

# Water in Our School

Water Audit  
Workbook



**SUMS+**

**This Workbook has been prepared to support the NSW science and maths curriculum. The aim is to make long term improvements in water management in your school whilst educating the next generation of water users.**

**It will increase students' awareness of the importance of water and highlight what the entire school community can do to create savings.**

## **Learning Intentions**

Students will learn how, where and when water is used and reflect on ways to save water in school. They will be able to collect water usage data and display information in tables. Finally, they will be able to communicate their findings to the school community.

## **The workbook allows students to:**

- Measure record, compare and estimate volumes and capacities using litres, millilitres and cubic centimetres
- Select appropriate methods to collect data & construct, compare, interpret and evaluate data
- Investigate questions and predictions by analysing collected data, suggesting explanations for findings, and communicating and reflecting on results
- Select and use the appropriate units to estimate, measure and calculate volumes and capacities
- Describe & represent mathematical situations in a variety of ways using mathematical terminology
- Demonstrate a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping a sustainable future

## **Classroom Organisation**

Classroom tasks to be completed as a whole class and in smaller groups to enable children to work together in groups of various sizes and composition to complete specific tasks.

## **Overview of tasks**

- Understand water use at school
- Check taps, bubblers and toilets for leaks and faulty equipment – recording water wastage
- Understand water usage per student per day
- Present findings to the class

## **Timeframe**

The 'Water in Our School' activities will take several sessions with a mixture of class work, group work and computer time in order to complete all tasks. Teachers can choose to complete the entire unit of work or select relevant sections appropriate for their class.

The logo for SUMS+ features the word "SUMS" in a large, bold, teal font, followed by a plus sign "+" in a smaller teal font.

**SUMS Group** [www.sums.com.au](http://www.sums.com.au)  
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# Water in our school

Firstly, let's think about how much water our school uses and the purpose and value of water in our environment.

## 1. Where is water used in our school?

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## 2. Who uses water and what is the water used for?

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## 3. The average water use in a school in the Lower Hunter is **27 litres per student per school day**. Does your school use this amount? Let's think about it.

Complete the table on the following page to estimate your schools water use per day. You will need to estimate the water use for each activity throughout the day and you will also need the total number of students in your school.

In order to complete the table you will have to estimate how many students will visit the boy's and girl's amenities each day. These figures will be estimates only but will provide a good idea of how much water is used for these activities every day at your school.

## Complete the table as shown in the example below:

Water used to	Water used per activity	Times per day	Working Column	Total Litres per day
<b>Flush Toilets</b> Half Flush Full Flush	6L 11L	100 50	6 x 100 11 x 50	600 550
<b>Wash hands</b>	4L	150	4 x 150	600
<b>Drink</b>	0.25L	200	0.25 x 200	50
<b>Other</b> Showers, wet areas, food preparation etc				400
<b>Total Daily water use</b>				<b>2470 litres/day</b>

Now complete the water audit below to find out how much water is being used with each flush of the toilet or turn of the tap.

## Water Audit:

# Bubblers & Toilets

## Bubblers

Number of bubblers:

Type of bubbler:

spring loaded

push button

tap

lever

other

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## Toilets

Number of toilets:

Type of toilet:

single flush

dual flush

Estimated volume of toilet cistern

Number of leaking / running toilets

## Hand basins

Number of taps:

What is the average tap flowrate?

Number of leaking / dripping taps

Now that you have accurately measured how much water is being used each time, record your findings here:

Water used to	Water used per activity	Times per day	Working Column	Total Litres per day
<b>Flush Toilets</b> Half Flush Full Flush				
<b>Wash hands</b>				
<b>Drink</b>				
<b>Other</b>				
<b>Total Daily water use</b>				

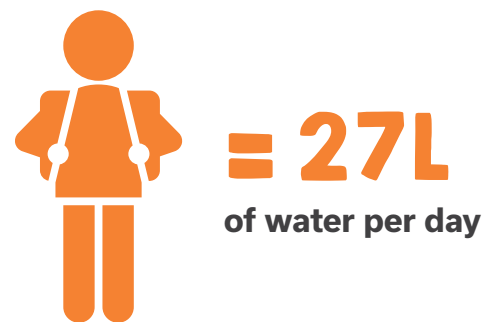
## 4. Now you can calculate the daily water use per student.

Use the calculation boxes below to calculate daily water use per student.

litres ÷  students =  litres/student

Total daily water use ÷ Number of students in your school = Average daily water use per student per day

5. If the average water use in a school is **27 litres per student per school day**, does your school use more or less water per student per school day? Please tick.



Our school uses  < 27 litres per student  > 27 litres per student

If your school uses more than **27 litres per student per school day**, discuss why you might use more/less water and what steps you could take to reduce water use at your school.

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## Exercise 2: Water wastage experiment

Now let's set up an experiment. Set up an example of water wastage using a dripping tap.

**Materials needed for this experiment:**

**Method:**



- Class room sink or suitable tap



- Measuring jug (1 litre) or measuring cup for smaller leaks



- Stop watch



- A. Place the measuring container under the dripping tap.** If the tap is not dripping turn it on slightly so that it is.



- B. Use your stopwatch to time one minute of dripping/leaking water.**



- C. Identify the amount of that is being wasted** using your measuring container.



Water lost in litres per minute =  litres

### 1. You can now calculate the water lost in litres per hour:

litres x  minutes =  litres/hour

Number of litres lost per minute x Number of minutes in an hour = Litres of water lost per hour

### 2. Calculating water lost per day (24 hour period):

litres x  hours =  litres/day

Water lost per hour x Number of hours in a day = Litres of water lost per day



### 3. Calculating water lost per year:

litres x  days =  litres/year

Water lost per day    x    Number of days in a year    =    Water lost per year

4. Summarise below how much water your leak represented per minute and what this leak would represent if it was left running for a whole year.

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### Did you know?

If your school has a leak of more than **5 litres per minute** which is left running for a whole year,

this leak will waste enough water to fill an **Olympic sized swimming pool**



## Exercise 3: Creating a water audit

As a class, identify all areas of water wastage in the table below and record their locations. Use the data from previous activities to estimate how much water is being wasted by each leak. Complete the worksheet as per example below.

**Record your school's water fixtures in the table below and describe any water wastage:**

Date	Problem identified	Description of fixture	Location	Litres/day wasted
02/04/2017	Leak	Bubbler	Canteen	Running constantly
02/04/2017	Leak	Outdoor tap	Hall	Dripping
02/04/2017	Faulty cistern	Toilet cistern – boy's toilet	Infants' toilets	Running constantly
02/04/2017	Drips	Hand basin – girl's toilet	Primary toilets	Constant dripping

## Record your findings below:

Date	Problem identified	Description of fixture	Location	Litres/day wasted

## Congratulations! Now you have identified the problem areas within your school.

When your list has been completed, hand this list to your Principal or General Assistant so actions can be taken to reduce water wastage.

**Saving water is important to all of us. We all need to change our behaviour and build in water saving measures to make a difference for the environment.**

# Saving water in our school

You may have noticed some large water tanks somewhere on your school grounds. This indicates that your school 'harvests' rain water from roofs and gutters. This water does not come from the normal water supply and will not cost your school money if operating properly.

## 1. If your school does have water tanks, where are they located?

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## 2. Approximately how big is the tank?

Tank Length =

metres

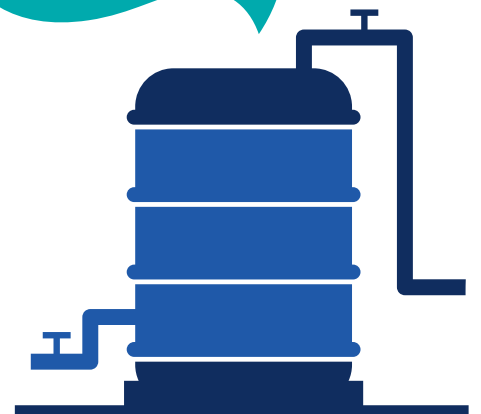
Tank Width at widest point =

metres  
(Tank diameter)

Tank Area =

metres<sup>2</sup>

Does your school have a water tank?



How BIG is your school's water tank?

## 3. How many litres of water does your school tank hold?

You can either work with your teacher to estimate the approximate tank volume, or ask your teacher for the accurate tank volume in litres.

<input type="text"/>	<b>area x</b>	<input type="text"/>	<b>height =</b>	<input type="text"/>	<b>litres each</b>
Tank area	<b>x</b>	Tank height	<b>=</b>	Total tank volume in litres	

#### 4. What is the 'harvested' rainwater used for in your school?

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#### 5. In your group, discuss what this means to your school. For example, does this help to save water and lower water costs?

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Remember to recommend ways to save water in everyday school life.



When your group has completed your water audit, identified areas of water wastage and water savings, present your findings to your classmates.

For more water saving tips go to [hunterwater.com.au/savewater](https://hunterwater.com.au/savewater)



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