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SCHOOL WATER AUDIT



A step-by-step guide to help teachers and students reduce water use in school



NEXT

Introduction

Why register? This free water audit pack can help teachers and students reduce water use in school.

REGISTER

Step-by-step instructions provide advice on how to carry out a water audit. Get your school and community involved too. Learn about gadgets to reduce your consumption and become sustainable. Keep up to date with Anglian Water's top tips and newsletters. You can also receive special offers and can qualify for loyalty rewards for your school.

REVIEW

In this section you will find out why saving water is important and instructions on how to find out your school's average water use.

How does your school compare in its water use to other similar schools? Carry out a water audit of your school and students' attitudes to water to find out what or who are the biggest water wastages.

ACTION PLAN

When you know where you are using water, writing an action plan on how to reduce it is key. Support on writing an action plan: addressing your individual needs and setting targets for your school.

Information and tips on how you can make all areas 'Waterwise' and become more sustainable.

INVOLVE

Tips on how to get the whole school involved. Making students and staff aware of how they use water can help reduce the amount used in school. Involve all the people interested, such as parents, governors and local community.

REVIEW

Have you met your targets? You can share your best tips on the Anglian Water website. Send your case study with photos to the Community Education team at education@anglianwater.co.uk

Why is water important?

Water is a key resource for all life. Without water there wouldn't be any life on the planet. Scientists are looking for traces of water on other planets in the solar system, like Mars, to find any signs of life. In the UK, we think we have lots of water because it rains a lot, but the reality is that there is a huge pressure on our water resources, just as there is on oil and gas resources.

Anglian Water supplies water to a fifth of England and Wales, covering an area of **27,000 kilometres**.

We supply around **1.2 billion** litres of water every day to over **4.2 million** households, schools and businesses across the region!



The water we drink and use on a daily basis is taken from the environment. We rely on the water cycle to gather fresh water from rivers, reservoirs and underground sources which comes from the rain. Predicting when it will rain is a difficult job, especially as we plan our water requirements at least a year in advance to make sure there is enough for all our customers.

Water stressed

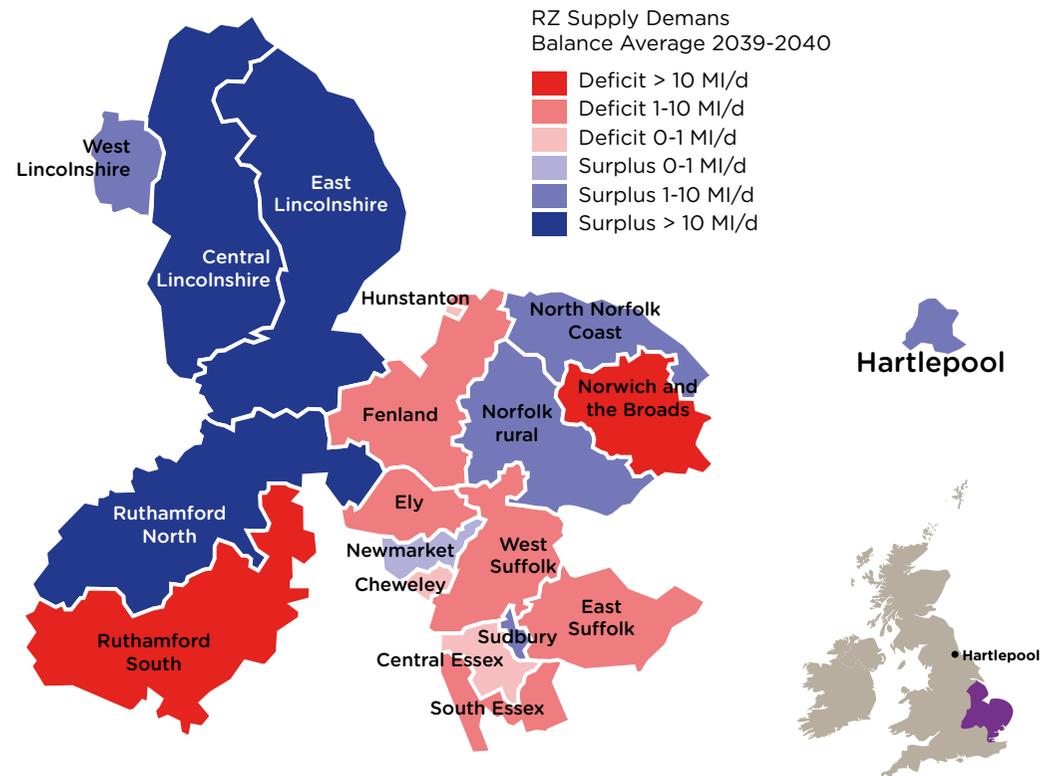
The Anglian Water region is classed as ‘water stressed’ by the Environment Agency because we receive the lowest average rainfall in the UK; however, this figure varies across the region.

What’s the average rainfall in your area?

www.metoffice.gov.uk/climate

The diagram below shows the parts of the region where by 2039-40, we think demand for water will be greater than the amount we are able to supply.

This shortfall is linked to the predicted increase in the population and the building of homes and businesses in these areas.



The Anglian Water region receives around an average of 600 millilitres of rain a year – around the same rainfall as Jerusalem or half the national average for the whole of England and Wales. Sustainability is the key to the future. We need a global response and everyone is part of the solution.

Pressures of global warming, climate change and changing weather patterns are affecting the East of England, and with more and more houses being built and a growing population, dealing with these changes are vitally important. Demand for water will continue to grow, putting pressure on our rivers, natural water resources and the environment. Trying to balance environmental needs with the water needs of households, agriculture and industry is becoming an increasing challenge.

Careful water management, together with an education programme, has shown that water use in schools can be reduced to four cubic metres per student per year.* Schools spend a total of around **£70 million** a year on water; a large secondary school can spend as much as **£20,000** per year on water. This could save a school of 600 students around **£5,000** annually. (*Water Watch 2007).

Becoming a water efficient school can make a long-term difference to the amount of water you use. It can also raise the awareness of water use of students, staff and your local community at home or work.

This resource will help you to carry out a water audit in your school and find out how people in your school use water.

Activity

- Find out where your water comes from and goes to.
- Are there any water treatment works or water recycling centres near your school?
- Do any of your students' families work for a company connected to the water industry?
- Locate rivers and reservoirs in your area or any habitats where water is important.
- What do you think are the most important reasons for saving water?
- Do you think that the order of the reasons will be different for groups of people?
- Would some people be persuaded by saving money rather than by becoming sustainable?

FACT

138 baths

The average yearly consumption of water by each secondary school student is 11 cubic metres (equivalent to 138 baths)

88 baths

Each primary school student uses seven cubic metres (equivalent to 88 baths). 1 cubic metre =1,000 litres.

Working out your average water use

To start, you need to review your school's current water use. Have a look at your school's water bills. Find out who manages the payments for the school's water bills and see if you can have copies to work out the average consumption for your school.

Use this table to find the answer

A. Take the water used either from bills or meter readings. Covert to litres, $1\text{m}^3 = 1,000$ litres.

=

B. Divided by the days spent in school.

=

C. Divide by the number of students and staff in the school.

=

Average water use per student and staff per day is...

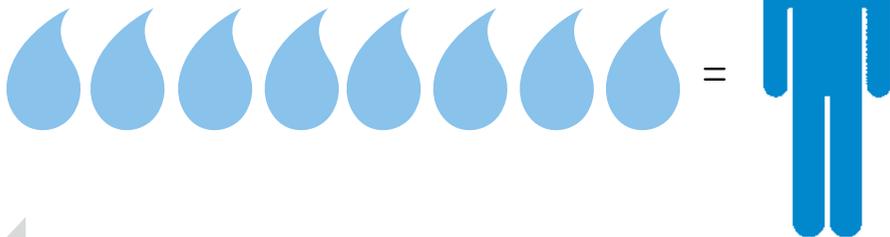
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You can also use this number to work out the amount of carbon that is released during the water treatment and transportation processes. To produce one litre of water out of a tap clean and safe to drink, Anglian Water release 0.3 grams of carbon into the atmosphere from the energy used to run the cleaning and pumping machines. We are one of the biggest users of energy in the East of England as a result: in one day we use enough electricity to power 40 homes for a year.

Activity

- How can you present your school's water use for other people in your school or community?
- Can you draw a graph to show water use and cost over a year?

If you haven't got access to your water bills, use the [How to read your water meter](#) section to work out how much you use from your meter readings.



Reading your water meter

First, find out where your meter is. You might need to talk to the site manager.

Some schools have more than one meter. The meter could be located in a place that is unsafe for you to access, so you may have to ask an adult to read your meter and take a photograph of the meter reading.

Reading your water meter can help monitor your water use and measure the impacts of your actions on your consumption.

The water coming into your school flows through the water meter, which is fitted in the water pipe. The numbers on the dial record how much water has been used since the meter was fitted.

How to measure water

Meters measure water in m^3 . $1m^3 = 1,000$ litres, so to convert your reading into litres x by 1,000



How to read your meter

Reading your meter is easy. You will have either a Type 1 or 2 as shown below. Please remember to include any leading zeros when taking your reading.

Meter type 1

If you have an older style meter, your display should look like this. The black digits with white background indicate the cubic metres used and will be the digits you need to read, just the first five digits.. So in the example shown, the meter reading would be 00158.



Meter type 2

If you have a digital meter, your display should look like this. We only use the digits in the top row. So in the example the meter reading would be 000189. These meters flash alternative screens from time to time. This is completely normal and indicates your meter screen is working correctly.



Our school's water use

Use the school water meter to measure the amount of water used over two consecutive weeks.

Important:

Was there any water use at night after the cleaners or clubs have left or over the weekend? (This means your school's end reading would be different from your school's start reading for the next day.) Could cleaning or irrigation explain this water? If not, it could be that taps have been left on overnight or the school has leaky pipes or urinals that are flushing during out of school hours.

Location of your school's water meter:

Week beginning:	Monday	Tuesday	Wednesday	Thursday	Friday	Monday morning (weekend usage)	
1st reading (school start)							
2nd reading (school end)							
Daily usage							Weekly usage

Photocopy this sheet to repeat this over several weeks.

Activity

- Can you record your results in a spreadsheet and create graphs to show your use?

Our school's water use

Start with a plan of your school. Highlight all the areas that use water. Also think about the outside areas of your school, like playing fields or gardens that might also use water. An aerial photograph or a map of your school can help you identify these areas. Try printing an image of your school from Google maps. All of these areas will need to be inspected.

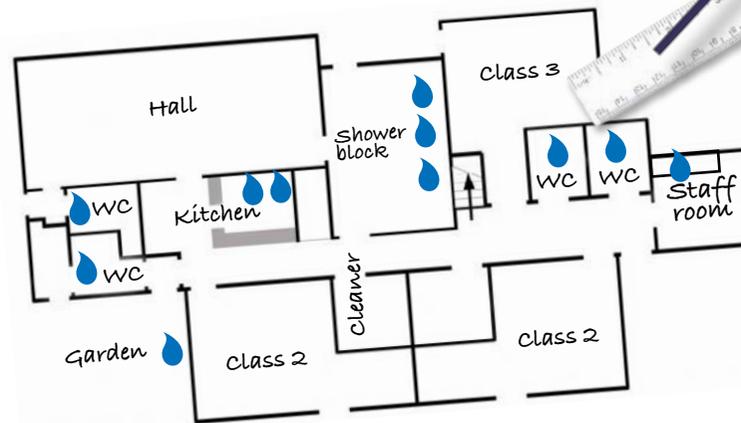
If you have a large school you might want to divide into teams.

TIPS

Think about the best time of day to check out different areas of your school, wait until classrooms or toilets are quieter. Prewarn and tell teachers that you are carrying out the audit during lesson times.

Think about the locations of toilets, classroom/laboratory sinks, kitchens, staffrooms. Don't forget outside taps, water fountains and swimming pools (if you have them). These are all areas that will need to be surveyed and recorded on the Water Audit Survey.

Plan of our school



Make a plan of your school. Highlight all the areas that use water.



Health and safety

Think about health and safety before you start your audit.

Things to consider:

- Do you need an adult to come with you?
- Take a spare pencil or pen.
- Can you take a camera to take photographs of meter readings or problems and leaks?
- Be aware you will be in areas which might be wet underfoot, where there may be hot liquids and electrical equipment.
- Walk sensibly and wear sensible shoes.
- Think about hygiene particularly in toilets and kitchens; make sure you wash your hands when you leave.

Water audit tips

- Check for damp patches, drips or leaks.
- Look out for dripping taps and how much they drip!
- Record how the urinals flush – are they timed, if so how often? They might be continual flush, push buttons, aerated or sensors.
- Check for silent leaks in sinks and toilets.
- Measuring the volume of toilets.
- Find out how many litres a tap uses in a minute.

To find how many litres your toilet uses:

1. Carefully take the lid off the water tank.
2. See if it says how many litres it uses on the inside of cistern, sometimes this is printed on the inside.
3. If it doesn't tell you how many litres, mark the water level with a pencil, or wax crayon.
4. Flush the toilet to empty the tank.
5. Then, while holding the ballcock down, pour water in up to the pencil line. Measure the water as you pour it in and record the volume of water used.



To measure the volume of water from a tap is a simple task:

1. Find a bucket or large bowl that will fit under your taps.
2. Turn the tap on for 15 seconds then measure how much water you have collected in the bucket accurately in litres.
3. Multiply the amount of water you collected by multiplying it by four to find out how many litres per minute your tap used.
4. You can always repeat to check how accurate your measurement was.
5. Remember, where possible to reuse the water you collect. Are there any plants you can water or can you save it in a water butt to be used later?

Water audit survey

To check for leaking toilets:

1. Listen for leaks, you can sometimes hear water running. Leaks can also happen in sinks or in any pipes around your school. They are often hard to find. You might need to get a qualified plumber to investigate and repair them.
2. Lift the lid off the toilet cistern and see if they are constantly refilling.
3. 'Silent leaks' can waste water. To find a silent leak add a dye to the cistern of the toilet. You can get dye from hardware stores but as an alternative you can use food colouring or even a dark coloured squash. Wait 30 minutes then lift the toilet seat lid. If there is colour in the bowl of the toilet then you have a leak.
4. Silent leaks can be caused by a faulty flush valve or refill valve. To find out which, draw a pencil line in the cistern at the water level. Switch off the water to toilet. Wait 20-30 minutes. If the water level remains the same, the refill valve is not working. If the water level has dropped below the line the problem is with the flush valve. These can be repaired cheaply with supplies from a hardware store.
5. Use stickers called Leaky Loos which are stuck on the inside of the bowls overnight to identify leaks.

Fixture and description	Type: e.g. single flush toilet, push tap, timed urinal	Number of litres used and unit	Any problems identified?	Amount of use in a day? Heavy/medium/light use	Notes
Girls' toilet no. 1 Year 5 area	Single flush toilet	7 litres per flush	Cistern continually filling	Heavy	High priority to repair



Listen for leaks, you can sometimes hear water running.



Lift the lid off the toilet cistern and see if they are constantly refilling.

Toilets – Water saving tips for areas in your school

Toilets in schools are the biggest single use of water, between 60 to 80% of total consumption. This is compared to 30% of home use of water.

There are many different devices that can help save water in toilets. Fitting these will depend on what type of toilets you have and what money is available for repairs or to change them. When you audit the school's water supply, it is very important to record this type of information to help influence your decisions in your action plan.

Dual Flush

If your school is able to fit new toilets, look for dual flush, low flow toilets. Toilets using rainwater to flush have a much lower carbon impact.

Save a flush

Install 'save a flush' or 'hippos' in the toilets. These are water displacement devices that can save water every flush. You can request free devices from Anglian Water by emailing education@anglianwater.co.uk

Hippos are only suitable for toilets with a flush of nine litres or more and save-a-flush bags for toilets between 7 and 9 litres per flush.



Toilets

There are many ways you can save water in your toilets. The suggestions in the list below provide low to high cost solutions. Maybe you can think of your own? Remember, there is a chance that not all the toilets in your school will be the same. Many are different ages and styles, so one solution might not work for all of them.



Low cost

- Fix leaking cisterns (see 'leaks' section on [page 14](#)).
- Fit eco beaters to single flush toilets to convert them into dual flush toilets.
- Replace old toilets with more water efficient new toilets.
- Install rainwater harvesting systems to flush toilets.

High cost

Urinals

Finding out how your urinals work can be a very simple step to save water. Timed flushing urinals are often left flushing during weekends and school holidays when they are not in use. There are other types of flushes that may be more suitable for schools which close for many weeks during the year.



Low cost

- Turn off urinals during school holidays and weekends.
- Reduce the frequency of timed flushes.
- Fit biological blocks to urinals which only need flushing once a day and the used blocks are recycled.
- Install push flush urinals.
- Install sensor urinals.

High cost

Taps and dripping taps - Water saving tips for areas in your school

Taps

You can find lots of taps around the school, from wash handbasins in the toilets to classroom sinks; they all use varying amounts of water. Ways to improve the water/eco credential of taps.

Low cost

- Turn off taps after use.
- Have water monitors to check taps are turned off.
- Put stickers or posters at all taps to remind users to turn off taps.
- Buy plugs or washing up bowls for all classroom or art room sinks.
- Fit tap aerators.
- Fit push taps.
- Fit sensor taps.

High cost

Remember

Remember very young children may find push taps hard to use.

Dripping taps

Fixing a dripping tap can save up to 3 litres per day. Make a note of how many taps are dripping. Use a jug to collect the water for one minute. Then multiply this amount by the number of dripping taps you have found to work out how many litres you waste during a day, week, or month.

Many dripping taps go unreported and are left leaking for many months. Does the site manager fix dripping taps in your school?

Dripping taps are often fixed by simply fitting a new washer. But if the problem is bigger, you might need to replace taps.

Low cost

- Design a card to report a dripping tap to the site manager or a card to hang on the tap to show a drip is being fixed.
- Replace washer.
- Change tap.

High cost



Put up posters to remind users to turn off taps and report leaks.



Leaks - Water saving tips for areas in your school

Leaks are one of the biggest wastes of water. Leaking toilets, taps and pipes can often be left undetected for a long time.

Check for any water stains, marks, damp patches or puddles. You can also use the water meter to help carry out an external leak test.

1. Turn off the internal stop tap.
2. Find your meter and take a reading – make a note of all of the dials, both white and red.
3. Wait 30 minutes and take a second reading. Is there any change or movement between the two readings?

➔ **If YES and the two readings are different - go to step 4a**

➔ **If NO and the readings are identical - go to step 4b**

Step 4a:

If the two readings are different, this would indicate a leak on your supply and you would need to arrange for this to be repaired. It is important that this is carried out within 30 days. Once repaired take two meter readings, two weeks apart (white and red numbers) and call us on 03457 91 91 55 to discuss the possibility of a leakage allowance.

Step 4b:

If the two readings are identical you do not have a leak on your supply pipe. You should now carry out an internal leak test.



Find your meter and take a reading.

← START

← BACK NEXT →

Leaks - Water saving tips for areas in your school

Outside

Plants and vegetables are often growing in school grounds. Pots and hanging baskets need a lot of watering. Have a look at our 'Growing for the future' gardens pack, full of ideas to save water in your gardens. The pack includes advice on which plants to pick, drought tolerant plants, plus a guide on how to line pots and baskets to keep water in. Download it for free at www.anglianwater.co.uk/growing-for-the-future

Around your school, there may be a number of outside taps. They may only be used by staff but don't forget about them. Check to see if your football or cricket pitches are irrigated.

Low cost

- Reminders to use water butt instead of hose when possible if you have water butts.
- Buy a trigger to attach to hoses and run the hose from the water butt.
- Lag pipes.
- Line plant pots and hanging baskets to retain water.
- Install water butts around your school to water plants.
- Plant drought tolerant plants.
- Install drip feed irrigation system to water plants, pots and vegetables.

High cost

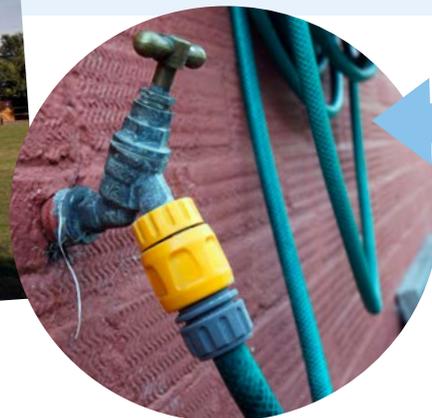
Kitchen/staff room

Appliances, such as washing machines or dishwashers, can vary in the amount of water they use depending on their age and how often people use them. Water from the kitchen sink is also used for things like drinking, washing food, plates and cups.

Low cost

- Reminders near sink to use a bowl or plug and dishwashers to make sure they are full.
- Plugs or washing up bowls for sinks.
- Fit tap aerators.
- New water efficient dishwashers.

High cost



Outside taps are particularly vulnerable during the winter. Frozen pipes can cause leaks and bursts, wasting water and money. Keep them wrapped up to prevent them freezing.

Use a bowl or plug to help save water.



Water saving tips for areas in your school

Showers

Some schools have showers in changing rooms or staff areas. The flow from showers can be measured in the same way as measuring the flow of taps.

Low cost

- Install tile stickers or posters in shower areas to remind people to use less water.

- Low flow shower heads or restrictors.

- Shower timers.

High cost

- Low flow showers.

Water fountains and coolers

Drinking water is really important to keep us all healthy. Water fountains are often a source of leaks, especially outside fountains when pipes freeze.

Check they can all be switched off properly when they are not in use and that they don't leak.



Activity

- Can you design a questionnaire for students and staff to find out how they use water in your school?
- For example: Do they report leaks or dripping taps? Do they leave taps running or use more water than they need? How many times do they flush the toilet a day?

Swimming pools

Some schools have their own pools. Once full, they should only require small amounts of water to top up. The water is filtered and chemically treated so that it can be reused. It is, therefore really important to make sure then that the pool is properly maintained. To empty and refill a pool requires a lot of water.

In this section:

- How to create an action plan following your school audit.
- Developing an action plan to include all members of your school community.

Action planning

After you have surveyed your school's water use, the next step is to create an action plan to start reducing the water used. You will need to involve many different groups of people in your school.

Who do you think you should get involved in reducing your school's water use?

- All students in the school,
- Teachers and school staff,
- Kitchen staff,
- Governors,
- Bursar/finance or business manager,
- Site manager/caretaker,
- School cleaners,
- Parents and families.



Involve many different groups of people.

TIPS

Action planning meeting tips

- Make notes from your meetings.
- Find out if you can present your decisions to school council, teachers, governors or students?
- Set targets which you can measure and put a time limit for these.
- It is also a good idea to share the load by giving action points to other people.



Some actions will require financial support. If your group has a budget, find out where your school get its supplies from as well as investigating other possible sources. The school may be able to get a discount.

If you haven't got a budget, you will need to do some fundraising. Have a look at the **involve** section to find out some ideas to help you raise funds.

Action planning meetings are important to decide who is doing what and by when.

Action plan template

Use this table to plan your action plan tasks, by when and who is going to do it.

Problem	Location	Action to be taken	Date to be completed	Whose responsibility?	Budget	Priority

In this section:

- **Develop your water audit to communicate with a range of audiences.**
- **Use a variety of strategies to become a water efficient school.**

Get your school and community involved

Share with them information you have found out, what you are doing and how they can save water too.

Involve your school - in your school you could try some of these

- Make sure regular maintenance and inspection plans are carried out annually. Check for drips, leaks and damaged fixtures and fittings to make sure water doesn't get wasted.
- Have a water day to let everyone know you are starting the school project. Run games, competitions, events, launch films.
- Display your school's average water use and how much you have saved as you carry out your action points or create a scale to show how close you are to reaching your target.
- Promote water saving around the school. Use posters with water saving tips and give reasons why everyone should save water. Create a Waterwise mural in your school or grounds and display of Waterwise pledges from students and staff.
- Drought tolerant plant competition. Challenge your water audit team to produce a pot or hanging basket, with tips from the Growing for the Future pack. Either hold a competition for the best pot or sell to raise money for water saving measures.
- Design your own drought tolerant or Waterwise garden for your school.
- Create slides to be displayed on interactive whiteboards in form time and registration or as screen savers or desktops on school computers. Perhaps a weekly water saving message.
- Photograph or video the stages of the process and how you're making your school Waterwise. Post it on your school's website.
- Hold assemblies to promote messages and let the school know what you are doing and your targets.
- Go on water related school trips. For example you can visit an Anglian Water education centre at a Water Recycling Centre, where we clean up your dirty water. Perhaps if you achieve your water saving target you can arrange a watery treat like going sailing.
- Link with a school in another country to compare your water use and what you have done to help save water.
- Collect rainwater to measure the rainfall at your school or find rainfall data. Compare the rainfall in your area to other parts of the UK and around the world.
- Design your own water saving gadget or device.
- Attend school events such as fairs to raise money for water saving products or charities like Wateraid.

Involve your community – in your community you could try some of these

- Write pieces for school publications, newsletters, etc. Remember to include eye-catching photographs.
- Write articles for your local paper at the beginning of your project and when you achieve your target.
- Engage with your local community – talk about the project at local nurseries, other schools or old people's homes. Share tips that can make them Waterwise too.
- Investigate water in your local area like rivers, lakes, ponds and even beaches. Are there groups you can be involved with that look after these areas such as Rivercare, cleaning litter out of rivers.
- Visit local gardens or nurseries to see how water is managed or grow drought tolerant plants like the Water Neutral Garden at Grafham Water.
- Invite speakers into the school to talk about water.
education@anglianwater.co.uk
- Could you develop a role play to show water saving tips to younger children? Or perhaps a story book?
- Produce leaflets with your results to go home to parents.



Involve your home

Try using the water calculator on the Anglian Water's website to work out how you can save water at home.

www.anglianwater.co.uk/water-calculator

Carry out your own water audit at home using the same water audit sheet.

WaterAid

We are really lucky to have safe clean water to drink and toilets to keep us healthy. One in 5 people in the world do not have safe clean water. Can you support Wateraid to help those people without?

Visit www.wateraid.org/uk

In this section:

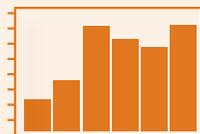
Plan your water auditing and review your water use each term



Read your meter and work out your average water use again.



Have you reduced your average water use?



Keep a spreadsheet or graph to show your water use and keep up to date every half term or term.



Hopefully you will be able to demonstrate a reduction in your water use.



Survey your students and staff again; have they changed their behaviours to water use?



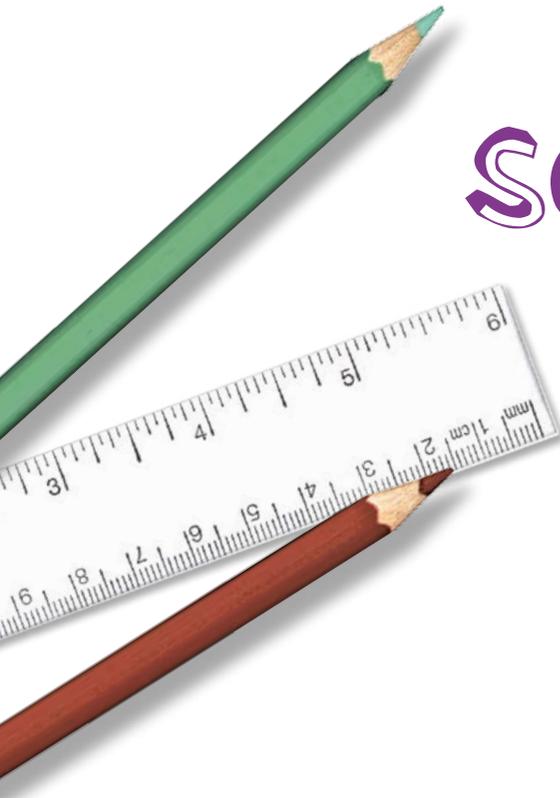
Email us your case studies to go on the Anglian Water website. Also send us your meter readings and savings to gain great rewards for your school from us. education@anglianwater.co.uk



Plan regular maintenance to ensure water audits occur regularly, checking for leaks, silent leaks and drips.

Scouts and Guides

This pack can also be used with community groups. Water audit your meeting place and create an action plan. This can also contribute to badgework.



SCHOOL WATER AUDIT

For more information
www.anglianwater.co.uk

