

Western Treatment Plant

What ends up at the Western Treatment Plant?

VELS Level 3

Strand/Domain	Dimensions
Discipline-based Learning/Science	Science knowledge and understanding
	Science at work
Discipline-based Learning/The Humanities	Humanities knowledge and understanding
	Humanities skills
Physical, Personal and Social Learning/Civics and Citizenship	Civic knowledge and understanding
	Community engagement
English	Writing

The pre-activity gives students the necessary background to make their visit to the Western Treatment Plant more meaningful. Students create a house plan to identify the different household items produced in different rooms of their home and what may end up in the sewage at the Western Treatment Plant. They conduct a home audit of sewage that enters the sewerage system from their home. Students build a Western Treatment Plant word bank.

The post-activities elaborate on aspects of the sewage treatment process observed during the visit. Students create a social message on 'What should or should not be put into the sewerage system' using the descriptive word bank and the house plan. They develop a visual flow chart of the sewerage system from home to the Western Treatment Plant.

Pre-activity 1: Down the Drain in my House

Focus

- Students identify the different types of household items produced in different rooms of their home that may end up in sewage at the Western Treatment Plant.

Duration

- Two double sessions

Activity

- Explain to students that everything that goes down the kitchen, laundry and bathroom drains, as well as what you flush down the toilet is called 'sewage' (or wastewater). Make the point that a lot of water ends up as sewage.
- Pose the question, 'What do we get rid of from our home that might end up as sewage?'
- Draw and label a simple plan of a house on the whiteboard, ensuring that the kitchen, bathroom, toilet and laundry are evident. Move from room to room, asking students to identify items that come from each room that may end up as sewage. List these on the board. (Note: an important part of this initial discussion is to focus on the idea that the items need not be solid, for example, the water and detergents from the dishwasher and washing machine, or cooking oil. Prompt students to think of these types of items as well as the more familiar. See http://education.melbournewater.com.au/content/sewage_and_recycling/your_role/your_role.asp for a list of household items.)
- Ask students to draw and label a plan of their home, using the plan on the whiteboard as a guide. In each room, students draw where the sewage is produced, for example, the shower in the bathroom; the toilet; the sink and dishwasher in kitchen; the washing machine in the laundry. The four main areas from which sewage is produced are the kitchen, laundry, toilet and bathroom. There may need to be some agreement reached with the students for rooms with an alternate name, for example, ensuite equals bathroom, or for combinations of rooms, such as laundry/bathroom.
- Ask students where they think the sewage goes once it has left their house. Explain that sewerage is the system of sewers (large pipes) that transfers sewage to a treatment plant, such as the Western Treatment Plant. Show them the simplified diagram at:

Teacher tip

Acknowledge that there are different configurations of homes but all have these essential systems to remove waste. Talk to students about the possibility of using symbols to illustrate toilets, laundry sinks, etc.

- http://education.melbournewater.com.au/content/sewage_and_recycling/what_is_sewage/what_is_sewage.asp
- www.melbournewater.com.au/images/sewerage/melb_sewera_ge_system_lrg.jpg
- Students use their plan to conduct a home audit of the different types of sewage produced by the family. Students can list the sewage by room using a table or list them on their plan.
- Drawing on the student home audits, create a list of the different types of sewage produced in each room of the home. Add this information to the class house plan.
- Ask students to think about sewage by the time it gets to the Western Treatment Plant. In pairs students agree on words to describe their thoughts and use a Y chart (looks like, smells like, sounds like) to record their ideas. Students contribute their ideas to a Western Treatment Plant word bank. Student use a range of dictionaries to check for spelling accuracy.

Note: The word bank and house plan will be revisited after the visit to the Western Treatment Plant.

Post-activity 1: Sewage, Sewerage and the Western Treatment Plant

Focus

- Students create a social message for the Western Treatment Plant using the descriptive word bank and their house plan.

Duration

- One double session

Activity

- In pairs, students revisit their Y chart and include any changes to their ideas since the visit.
- As a class, conduct a review of the word bank developed by the class prior to the site visit to the Western Treatment Plant, ticking words that accurately described the experience and crossing off inaccurate words.
- In pairs, students discuss their site visit experience and decide on suitable descriptive words to be added to the word bank. Students use a range of dictionaries to check spelling accuracy.
- Revisit the class house plan and discuss with the students which of the items listed may go in the sewerage system and which ones should not, and why or why not. Students revisit their home audit and tick or cross the items that should or should not be put in the sewerage system.
- Pairs discuss the consequences for the treatment of sewage, and the environment, of what is put into the sewerage system. Discuss with students why sewage goes to the plant. What happens there? Using the word bank and their house plan students develop a message about what should or should not be put into the sewerage system.
- Share messages. Students evaluate the messages for:
 - accuracy and meaningfulness
 - best use of descriptive words from the word bank.

Post-activity 2: Western Treatment Plant and my Family

Focus

- Students develop a visual flow chart of the sewerage system from home to the Western Treatment Plant.

Duration

- One double session

Activity

- Students use Student worksheet: Western Treatment Plant and my Family for this activity. Using the completed worksheet students create a visual flow chart that shows that:
 - sewage generally comes from four room types in the family home
 - sewage travels through pipes and channels to the Western Treatment Plant
 - the Western Treatment Plant uses a process to treat sewage
 - treated sewage can be released to the environment or used as recycled water.
- Using the students' visual flow chart as a focus, discuss and agree on key important information about the sewerage system and Western Treatment Plant, including:
 - sewage treatment takes out solids and removes harmful chemicals
 - the Western Treatment Plant is a natural treatment process that uses bacteria and not chemicals to treat sewage
 - treated water from the Western Treatment Plant is used as recycled water on the farm and the wetland, and is safe to go into the ocean (Port Phillip Bay)
 - sewage from just over half of Melbourne's homes ends up at the Western Treatment Plant (over 40% goes to the Eastern Treatment Plant, Bangholme, with the rest being treated at small plants throughout Melbourne) and the importance of thinking about what we put down the drain in our homes.
- Students use the information from the discussion to annotate their visual flow chart with key facts.

References



Melbourne Water is owned by the Victorian Government. We manage Melbourne's water supply catchments, remove and treat most of Melbourne's sewage, and manage rivers and creeks and major drainage systems throughout the Port Phillip and Westernport region. Telephone 131 722 or visit melbournewater.com.au



- Melbourne's Sewerage System, Melbourne Water,
www.melbournewater.com.au/content/sewerage/melbournes_sewerage_system/melbournes_sewerage_system.asp
- What is sewage?, Melbourne Water,
http://education.melbournewater.com.au/content/sewage_and_recycling/what_is_sewage/what_is_sewage.asp
- Western Treatment Plant, Melbourne Water,
www.melbournewater.com.au/content/sewerage/western_treatment_plant/western_treatment_plant.asp
- Your role, Melbourne Water,
http://education.melbournewater.com.au/content/sewage_and_recycling/your_role/your_role.asp

Student worksheet: Western Treatment Plant and my Family (post-activity 2)

You are going to make a flow chart that shows what happens to sewage that goes down drainpipes in your home. Draw pictures of your bathroom, kitchen, laundry and toilet in the boxes. Cut out the boxes and paste them onto a large sheet of paper. Show how sewage from your house gets through the sewerage system to the Western Treatment Plant for processing.

My bathroom	My kitchen
My laundry	My toilet
	
Sewerage pipe	Pumping station



Western Treatment Plant channels



Western Treatment Plant lagoons



Western Treatment Plant aerators



Sea (Port Phillip Bay)

Curriculum mapping

Strand/ Domain	Dimensions	Level	Standard
Discipline-based Learning/Science	Science knowledge and understanding	3	Describe natural physical and biological conditions, and human influences in the environment, which affect the survival of living things.
	Science at work	3	Explain how scientific knowledge is used, or could be used, to solve a social issue or problem.
Physical, Personal and Social Learning/Civics and Citizenship	Civic knowledge and understanding	3	Explain why protection and care for the natural and built environment is important.
	Community engagement	3	Participate in activities to protect and care for the natural and built environment.
English	Writing	3	Express a point of view providing some information and supporting detail.

Connections to the Australian Curriculum

Australian Curriculum	Content strands/ sub-strand	Content descriptions
Science	Science Understanding/ Biological sciences	<p>Year 3</p> <p>Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044)</p> <p>Year 4</p> <p>Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073)</p>
	<p>Science as a Human Endeavour/ Nature and development of science</p> <p>Science as a Human Endeavour/ Use and influence of science</p>	<p>Years 3 and 4</p> <p>Science involves making predictions and describing patterns and relationships (ACSHE050)/ (ACSHE061)</p> <p>Science knowledge helps people to understand the effect of their actions (ACSHE051)/ ACSHE062)</p>
	Science Inquiry Skills/ Communicating	<p>Years 3 and 4</p> <p>Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports (ACSIS060)/ (ACSIS071)</p>