Environment Agency

waterwise

Good for business,
great for the environment

We are the Environment Agency. It's our job to look after your environment and make it a better place – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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Introduction

Many organisations pay higher water costs than necessary. Investing a little time and money in a simple water management plan could save you money and reduce your water consumption by up to 80 per cent.

Water efficiency not only has a financial impact but an environmental one as well. Although England and Wales are often considered to have a wet climate, high population density means that some parts of the country have less water available per person than Mediterranean countries.

Being **Waterwise** is also good for the environment because looking after water properly provides a secure water supply for people and the environment.

This guide is part of a series of free water efficiency publications from the Environment Agency.

Contents

How to develop a water management plan

Get your organisation started on the road to water efficiency with a simple water management plan.

It is important to remember that management and employee support, and promoting successes, are just as important as gathering information and target setting.

Here are six simple steps to long-lasting success:

Step 1 Obtain management and staff support

Step 2 Find out what the true cost of water is to your organisation

Step 3 Identify your water use

Step 4 Reassess your water use

Step 5 Identify and evaluate your water efficiency measures and write a plan

Step 6 Put your plan into action and report your results

Step 1 Obtain management and staff support

Active support from all of your staff is the key to your plan's success. So get people involved right from the start of the planning process.

Enough time and financial commitment is also essential, so management support is vital. Your facilities management, finance and operations teams should all be involved from the outset.

A simple water policy statement will help to make staff more aware of their water use. It should include what their role is and may form part of your existing environmental statement.

Example water policy statement

'We are committed to developing and maintaining a comprehensive water saving programme. This will increase our efficiency, reduce costs and make a positive contribution towards the environment.'


A simple water policy statement will help to make staff more aware of their water use.

Step 2 Find out what the true cost of water is to your

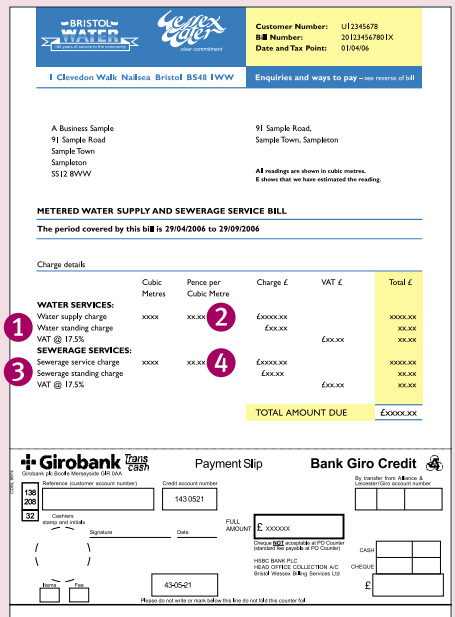
Understanding the true cost of your water usage is crucial. Costs are often unknown or mistakenly perceived to be too low for concern.

Things you can do to identify how much water is costing you:

- check your water bills from the past two to three years – note the annual consumption and cost
- identify any trends or patterns – such as seasonal variations or unexplained increases
- consider associated costs – such as energy requirements
- read your water meter regularly

A metered water bill contains four separate charges:

1. Water supply standing charge – often depends on the size of the water meter (a larger meter equals a greater standing charge)
2. Charge per m^3 for the amount of water used
3. Standing charge for disposal (sewerage) costs – also based on water meter size
4. Charge per m^3 for the amount of water discharged to the sewer


BRISTOL WATER

Customer Number: UI12345678
Bill Number: 2012345678 01X
Date and Tax Point: 01/04/06

1 Clevedon Walk Nailsea Bristol BS48 1WW

Enquiries and ways to pay – see reverse of bill

A Business Sample
91 Sample Road
Sample Town
Sampleton
SS12 8WW

91 Sample Road,
Sample Town, Sampleton

All readings are shown in cubic metres.
E shows that we have estimated the reading.

METERED WATER SUPPLY AND SEWERAGE SERVICE BILL

The period covered by this bill is 29/04/2006 to 29/09/2006

Charge details

	Cubic Metres	Pence per Cubic Metre	Charge £	VAT £	Total £
WATER SERVICES:					
1 Water supply charge	xxxx	xx.xx 2	£xxxx.xx		xxxx.xx
Water standing charge			£xx.xx		xx.xx
VAT @ 17.5%				£xx.xx	xx.xx
SEWERAGE SERVICES:					
3 Sewerage service charge	xxxx	xx.xx 4	£xxxx.xx		xxxx.xx
Sewerage standing charge			£xx.xx		xx.xx
VAT @ 17.5%				£xx.xx	xx.xx
			TOTAL AMOUNT DUE		£xxxx.xx

Girobank Transcash

Payment Slip

Bank Giro Credit

Reference (customer account number)

Credit account number 1430521

Customers stamp and initials

Signature

Date

FULL AMOUNT £ xxxxxx

Cheque NOT acceptable at PO Counter (standard fee payable at PO Counter)

HSBC BANK PLC
HEAD OFFICE COLLECTION A/C
Bristol Wessex Billing Services Ltd

CASH

CHEQUE

£

Items Fee

430521

Please do not write or mark below this line do not fold this counter foil

organisation

Additional costs may also be incurred according to your type of organisation, including:

- energy costs – for heating, pumping and treating water
- treatment costs – either to make water suitable for use in a process or for treating contaminated water prior to discharge
- maintenance costs – for pumps, flow meters, pipework corrosion and equipment

There are established benchmark figures available for different types of organisations (see Further information). You can compare your current water use figures against these to identify the potential for reducing your water use.

Water costs may appear small in comparison with your turnover, but they often represent significant amounts of money. Many actions to reduce water use have short payback periods of six to 24 months. Considerable cost reductions can be achieved, sometimes up to 80 per cent on sites where no previous action has been taken.

How to calculate office water consumption

The average office water use is four cubic metres per employee a year*. You can calculate water use, per employee, in your office using the following:

$$\frac{\text{annual water-use (m}^3\text{)}}{\text{number of staff (full and part time)}}$$

For example, the calculation for an office with 43 full and part time staff and a six monthly water use of 133m^3 (taken from the bill) would be:

$$\frac{133 \times 2}{43} = 6.2 \text{ m}^3\text{/employee/year}$$

* Source: Water Key Performance Indicators and benchmarks for offices and hotels. C657 CIRIA www.ciria.org

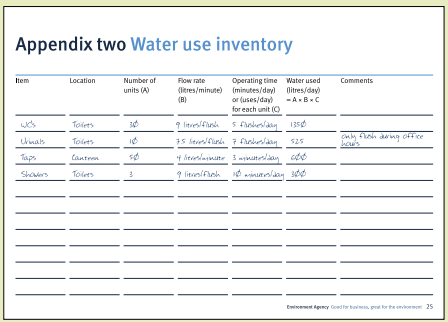
Step 3 Identify your water use

Carrying out a water-use survey will tell you how, where and why water is being used.

The easiest way to do this is to list all water-using items in the building; noting the number, location, flow rates and operating times. Within the appendices you will find an example of a water use inventory which can be photocopied.

Remember to talk to staff to find out how they use water and ask them for any suggestions they have for improvements.

Once the survey is complete, you can produce a document known as a 'water balance' which lists and quantifies individual items and their water use. Compare this with the amount of metered water. A 10 per cent discrepancy for 'unspecified' water should be expected, but anything more is likely to mean that something has been missed or, more seriously, there is an undetected leak (see page 18).



Appendix two Water use inventory

Item	Location	Number of units (A)	Flow rate (litres/minute) (B)	Operating time (minutes/day) or (uses/day) for each unit (C)	Water used (litres/day) = A × B × C	Comments
WCs	Toilets	30	9 litres/flush	5 flushes/day	1350	
Urinals	Toilets	10	7.5 litres/flush	7 flushes/day	525	only flush during office hours
Taps	Canteen	50	4 litres/minute	3 minutes/day	600	
Showers	Toilets	3	9 litres/flush	10 minutes/day	360	

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Example water use inventory

Measuring/estimating flow rates and duration of flow

Measure the time it takes to fill a container you know the capacity of, such as a bucket or jug. WC cistern volumes can be calculated by tying up the ballcock, flushing and re-filling the cistern from a bucket or jug.

Washbasin water use can be measured by temporarily disconnecting the U-bend and running the waste into a bucket, using tap water to simulate normal use, such as hand washing.

You will also need accurate estimates of operating hours for each water-using item. Remember to consider the number of operating days per week or month, seasonal variations (such as heating and cooling systems) and staff occupancy.

Step 4 Re-assess your water use

Once you know how much water your organisation is using, you can start focusing your actions on improving water efficiency.

Firstly, consider if the quantity of water currently being used for particular tasks is necessary. Secondly, assess if the task could be altered to use less water. You may wish to prioritise your actions to larger water-using areas of your premises, such as washrooms.

It is important to talk to staff who use or operate the water-using appliances, as they may have a better understanding of how they work or have their own suggestions for improvements. Good housekeeping activities, such as ensuring that water-using appliances are turned off when not in use and fixing dripping taps promptly, can save significant amounts of water at virtually no cost.

It is important to talk to staff who use or operate the water-using appliances, as they may have a better understanding of how they work or have their own suggestions for improvements.

Step 5 Identify and evaluate your water efficiency measures

Next evaluate your Water efficiency measures for their potential for reducing water consumption and write a plan to identify where you might be able to reduce existing water consumption.

Payback periods

Comparing the expected net annual savings with the capital costs (one-off purchases and installation costs) will give you a payback period figure.

Payback period =

$$\frac{\text{capital cost (£)}}{\text{net annual savings (£)}}$$

Refer to our list of Water efficiency measures on page 16, some of which may be suitable for your organisation.

You are now ready to commit your water management plan to paper, identifying:

- how you plan to save water
- targets for how much water and money will be saved
- who is responsible for carrying out the plan

It is important to establish goals and timeframes. Detail your actions in full and place them in order of priority. Remember that your water management plan is a working document and should be reviewed regularly.


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Step 6 Put your plan into action and report your results

Make everyone in your organisation fully aware of the plan and their responsibilities.

Involve your staff in the water management plan

- **Communicate your progress and results regularly in a style appropriate to the audience – noticeboards, meetings etc**
- **Encourage staff to participate by holding competitions for water efficiency ideas and slogans**
- **Set up a reporting system for leaking taps and faulty water-using equipment**
- **Encourage staff to think about water efficiency in the home**

Positive communication is crucial, as people may feel suspicious of some water efficiency measures, such as waterless urinals.

Remember to report all successes and use every opportunity to publicise the savings, both internally and externally through newsletters, press releases, annual reports and presentations. You could even enter our Water Efficiency Awards and gain some national recognition for your efforts.

The environment is increasingly becoming a 'business' issue as customers become more environmentally aware. Many companies actively pursue a sustainable development approach to give themselves a competitive advantage or to satisfy investor or supply chain requirements. Minimising water use is part of that pursuit.

Review and update your water management plan at least once a year. Analyse actions that have not achieved anticipated savings and identify why they failed and how they could be improved next year.

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Water efficiency measures

No or low cost

- Good housekeeping ensures that water-using appliances are turned off when not in use and would include fixing dripping taps promptly.
- Cistern displacement devices such as Hippos and Save-a-Flushes reduce the volume of water required to fill a toilet cistern by up to three litres per flush. They are often available free of charge from your water company.
- Collecting rainwater in water butts reduces the need for mains supply water for watering plants or washing vehicles.

Medium cost

The suitability of these depends on many factors including building type, budget and payback periods required.

- Low or dual-flush toilets should be considered if replacing existing units. For more information consult the Water Technology List on page 22.
- Supply restrictor valves are easily fitted to supply pipes and keep the water flow constant, regardless of fluctuations in water pressure.
- Tap controls are an easy and cheap way of reducing water consumption and are available in both new and retrofit versions. Different types include infrared, battery operated, simple push-top and spray taps.
- Urinal controls can be retrofitted to existing urinals, ensuring that the cistern only flushes during office hours, or after use, rather than continuously.
- Waterless urinals use either a syphonic trap, or an outlet with a pad impregnated with a deodorising agent.

Other measures

These options require greater investment if fitted to existing buildings, but should be considered when constructing a new building.

- **Washroom control systems**
  If you limit your hot and cold water supply and also control lighting and ventilation, you should achieve additional energy savings for your business.
- **Rainwater harvesting systems**
  These collect rainwater from roofs or large paved areas such as car parks. The collected water can be used for toilet flushing or washing vehicles.
- **Greywater recycling**
  This involves using wastewater from washroom basins and showers, then using it for flushing toilets or outside watering.

For more detailed information on the different types of water efficiency measures, together with supplier information, please consult the Environment Agency's *Conserving Water in Buildings* publication (see Futher information for details).

Some businesses, such as light industrial ones, use more technical water-using processes and require a more specialist approach. Envirowise is an organisation that provides free water-efficiency advice to specific industries on a range of industrial processes (see Further information).

Measurement and leaks

The following issues, although not water-saving, can contribute greatly to achieving your water efficiency targets.

Metering

An organisation can only manage water effectively if consumption is accurately measured. Estimated bills from your water company should not be relied upon for developing and monitoring your water management plan. Frequent meter reading by a designated individual is essential, not only to quantify consumption, but also to understand seasonal variations and identify leaks.

Sub-metering

If your organisation has major water-using departments, such as a kitchen, you may consider installing sub-meters to identify how much water use they are responsible for.

This can be extremely useful if you want to divide the water charges across more than one department and could encourage staff to reduce their water use. Sub-metering can also be extremely useful when deciding which areas within your business need to be addressed as a matter of priority.

Leak detection and repair

If left undetected, a leak can result in vast amounts of water and money being wasted. Leaks can be both visible (such as a tap that cannot be turned off) or non-visible (from underground piping).

Your organisation is responsible for repairing underground leaks that occur on company property. Non-visible leaks are harder to detect and an important detection method is to note any unexplained increases in metered water consumption (see the night flow test on the opposite page).

Read meters weekly and analyse any sudden changes in consumption that may indicate a leak. Unexplained damp patches or subsidence could indicate the presence of leaks for example.

If a major underground leak is suspected, it should be located and repaired as quickly as possible, not only to save water, but also to prevent water-related damage. Detecting external leaks is a skilled job and it is advisable to use a specialist contractor (your water company may provide a free or subsidised leak detection service).

How to identify leaks using the night flow test

If you suspect a leak, 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, you are likely to have a leak. (Any known night use will have to be shut off or accounted for.)


The Environment Agency's Water Demand Management team has a range of free water efficiency publications.

Further information

These organisations provide advice and free publications on water efficiency:

Environment Agency

The Environment Agency's Water Demand Management team has a range of free water efficiency publications available as listed below. For further information on their work please email **savewater @environment-agency.gov.uk** or telephone **01903 832275.** Alternatively fill in and return the fax-back form at the back of this publication.

Publications can be downloaded in pdf format from **www.environment-agency.gov.uk/savewater**

- *Water Efficiency Awards 2005 and Water Efficiency Awards 2003* – These publications highlight good practice water efficiency case studies from industry, business, agriculture and the public sector.
- *Water Efficiency Awards 2001* – Water UK and the Environment Agency publication that highlights good practice water efficiency case studies from industry, business, agriculture and the public sector.
- *Conserving water in buildings (2001)* – series of 11 fact cards with detailed information on the different types of water efficiency technology available in England and Wales. Supported by an up-to-date supplier list.
- *www.environment-agency.gov.uk/savewater* – the Savewater pages on the Environment Agency's website tell you how and why you should be using water wisely, both at home and at work.

BRE's Environmental Assessment Method (BREEAM)

BREEAM is a scoring system for the environmental performance of existing, refurbished or new buildings. We recommend you aim for the 'very good' or 'excellent' rating. For more information visit: **www.breeam.org**

Envirowise

Envirowise is a government programme that offers free, independent advice on practical ways to minimise waste and convert turnover into profit. Each year Envirowise helps thousands of businesses across the UK to increase profits. It has published more than 70 best practice guides, many of which relate to water efficiency. Consult their website: **www.envirowise.gov.uk** or call the Environment and Energy helpline: **0800 585 794**

Watermark

Watermark is an initiative from OGCbuying.solutions (part of the Office of Government Commerce in the Treasury) to benchmark public sector water use. They have also negotiated a 'shared savings' contract with ADSM, a water auditing company. For more information visit: **www.watermark.gov.uk**

Water Technology List

The Water Technology List is a list of certified products that are amongst the most water efficient available. If you pay business or corporation tax you can claim an 'Enhanced Capital Allowance' on them. Visit: **www.eca-water.gov.uk**

Your water company

Your water company should provide you with information and advice on water efficiency and metering. If you are unsure who your supplier is, consult the **Water UK** website: **www.water.org.uk**

Appendix one Waterwise checklist

Use this checklist to organise your water management plan, by ticking off activities as you complete them.

- ☐ Obtain management and staff support through a published water policy statement.
- ☐ Take weekly water meter readings and note any sudden or unexplained increases in consumption.
- ☐ Analyse old water bills and identify how much you are paying for water and effluent charges.
- ☐ Establish a figure for water consumption on your premises – expressed as m^3 per employee, per year.
- ☐ Use the water-use inventory (see appendix two) to identify the water consumption of each water-using appliance and activity on your premises.
- ☐ Consider where you could use water more efficiently, by re-assessing your water-using appliances and activities.
- ☐ Identify and evaluate water efficiency measures, by working out potential payback periods that include financial savings from associated costs.
- ☐ Agree and publicise a target for water saving and develop an awareness campaign for staff.
- ☐ Implement your plan and monitor its progress. Publicise all savings and successes both internally and externally.
- ☐ Review and update your plan.

Appendix two Water use inventory

Item	Location	Number of units (A)	Flow rate (litres/minute) (B)	Operating time (minutes/day) or (uses/day) for each unit (C)	Water used (litres/day) = A × B × C	Comments

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Appendix three Waterwise fax-back form

Further copies of Waterwise, good for business, great for the environment and other Environment Agency water efficiency publications are available free of charge.

Simply photocopy the reverse, complete and fax it to 01903 832274.

Environment Agency, Water Demand Management, Guildbourne House, Chatsworth Road, Worthing BN11 1LD
Tel: 01903 832275 Fax: 01903 832274 www.environment-agency.gov.uk/savewater

Waterwise fax-back form

Title ☐ Dr ☐ Mr ☐ Mrs ☐ Miss

Full name

Job title

Organisation

Address

Postcode

Email

Tel

Fax

Publication	Quantity
Waterwise, good for business, great for the environment Guide to developing and implementing a water management plan	☐
Water Efficiency Awards 2005 Water efficiency case studies from across all sectors	☐
Water Efficiency Awards 2003 Water efficiency case studies from across all sectors	☐
Water Efficiency Awards 2001 Water efficiency case studies from business, industry and the public sector	☐
Conserving water in buildings Eleven fact cards on water efficient technology, together with supplier list	☐

Please note: all publications are subject to availability.

Please fax this form to: 01903 832274

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email **enquiries@environment-agency.gov.uk**

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incident hotline **0800 80 70 60** (24hrs)
floodline **0845 988 1188**

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