

Not Just Any Old Drain (Middle Childhood)

The difference between the sewage and stormwater systems is explained and pollutants in stormwater discussed.

Curriculum Links: S&E (Place & Space, Natural & Social Systems, Active Citizenship)
 Science (Acting Responsibly, Earth & Beyond)
 English (Viewing)

Outcomes: Students will develop the following understandings:

- People's activities have planned and unplanned impacts on the natural environment.
- Human activity impacts on and may change the interrelationships in a natural system.
- Decisions made now about caring for the environment (sustainability) will affect people's well being in the future.
- Home and community experiences influence the meanings made from visual texts.

Students will also have the opportunity to:

- Respect and have concern for the environment by understanding how litter endangers the waterway systems and take action to avoid this at home and at school.
- Take messages to the community to avoid pollution of stormwater.
- Make meaning from visual text.

Preparation:

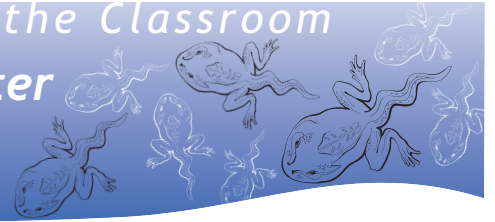
Prepare an overhead and/or class set of page 21.

Class Activity:

It is recommended that the lesson "What is Litter" is completed prior to this lesson as a knowledge of what litter is in its broader meaning, and why it is undesirable, is assumed.

- Read and Discuss the Lesson Notes with the class.
- Complete Activity 1. Ensure students can explain how items enter the drainage system, why they are pollutants and how the pollution could be avoided.
- Teachers may like to divide this into home factors and community factors.
- Reiterate **inside drains for septic/sewer—outside drains for stormwater/runoff.**
- Distribute diagram (picture) to the students. They are to colour the water and drains as indicated and discuss.
- Completed picture should be checked to assess understanding and students can then paste it in their workbooks.
- Complete activity 2 of the Activity Sheet.





Lesson Notes

The sewage and stormwater systems are two different systems:

The **stormwater** or drainage system carries rainwater from streets and outdoor drains. It is a system of open channels or gutters, side entry pits and drains which connect to our creeks, rivers and eventually the Indian Ocean.

Only **clean rainwater** should enter this system as this water is not treated in any way before being released into the waterways. Stormwater which contains litter, rubbish, oil and grease from the road, paint, plastics, paper, animal poo, leaves, fertilisers and pesticides from the garden and detergents from car washing **WILL** pollute our rivers and ocean.

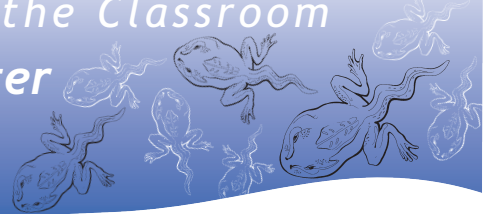
The **wastewater (sewage)** system of pipes carries everything from your laundry, kitchen sink, toilet and bathroom drains to the Wastewater Treatment Plant or, in some areas, a septic holding tank. This water contains all sorts of things like urine, poo, toilet paper, soaps and cleaning agents, left over food and oil. If it comes from factories it might contain chemicals, heavy metals, micro-organisms, fats and oils.

Sewage water is treated and made environmentally friendly before being discharged under licence into the ocean. However, not all fats, oils, detergents and chemicals can be totally removed.

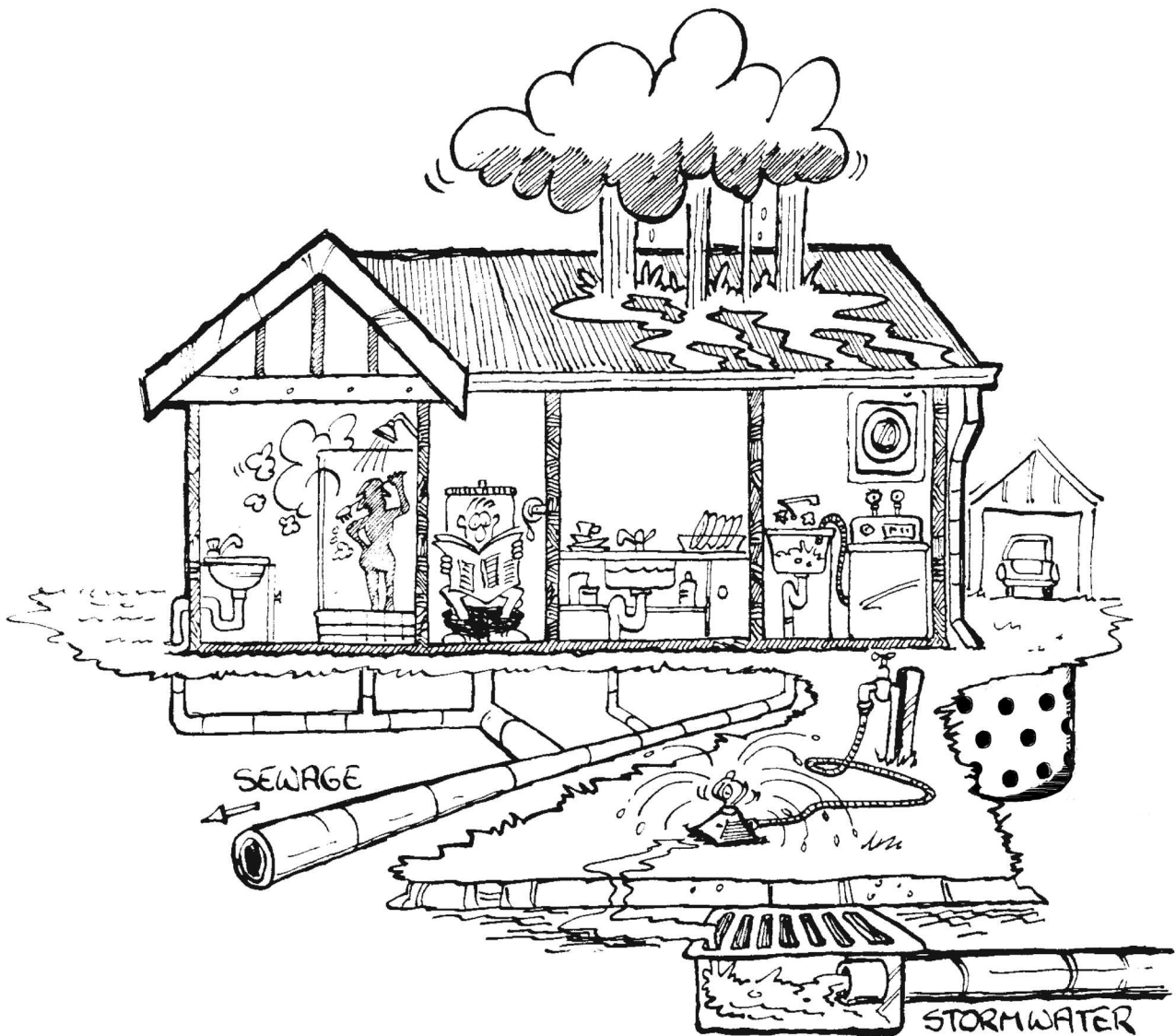
N.B. In Western Australia, houses in newer areas where soils are not a clay soil will have soak wells installed to collect rainwater from the roof. These then allow water to infiltrate more slowly into the ground.

Look around your school and house and see where your roof water goes. Is it connected to a soak well at the base of the gutter? Is it piped to the stormwater or, as is the case in some older schools and country areas, does it just run from the gutter onto the ground. In this case, see what happens when it rains (this will depend on soil type and type of rainfall event).





Where does the water go?

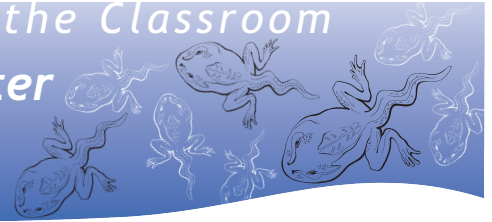


Colour the water which goes to septic or sewage systems red.

Show where it comes from.

Colour the water which goes directly to the waterways blue. Colour the source of the water also.

Colour the water which could go to a soakwell green.



Activity 1:

Answer these questions

1. Name the two types of drains which take water from your house and neighbourhood.
2. What is the major difference between these two piping systems other than they end up in different places?
3. Why do you think it is illegal to connect the sewage pipes to the stormwater drainage system?
4. Tick the column which shows where water from each of these activities will end up.

Activity	Stormwater System	Sewage System
a) water from the kitchen sink after you do the dishes		
b) water from the washing machine		
c) washing the car on the driveway		
d) flushing the toilet		
e) watering the garden		
f) having a long, soapy shower		

5. List five things which might enter a stormwater drain during a rainstorm. Make a table to show where each thing came from and how it might have gotten into the drainage system.
6. Also show how each item pollutes waterways and suggest ways to stop these pollutants entering the stormwater.

Activity 2:

Side Entry Pits are openings in the street gutter that lead to a drain.

In a large city suburb, streets usually have a single side entry pit for every 10 houses.

In Melbourne's Metropolitan area for example, there are about 2 000 000 side entry pits.

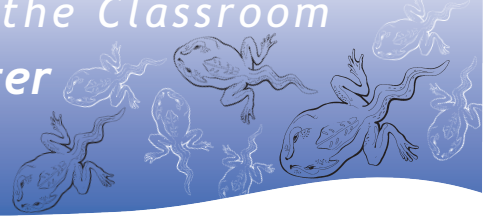


1. Find out from your council, what the total number of side entry pits and /or the number of houses per drain entry in your area.
 - How many "potential" entry points for litter are there based on this information?
 - Why do you think we need so many side entry points?
2. Place these words in the correct sequence, ending at the sea.

drain river gutter sea rain street wind side entry
pit



Section 9 • Stormwater



3. These things were discovered in the drain leading to the river. For each item, suggest how it came to be in the drainage (stormwater) system. Suggest a way each could have been disposed of in a more thoughtful and environmentally friendly way.

ITEM	THOUGHTLESS DISPOSAL	THOUGHTFUL DISPOSAL
Soft Drink Can		
Baby's disposable nappy		
A yellow footy sock		
Newspapers and junk mail		
Leaves and grass clippings		
Chicken bones and foil bag		

4. Write TRUE or FALSE beside each statement:

- A) Clean drinking water comes into our homes through one set of pipes and waste water leaves through another set of pipes. _____
- B) Water from the stormwater system is treated before being discharged. _____
- C) Sewage is not treated before being released to the ocean. _____
- D) Kerbside recycling and garbage collection is a big contributor to litter. _____
- E) If I could change one thing I do to help create less litter. THIS ONE THING WOULD BE _____

5. Construct a Venn Diagram to compare stormwater and sewerage systems.