

Conserving water in buildings



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Water is essential for natural life and for human use. We use it in our homes and gardens, in commerce and industry, and in agriculture. The way that we use water has a direct impact on the natural environment.

The Agency's vision for water resources for the next 25 years is:
Abstraction of water that is environmentally and economically sustainable, providing the right amount of water for people, agriculture, commerce and industry, and an improved water-related environment.

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Domestic appliances

Consider water and energy efficiency when buying new. Look for the energy label, which also contains water consumption information.

How much water can we save?

Washing machines typically account for about 14 per cent of the water we use at home, while the kitchen sink and dishwasher account for another 7.7 per cent. New washing machines are much more water and energy-efficient than they used to be: a new machine uses about half the water and energy of the average 10-year-old machine. Many of the most efficient washing machines now use less than 50 litres of water per wash.

Dishwashers are also becoming more water and energy-efficient. In January 2001 *Which?* tested 13 dishwashers, seven of which used just 16 litres per cycle (12 place settings). *Which?* estimate that washing the same crockery by hand would use 40 litres of hot water, two and a half times as much. To keep water consumption down, it's important not to rinse items under the tap before placing them in a dishwasher. Simply scrape off excess food and fats.

Despite the prevalence of half-load programmes on washing machines and dishwashers, full loads are still more water efficient. However, a survey by *Which?* revealed that a typical household clothes wash weighs around 2kg, although most machines are designed to be able to take 5kg¹.

Always try to wash a full load; half-load programmes use more than half the water and energy of a full load.

Should I replace my machine?

The typical lifespan of both washing machines and dishwashers is about eight years. As more people are being charged for their water by meter, they are more likely to choose low-water-using appliances when considering a new purchase. Annual financial water savings made are often reasonable, but are unlikely to pay for the whole cost of trading in an existing working machine in the short term. Payback periods are directly dependent on the number of times a machine is used. The following example is based on seven full-load washes per week.

	Washing machine		Dishwasher	
	old	new	old	new
Litres per wash (full load)	100	50	25	16
Annual water use – M ³ *	36.4	18.2	9.1	5.8
Annual water cost**	£54.60	£27.30	£13.65	£8.70

* based on seven full-load washes per week for both washing machine and dishwasher

** based on combined average UK water & sewerage charges of £1.50 per M³

¹ *Which?* Online product testing report, August 2000.

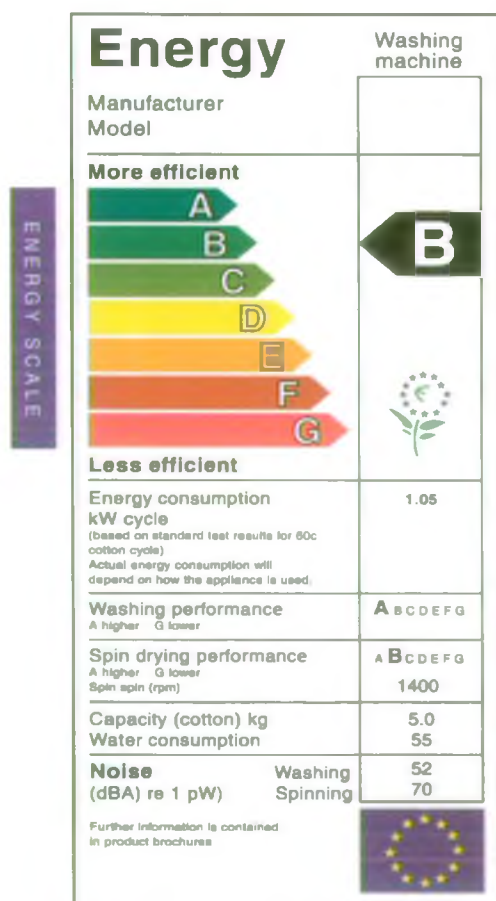


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When replacing a worn-out machine the economics change. The "best buy" in terms of reliability, low noise and features may also be the most water and energy efficient, as happened in the 1998 *Which?* test of washing machines.

Choosing a machine

All new washing machines and dishwashers now have to display an energy label. The label, shown below, allows buyers to compare the energy and water consumption of each machine. "A" rated machines are the most and "G" rated machines the least water and energy efficient. However, testing by *Which?* has produced different results to those shown on the labels. You can keep up to date by referring to *Which?* magazine, which tests a new range of appliances about once a year. In the February 1998 survey of 22 washing machines, consumption varied from 42 to 67 litres, in contrast with a range of 42 to 106 litres two years earlier. *Which?* is not, however, able to test all machines but you can use their results in conjunction with the energy label to help you make an informed choice.



The energy label displays water consumption information.



The future

Many machines now incorporate fuzzy logic to add a degree of "intelligence". Typically, the machine will add enough water to help match the size and absorbency of the load and some will check for suds to see if an extra rinse cycle is required. Future innovations may include ultrasonic agitation and reuse of rinse water.

Further information

Which? Online: www.which.net

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Further copies of these fact cards are available from the Environment Agency's National Water Demand Management Centre, Guildbourne House, Chatsworth Road, Worthing, West Sussex, BN11 1LD. Email: paula.wood@environment-agency.gov.uk Telephone: 01903 832073 Website: www.environment-agency.gov.uk/savewater

Gardening

In the UK it is possible to have a beautiful and productive garden without using any mains water.

How much water can we save?

Average UK outdoor water use, which includes garden watering and car washing, accounts for only about six per cent of annual domestic water consumption. However, on hot summer evenings 50 per cent or more of the water supply may be used for garden watering when supplies are most stressed.

Water-efficient gardening

A healthy soil with plenty of organic matter will retain moisture and nutrients. Choose plants for drought tolerance and compatibility with your soil and intended position. Planting new shrubs and trees through plastic will retain moisture and control weeds, while loose mulches can be used to similar effect around established plants. Low-maintenance alternatives to planted areas include gravel, coloured glass nuggets and decking.

Lawns are the thirstiest part of a garden. Letting the grass grow longer helps shade the soil and reduces the need for water. If you must water your lawn, remember that infrequent soaking is far more beneficial than regular sprinkling as it encourages the roots to search for water stored deep below the soil's surface. If the grass turns brown, it does not mean that it has died: it will

eventually recover when it rains. Some varieties of grass are particularly suited to dry conditions, such as fescue grasses and smooth stalked meadow grass.

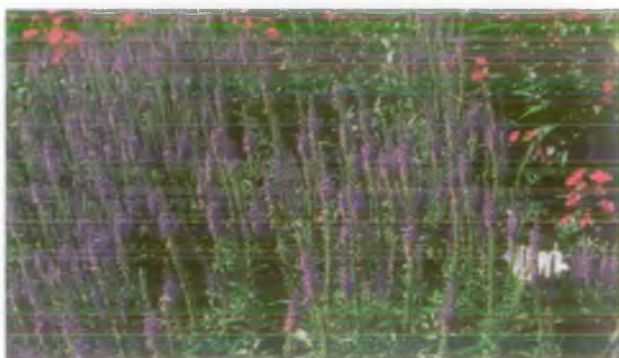
Plants for a Mediterranean-style garden

The following plants thrive in hot and dry conditions and are best suited for poor, free-draining soils:

African lily	Lavender
Buddleia (butterfly bush)	Peruvian lily
Californian lilac	Pink
Californian poppy	Red-hot poker
Catmint	Rock rose
Daisy bush	Rosemary
Evening primrose	Straw daisy
Foxtail lily	Thyme
French honeysuckle	Tulip

Rain and greywater

Rainwater can be collected in butts and used in watering cans (see also card 4). All gardens will benefit from water butts, which you can disguise with suitable plants such as clematis (many varieties of which are drought tolerant). A range of manufactured or reclaimed containers is available locally or by mail order, and water companies often sell water butts at subsidised prices. Garden centres sell suitable pumps to allow the use of hoses with trigger sprays, which are ideal for larger gardens.



Lavender



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This large water butt (1,500-litre recycled orange juice barrel) has been partly buried and screened with woven willow and clematis (Elemental Solutions).

Greywater from baths and showers can be used safely on most non-edible plants, provided it is applied to the soil rather than foliage and is not hot (see also card 3). Valves are available to divert wastewater from upstairs bathrooms to a hose when needed. A number of books and websites provide detailed advice on greywater gardening.

Watering – equipment and techniques

Having minimised your garden's need for water and maximised your collection of rainwater, it is important not to waste the water you do use. Generally, the following principles apply:

- don't use watering-can roses (except for seedlings), as the water does not go directly to the roots where it is needed;
- don't over-water plants: this can cause as much stress as under-watering;
- frequent light watering is not good as it encourages shallow roots rather than deep moisture-seeking ones;
- do water in the early morning or in the evening to avoid evaporation.

Check your garden hose for leaks and fit it with a trigger to control the flow. An aerating nozzle allows you to water roots without washing away the soil or having to use the less efficient spray pattern. Many water companies require households using sprinklers to have a water meter fitted.

Drip irrigation has the potential to save water, particularly when used in large planting schemes. However, it may pose problems, and has limited application for small gardens. Incorrectly installed systems can waste water and care must be taken not to contaminate mains water supplies through backflow. Porous hoses (so-called "seep hoses") are typically left attached to taps and irrigate by "weeping" water on to or below the ground surface. They appear attractive as alternatives to hosepipes, but can become irreversibly expanded if over-pressurised in use, which will result in them wasting very large amounts of water.

Regulations

The Water Supply (Water Fittings) Regulations 1999 require that all irrigation systems be provided with suitable backflow prevention devices to avoid contamination of upstream pipework. The regulations also require that garden ponds have impervious linings and be watertight. They must not have a permanent connection directly to a mains water supply. Government guidance to the regulations recommends that garden hoses be fitted with a self-closing trigger mechanism.

Further reading

Create an Oasis with Greywater, Art Ludwig, 1994,
<http://www.oasisdesign.net/>

Drought Gardening, Sue Hakala, Storey Publishing, 1995

Drought Resistant Gardening, The Royal Horticultural Society, 1999.

Gardening Without Water, Charlotte Green, Search Press, 1999 (HDRA).

Low Water Gardening, John Lucas, CPRE, 1993.

Plants For Dry Gardens; Beating the drought, Jane Taylor, Frances Lincoln, 1993.

Which? Online: www.which.net

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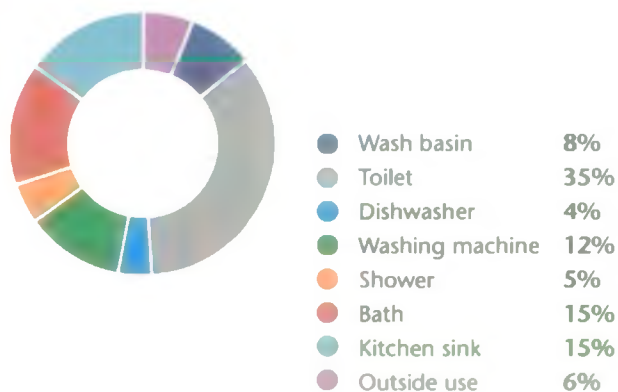
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Greywater

Using greywater can save up to 18,000 litres of water a year for each person. This represents 33 per cent of daily household water use.

How much water can we save?

Typically, about a third of household water is used for flushing the WC. Greywater, the waste water from baths, showers and washbasins, can be collected in a household-scale reuse system and treated to a standard suitable for WC flushing. Although personal bathing habits will influence the actual water savings, the pie chart below shows that volumes of greywater produced approximately equal the water use of the WC, giving potential savings of around a third of daily household water demand. A trial by the Agency's National Water Demand Management Centre showed a range of water savings from about five per cent to 36 per cent for different trialists.



Household water use. Waste water from showers, baths and washbasins can be used for toilet flushing.

What treatment is necessary?

Greywater from baths, showers and handbasins is usually clean enough for flushing the toilet with only basic disinfectant or microbiological treatment. Problems can arise, however, when the warm, nutrient-rich greywater is stored, since it quickly deteriorates as bacteria multiply.

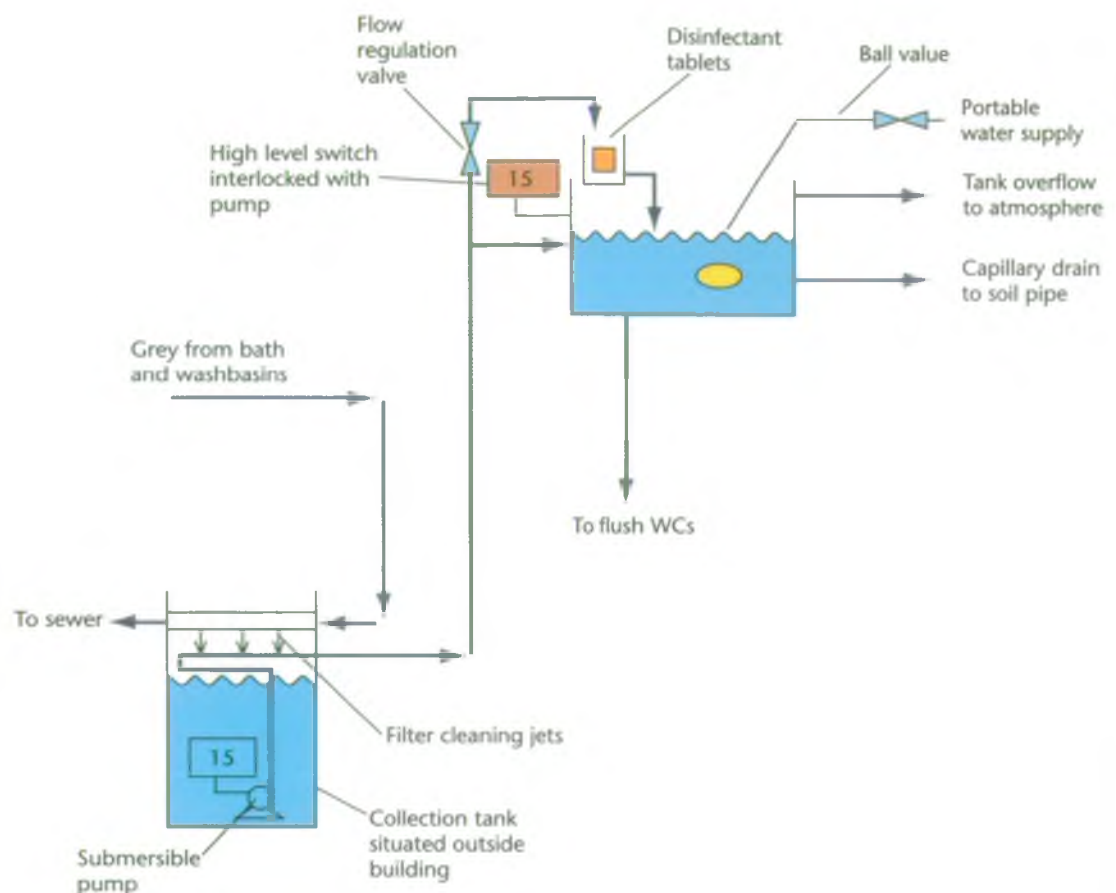
One solution is to remove any gross matter such as hair and skin debris by passing the greywater through a suitable coarse filter prior to disinfecting it. This prevents biological activity for long enough to allow the treated water to be stored until needed. Other components of the system include a pump to get the greywater to the WC (usually via a header tank) and a method of providing mains-water backup for when supply does not meet demand. There must also be a means of protecting the mains water against contamination by backflow (in order to comply with the Water Supply (Water Fittings) Regulations 1999).

Another approach, better suited to larger-scale systems, is to treat the greywater in much the same way as sewage is treated. This has been done using traditional biological methods as well as newer membrane filtration technology. At this level of treatment it is possible to treat the combined sewage flow without separating out the greywater. The treated water is clear and free of unpleasant odour and contains little organic matter, allowing it to be stored. The low level of contamination following this type of treatment means that far lower levels of disinfection need to be used.

Untreated greywater (excluding any foul waste water from, for example, WCs) can be used for garden watering if used immediately after it is produced (see card 2). The waste water from kitchen sinks and dishwashers is not usually collected as it is too heavily contaminated.



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Well Butt Greywater reuse system (Water Dynamics).

What is the potential?

Technical innovations are required to improve user satisfaction, simplify maintenance and reduce the cost of installing domestic greywater systems. A number of manufacturers claim to have products in development that will make greywater reuse practical at the single household scale, although economies of scale are likely to tip the balance in favour of shared systems.

Countries outside the UK have already realised the benefits of recycling greywater. In Tokyo it is mandatory for buildings with over 30,000m² of floor space or with a potential water reuse of more than 100m³ per day.

Do regulations apply?

The Water Supply (Water Fittings) Regulations 1999 impose legal requirements for backflow protection of any public mains supply "back-up" connection. They also place an obligation on installers not to allow cross-connection of mains-fed pipework with pipes carrying recycled water, and to clearly mark the pipes and fittings to distinguish recycled water from mains-derived water.

Other advantages of water reuse

The reduction in sewage volume is an important advantage of greywater systems, especially for households with cesspools or septic tanks and poor drainage. For those who pay for mains drainage, a reduction in sewerage charges may be negotiable with their sewerage authority.

Further reading

A Study of Domestic Greywater Recycling, National Water Demand Management Centre, Environment Agency, 2000

Buildings that Save Water, CIRIA, 2001

Reclaimed Water Systems: Information About Installing, Modifying or Maintaining Reclaimed Water Systems. WRAS Information and Guidance note, August 1999 No 9-02-04. Available from WRAS, tel: 01495 248454. Website: www.wras.co.uk

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Rainwater reuse

Using rainwater for garden watering, toilet flushing and washing machines can save up to 50 per cent of household water use.

How much water can we save?

WCs, washing machines and outdoor use account for about 50 per cent of domestic water consumption. Correctly collected and stored, rainwater can meet all these requirements without further treatment. In practice most domestic roof areas are too small to satisfy all this potential demand regardless of storage cistern size, so it is important to evaluate the potential savings before investing in an expensive installation.

In existing housing, it is generally more economic to employ water-saving measures than to reuse rainwater or greywater (see card 3). However, with new developments, rainwater reuse becomes a more attractive option.

Rainwater systems in the UK are used primarily for WC flushing and garden watering. Ultimately, rainwater systems installed with filtration and disinfection could potentially supply all domestic water requirements, although this is not currently recommended.

The simplest rainwater collection method is the garden water butt. It requires no treatment or mains backup, and is not required to supply water when temperatures are below freezing (see card 2). Household rainwater systems are, however, much more sophisticated and their installation is quite complex.

Plan roof area M²

mm rain/year	50	75	100	125	150
600	18	27	36	45	54
800	24	36	48	60	72
1000	30	45	60	75	90
1200	36	54	72	90	108
1400	42	63	84	105	126
1600	48	72	96	120	144

Table showing approximate annual yield of rainwater in cubic metres for a range of roof sizes and average annual rainfall. It is assumed that 60 per cent of the rain falling on the roof is collected and used.

Cistern sizing

Rainfall is sporadic and so storage is required. A typical tank size for a four-person household is around 2m³, with quickly diminishing returns for larger tanks.

The ease and subsequent cost of installation will depend on a number of factors. A building with multiple downpipes, limited roof area and restricted space for a storage tank is unlikely to be suitable. However, a building with downpipes at one end and a garage or cellar with a place for a low-cost tank would greatly simplify installation of a rainwater system. Similarly, installation in a new house is easier than fitting a system into an existing one.



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System types

A large number of products is now available, mainly from Germany, where commercial systems are currently installed at a rate of around 50,000 per year. The different formats can be usefully divided into those that pump water direct to appliances and those that pump rainwater to a header tank in the loft:

Header tank systems

Pros

- High reliability, reverts to mains water if power or pump fails.
- Low-cost pump and simple controls possible.
- Energy-efficient as pump runs at full flow.

Cons

- Low-pressure water to WC, may fill slowly.
- Pressure may be too low for modern washing machines.
- Requires loft tank.
- Few commercial systems available.

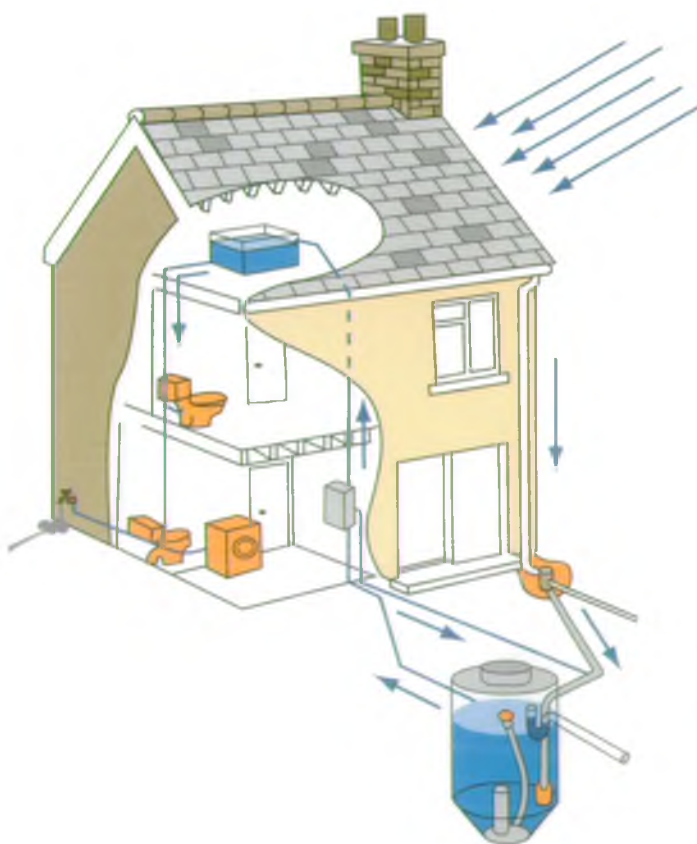
Direct pumped systems

Pros

- Good pressure, ideal for garden hoses and washing machines.
- No loft tank.

Cons

- WC cannot be flushed if power or pump fails (use a bucket to flush).
- Mains top-up and controls may be more complicated.



RainSava system (Acorn Environmental Systems).

Regulations

There are currently no UK regulations relating to required water quality for WC and washing machine use. Extensive studies in Germany have concluded that correctly collected rainwater is suitable for such use without disinfection¹. Mains water backup must be in accordance with the Water Supply (Water Fittings) Regulations 1999 and pipes should be clearly identified.

Some countries, or regions within countries, now require new buildings to include rainwater systems, and a minimum cistern volume is often specified.

Other benefits

As it is "soft", rainwater is ideal for clothes washing and toilet flushing. Trials in Germany have shown extended life for washing machines fed with rain rather than hard water.

Further reading

Reclaimed Water Systems; Information About Installing, Modifying or Maintaining Reclaimed Water Systems. WRAS Information and Guidance note, August 1999 No 9-02-04. Available from WRAS, tel: 01495 248454. Website: www.wras.co.uk

¹ Lucke, 1998, English translation ISBN 0-9517890-1-5

Taps

Spray taps on handbasins typically save up to 80 per cent of the water and energy used with standard pillar taps. Sensor and push taps can save water where taps may be left on, and they also avoid the need to touch the tap once hands are washed.

How much water can we save?

Commercial washrooms

About a third of the water used in every office comes through the tap. Installing spray taps can reduce this amount by up to 80 per cent. Taps with a standard M22 or M24 outlet thread can easily be fitted with sprays, and many round outlets can be adapted. When installing new taps consider specifying models with metric outlets, since this allows the flexibility to add a range of outlet devices such as sprays and aerators. However, beware of reducing the air gap between the tap discharge outlet and the "spillover" level of the washbasin, as this is essential to prevent backflow of contamination into the pipework if the basin outlet becomes blocked.

Electronic sensor taps and timed turn-off push taps prevent wastage and flooding where taps may be left running. They also offer improved hygiene, as the tap does not have to be touched. To ensure savings are achieved while maintaining user satisfaction, the fitting must suit the water pressure and allow for correct adjustment.

Domestic taps

Approximately eight per cent of household water use is at the washbasin. Unlike those in commercial washrooms, taps in the home are also used for filling the basin and so sprays are not usually appropriate. A recent invention that aims to address this problem is the Tapmagic insert, which can be fitted to most taps with a round outlet hole or standard metric thread. At low flows the device delivers a spray pattern suitable for washing hands or rinsing toothbrushes. As the flow is increased, the device opens up to allow full, unrestricted flow. However, as with taps in commercial wash rooms, beware of reducing the air gap between the tap discharge outlet and the "spillover" level of the washbasin.



spray



full flow

Tapmagic at low and full flow.



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Another innovation is water-saving cartridges for single-lever mixer taps. As the lever is lifted, resistance is felt once a flow of between five and 10 litres per minute has been reached. If a higher flow is required, the lever can be pushed past this stop. Some designs ensure that only cold water is delivered when the lever is in the middle.



Single-lever mixer tap with retrofit water-saving ceramic cartridge (RST, Germany, Rodin Group UK).

Where water is supplied at mains pressure, an aerator or laminar flow device will eliminate splashing. These devices usually incorporate flow regulators and provide the illusion of more water than is actually flowing.

Flow regulation

Some flow regulators are designed specifically for taps, usually fitting to the tail or pressed into the seat. The Aqualoc tap seat insert, which is claimed to last longer than conventional tap washers, reduces the force needed to turn off the flow and acts as a restrictor to limit flow. Water savings from flow regulation may not be very high, but other benefits make it worthwhile as a standard good-practice measure (see card 6).

Other considerations

- In hard-water areas, sprays may need regular descaling to make sure that they do not become blocked.
- To avoid long delays while water runs hot, pipes to spray taps should be no longer than 1 m from a point-of-use water heater or pumped loop.
- Because of the low flow rate, smaller bore pipes can be used, further reducing the dead-leg.

Legionella

There is sometimes concern that spray fittings and aerators might introduce a risk of legionella. The temperature of the water is an important factor in the occurrence of legionella outbreaks. Sufficiently hot water will kill off the legionella, as they cannot survive in very high temperatures. In addition, descaling regularly and reducing the pressure of water to taps will reduce the production of aerosol droplets, which is how legionella usually enters the body. The Building Services Research and Information Association (BSRIA) has produced guidelines for temperature with respect to outbreaks of legionella (see Further reading, below). For low-usage applications, sprays are not recommended and would offer minimal savings.

Further reading

Guide to Legionellosis – Temperature Measurements for Hot and Cold Water Services, BSRIA Application Guide 4/94.

Ionisation Water Treatment for Hot and Cold Water Services, BSRIA – Technical Note 6/96.

Flow regulation and leak detection devices

As well as saving water, flow regulation offers additional benefits, such as helping to balance the available pressure throughout the system.

How much water can we save?

Water savings from flow regulation are very variable. Halving the flow rate to a shower might halve water use, but regulating the flow to a bath tap is unlikely to save anything. If a WC refills faster than necessary, adding a flow regulator will offer a small saving (see card 9). Restricting the flow to a sink or basin may save some water if users are not water conscious, but will offer little saving for users who take care to control the flow manually. Some authors and most manufacturers have claimed a 25-30 per cent saving from tap flow to basins and sinks, but this may be rather optimistic for most applications. Flow regulation does offer several other important benefits, however, (see Other advantages overleaf), so that any water saving may be seen as a bonus.

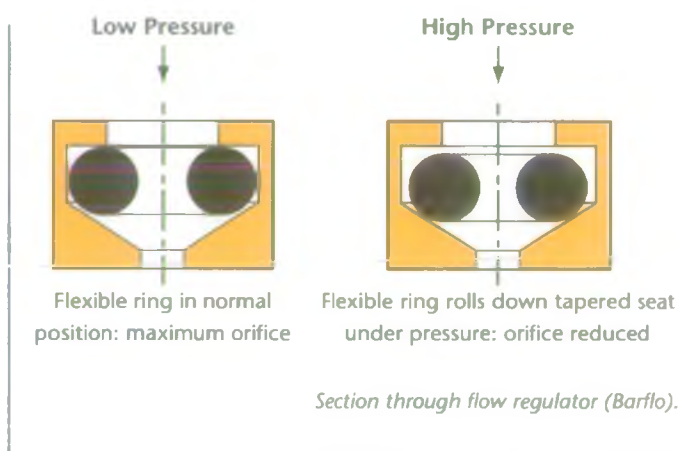
Leak detection devices are intended mainly to prevent damage from pipe bursts in unoccupied buildings, with water saving as an added benefit.

Pressure and flow regulators

Pressure regulators are designed to maintain a constant pressure independent of flow, whereas flow regulators are designed to maintain a constant flow largely independent of pressure. Pressure regulators are typically used to limit pressures in mains-fed hot water systems, or where mains pressure is particularly high and may lead to problems such as burst hoses or leaking float-operated valves. Pressure regulators are normally adjustable and fitted to a whole building or hot-water system. Flow regulators, also adjustable, and restrictors are low-cost devices that are typically fitted at each terminal fitting such as a tap or shower.

Regulators and restrictors

Flow restrictors do just that, and a typical example consists of a washer with a small orifice to limit flow rates. The problem with this simple approach is that the flow rate depends on water pressure, which will vary. The "Restrictaflow" is a "Ball-o-fix" valve with a very small hole in the ball. This can be drilled out for higher flow rates and rotated 180 degrees to clear any blockage.



Flow regulators vary the restriction to maintain a fairly constant flow, regardless of pressure within a specified range.

In-pipe flow regulators can be used with taps and showers. However, regulation can sometimes be better provided by a fitting a special showerhead or tap outlet such as a spray or aerator (see cards 5 and 10), and flow regulators should not be used in conjunction with these.



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The Aquaflow Access Valve is a flow regulated isolating valve that allows the regulator to be changed for one with a different flow rate, from four to 18 litres per minute.

Other advantages

Limiting the flow for any tap or appliance (even a WC), to a minimum rate helps balance the available pressure throughout the system. Thus if someone is in the shower and the kitchen tap is turned on full, the temperature and flow are likely to remain more stable if the kitchen tap is only able to draw as much water as it needs.

Flow regulation can also reduce noise, splashing taps (where aerators cannot be fitted) and water hammer (sharp concussion when water flow in a pipe is suddenly stopped). Regulation of flows allows simplified design and minimised pipe sizing, as peak flow rates can be accurately specified.

Leak detection

A number of products on the market are designed to detect burst pipes and leaks and shut off the water supply to minimise water loss and damage. Most work by starting a timer when flow is detected. If the flow continues beyond a preset time, the supply is shut off unless an override facility has been set. When flow stops the timer resets. A few devices also detect high flow rates due to a burst pipe, and most provide a simple switch to turn off the water when the building is unoccupied for any length of time. Since the devices are usually fitted indoors they do not detect leaks in the pipe between the water meter and the building.

Some designs have the option of a hot-water shut-off valve to deal with the problem of possible scalding should the cold-water flow be stopped during a shower.

The main reason for installing such devices is for property protection rather than water conservation. Turning off the stopcock when away may provide similar protection. Electrically actuated stopcocks are available to simplify this operation.

Further reading

Water Conservation: IP 2/00, Low Flow Showers and Flow Restrictors. BRE Water Centre. Available from CRC, tel: 020 7505 6622.

Urinals

Installing urinal controls can halve the amount of water used for urinal flushing in offices.

How much water can we save?

Urinals can save water compared with WCs, but will waste a considerable amount of water if incorrectly installed. Typically, urinals account for about 20 per cent of office water use, but this figure can vary a good deal. Urinals that use no water, other than for daily cleaning, are now widely available.

The Water Supply (Water Fittings) Regulations 1999 require urinals to use no more than 7.5 litres per bowl per hour (10 litres for a single bowl) and require that a device be fitted to inhibit flushing when the building is unused. In practice flow rates are rarely measured and will drift with time, or be deliberately increased in a usually vain attempt to solve odour problems.

Urinal controls

Many urinal installations do not have controls and so flushing continues for 24 hours a day, seven days a week, and often at a higher rate than specified by the regulations. For an office with a 40-hour working week this means that 76 per cent of the flushing occurs when the building is unoccupied.

Many designs of flush controller are available. These work either by a time clock set to match the hours of use or by detecting the presence of people. This is typically achieved by means of infrared movement detectors or door switches. Mechanical designs use water flow or variations in pressure caused by taps being used, to open a valve to the urinal cistern.

Some controls allow the urinal cistern to fill slowly unless no activity has been detected for a preset period. Other designs allow the cistern to fill quickly, causing it to flush when people are detected. An electronic delay prevents further flushing for a preset period. Each method has its advantages. Where a large number of urinals are installed with a quick-fill system, separate controllers may be needed to prevent all the bowls flushing when one person enters the room.

Whatever system is installed it must be correctly set up, tested and maintained. Monitoring at Worthing High School found the urinals to be responsible for over 40 per cent of total water use, and this rose to 80 per cent as the trial progressed. The problem was traced to faulty urinal controllers, and the situation might have continued undetected had the school not been carrying out a detailed water audit.

Some designs use the same circuitry to control lights and fans or to shut off the water supply to the entire washroom when it is unoccupied.



Waterless urinals using liquid seal trap (Armitage Shanks).



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Flush-per-use systems

The Water Supply (Water Fittings) Regulations 1999 allow the use of single urinal bowls with pressure-flushing valves and a flush volume no greater than 1.5 litres. This arrangement is particularly suited to situations with low usage such as small offices. Each office urinal might serve between one and 30 male workers¹. If this were to be flushed automatically, the daily use would be between 80 and 2.7 litres per person depending on the number of staff². If we assume three uses per person per day, the single flush-after-use urinal should be more economical if there are fewer than about 17 male staff (17 staff x 3 uses/day x 1.5 litres = 76.5 litres compared with 80 litres for a single automatic cistern).

Waterless urinals

A wide range of urinals work without using any water. Some systems are supplied as a complete unit while others can be fitted to standard bowls and troughs.

As well as offering significant water savings, waterless urinals also aim to address some of the problems associated with flushing urinals, namely scale, odour, blockage, and subsequent flooding. Hard water can form an absorbent layer of limescale on the bowl, which is thought to contribute to odour. Waterborne limescale also accelerates the blockage of traps and drains and the resulting solids are very difficult to remove. Simply turning off the water does not cause odour and may reduce blockage in hard-water areas. However, urine salts, hair and other solids will eventually block normal traps without further preventative measures.

Unlike WC flushing, normal urinal flushing is not fast enough to clear out the trap and so prevent blockage. Waterless designs deal with blockage in a number of ways. Some use an easily removable disposable trap that retains the urine salts, while others replace the trap with a one-way valve so that urine is not retained and crystals do not have time to form. Some systems retain the conventional tubular trap but prescribe daily or weekly sluicing with water and detergent to flush away solids.

As odour is perceived to be a problem with waterless urinals, most manufacturers offer a countermeasure, usually in the form of a scented block, stick or pad. Odours are usually caused by trap leaks or general hygiene problems around the urinals rather than the lack of water.

Appropriate choice of system will be site-specific. Whatever system is installed, correct maintenance is crucial. Some manufacturers offer maintenance contracts and these may be economic for larger installations but not usually for a single urinal bowl.

Other advantages

Systems that do not require water avoid the need for frost-and-vandal-prone plumbing and avoid flooding when bowls block due to scale or sabotage. Washroom control systems save energy and can help prevent damage by automatically turning off the water supply to unoccupied washrooms.

¹ British Standard, 6464 Part 1, 1994. BSI.

² 10 litres per hour x 8 hour day = 80 litres per day. Therefore, if the urinal serves 30 men this is equivalent to 80/30 = 2.7 litres per person per day.

Waterless and vacuum toilets

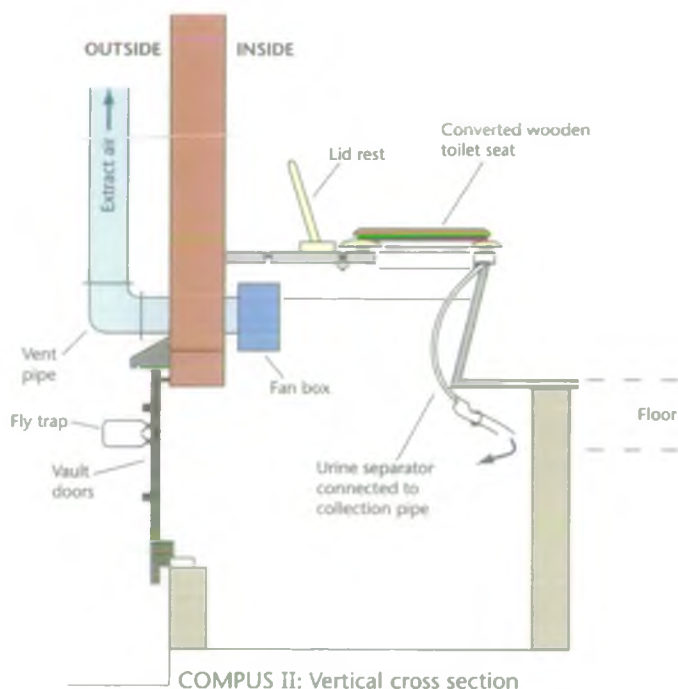
Waterless and vacuum toilets are an ideal solution where the water supply is scarce or non-existent.

How much water can we save?

Typically, household WC flushing uses about 50 litres per day, accounting for around 30-40 per cent of household water use. Waterless toilets would save all of this. Vacuum toilets, with a typical 1.2 litres per flush, would reduce this by about 88 per cent to around six litres per person per day. However, vacuum toilets are currently only used where it is necessary to use a minimum of water, or to solve particular drainage problems.

Waterless toilets

These are rarely installed simply as water-saving measures except where water is very scarce. They might be installed as public toilets at remote sites without a water supply, or in the few houses where the only water supply is rainwater. The best waterless toilet systems are comparable in price with conventional on-site drainage for rural new-build projects. Retrofitting as a purely water-saving measure is unlikely to be economic. The most common form of waterless toilet is the composting toilet.



Twin-vault urine separating compost toilet (Natural Solutions).



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Composting toilets

Composting toilets compost the waste into a form that can safely be used as fertiliser. They range in size from a large box that fits in a bathroom to larger vaults installed in a basement. The smaller models tend to use heaters and raking or tumbling mechanisms to accelerate decomposition, while larger models rely on natural mouldering processes, perhaps with the help of tiger worms and the addition of a soak such as shredded cardboard or sawdust.

If you are installing a dry toilet for environmental reasons, avoid units with heaters, as the energy use will offset any water-saving benefit. Most units incorporate a small vent fan, but their power consumption is typically under 5W (£3.50/year at 8p/kW.h)

Regulations

A number of installations have now received Building Regulations approval. The Water Supply (Water Fittings) Regulations 1999 do not apply unless there is a connection to mains water.

Other advantages

The better waterless toilet designs are silent, odour free and do not splash. There are no drains to block and no sewage sludge is generated, but final removal of compost is usually a manual process and regular raking is often required. Dry toilets are immune to freezing, which is an important consideration for remote sites and outdoor toilets without power for frost protection.

Vacuum toilets

Vacuum drainage is not currently cost-effective or practical for houses. It can be found in trains, boats and aircraft where it is necessary to use the minimum amount of water. Vacuum toilets can be economic for larger projects, particularly where conventional gravity drainage would be problematic. Examples include the addition of sanitary facilities to historic buildings.

Marine toilets using compressed air and low-flush macerating toilets are a lower-cost option, and have been used in houses, particularly where cesspool-emptying charges make such measures extremely cost-effective. Care should be taken to ensure that the installation meets the requirements of the Water Supply (Water Fittings) Regulations 1999 if the toilet has a direct mains water connection, as many designs require modification to comply.

Further reading

Lifting the Lid, Harper and Halestrap, Centre for Alternative Technology, 1999.

Water-efficient WCs and retrofits

Dual-flush and low-flush toilets can cut household water use by up to 20 per cent, and save more than half the water used in flushing toilets.

How much water can we save?

Typically, every household uses about 50 litres of water per person per day for WC flushing. This represents about 35 per cent of all domestic water use. The most efficient WCs can reduce this volume to around 20 litres or less per person per day.

Cistern displacement devices

Where WC replacement is not an option, the flush volume of older toilets can often be reduced. A number of devices are available, or can be improvised, that displace a volume of water in the cistern and so reduce each flush by that amount, typically a litre. Before and after fitting such a device check that the flush works well, that the inlet valve does not leak and that it is adjusted so that the water is up to the level marked in the cistern. Lowering the water level will reduce the flush volume but will also reduce the efficiency of the flush. Displacement devices are often available from local water companies, or you can fill a suitable plastic bottle with water and place it in the cistern.

If double flushing is required, your water use could actually increase. If you experience problems with flushing, remove the cistern displacement device immediately.

Delayed action inlet valves

Although we talk of nominal nine-, seven- or six-litre WCs, each flush uses more than this amount, mainly because, as the toilet flushes, it immediately starts to refill. A new, patented water cistern inlet valve addresses this problem. It has a small delayed evacuating bowl beneath the float that operates the valve. When the WC flushes the water level in the cistern drops but the valve is held shut by the water remaining in the bowl. As the water drains slowly, the valve can open and the cistern can refill. When used with a seven-litre WC the valve can save about 1.4 litres per flush at 3-bar and 3.5 litres at 10-bar, when compared with the same valve without the bowl.



Torbeck Ecofil delayed action inlet valve (Opella).

New WCs

The Water Supply (Water Fittings) Regulations 1999 require that all new WC suites installed after 1 January 2001 shall flush with no more than six litres. Dual-flush cisterns are permitted if the method of operation is clear and instructions are provided on the cistern or nearby. The lesser flush should be no greater than two-thirds of the full flush. The retrofitting of dual-flush devices to existing siphonic flush toilets is currently not permitted under the regulations.

Prior to January 2001, all domestic WCs in the UK had to use a siphon flush, but the new regulations permit approved outlet-valve mechanisms. Valves offer a number of advantages but, unlike the siphon, they will eventually leak. The Water Supply (Water Fittings) Regulations 1999 require endurance testing of 200,000 flushes, which corresponds to over 20 years' domestic use, but mechanisms can be incorrectly installed and debris can enter the cistern during installation, causing immediate leakage. Smaller leaks may not be obvious but should be detected by the following test:



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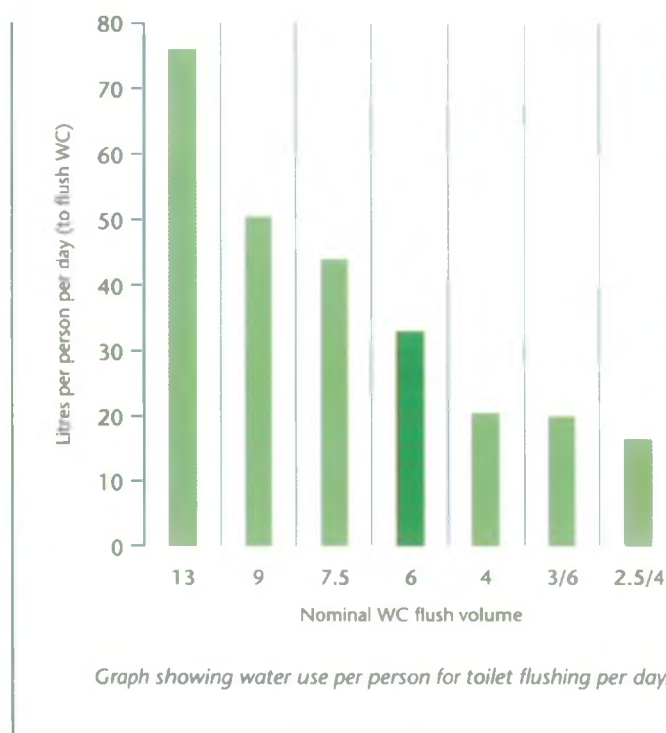
Detecting a leak

If the WC has been flushed recently, allow the water under the rim to drain for about five minutes. Wearing rubber gloves, dry the back of the pan below the rim with toilet paper. Any leak should be obvious. If you can't see a leak, hold a sheet of toilet paper against the back of the pan for about a minute and check that it stays dry. Since most cisterns with valves have an internal overflow that discharges into the pan, a leak could be due to either the inlet or the flush valve. If turning off the water to the WC quickly stops the leak, suspect the inlet valve.

Comparison of WC types

Valve	Siphon
<ul style="list-style-type: none">● Fast flush● Easy operation● Dual flush is easily distinguished, for example with buttons● Will eventually leak● Unfamiliar to UK plumbers● Mechanisms can stick open	<ul style="list-style-type: none">● Leak-free● Robust● Familiar to UK plumbers● Parts widely available● Dual-flush operation tends to be less elegant● Flow rate tends to be less
Dual flush	flushSingle
<ul style="list-style-type: none">● Potential for water saving● User must understand operation to avoid double flushing● Half flush may be insufficient for women's public toilets● Novelty value may lead to users trying both buttons	<ul style="list-style-type: none">● No user education or understanding required● Simple flush mechanism

The graph below assumes four half and one full (for dual flush) or five full flushes and shows theoretical domestic water use per person per day for toilet flushing.



The future

A number of technologies exist or are being developed to achieve even lower flush volumes, but the currently available four-litre (full flush) probably represents the lower limit for conventional drains. The use of smaller diameter drains or boosters, which collect a number of flushes before discharging them all at once, could allow flush volumes to be reduced further for new developments in the future.

Other technologies on the horizon include leak-free flush mechanisms that combine the benefits of the siphon and the valve.

Further reading

Water Conservation: a guide for installation and maintenance of low-flush WCs, BRE 1997, Published by CRC, tel: 020 7505 6622.

Showers and baths

A quick shower uses a third of the water of a bath, but power showers can use more water than a bath in less than five minutes.

How much water can we save?

In the typical UK household, bathing accounts for about 20 per cent of annual water use. Showers are usually seen as a water-saving alternative to baths, since they use about a third of the water and energy of an ordinary bath. Recent trends with "power showers", however, have increased flow rates to the point where water use for a single shower can more than equal that of a bath.

Water-saving showers

There is no agreed definition of a water-efficient shower. Unlike washing machines or WCs that use fixed volumes of water per cycle or flush, shower water use depends very much on user behaviour and water pressure levels.

Mixer valves

The choice of mixer valve will influence water use for showering. Simple hot and cold tap controls require both taps to be adjusted with an infinite number of possible combinations in order to achieve the desired flow and temperature. As this must be done by feel, the valves will have to be adjusted as the hot water starts to reach the mixer and there is always a risk of scalding. Turning off the flow to apply shampoo would require a repeat performance, so the water tends to be left running.

Thermostatic mixers have a calibrated dial, allowing the temperature to be set from experience. The flow is adjusted with a separate control so that reducing or interrupting the flow, for example to apply shampoo, is a simple matter.

Flow rate

Trials at the Building Research Establishment (BRE) found that most people find flow rates of less than three litres per minute unacceptable and are satisfied with a flow rate of 10 litres per minute.

Sufficient flow is required to provide adequate wetting, to rinse off soapsuds and to provide sufficient warmth to the bather. The design of showerhead will influence all these functions.

"Water-saver" showerheads usually work by creating finer drops or by introducing air, rather like the tap aerators discussed in card 5. Typically, such showerheads require a pressure of at least one bar (100 Kpa), which is available from mains pressure systems but not from gravity-feed hot water systems without a pump. These water-saver showers typically work at a flow rate of between four and nine litres per minute, and the effect is usually perceived as a "power shower" but with perhaps half the flow rate. Apart from the need for sufficient water pressure, the main criticism from some users of these showers is the "cold feet" effect of the faster cooling of the fine droplets.

Water-saver showerheads and restrictors should not be used with electrically heater showers without the consent of the manufacturer, as this could be dangerous.

Water use in showers depends on a number of factors other than flow rate:

Heating mechanism:

- Combination-boiler warm-up (see card 11)
- Pipe dead-leg (see card 11)

Fixed/adjustable controls:

- Separate flow and temperature controls
- Stability of combination-boiler temperature control
- Stability of plumbing system pressures (see card 6)

Flow rate:

- Pressure and spray pattern influence perception of flow
- Small flow reductions may not be noticed
- Pressure variability
- Type of shower system
- Position of header tank/mains pressure/pumped pressure



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Baths






With baths the main variables are volume and shape. Tapered or peanut-shaped baths may provide more space for bathing with less water. Insulation of the bath will reduce the need for regular topping up with hot water when taking long soaks.

Bath volumes are usually given in brochures and are specified to the centre of the overflow. Some manufacturers consider Archimedes and subtract the volume of an adult (about 70 litres) so make sure that you compare like with like. Very few modern baths hold less than 130 litres, which is about 60 litres of water with a submerged adult. Some larger baths hold more than 300 litres, equivalent to the average daily domestic water use of two people.

The Water Supply (Water Fittings) Regulations 1999 require that if you intend to install a bath with a volume greater than 230 litres, you must notify your water supply company.



Table of shower flow rates

Description	Ultra-low water use	7.2kW electric	9.5kW electric	"Water saver"	"Power shower"
Flow rate	1.5 l/min	3.5 l/min 30°C temp rise	4.6 l/min 30°C temp rise	4-10 l/min	12 + litres/min
Application	Limited non-household application	UK domestic	UK domestic	Mains pressure water or pumped	Mains pressure water or pumped
Comment	Atomising	Usually perceived as poor performance	Better comfort than 7.2kW	Power shower feel Cold feet possible	
Water use for 5 minute shower	7.5 litres	17.5 litres	23 litres	20-50 litres	7.5 litres
As % of 70-litre bath	11% 	25% 	32% 	28-71% 	86% 



Water-saver showerhead (Dart Valley Systems).

Other advantages

Water-saving showers can be energy efficient and allow a comfortable shower with the limited flow rate of smaller combination boilers.

Further reading

Water Conservation: IP 2/00, Low Flow Showers and Flow Restrictors. BRE Water Centre. Available from CRC, tel: 020 7505 6622.

This leaflet gives guidance only. It should not be treated as a complete and authoritative statement of measures to be adopted and their results. You are advised to make your own investigations before deciding on any course of action. The Environment Agency does not endorse the use, purchase and/or the performance of the goods or services provided by companies mentioned herein.

Further copies of these fact cards are available from the Environment Agency's National Water Demand Management Centre, Guildbourne House, Chatsworth Road, Worthing, West Sussex, BN11 1LD. Email: paula.wood@environment-agency.gov.uk Telephone: 01903 832073 Website: www.environment-agency.gov.uk/savewater

Plumbing and heating system design and management

By carefully planning a building's plumbing system, both water and energy savings can be made.

How much water can we save?

Water-efficient appliances, from WCs to showers, do not operate in isolation. Further savings are to be gained by carefully considering a building's plumbing as a whole, both in household and non-household environments. The scope is greater for new buildings but refurbishment or retrofit may also offer improvement.

Household design

Water pressure

The type of hot-water system will influence the choice of taps and showers and will have a direct influence on water and energy consumption. For a house, the three main choices are:

- a traditional gravity-fed system delivering low-pressure hot water;
- a combination ("combi") boiler that directly heats the incoming mains water;
- a mains-pressure hot-water cylinder.

Implications for water efficiency

We expect that occupants of a house with mains-pressure hot water to use more water than an equivalent household with a gravity system. This can be attributed to the higher flow rates from taps and, in particular, showers.

However, with good design it is possible to achieve efficiency savings and improved comfort in a building with mains pressure hot water by incorporating the following measures:

Measure	Water saving	Other advantages
Small-bore pipes	Reduced dead-leg	Taps run hot (or cold) quickly
Tap aerators	Illusion of more flow	Eliminate splashing
Low water-use shower	Less than a bath	Power shower effect due to pressure
Flow regulation	Reduces waste when taps left running	Flow to each outlet is balanced, shower temperature stabilised

Measures for use with mains pressure plumbing systems to improve efficiency and performance.

Pipe sizing and layout

Minimising the length of hot-water pipes reduces the volume of cold water that has to be drawn off each time a tap or shower is used (dead-leg). The ideal arrangement would be to have all water fittings grouped around the hot-water source. When juggling with the layout, aim to minimise the distance to the most frequently used fittings, typically the kitchen sink. Baths are less of a concern, as some cold water is likely to be required. For larger buildings localised water heaters will usually provide energy and water savings.

Hot-water pipes should be placed above cold-water pipes to reduce heat transfer. Longer hot and cold pipes should be insulated to prevent heat gain and loss. Pipes in unheated areas must be protected from freezing.



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Combination boilers

Combination or "combi" boilers directly heat mains water on the way to the taps and shower. The main water-efficiency concern is that standard combi boilers increase the effective dead-leg to hot taps, which can waste between five and 10 litres of water every time hot water is required. The warm-up issue has been addressed in a number of ways. Some boilers run the burner occasionally to keep the heat exchanger warm, while others incorporate a small insulated thermal store. Care should be taken to check with manufacturers if water savings are not to be negated by increased energy use.

Commercial design

Management

Regular maintenance is crucial if savings are not to be lost through leakage or malfunction. Even slow leaks from taps and float valves can lead to significant water loss if they are not fixed promptly. Hidden leaks are best detected by checking the water meter overnight or when a building is unoccupied.

Checking for leaks

If a leak is suspected, take a meter reading last thing at night when everyone has gone home and first thing in the morning before everyone arrives. If the reading has changed, indicating consumption, this is likely to be a leak. Any known night use will have to be shut off or accounted for.

Regular reading of the water meter and calculation of daily or monthly water use will identify leaks and allow efficiency measures to be checked against benchmarks and previous performance. Larger buildings can benefit from automatic data logging which can be integrated into the building management system (BMS) if one is installed.

With the introduction of valve flush mechanisms and internal overflows for WCs, special methods of leak detection are now required (see card 9).

Overflows

The Water Supply (Water Fittings) Regulations 1999 require overflow-warning pipes on water tanks to indicate float-operated-valve leakage. Where pressure or temperature relief valves are used, these must discharge in a safe and conspicuous manner.

Further reading

Water Regulations Guide, Water Regulations Advisory Scheme (WRAS), 2000. ISBN 0-9539708-0-9.

Conservation of Water: An Information and Guidance Note for Architects, Designers and Installers (WRAS)
tel: 01495 248454 (free).

Cost Effective Water Saving Devices and Practices, GG67, Envirowise, www.envirowise.gov.uk, tel: 0800 585794 (free).

www.watermark.gov.uk provides information on saving water in the public sector including benchmarking information.

How much water is lost due to leaking taps

				
One drip per second wastes 4 litres per day	Drips breaking into stream waste 90 litres per day	1.5mm (1/16") stream wastes 320 litres per day	3mm (1/8") stream wastes 985 litres per day	6mm (1/4") stream wastes 3,500 litres per day

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1: DOMESTIC APPLIANCES



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Which?

Membership Services Dept
PO Box 44
Hertford
SG14 1BH

Which? is researched by Consumers Association.

Phone 0645 123 580 Fax: 020 7770 7485

Email: which@which.net

Web: www.which.net/which



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2: GARDENING



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Gardena UK Limited

27-28 Brenkley Way
Blezard Business Park
Seaton Burn
Newcastle-upon-Tyne NE13 6DS

*Irrigation equipment, trigger spray drippers,
garden rain pumps*

Phone 0191 2173608 Fax: 0191 2171538

Email: sales@gardena.co.uk

Web:

LBS

Stanroyd Mill
Cottontree
Colne
Lancashire BB8 7BW

*Garden & horticultural irrigation rain tanks,
pumps mulch moisture meters*

Phone 0870 7273615 Fax: 0870 7273618

Email: sales@lbs-group.co.uk

Web: www.lbs-group.co.uk

Norman Garden Products

P.O. Box 147
Chichester
West Sussex
PO19 4AG

Drip Irrigation

Phone 01243 539185 Fax: 01243 539185

Email:

Web: www.norman-garden-products.co.uk

The Original Wallmounted Waterbutt Co. Ltd.

Crispins
Ponds Road
Galleywood
Chelmsford, Essex CM2 8QP

Wall mounted water butt

Phone 01245 266460 Fax: 01245 266460

Email:

Web:

The Tank Exchange

Lewden House
Barnsley Road
Dodworth
Barnsley S75 3JU

Water butts, large recycled water containers

Phone 0870 7080800 Fax: 01226 299424

Email: raintanks@aol.co.uk

Web: www.pirnet.com



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3: GREYWATER



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Eastwood Services

Kitty Mill
Wash Lane
Wenhaston Halesworth
Suffolk IP19 9DX

Compact dry toilets, recycling systems

Phone 01502 478165 Fax: 01502 478165
Email: adam.estwood-services@virgin.net
Web: www.sun-mar.com

Water 2

P.O. Box 4
Kirby Stephen
Cumbria
CA17 4GB

Grey water diverter valve for garden watering

Phone 01539 623429 Fax: 01539 623429
Email: admin@watertwo.co.uk
Web: www.watertwo.co.uk

Freewater UK Limited

The Old School
Station Road East
Grantham
NG31 6HX

Greywater / Rainwater reuse

Phone 0870 2416964 Fax: 01476 571817
Email: freewater@btconnect.com
Web: www.freewateruk.co.uk

Water Dynamics

Unit 32, Branbridges Industrial Estate
East Peckham
Tonbridge
Kent TN12 5HF

Domestic greywater reuse

Phone 01622 873 322 Fax: 01622 873399
Email: info@waterdynamics.co.uk
Web: www.waterdynamics.co.uk

Merpro

4 High Street
Nailsea
Bristol
BS4 1BT

Water Saviour grey water system (not in production on domestic scale)

Phone 01275 866000 Fax: 01275 866033
Email: mpl@merpro.com
Web: www.merpro.com



4: RAINWATER REUSE



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Acorn Environmental Systems Ltd

The Acorns
The Quantock Meadow Estate
Bridgwater
Somerset TA6 7JY

Rainwater tanks, reuse systems

Phone 01278 439325 Fax: 01278 439324
Email: info@acornsystems.com
Web: www.acornsystems.com

Construction Resources

16 Greal Guildford Street
London
SE1 0HS

IDO 2/4 litre WCs, Wisy rainwater systems, sensor tap

Phone 0207 450 2211 Fax: 0207 4502224
Email:
Web: www.ecoconstruct.com

Eastwood Services

Kitty Mill
Wash Lane
Wenhaston Halesworth
Suffolk IP19 9DX

Compact dry toilets, recycling systems

Phone 01502 478165 Fax: 01502 478165
Email: adam.estwood-services@virgin.net
Web: www.sun-mar.com

Formpave Limited

Tufthorne Avenue
Coleford
Gloucester
GL16 8PR

Stormwater control

Phone 01594 836999 Fax: 01594 810 577
Email: sales@formpave.co.uk
Web: www.formpave.co.uk

Freerain (Gusto Construction)

Millenium Green Business Centre
Rio Drive
Collingham
Newark NG23 7NB

Rainwater system

Phone 01636 893879 Fax: 01636 893388
Email: mail@freerain.co.uk
Web: www.freerain.co.uk

Freewater UK Limited

The Old School
Station Road East
Grantham
NG31 6HX

Greywater / Rainwater reuse

Phone 0870 2416964 Fax: 01476 571817
Email: freewater@btconnect.com
Web: www.freewateruk.co.uk

Gardena UK Limited

27-28 Brenkley Way
Bleazard Business Park
Seaton Burn
Newcastle-upon-Tyne NE13 6DS

Irrigation equipment, trigger spray drippers, garden rain pumps

Phone 0191 2173608 Fax: 0191 2171538
Email: sales@gardena.co.uk
Web:

KSB

2 Colton Way
Loughborough
Leicestershire
LE11 5TF

Hyarain rainwater systems

Phone 01509 231872 Fax: 01509 215228
Email:
Web: www.ksb.de

LBS

Stanroyd Mill
Coltontree
Colne
Lancashire BB8 7BW

Garden & horticultural irrigation rain tanks, pumps mulch moisture meters

Phone 0870 7273615 Fax: 0870 7273618
Email: sales@lbs-group.co.uk
Web: www.lbs-group.co.uk

Monsoon Water Limited

Unit 26, IMEX Business Centre
Byron Estate
Brookfield Road
Arnold, Nottingham NG5 7ER

Domestic & commercial rain systems

Phone 0870 753 6750 Fax: 0870 753 7750
Email: enquiries@monsoonwater.com
Web:

Monsoon Water Limited

Unit 26, IMEX Business Centre
Byron Estate
Brookfield Road
Arnold, Nottingham NG5 7ER

Domestic & commercial rain systems

Phone 0870 753 6750 Fax: 0870 753 7750
Email: enquiries@monsoonwater.com
Web:

Norman Garden Products

P.O. Box 147
Chichester
West Sussex
PO19 4AG

Drip Irrigation

Phone 01243 539185 Fax: 01243 539185
Email:
Web: www.norman-garden-products.co.uk

Oasis Rain System (Hanson Concrete Products)

Station Rd
Llangadog
Carmarthenshire
SA19 9LH

Concrete rain tanks, Oasis Rain System

Phone 01550 777798 Fax: 01550 777328
Email:
Web:

Polypipe Civils Ltd

Unit 8 Enterprise Way
Whitby Business Park
Whitby
North Yorkshire YO22 4NH

Rainwater system

Phone 01947 600033 Fax: 01947 821877
Email:
Web: www.polypipecivils.co.uk

Pullen Pumps

158 Beddington Lane
Croydon
Surrey
CR9 4PT

Kessel rainwater systems

Phone 0208 6849521 Fax: 0208 6898892
Email: sales@pullenpumps.co.uk
Web: www.pullenpumps.co.uk



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4: RAINWATER REUSE

Rain Saver Kit

10 Glover Way
Parkside
Leeds
LS11 5JP

Garden butt, rain collector

Phone 0113 2091000 Fax: 0113 2713083
Email: blackwall.ild@virgin.net
Web:

The Original Wallmounted Waterbutt Co. Ltd.

Crispins
Ponds Road
Galleywood
Chelmsford, Essex CM2 8QP

Wall mounted water butt

Phone 01245 266460 Fax: 01245 266460
Email:
Web:

Wilo Salmaon Pumps Limited

Centrum 100
Burton-on-Trent
Staffordshire
DE14 2WJ

Pumps & rainwater systems

Phone 01283 523000 Fax: 01283 523099
Email: sales@wilo.co.uk
Web: www.wilo.co.uk

Rainharvesting Systems

Bisley
Stroud
Gloucestershire
GL6 7BX

Rainwater systems, tanks, 1/5 WCs flow regulators

Phone 01452 772000 Fax: 01452 770629
Email: rainwater@greenshop.co.uk
Web: www.greenshop.co.uk

The Tank Exchange

Lewden House
Barnsley Road
Dodworth
Barnsley S75 3JU

Water butts, large recycled water containers

Phone 0870 7080800 Fax: 01226 299424
Email: raintanks@aol.co.uk
Web: www.pimet.com

Stormstore

Grove Farm
Moulton
Northampton
NN3 7UF

Phone 01604 646800 Fax: 01604 646456
Email:
Web: www.stormstore.co.uk

Wavin Plastics Limited

Parsonage Way
Chippenham
Wiltshire
SN15 5PN

Rainwater system & stormwater control

Phone 01249 654121 Fax: 01249 443286
Email:
Web:

5: TAPS & TAP CONTROLS



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A & J Gummers

Unit H, Redfern Park Way
Tyseley
Birmingham
BN11 2DN

Spray, sensor, showers, timed turn-off

Phone 0121 7062241 Fax: 0121 706 2960

Email:

Web:

adsm plc

Thames House
St Leonards Road
Windsor
Berkshire SL4 3BZ

*Urinal controllers mains & battery,
sensor taps, sensor wc flush controls*

Phone 01753 833 880 Fax: 01753 833 990

Email: info@adsmplc.com

Web: www.adsmplc.com

Aquaflow Regulators Limited

Heywood House
40 New Road
Stourbridge
West Midlands DY8 1PA

Sprays aerators flow regulators

Phone 01384 442611 Fax: 01384 442612

Email:

Web:

Aqualoc Limited

Cedar House
Grange Farm
Shaw
Newbury RG14 2TF

Tap seat replacement, regulator

Phone 01635 203344 Fax: 01635 202499

Email: info@aqualoc.co.uk

Web: www.aqualoc.co.uk

Armitage Shanks

Armitage
Rugely
Staffordshire
WS15 4BT

*Waterless urinals, sensor taps,
washroom controls*

Phone 01543 490 253 Fax: 01543 490 677

Email:

Web: www.armitage-shanks.co.uk

Barber Wilsons and Company Limited

Crawley Road
Westbury Avenue
Wood Green
London N22 6AH

Taps including commercial press top.

Phone 020 8888 3461 Fax: 020 8888 2041

Email: sales@barwil.co.uk

Web: www.barwil.co.uk

Brausch & Co

The Gate Centre
Great West Road
Brentford
Middlesex TW8 9DD

Sensor taps, urinals

Phone 0208 8474455 Fax: 0208 5607258

Email:

Web:

Bristan

Lagrange
Lichfield Road Industrial Estate
Tamworth
Staffordshire B79 7XD

*Spray, non-concussive
taps with metric outlet thread for aerators*

Phone 01827 68525 Fax: 01827 68553

Email:

Web:

Construction Resources

16 Great Guildford Street
London
SE1 0HS

*IDO 2/4 litre WCs, Wisy rainwater systems,
sensor tap*

Phone 0207 450 2211 Fax: 0207 4502224

Email:

Web: www.ecoconstruct.com

Dart Valley Systems

Units 1 - 2, Alders way
Yalberton Industrial Estate
Paignton
Devon TQ4 7QN

*Retrofit sensor taps, flow restrictors,
urinal controllers*

Phone 01803 529021 Fax: 01803 559016

Email: dartvalley@aol.com

Web:

Eco-Logic (UK) EMPS Limited

Elite House
70 Warwick Street
Birmingham
B12 0NL

*Electronic taps and controls, electronic urinal
wc controls, electronic management control*

Phone 0121 766 3016 Fax: 0121 766 3064

Email: info@eco-logic.uk.com

Web: www.eco-logic.uk.com

Faucets

3 - 5 Court Rd Industrial Estate
Cwmbran
NP44 3AS

*Distributors of domestic and commercial
showers taps etc inc' sprays sensor taps etc.*

Phone 01633 872828 Fax: 01633 872264

Email: showers@faucets.co.uk

Web: www.faucets.co.uk

Flow Control

Conservation House
Brighton Street
Wallasey
Merseyside L44 6QJ

*Retrofit sensor taps, flow restrictors
& urinal controllers*

Phone 0151 638 8811 Fax: 0151 638 4137

Email: mail@waterconservation.co.uk

Web: www.waterconservation.co.uk

Geberit

Aylesford
Kent
ME20 7PJ

Electronic taps, taps, dual flush cisterns

Phone 01622 717811 Fax: 01622 716920

Email:

Web:

Grohe Limited

1 River Road
Barking
Essex
IG11 0HD

WC cisterns taps

Phone 0208 5947292 Fax: 0208 5948898

Email: info@grohe.co.uk

Web: www.grohe.co.uk



Water Conservation in Buildings - W6E (00) 05

5: TAPS & TAP CONTROLS

Howard Bird
26 The Avenue
Rubery
Birmingham
B45 9AL

Spray, non-concussive taps

Phone 0121 4576650 Fax: 0121 4576682
Email: sales@howardbird.com
Web:

Reliance Water Controls
Worcester Road
Evesham
Worcestershire
WR11 4RA

Showers, timed controls push taps.

Phone 01386 47148 Fax: 01386 47028
Email: robp@rwc.co.uk
Web: www.rwc.co.uk

Smart Showers
Unit 12, Woodside Road
South Marston Park
Swindon
Wiltshire SN3 4WA

Hansaeco taps

Phone 01793 822775 Fax: 01793 823800
Email:
Web:

TL Aquarius
41 Belmont Road
Maidenhead
Berkshire
SL6 6JL

Aerating shower heads, tap aerators

Phone 07000 794727 Fax: 07071 225195
Email: info@tlaquarius.com
Web:

Marnic Technology (Sales) Limited
Gateshead Close
Middlefield Industrial Estate
Sandy
Beds SG19 1RS

Urinal flush controllers, retrofit WCs taps

Phone 01767 689 743 Fax: 01767 681 750
Email: enquiries@marnic-sales.com
Web: www.marnic-sales.com

Robert Pearson & Company
Post Office House
Post Office Lane
Stockton
Warminster, Wiltshire BA12 0SE

Specialist supplier urinal & tap sensors

Phone 01985 850954 Fax: 01985 850112
Email: rpearson@ndirect.co.uk
Web:

Tapmagic
Allen's House
Tuddenham
Ipswich
Suffolk IP6 9DA

Spray retrofit

Phone 01473 252 043 Fax: 01473 212045
Email: aal@tapmagic.co.uk
Web: www.tapmagic.co.uk

Wallgate Limited
Crow Lane
Wilton
Salisbury
Wiltshire SP2 0HB

Sensor tap

Phone 01722 744594 Fax: 01722 742 096
Email: sales@wallgate.com
Web: www.wallgate.com/wallgate/

Pegler
St. Catherine's Avenue
Doncaster
South Yorkshire
DN4 8DF

Taps, urinal controllers, shower valves

Phone 01302 560560 Fax: 01302 367661
Email: uk.sales@peqler.co.uk
Web: www.peqler

SleekGreen Uk Limited
Bulldog House
38/40 London Road
Twyford
Berkshire RG10 9EU

Phone 0118 932 1030 Fax: 0118 932 1030
Email: sleekgreen@cwmail.com
Web: www.sleekgreen.com

Thomas Dudley
Dauntless Works
P.O. Box 28
Birmingham New Road
Dudley West Midlands DY1 4SN

Sensor taps, urinal flushing valves, siphons

Phone 0121 5307000 Fax: 0121 5575345
Email: info@thomasdudley.co.uk
Web: www.thomasdudley.co.uk

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6: FLOW REGULATION & LEAK DETECTION SERVICES



ENVIRONMENT
AGENCY

adsm plc

Thames House
St Leonards Road
Windsor
Berkshire SL4 3BZ

*Urinal controllers mains & battery,
sensor taps, sensor wc flush controls*

Phone 01753 833 880 Fax: 01753 833 990
Email: info@adsmplc.com
Web: www.adsmplc.com

Barflo-Lca

116 London Road
Hailsham
East Sussex
BN27 3AL

*Flow & pressure regulators,
urinal flush controllers*

Phone 01323 442333 Fax: 01323 847488
Email:
Web:

Dart Valley Systems

Units 1 - 2, Alders way
Yalberton Industrial Estate
Paignton
Devon TQ4 7QN

*Retrofit sensor taps, flow restrictors,
urinal controllers*

Phone 01803 529021 Fax: 01803 559016
Email: dartvalley@aol.com
Web:

Flow Control

Conservation House
Brighton Street
Wallasey
Merseyside L44 6QJ

*Retrofit sensor taps, flow restrictors
& urinal controllers*

Phone 0151 638 8811 Fax: 0151 638 4137
Email: mail@waterconservation.co.uk
Web: www.waterconservation.co.uk

Palmer Environmental

Ty Coch House
Llantamam Park Way
Cwmbran
NP44 3AW

Leak detection training & service

Phone 01633 489479 Fax: 01633 877857
Email: info@palmer.co.uk
Web: www.palmer.co.uk

Aquaflow Regulators Limited

Heywood House
40 New Road
Stourbridge
West Midlands DY8 1PA

Sprays aerators flow regulators

Phone 01384 442611 Fax: 01384 442612
Email:
Web:

Bradley Products Limited

14 Maghera Road
Tobermore
Magherafelt
Co Derry BT45 5QB

Leak detection, water-use data loggers

Phone 028 79642333 Fax: 028 78645222
Email: support@bradleyproducts.co.uk
Web:

Dereve Flow Controls Ltd

Park Lane
Handsworth
Birmingham
B21 8LE

*Pressure regulators & reducers,
hydraulic urinal flush controller (non-electric).*

Phone 0121 553 7021 Fax: 0121 525 5664
Email: dc.conreols@btinternet.com
Web:

H2O Building Services

2 Gelder Court
Batley Road
Alverthorpe
Wakefield WF2 0UN

Showers, leak detection, urinal controllers

Phone 01924 372685 Fax: 01924 372780
Email:
Web: www.h2obuildingservices.co.uk

Rainharvesting Systems

Bisley
Stroud
Gloucestershire
GL6 7BX

*Rainwater systems, tanks,
110 WCs flow regulators*

Phone 01452 772000 Fax: 01452 770629
Email: rainwater@greenshop.co.uk
Web: www.greenshop.co.uk

Aqualoc Limited

Cedar House
Grange Farm
Shaw
Newbury RG14 2TF

Tap seat replacement, regulator

Phone 01635 203344 Fax: 01635 202499
Email: info@aqualoc.co.uk
Web: www.aqualoc.co.uk

Credwson & Company - Ydrostop

Beck Mills
Kendal
Cumbria
LA9 6NY

Leak detection, non electric

Phone 01539 730990 Fax: 01539 725316
Email:
Web:

Eco-Logic (UK) EMPS Limited

Elite House
70 Warwick Street
Birmingham
B12 0NL

*Electronic taps and controls, electronic urinal
wc controls, electronic management control*

Phone 0121 766 3016 Fax: 0121 766 3064
Email: infor@eco-logic.uk.com
Web: www.eco-logic.uk.com

Hippo The Water Saver

Alton Lodge
Alton Street
Ross on Wye
Herefordshire HR9 5AG

Hippo, Aquablock leak detection

Phone 01989 563 907 Fax: 01989 563 993
Email: paul@hippo-the-watersaver.co.uk
Web: www.hippo-the-watersaver.co.uk

Relcross

Hambleton Avenue
Devizes
Wiltshire
SN10 2RT

*Waterless urinal (sealtrap),
Aquablock leak detection*

Phone 01380 729600 Fax: 01380 729888
Email: sales@relcross.freemove.co.uk
Web: www.relcross.co.uk



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6: FLOW REGULATION & LEAK DETECTION SERVICES

Robert Pearson & Company

Post Office House
Post Office Lane
Stockton
Warminster, Wiltshire BA12 0SE

Specialist supplier urinal & tap sensors

Phone 01985 850954 Fax: 01985 850112
Email: rpearson@ndirect.co.uk
Web:

Tapmagic

Allen's House
Tuddenham
Ipswich
Suffolk IP6 9DA

Spray retrofit

Phone 01473 252 043 Fax: 01473 212045
Email: aal@tapmagic.co.uk
Web: www.tapmagic.co.uk

SleekGreen Uk Limited

Buildog House
38/40 London Road
Twyford
Berkshire RG10 9EU

Phone 0118 932 1030 Fax: 0118 932 1030
Email: sleekgreen@cwmail.com
Web: www.sleekgreen.com

Waterguard (A Fox Systems Ltd)

Unit 23 Oakwell Business Centre
Oakwell View
Barnsley
S71 1HX

Leak detection

Phone 01226 733100 Fax: 01226 733144
Email: enquiries@waterguard.co.uk
Web: www.waterguard.co.uk

Tap off Ltd

Ridgeway Industrial Estate
Burnt Lodge Lane
Ticehurst
East Sussex TN5 7LA

Electric remote controlled stopcock

Phone 01580 200868 Fax: 01580 200869
Email: sales@tapoff.co.uk
Web: www.tapoff.co.uk

7: URINALS



adsm pic

Thames House
St Leonards Road
Windsor
Berkshire SL4 3BZ

*Urinal controllers mains & battery,
sensor taps, sensor wc flush controls*

Phone 01753 833 880 Fax: 01753 833 990
Email: info@adsm-pic.com
Web: www.adsm-pic.com

Aqualoc Limited

Cedar House
Grange Farm
Shaw
Newbury RG14 2TF

Tap seat replacement, regulator

Phone 01635 203344 Fax: 01635 202499
Email: info@aqualoc.co.uk
Web: www.aqualoc.co.uk

Armitage Shanks

Armitage
Rugely
Staffordshire
WS15 4BT

*Waterless urinals, sensor taps,
washroom controls*

Phone 01543 490 253 Fax: 01543 490 677
Email:
Web: www.armitage-shanks.co.uk

Barflo-Lca

116 London Road
Hailsham
East Sussex
BN27 3AL

*Flow & pressure regulators,
urinal flush controllers*

Phone 01323 442333 Fax: 01323 847488
Email:
Web:

Basic Solutions

Hammerain House
Hookstone Avenue
Harrogate
North Yorkshire HG2 8ER

Waterless urinal retrofit

Phone 01423 815850 Fax: 01423 815806
Email: basicsolutions@lineone.net
Web:

Bee Environmental

The Studio
Tall Trees
Stoke Wood
Stoke Poges, Buckinghamshire SL2 4AU

Waterless urinals - Whiffaway

Phone 01753 647124 Fax: 01753 647596
Email: whiffaway.uk@virgin.net
Web:

Brausch & Co

The Gate Centre
Great West Road
Brentford
Middlesex TW8 9DD

Sensor taps, urinals

Phone 0208 8474455 Fax: 0208 5607258
Email:
Web:

Cistermiser

Unit 1 Woodley Park Estate
59-69 Reading Road
Woodley
Reading RG5 3AN

*Urinal flush controls (electric and non-electric),
dual flush valve flush*

Phone 01189 691611 Fax: 011894 41426
Email: cistermiserid@btinternet.com
Web: www.cistermiser.co.uk

Construction Resources

16 Great Guildford Street
London
SE1 0HS

*IDO 2/4 litre WCs, Wisy rainwater systems,
sensor tap*

Phone 0207 450 2211 Fax: 0207 4502224
Email:
Web: www.ecoconstruct.com

Dart Valley Systems

Units 1 - 2, Alders way
Yalberton Industrial Estate
Paignton
Devon TQ4 7QN

*Retrofit sensor taps, flow restrictors,
urinal controllers*

Phone 01803 529021 Fax: 01803 559016
Email: dartvalley@aol.com
Web:

Dereve Flow Controls Ltd

Park Lane
Handsworth
Birmingham
B21 8LE

*Pressure regulators & reducers,
hydraulic urinal flush controller (non-electric).*

Phone 0121 553 7021 Fax: 0121 525 5664
Email: dc.conreols@btinternet.com
Web:

Eco-Logic (UK) EMPS Limited

Ekite House
70 Warwick Street
Birmingham
B12 0NL

*Electronic taps and controls, electronic urinal
/wc controls, electronic management control*

Phone 0121 766 3016 Fax: 0121 766 3064
Email: infor@eco-logic.uk.com
Web: www.eco-logic.uk.com

EcoBug (AHP Services Limited)

Castle Farm
Broadbury
Devon
EX20 4LF

Biological urinal blocks for waterless urinal use.

Phone 07000 326284 Fax: 01837 871151
Email: info@ecobug.com
Web: www.ecobug.com

Effex Enviro-Tech

Unit 8
Enterprise Way
Whitby Business Park
Whitby, North Yorkshire YO22 4NH

Phone 01386 841695 Fax: 01386 841724
Email: biotreat-effex@talk21.com
Web: www.solutions2pollutions.com

Elemental Solutions

Oaklands Park
Newnham
Gloucestershire
GL14 1EF

Iflo 2/4 litre WCs, 4 litre siphon flush, Air Flush Uri

Phone 01594 516063 Fax: 01594 516821
Email: mark.es@seeb.com
Web:



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7: URINALS

ERNST H2NO

1 Woodbridge Road
Ipswich
Suffolk
IP4 2EA

Waterless urinals - oil trap

Phone 01473 259 232 Fax: 01473 286285

Email:

Web: www.ernstsystems.com

H2O Building Services

2 Gelder Court
Batley Road
Alverthorpe
Wakefield WF2 0UN

Showers, leak detection, urinal controllers

Phone 01924 372685 Fax: 01924 372780

Email:

Web: www.h2obuildingservices.co.uk

Matrex

1 Lagrange
Lichfield Road Industrial Estate
Tamworth
B79 7XD

Blue Buoy waterless urinal, Valve & deodorising block

Phone 01827 310711 Fax: 01827 310090

Email: sales@blue-buoy.com

Web: www.blue-buoy.com

Pipex Ltd

Wessex Water
Wessex Road
Dorchester
DT1 2NY

Urinal controller installation

Phone 01305 257788 Fax: 01305 262558

Email:

Web:

Rodin Group

61 Silverdale
New Milton
Hampshire
BH25 7DE

Atomising shower head, Waterless (UK) urinal in GRP

Phone 01425 622581 Fax: 01425 629220

Email: therodingroup@compuserve.com

Web:

Ex-Or Limited

Haydock Lane
Haydock
Merseyside
WA11 9UJ

Urinal controls & washroom management

Phone 01942 719229 Fax: 01942 272767

Email: ex-or@ex-or.com

Web: www.ex-or.com

Hygienic Solutions

Newlands
Titchfield Lane
Wickham
Fareham, Hampshire PO17 5NX

Phone 01329 832 112 Fax: 01329 835 771

Email: hygienicsolutions@hotmail.com

Web: www.hygienicsolutions.co.uk

Now 2000

30 Regent Place
Rugby
Warwickshire
CV21 2PN

Waterless urinal retrofit with biological or biocidal sticks

Phone 01788 561221 Fax: 01788 552266

Email:

Web:

Relcross

Hambleton Avenue
Devizes
Wiltshire
SN10 2RT

Waterless urinal (sealtrap), AquaBlock leak detection

Phone 01380 729600 Fax: 01380 729888

Email: sales@relcross.freemove.co.uk

Web: www.relcross.co.uk

RS Conservation Ltd

74 Birchlands Avenue
Wilden
Nr Bradford
West Yorkshire BD15 0HB

Sava Flush, urinal controls

Phone 01535 274419 Fax: 01535 274419

Email:

Web:

Flow Control

Conservation House
Brighton Street
Wallasey
Merseyside L44 6QJ

Retrofit sensor taps, flow restrictors & urinal controllers

Phone 0151 638 8811 Fax: 0151 638 4137

Email: mail@waterconservation.co.uk

Web: www.waterconservation.co.uk

Marnic Technology (Sales) Limited

Gateshead Close
Middlefield Industrial Estate
Sandy
Beds SG19 1RS

Urinal flush controllers, retrofit WCs taps

Phone 01767 689 743 Fax: 01767 681 750

Email: enquiries@marnic-sales.com

Web: www.marnic-sales.com

Pegler

St. Catherine's Avenue
Doncaster
South Yorkshire
DN4 8DF

Taps, urinal controllers, shower valves

Phone 01302 560560 Fax: 01302 367661

Email: uk.sales@pegler.co.uk

Web: www.pegler.com

Robert Pearson & Company

Post Office House
Post Office Lane
Stockton
Warminster, Wiltshire BA12 0SE

Specialist supplier urinal & tap sensors

Phone 01985 850954 Fax: 01985 850112

Email: rpearson@ndirect.co.uk

Web:

Sensaflow

PO Box 61
Bridgewater
Somerset
TA5 1YY

Urinal flush control

Phone 01278 732620 Fax: 01278 732620

Email:

Web:

7: URINALS



Set Square Limited

5A Valley Industries
Hadlow Road
Tonbridge
Kent TN11 0AH

Urinal flush control

Phone 01732 851888 Fax: 01732 851853
Email:
Web:

SleekGreen Uk Limited

Bulldog House
38/40 London Road
Twyford
Berkshire RG10 9EU

Phone 0118 932 1030 Fax: 0118 932 1030
Email: sleekgreen@cwmail.com
Web: www.sleekgreen.com

Smart Flush

Chess Industries Plc
Central Chambers
London Road
Alderley Edge Cheshire SK9 7DZ

Urinal controls

Phone 01625 585565 Fax: 01625 585584
Email: peter_naden@chessindustries.plc.uk
Web: www.chessindustries.plc.uk

SMC Sales (Westec)

P.O. Box 12
Enfield
Middlesex
EN2 0ZP

Urinal controls

Phone 0208 3675316 Fax: 0208 3675940
Email: smcsales@mcmail.com
Web:

Sphinx Bathrooms

Quinn Close
Seven Stars Industrial Estate
Coventry
CV3 4LH

Lady P women's urinal

Phone 02476 306283 Fax: 02476 305287
Email:
Web:

Thomas Dudley

Dauntless Works
P.O. Box 28
Birmingham New Road
Dudley West Midlands DY1 4SN

Sensor taps, urinal flushing valves, siphons

Phone 0121 5307000 Fax: 0121 5575345
Email: info@thomasdudley.co.uk
Web: www.thomasdudley.co.uk

Uni-Hygea Limited

Broadfields
Bicester Road
Aylesbury
Buckinghamshire HP19 3BN

Odour control

Phone 01296 488088 Fax:
Email:
Web:

Water Solutions (GB) Limited

St Johns House
1-3 High Street
Sidcup
Kent DA14 6EN

water free urinals

Phone 0208 309 5556 Fax:
Email: info@watersolution.com
Web: www.watersolution.com

Watermatic

Reddicap Trading Estate
Sutton Coldfield
West Midlands
B75 7BY

Oil seal bottle trap for urinals

Phone 0800 838496 Fax: 0121 3111427
Email: info@watermatic.co.uk
Web: www.watermatic.co.uk

Watersavers

21 Cantley Lane
Cringeford
Norwich
NR4 6TA

Urinal controllers mains & battery

Phone 01603 503209 Fax: 01603 503209
Email:
Web:



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PRESS

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8: TOILETS - WATERLESS & VACUUM



ENVIRONMENT
AGENCY

Barton Accessories

Moreigh Road
Harbertonford
TQ9 7TS

WEB toilet, Electric heated dry toilet.

Phone 01803 732878 Fax: 01803 732878

Email:

Web:

Eastwood Services

Kitty Mill
Wash Lane
Wenhaston Halesworth
Suffolk IP19 9DX

Compact dry toilets, recycling systems

Phone 01502 478165 Fax: 01502 478165

Email: adam.estwood-services@virgin.net

Web: www.sun-mar.com

EVAC

210 Lion Road
Bexley Heath
Kent
DA6 8NW

Vacuum drainage/WCs

Phone 0208 3033699 Fax: 0208 303 3999

Email:

Web: www.evacgroup.com

Kingsley Clivus

4 Greensacres Drive
Otterbourne
Winchester
SO21 2HE

Clivus Multrum compost toilet system

Phone 01962 717434 Fax: 01962 717434

Email:

Web:

Lee Sanitation

Wharf Road
Fenny Compton
Warwickshire
CV33 0XE

Marine toilets air & vacuum

Phone 01295 770000 Fax: 1295 770022

Email:

Web:

MM Consultants

The Coach House
141 Hersham Road
Wallon on Thames
Surrey KT12 1RW

Rotaloo dry toilet

Phone 01932 230763 Fax: 01932 252278

Email: enquiry@rotaloo.com

Web:

Natural Solutions

20 Bethel Street
Llanidloes
Powys
SY18 6BS

Urine separating twin vault compost toilet

Phone 01686 412653 Fax: 01689 412417

Email: nat.sol@ruralwales.org

Web: www.midwales.com/natsol

Wendage Pollution Control

Rangeways Farm
Conford
Liphook
Hampshire GU30 7QP

BioLet compact dry toilet

Phone 01428 751296 Fax: 01428 751541

Email: biolet@wendage.demon.co.uk

Web:





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9: WATER EFFICIENT WCs & RETROFITS



**ENVIRONMENT
AGENCY**

adsm plc

Thames House
St Leonards Road
Windsor
Berkshire SL4 3BZ

*Urinal controllers mains & battery,
sensor taps, sensor wc flush controls*

Phone 01753 833 880 Fax: 01753 833 990
Email: info@adsmplc.com
Web: www.adsmplc.com

Eco-Logic (UK) EMPS Limited

Elite House
70 Warwick Street
Birmingham
B12 0NL

*Electronic taps and controls, electronic urinal
wc controls, electronic management control*

Phone 0121 766 3016 Fax: 0121 766 3064
Email: info@eco-logic.uk.com
Web: www.eco-logic.uk.com

Flow Control

Conservation House
Bnghton Street
Wallasey
Merseyside L44 6QJ

*Retrofit sensor taps, flow restrictors
& urinal controllers*

Phone 0151 638 8811 Fax: 0151 638 4137
Email: mail@waterconservation.co.uk
Web: www.waterconservation.co.uk

Grohe Limited

1 River Road
Barking
Essex
IG11 0HD

WC cisterns taps

Phone 0208 5947292 Fax: 0208 5948898
Email: info@grohe.co.uk
Web: www.grohe.co.uk

Opella

Twyford Road
Rotherwas Industrial Estate
Hereford
HR2 6JR

Torbeck Ecofil, WC inlet valve

Phone 01432 357331 Fax: 01432 264014
Email: sales@opella.co.uk
Web: www.opella.co.uk

Aqualoc Limited

Cedar House
Grange Farm
Shaw
Newbury RG14 2TF

Tap seat replacement, regulator

Phone 01635 203344 Fax: 01635 202499
Email: info@aqualoc.co.uk
Web: www.aqualoc.co.uk

Edincare Superflush

Unit 10, Avebury Court
Mark Road
Hemel Hempstead.
Hertfordshire HP2 7TA

3 litre macerator WC

Phone 01442 211554 Fax: 01442 211553
Email: curtis@nacd.co.uk
Web: www.edincare.com

Geberit

Aylesford
Kent
ME20 7PJ

Electronic taps, taps, dual flush cisterns

Phone 01622 717811 Fax: 01622 716920
Email:
Web:

Hippo The Water Saver

Alton Lodge
Alton Street
Ross on Wye
Herefordshire HR9 5AG

Hippo, Aquablock leak detection

Phone 01989 563 907 Fax: 01989 563 993
Email: paul@hippo-the-watersaver.co.uk
Web: www.hippo-the-watersaver.co.uk

Peterton Limited

9 Vicarage Avenue
Egham
Surrey
TW20 8NW

WC retrofits

Phone 01784 432 443 Fax: 01784 432 449
Email: sales@peterton.co.uk
Web: www.peterton.co.uk

Construction Resources

16 Great Guildford Street
London
SE1 0HS

*IDO 2/4 litre WCs, Wisy rainwater systems,
sensor tap*

Phone 0207 450 2211 Fax: 0207 4502224
Email:
Web: www.ecoconstruct.com

Elemental Solutions

Oaklands Park
Newnham
Gloucestershire
GL14 1EF

Ifö 2/4 litre WCs, 4 litre siphon flush, Air Flush Urli

Phone 01594 516063 Fax: 01594 516821
Email: mark.es@aecb.net
Web:

Gesek

P.O. Box 17115
London
SE16 3ZQ

*Variable flush retrofit full med
low - Water Regulations Issue for retrofit*

Phone 0208 9880103 Fax: 0208 9880104
Email: info@ecoflush.co.uk
Web: www.ecoflush.com

Marnic Technology (Sales) Limited

Gateshead Close
Middlefield Industrial Estate
Sandy
Beds SG19 1RS

*Urinal flush controllers, retrofit WCs
taps*

Phone 01767 689 743 Fax: 01767 681 750
Email: enquiries@marnic-sales.com
Web: www.marnic-sales.com

Rainharvesting Systems

Bisley
Stroud
Gloucestershire
GL6 7BX

*Rainwater systems, tanks,
Ifö WCs flow regulators*

Phone 01452 772000 Fax: 01452 770629
Email: rainwater@greenshop.co.uk
Web: www.greenshop.co.uk



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9: WATER EFFICIENT WCs & RETROFITS

Save-a-Flush (Kma (u.k.) Ltd)

Newhay House
62 Stockport Road
Cheadle
Cheshire SK8 2AF

Cistern displacement device

Phone 0161 6108642 Fax: 0161 6108643

Email:

Web: www.save-a-flush.co.uk

Seeflo

Yorkshire House
Canal Bridge
Sykes Lane
Silsden, West Yorkshire BD20 0ED

WC inlet valve leak warning

Phone 01535 653444 Fax: 01535 654867

Email:

Web:

Thomas Dudley

Dauntless Works
P.O. Box 28
Birmingham New Road
Dudley West Midlands DY1 4SN

Sensor taps, urinal flushing valves, siphons

Phone 0121 5307000 Fax: 0121 5575345

Email: info@thomasdudley.co.uk

Web: www.thomasdudley.co.uk

10: SHOWERS & BATHS



ENVIRONMENT
AGENCY

A & J Gummers

Unit H, Redfern Park Way
Tyseley
Birmingham
BN11 2DN

Spray, sensor, showers, timed turn-off

Phone 0121 7062241 Fax: 0121 706 2960

Email:

Web:

adsm pic

Thames House
St Leonards Road
Windsor
Berkshire SL4 3BZ

*Urinal controllers mains & battery,
sensor taps, sensor wc flush controls*

Phone 01753 833 880 Fax: 01753 833 990

Email: info@adsmplc.com

Web: www.adsmplc.com

Dart Valley Systems

Units 1 - 2, Alders way
Yalberton Industrial Estate
Paignton
Devon TQ4 7QN

*Retrofit sensor taps, flow restrictors,
urinal controllers*

Phone 01803 529021 Fax: 01803 559016

Email: dartvalley@aol.com

Web:

Eco-Logic (UK) EMPS Limited

Elite House
70 Warwick Street
Birmingham
B12 0NL

*Electronic taps and controls, electronic urinal
/wc controls, electronic management control*

Phone 0121 766 3016 Fax: 0121 766 3064

Email: info@eco-logic.uk.com

Web: www.eco-logic.uk.com

Faucets

3 - 5 Court Rd Industrial Estate
Cwmbran
NP44 3AS

*Distributors of domestic and commercial
showers taps etc inc' sprays sensor taps etc.*

Phone 01633 872828 Fax: 01633 872264

Email: showers@faucets.co.uk

Web: www.faucets.co.uk

H2O Building Services

2 Gelder Court
Bailey Road
Alverthorpe
Wakefield WF2 0UN

Showers, leak detection, urinal controllers

Phone 01924 372685 Fax: 01924 372780

Email:

Web: www.h2obuildingservices.co.uk

Pegler

St. Catherine's Avenue
Doncaster
South Yorkshire
DN4 8DF

Taps, urinal controllers, shower valves

Phone 01302 560560 Fax: 01302 367661

Email: uk.sales@pegler.co.uk

Web: www.pegler

Reliance Water Controls

Worcester Road
Evesham
Worcestershire
WR11 4RA

Showers, timed controls push taps.

Phone 01386 47148 Fax: 01386 47028

Email: robp@rwc.co.uk

Web: www.rwc.co.uk

Rodin Group

61 Silverdale
New Milton
Hampshire
BH25 7DF

*Atomising shower head,
Waterless (UK) urinal in GRP*

Phone 01425 622581 Fax: 01425 629220

Email: therodingroup@compuserve.com

Web:

SleekGreen Uk Limited

Bulldog House
38/40 London Road
Twyford
Berkshire RG10 9EU

Phone 0118 932 1030 Fax: 0118 932 1030

Email: sleekgreen@cwmail.com

Web: www.sleekgreen.com

TL Aquarius

41 Belmont Road
Maidenhead
Berkshire
SL6 6JL

Aerating shower heads, tap aerators

Phone 07000 794727 Fax: 07071 225195

Email: info@laquarius.com

Web:



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11: SYSTEM DESIGN & MANAGEMENT



ENVIRONMENT
AGENCY

adsm pic

Thames House
St Leonards Road
Windsor
Berkshire SL4 3BZ

*Urinal controllers mains & battery,
sensor taps, sensor wc flush controls*

Phone 01753 833 880 Fax: 01753 833 990
Email: info@adsmplc.com
Web: www.adsmplc.com

Eco-Logic (UK) EMPS Limited

Elite House
70 Warwick Street
Birmingham
B12 0NL

*Electronic taps and controls, electronic urinal
/wc controls, electronic management control*

Phone 0121 766 3016 Fax: 0121 766 3064
Email: info@eco-logic.uk.com
Web: www.eco-logic.uk.com

Fairfield Control Systems Limited

The Old Rectory
Main Street
Kilton
Nottinghamshire NG22 9LP

PIC agricultural irrigation control

Phone 01623 835350 Fax: 01623 835375
Email: mail@fairfield.co.uk
Web:

Radcom Technologies Limited

32 Mount Pleasant Industrial Park
Mount Pleasant Road
Southampton
Hampshire SO14 0SP

Data loggers, programable pressure reducing valves

Phone 023 80682300 Fax: 023 80682330
Email: sales@radcom.co.uk
Web: www.radcom.co.uk

SleekGreen Uk Limited

Bulldog House
38/40 London Road
Twyford
Berkshire RG10 9EU

Phone 0118 932 1030 Fax: 0118 932 1030
Email: sleekgreen@cwmail.com
Web: www.sleekgreen.com

Willow Electronics

45 Willow Road
Hampstead
London
NW3 1TS

*Loggers for water and electricity meters
with optical pick-up*

Phone 0207 4313348 Fax: 0207 4318886
Email:
Web:



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Chatsworth Road
Worthing
West Sussex BN11 1LD
Tel: 01903 832 000
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Sapphire East
550 Streetsbrook Road
Solihull B91 1QT
Tel: 0121 711 2324
Fax: 0121 711 5824

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Manley House
Kestrel Way
Exeter EX2 7LQ
Tel: 01392 444 000
Fax: 01392 444 238

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Rivers House
21 Park Square South
Leeds LS1 2QG
Tel: 0113 244 0191
Fax: 0113 246 1889

THAMES

Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: 0118 953 5000
Fax: 0118 950 0388

NORTH WEST

Richard Fairclough House
Knutsford Road
Warrington WA4 1HG
Tel: 01925 653 999
Fax: 01925 415 961

WALES

Rivers House/Plas-yr-Afon
St Mellons Business Park
St Mellons
Cardiff CF3 0EY
Tel: 029 2077 0088
Fax: 029 2079 8555



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GENERAL ENQUIRY LINE

0845 933 3111

ENVIRONMENT AGENCY
FLOODLINE

0845 988 1188

ENVIRONMENT AGENCY
EMERGENCY HOTLINE

0800 80 70 60



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