Shoalhaven Council's Water Utility
WATER

Tapstar School Water Audit Kit

Teacher resource book

Years K to 6

Acknowledgements

Tapstar Waterwise Education Program aims to give students a sound understanding of water in our environment and the need to conserve the quality of this precious resource.

Shoalhaven Water has created an education program that incorporates a 40 minute play and complimenting lessons to educate children on what happens to water as it enters drains and sinks and how our behaviour can affect the quality of water that ends up in our waterways. The teaching kit and performance was produced by Eaton Gorge Theatre Company (EGTC).

This resource has been developed to promote the water quality within NSW through educating students in stages 1 – 3 at Primary School.

The contribution of those listed below was highly valued and is gratefully acknowledged:

- Carmel Krough, Shoalhaven Water, Director
- Tony Holmes, Shoalhaven Water, Business and Support Manager
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- Karen Cobban, EGTC
- Michael Connor, EGTC
- Ian McColm, EGTC
- Juliet Scrine, EGTC

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Contents

This teachers kit is designed to be used as a complimentary program to 'The Tapstar Saves the Waterways' play to educate children in preserving water quality.

Introduction

Program Overview

This School Water Audit is designed to be used as a guide to assist schools in reducing the demand of water, to help lower costs, and to be used as an educational tool for water education.

Why do a Water Audit?

If you are concerned at how much water is being used at your school and would like to inspire your students to use water more wisely and save money for the school, a water audit can help you to achieve these goals.

Doing a water audit provides information that can be used to measure improvments in your school's water efficiency.

Before the Water Audit

- Undertake a water conservation education program such as Shoalhaven Water's Tapstar Show.
- Read the water meter before and after school for at least a week. This information will help you work out if there are any leaks in the system. If your school is using water overnight and there are no night-users then you can reasonably assume there is a leak. Any leaks will have to be detected then fixed.
- With the water meter readings calculate the water used for each day. This will assist in identifying how much water is used at the school on an average day. Can you work out the average water consumption per person per day?
- Graphing results will help see any patterns emerging and is also a good maths activity. Using the results you can see which days use more water than others, investigate why.
- Obtain or create a site plan of the school. Identify the location of all water outlets such as toilets, sinks, bubblers, staff rooms, canteen, and indoor/outdoor taps.
- Make a school community commitment to water education and water conservation and inform the school community about the date of the water audit.
- Arrange for a teacher or student leader to assist a group of students to undertake the water audit. It may take as long as 2 hours.

Introduction

On the Day of the Water Audit

- Alert all staff and students that the water audit will be taking place.
- Brief the team leaders on the water audit process.
- Organise the class into water audit groups – appoint a team leader, recorder and reporter. Groups should be allocated to areas (boys toilets, girls toilets, staff toilets, canteen, staff rooms kitchens, class rooms, bubblers, outside taps etc)
- Provide students with work sheets, pencils, site plan of school grounds. Discuss locations of all water outlets.
- Discuss identification of any obvious problems such as dripping taps and running cisterns. This is when problems are identified.
- Remind students of health and safety rules.
- Each team leader reports on the results of their audit area.
- Identify areas of water wastage and develop a School Water Saving Action Plan.

After the Water Audit

- The water audit will raise awareness of water issues and encourage students to think of ways to reduce water use and waste.
- Students will generate many ideas about ways to save water. Some ideas may not be practical while others will be simple.
- Identify and prioritise short and long term water saving targets by having students list all ideas.
- Develop a school water savings action plan.
- Inform the school community of the outcomes of the water audit.
- Establish a school protocol for reporting leaking taps and pipes.
- After a period of time review the results.

Water Audit
Worksheet

Girls Toilet

Inspectors Name

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 .....

Water Audit
Worksheet

Boys Toilet

Inspectors Name

Toilets

Number of toilets .....

Type of toilet ☐ single flush

☐ dual flush

Estimated volume of toilet cistern .....

Number of leaking / running toilets .....

Urinals

Number of urinals .....

Type of urinal ☐ pull chain

☐ motion censor

☐ continuous flush

Estimated volume of urinal cistern .....

Number of leaking / running urinals .....

Hand Basins

Number of taps .....

What is the average tap flowrate? .....

Number of leaking / dripping taps .....

Water Audit
Worksheet

Staff Amenities

Inspectors Name

Toilets / Urinals

Number of toilets .....

Type of toilet ☐ single flush

☐ dual flush

Estimated volume of toilet cistern .....

Number of leaking / running toilets .....

Number of urinals .....

Type of urinal ☐ pull chain

☐ motion censor

☐ continuous flush

Estimated volume of urinal cistern .....

Number of leaking / running urinals .....

Hand Basins / Kitchenette / Showers

Number of taps .....

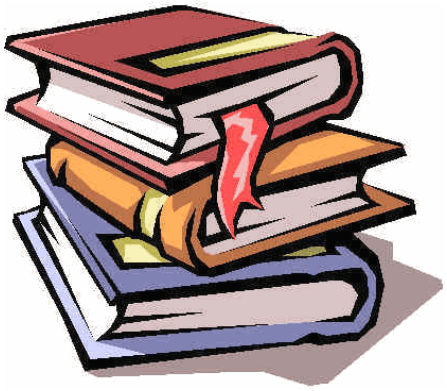
Number of showers .....

What is the average tap flowrate? .....

Number of leaking / dripping taps .....

Water Audit
Worksheet

Classrooms & Library



Inspectors Name

Toilets

Number of toilets .....

Type of toilet ☐ single flush

☐ dual flush

Estimated volume of toilet cistern .....

Number of leaking / running toilets .....

Urinals

Number of urinals .....

Type of urinal ☐ pull chain

☐ motion censor

☐ continuous flush

Estimated volume of urinal cistern .....

Number of leaking / running urinals .....

Hand Basins / Kitchenette

Number of taps .....

What is the average tap flowrate? .....

Number of leaking / dripping taps .....

Water Audit
Worksheet

Canteen, Hall & Gym

Inspectors Name

Toilets

Number of toilets .....

Type of toilet ☐ single flush

☐ dual flush

Estimated volume of toilet cistern .....

Number of leaking / running toilets .....

Urinals

Number of urinals .....

Type of urinal ☐ pull chain

☐ motion censor

☐ continuous flush

Estimated volume of urinal cistern .....

Number of leaking / running urinals .....

Hand Basins / Kitchenette / Showers

Number of taps .....

Number of showers .....

What is the average tap flowrate? .....

Number of leaking / dripping taps .....

Water Audit
Worksheet

Bubblers & Disabled Toilets

Inspectors Name

Bubblers

Number of bubblers .....

Type of bubbler:

☐ spring loaded ☐ tap

☐ push button ☐ lever

☐ other .....

Disabled Toilets

Number of toilets .....

Type of toilet ☐ single flush

☐ dual flush

Estimated volume of toilet cistern .....

Number of leaking / running toilets .....

Hand Basins / Kitchenette

Number of taps .....

What is the average tap flowrate? .....

Number of leaking / dripping taps .....

Water Audit
Worksheet

Outdoor Taps, Irrigation & Cleaning

Inspectors Name

_____

Outdoor Taps

Number of taps .....

Number of leaking/dripping taps .....

Are any taps vandalised or damaged? .....

Irrigation

(Perhaps talk to the school gardener)

Number of garden beds/oval with irrigation .....

Type of irrigation ☐ above ground

☐ below ground

Days per week irrigation used: (circle)

S M T W T F S

Time irrigation in use: ..... minutes

Number of times per week .....

Cleaning of Hard Surfaces

(paved or concreted areas and windows)

Areas that get hosed down .....

What is the average tap flowrate? .....

Number of leaking / dripping taps .....

Water Audit
Summary

Toilets	Number	Leaking, Broken or Running
Girls/Boys/Staff		
Urinals - Boys/Staff		
Disability		
Gymnasium		
Canteen		
Other		
Total		

Taps: Handbasins/Sinks	Number	Leaking, Broken or Running
Girls Toilet		
Boys Toilet		
Staffroom & Offices		
Disabled Toilet		
Classrooms		
Other		
Total		

Taps: Cleaning & Grounds	Number	Leaking, Broken or Running
Girls Toilet		
Boys Toilet		
Staff Toilet		
Disabled Toilet		
Canteen		
Grounds		
Other		
Total		

Water Audit
Summary

Showers	Number	Leaking, Broken or Running
Girls Toilet		
Boys Toilet		
Staff		
Disability		
Other		
Total		

Bubblers	Number	Leaking, Broken or Running
Girls Toilet		
Boys Toilet		
Staffroom & Offices		
Disabled Toilet		
Playground		
Other		
Total		

Other	Number	Leaking, Broken or Running
Dishwasher		
Hot Water Urn		
Water Cooler		
Rainwater Tank		
Sprinkler System		
Irrigation System		
Other		
Total		

Support
Material

Being Waterwise at School

Ways to Save Water at your School

- Report all leaking taps, bubblers and toilets
- Use the half flush toilet button when you can
- Use a bucket when washing paint brushes
- Turn all taps and bubblers off after using them
- Have water monitors
- Follw the School "Water Action Plan"

Be a Water Saving School

- Install aerators on spring loaded taps
- Install dual flush toilets and motion sensor urinals
- Install water efficient shower heads
- Fix all leaks quickly
- Use a broom or blower vac when cleaning outside areas
- Mulch garden areas and plant Australian Native Plants
- Use tap timers or a controlled water irrigation system
- Install rainwater tanks

Health & Safety at School

- Respect others and speak quietly
- Wash your hands after visiting the toilet area
- Keep your clothes dry
- Empty buckets or jugs of water onto a garden or grassed area
- Use equipment such as stopwatch and tape measure carefully
- DO NOT TOUCH HOT WATER TAPS

Support
Material

Develop a Water Action Plan

As a group or class activity you can develop a Water Action Plan.

We will save water by:

1. _____
2. _____
3. _____

Reasons for your choices

_____

_____

_____

_____

Issue

Problem _____

_____

Action to be taken _____

_____

Goal

Who is responsible? _____

_____

Strategy

Cost _____

_____

Develop a Water Action Plan

Develop a school awareness program.

Perhaps have a competition to design posters to go up in water use areas.

eg

Support
Material

Consider a School Campaign

Consider an education campaign that will need some imaginative strategy:

Helping kindergarten children turn off taps	Creating water monitors to check that taps and bubblers have been turned off	Have messages printed near taps or drains eg the drain is just for rain	Involve the students in painting murals on the water tanks with water saving messages and designs

Ongoing water education and water conservation strategies could include:

- Integrate water education and water conservation across all classes.
- Undertake a school water audit annually.
- Review and update your school water savings action plan annually.
- Communicate and celebrate water saving achievements.
- Integrate water saving strategies and outcomes into school policies.
- Share your ideas and achievements with other schools and the wider community.
- Discuss water conservation and messages regularly at school assemblies.

Support
Material

How to Measure Flowrates

It is worth measuring flow rates to show that some taps use more water than others but it is not necessary to measure every tap.

One tap in each area is usually sufficient.

You will need:

- Clip boards
- Buckets and/or one litre jugs
- Stop watches
- Tape measure or ruler
- Disposable gloves

Use a measuring cylinder or jug and a stop watch or watch with a second hand.

Turn the tap on fully and put the jug under the tap for 5 seconds.

Turn the tap off.

Measure the volume (in millilitres) and multiply by 12 to give millilitres per minute.

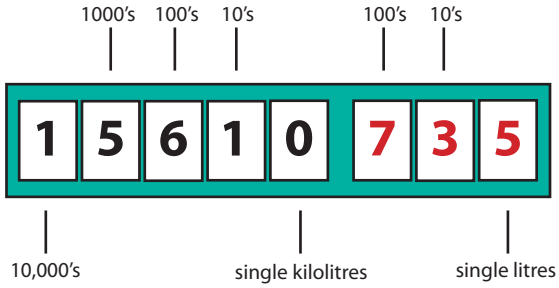
Support
Material

How to Read your Water Meter

Use the school water meter/s to measure how much water is used over a one week period. If your school has more than one meter add the results together to get the total.
Make up a class roster of students who will read the meter just before school starts and ends each day.

You should try to keep times about the same each day.

Your water meter dial will look something like this.



Read the red figures only!

1000 litres is equal to 1 kilolitre

Complete the daily water use results table below

	Monday	Tuesday	Wednesday	Thursday	Friday
2nd Reading (School finish) Time:					
1st Reading (School start) Time:					
Daily Water Use (2nd reading minus the 1st reading)					

Weekly Water Usage ☐

☐ **Friday Afternoon Reading**

— ☐ **Monday Morning Reading**

= ☐ **Weekend Use**

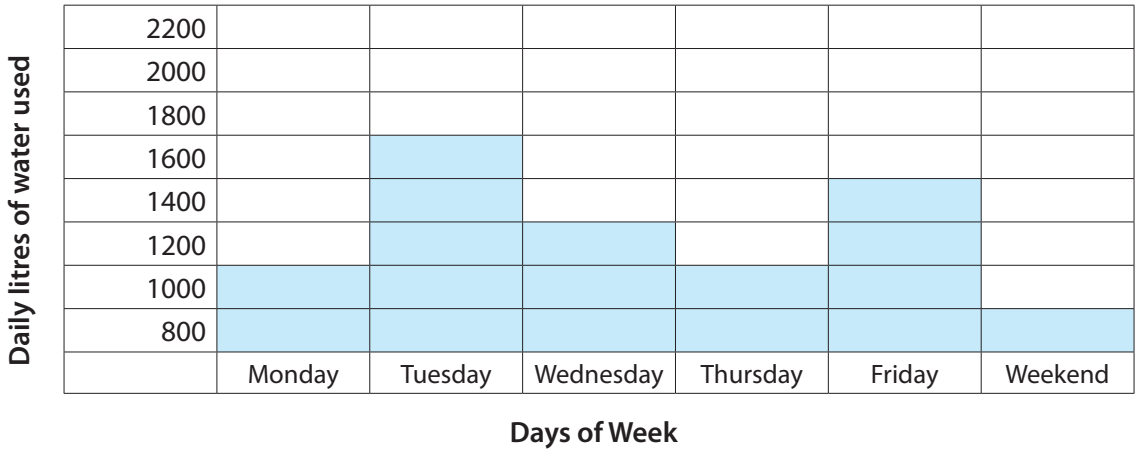
Support
Material

Recording School Water Usage

Complete chart to determine high water use days

To assist the children in determining the schools water usage it may be worthwhile to chart your results.

Please see the below example



The objective here would be to determine why Tuesday and Friday are high water usage days and why there is water being used over the weekend when there is no one at the school.

Class activities / discussion could include:

- Checking for leaks and how much water is wasted from this.
- High water usage days - where is the water being used and can the process be improved?

Notes

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