit under BREEAM and the Code for Sustainable Homes. Additionally the Code has a mandatory requirement to maintain run-off rates and volumes at those present on the site before construction began. Another in this series of Technical Briefing Notes gives more detail on the design and benefits of green roofs (Briefing Note 2).

The issue of how to deal with rainwater run-off has become so critical in managing the impact of flooding on drainage and sewerage infrastructure that SUDS should now be considered for all suitable projects. The potential impact of flooding on the building must also be considered to ensure that the buildings we construct today will be able to cope with the potential climate of tomorrow.

Willmott Dixon already has good examples of projects where water efficiency is an integral feature. A sustainable constructor is one who designs buildings that minimise the use of water, has efficient drainage solutions, limits the amount of water used in construction and prevents pollution being caused.

Figure 1: Exposed recycled water pipes at Kingsmead School – being used to educate pupils about water efficiency.

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Willmott Dixon is also tackling the use of water on site. We use a key performance indicator to monitor our own use of water in construction and have toolbox talks that explain our responsibilities and ways to reduce wastage and consumption. Other efforts are being taken make site cabins more efficient by introducing water saving measures such as waterless urinals, low-flow toilets and taps.

So what about me and my personal impact?

30% of treated mains water is used to flush toilets. In the UK there are approximately 45 million domestic toilets which use an estimated two billion litres of fresh water every day. By adjusting the height of your ball cock float, installing a water hippo or replacing old toilets with more efficient models when refurbishing you can reduce your water usage. Water companies will provide free help and advice on how to be more water efficient. When you get your next bill why not contact them?

Approx 20% of UK domestic water is used for bathing and showering. Shower flow rates vary from 1.5 l/min to 12 l/min for a power shower and using a power shower for 15 minutes is equivalent to running 2 baths. Whereas a typical 5 l/min domestic shower for 5 minutes is the same as one third of a bath.

Washing machines use approximately 14% of domestic water. Manufacturers have improved water efficiency and new models now use approximately two thirds less than they did 25 years ago. Many dishwashers are more water efficient and effective than hand washing, providing the dishwasher is run when full 'on' an economy setting.

Obviously, use water from water butts for the garden and wash the car with a bucket and not a hose.

Enough rainwater falls in the UK to more than meet the needs of everyone, the challenge is how we can capture and use this in the most efficient way.

References and further information

https://www.gov.uk/government/publications/2010-to-2015-government-policy-water-and-sewerage-services/2010-to-2015-government-policy-water-and-sewerage-services

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