

Water Efficiency

H₂Ome:
Managing water for sustainable lifestyles
A Sponge Event
July 26th 2006

Cath Hassell

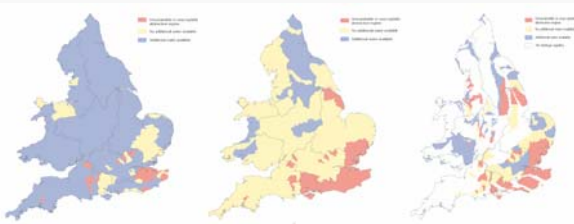
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We need to reduce our demand for potable water. Installing water efficient appliances combined with behavioural changes is the best way to do this.



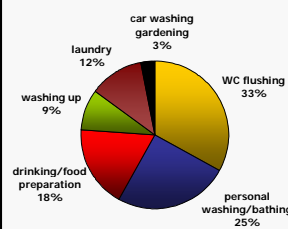
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The pressure on water resources is increasing and is at a critical level in parts of the south and east of the UK. Water efficient appliances must be retrofitted into existing buildings as well as installed in new build. Legislation rather than persuasion is required.

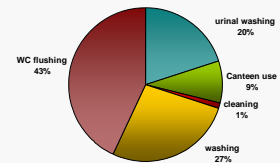


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UK domestic water use



UK commercial water use



The quickest wins are in WC and urinal flushing, followed by use at taps

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Good practice in design

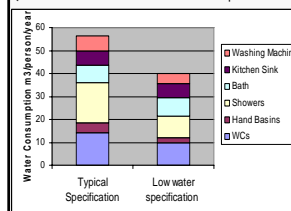
- Good design is important, e.g. reduce dead legs, guard against scale
- Address high water using components first, i.e. WC and urinals consumption
- Reduce demand from taps and showers
- Install automatic mains shut off devices for remote public buildings
- Look at rainwater harvesting or greywater recycling possibilities only after demand is reduced as much as possible
- If alternative sources of water use more energy than 0.6kWh/m³ the carbon efficiency of the water supply is compromised

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Reducing demand in dwellings

Breakdown of water use

(Based on EcoHomes water consumption calculator):



Typical Specification	Low Water Specification
6 litre flush WC	4/2.5 litre flush WC
Unregulated taps	Regulated / spray taps
15 litres/minute shower	9 litres/minute shower
normal washing machine	low water washing machine

25% savings are available from simple measures

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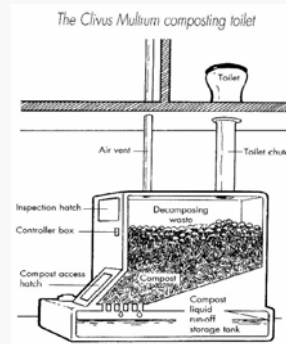
Reduce WC Demand

- Replace existing WCs with dual flush low flush WCs. 4/2.5 litre in public areas saves 2.5m³ water (5.0m³ if existing) per person per year. 4/2.5 litres in private situations saves 26m³ water a year for an average household (52m³ if existing)
- Convert existing WCs. Install cistern displacement devices or flush reduction mechanisms (dual flush valve or dual flush siphon)



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Compost, don't dehydrate

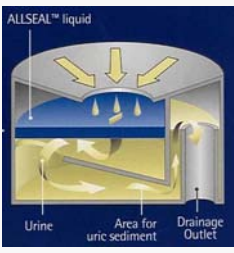


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Urinals

- An uncontrolled urinal can use 90,000 litres of water per year
- Controlled flushing relating to the occupancy of building (mandatory since 1989 Regs) can mean as much as 23,400 litres of water per urinal per year (a saving of over 66,000 litres per year)
- Controlled flushing relating to use of urinals (in-line valves allowed under 1999 Water Regulations) can save large amounts of water in low traffic situations
- Waterless urinals use no water. No water means no scale but removal of uric sediment still required. There is a consumables cost which can be quite high



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Specify efficient terminal fittings

- Control flow rates from taps and showers with flow regulators. Give constant flow regardless of pressure fluctuations at 1 bar and above. Prevent starvation at end appliances. Reduce water use
- Specify automatically controlled taps with spray heads in commercial situations regulated to 4 litres/min for basins
- Use flow regulators and aerated heads for showers. 9 litres/min is a good flow rate for showers.



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Water savings at Boatemah Walk



18 flats
396m³ of water saved per year on average. 220m³ savings from WC specification. 176m³ from rainwater specification
Rainwater estimated to supply 80% of flushing demand on average
Average overall savings per year are £14.50 (1 bed), £43 (2 bed) and £58 (3 bed)
Payback for a family of 4 for a 4/2.5 litre flush WC is 2-3 years

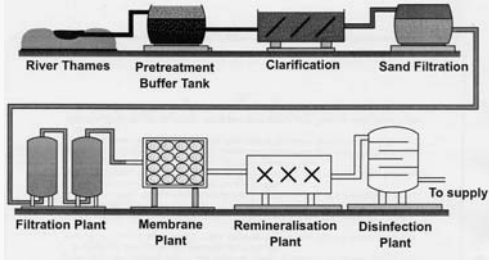
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Existing school in South London

- New extension with new WC block
- 420 pupils
- 15 x 9 litre flush WCs to stay. 7 x uncontrolled urinals to stay
- Rainwater Harvesting potential is 47m³ off the new extension, 236 litres day over 200 day term
- Replace existing 9 litre flush WCs with 6 litre single flush. Saves 454m³/year
- Replace with 4/2.5 litre dual flush. Saves 907m³/year
- Add controls to urinals. Saves 355m³/year

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The best option to satisfy London's increasing water demand is NOT a desalination plant but rather leakage control and retrofitting of efficient appliances and controls into existing buildings



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