



Water Neutrality at Royal Exchange – a case study

April 2023

A Thames Water and Berkeley Group collaboration exploring the viability of water neutrality at new development sites

The Southeast of England is classed as “seriously water stressed” by the Environment Agency and if no action is taken, shortfalls of over 1 billion litres of water a day are forecast by 2040. Defra has recently published plans to introduce a National Water Target, seeking a 20% reduction of water into public supply by 2050. This national demand reduction agenda includes separate Per Capita Consumption (PCC) and Business Demand water use reduction targets.

With the population forecast to increase in the Thames Water supply area, in parallel with requirements to reduce water abstraction from the environment, there is growing pressure on new development to play a demand reduction role in these stressed water resource zones. Building homes that meet high water efficiency standards is becoming an essential demand management requirement. Government is in the process of strengthening building regulations (i.e., Future Homes Standard) and introducing mandatory water labelling, alongside the water sector introducing new initiatives and incentives with developers and planning authorities to encourage accelerated water efficiency and water neutrality outcomes.

Thames Water teamed up with Berkeley Group/St. George to pilot the concept of water neutrality on the Royal Exchange development in South West London. The objectives of this pilot were to:

1. Quantify how much water new homes actually use, compared to water performance levels of 125 and 110 litres/person/day as outlined in Part G of Building Regulations.
2. Quantify the water use and PCC benefits of using the ‘fittings approach’ from Part G.
3. Quantify the water savings volumes that can be made from retrofitting existing homes and businesses in the surrounding area.
4. Prove that achieving water neutrality by offsetting the forecasted water demand of a new development, can be done by improving the water performance of existing surrounding buildings.

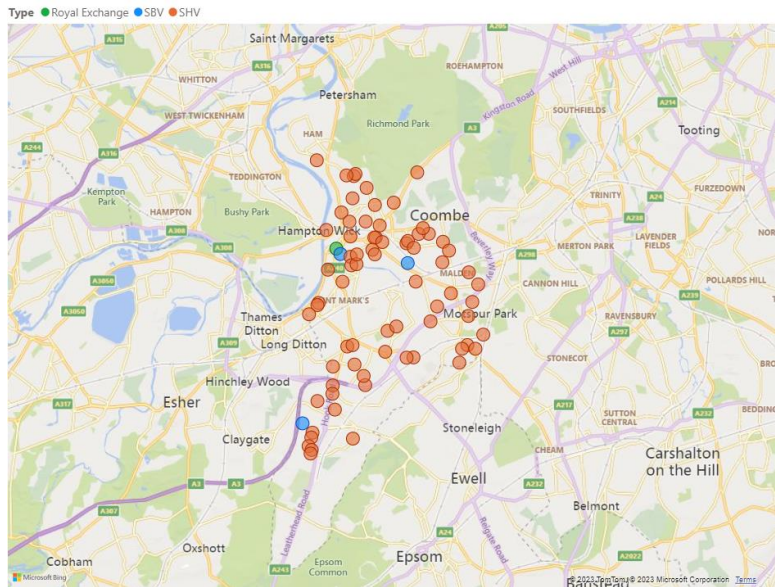
The results of this water neutrality project will be disseminated through the water utility and developer sectors, as proof that offsetting future new water demand can be achieved with relatively simple water device retrofits and wastage/leak fixes in existing homes and businesses.

Methodology

- Berkeley Group/St. George provided details for each of the Royal Exchange’s 320 homes - including bedroom numbers, plumbing fixtures, fittings and appliance specifications, plus occupancy/vacancy projections.
- Thames Water’s Demand Reduction team verified that the water fixtures and fittings were compliant with Part G ‘Fittings Approach’ methodology.
- Using the water device and development details, a total water demand of 45,573 litres was projected for Royal Exchange once completed and occupied. This daily water use volume would become the demand reduction target for the offsetting activities in surrounding homes and businesses.
- Using Thames Water’s data from water efficiency visits in household and non-household premises, a minimum number of 56 Smarter Home Visits (SHVs) and Smarter Business Visits (SBVs) were calculated as needed to offset the Royal Exchange’s projected daily usage, which were to be carried out in homes and businesses in the surrounding community. SHVs and SBVs are Thames Water’s in-home/business initiative, where free water saving devices are retrofitted and internal wastage is identified and fixed, i.e., leaky

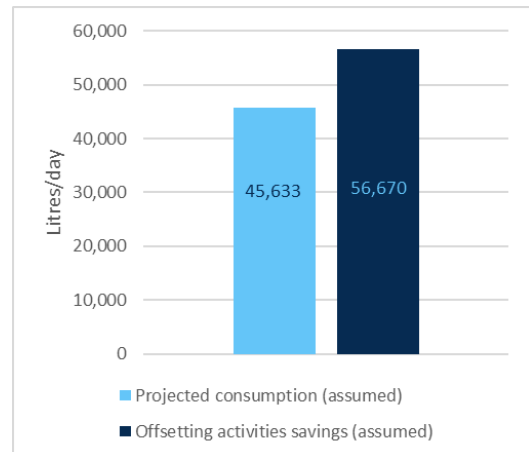
loos, dripping taps and uncontrolled urinals. SHVs further include a behaviour change element, where a questionnaire is completed, and customers receive tailored water saving advice followed up by a personalised water savings report.

- Over 6 months, a mix of 79 SHV and SBVs were delivered in the Kingston council area. Many of these sites have had a smart water meter installed, enabling long-term monitoring of actual consumption values, which will be used to verify earlier water use projections.
- Smart water meters are being installed in all the 320 homes at Royal Exchange. These smart meters are now the standard meter installed by Thames Water and will capture hourly consumption reads. This data will enable this pilot project to quantify actual consumption and demand reduction volumes, plus identify on-site leaks or internal wastage issues, which can be flagged for immediate rectification.



Outcome

- The calculated savings data from the water efficiency visits on existing homes and businesses, exceeded the projected water demand for Royal Exchange. Water neutrality was achieved.
- Initial smart meter data from the occupied Royal Exchange homes is showing lower water use volumes compared to similar developments in London that did not use the 'Fittings Approach' from Part G.



Next steps

- Continue installing smart meters in all Royal Exchange homes so that 100% of apartments are smart metered by the time all homes are occupied.
- Continue monitoring actual water use levels against demand projections and Building Regulation levels.
- Monitor usage Royal Exchange and demand reduction levels made in existing homes and business over several seasons, to verify the water neutrality agenda and inform future developments and water neutrality projects.

