# AECB’s Water Standards – design for sustainable water systems is less complicated than you may expect!

### AECB Water Standards Volumes 1 and 2: Nick Grant and Judith Thornton

Greywater recycling and rainwater harvesting sound good and green, don’t they? However, as the AECB’s detailed guide to sustainable water use explains, using these systems for a domestic water supply is expensive in space and cash, and will also use energy, all to save a cheap, low-energy resource – mains water. This means they make little sense in areas where water is abundant.

In fact far and away the biggest impact from domestic water comes from the energy used to heat it (see graphic).

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Greenhouse gas emissions due to domestic water use, from “*Environment Agency Briefing Note; greenhouse gas implications of future water resource options*.”

The most rewarding area to make savings is within the home, in particular, efficient use of hot water. The energy to treat and pump mains water is a much smaller part of the emissions picture. Simply saving cold mains water has a minor impact on emissions, in comparison to saving hot water and using more efficient water heating.

This is why Nick Grant and Judith Thornton, the authors of the AECB water standards, took issue with the Code for Sustainable Homes (CSH)\*. Illogically, the water calculator used in the Code allows you to ‘trade off’ high hot-water-flow appliances (like showers) against other appliances that may save water, but also use a lot of energy (like rainwater harvesting), or appliances that only restrict cold water supply (like low-flush toilets). The net effect of the water calculator in the CSH is to lead to higher, not lower, energy use, they warn.

The AECB Water Standards take this fact into account and offer guidance on putting together a system that works well from the user’s point of view, while using both water *and* energy efficiently and intelligently.

The Standards, which are free to download, are written with professionals in mind, so as well as offering comprehensible discussion of the background thinking, they also offer detailed technical guidance for anyone designing a new water system or upgrading an old one. There is information on flush volumes, boiler placement, pipe diameters and dead legs, pressure regulation, and metering - many of these insights are overlooked by the official design guidance.\*

Thus with real-life practicality, the standards recommend maximum flow rates for appliances, and advise on how to ensure the appliances work properly in locations with very different water pressures. But they warn against choosing ultra-low-flow appliances (even for hot water), or opting for innovations such as compost toilets, unless you are sure you (or your clients) will be able to live with them.

Even in areas of high water stress, the standards suggest the most valuable contribution from water ‘recycling’ is probably from greywater and rainwater collection for the garden, as these uses are greatest when water is scarcest (dry summers), and they don’t impose the same energy demands for purification and pumping as rainwater harvesting for the home, or greywater recycling. It is more important for everyone to understand (and if necessary, alter) their own water use habits, and to be given clear information on how to get the best out to the systems they have – and the AECB standards themselves are a great place to start.

\*Part G of the building regulations, and the Code for Sustainable Homes, both from the Department of Communities and Local Government. These standards are currently under review.

To download the AECB Water Standards visit <https://aecb.net/aecb-water-standard/>