

# Table of Contents

## **WATER IS LIFE .....**

### **1. MAKE EVERY DROP COUNT.....**

Activity1A: The difference between evaporation and condensation.....

## **WATER USE EFFICIENCY.....**

### **2. ALWAYS USE WATER WISELY.....**

Activity2A: Wise up on wetlands.....

### **3. YOU CAN BE A WATER INSPECTOR.....**

Activity3A: Inspect the water used at home.....

Activity3B: Meter readings on water inspection.....

### **4. MONEY FROM THE RIVERS.....**

Activity4A: Natural resources that are of benefit to human activities.....

### **5. WE ALL PLAY A ROLE IN THE ECONOMIC CYCLE.....**

Activity5A: How money, goods and services flow.....

Activity5B: Let's conserve rivers in order to get and save money.....

### **6. ROLES AND RESPONSIBILITIES IN THE MANAGEMENT OF WATER RESOURCES, SANITATION AND FORESTRY.....**

Activity6A: Where and how to apply for water?.....

Activity 6B: Where do you report water and sanitation related problems.....

## **WATER QUALITY.....**

### **7. HOW HUMAN ACTIVITY IMPACT ON THE QUALITY OF WATER?.....**

Activity7A: Forms of river pollution.....

Activity7B: River pollution worksheet.....

## **SANITATION, HEALTH AND HYGIENE.....**

### **8. ALWAYS PROTECT YOURSELF FROM GERMS.....**

Activity8A: Constructing a hand washing facility.....

Activity8B: Spread the word.....

### **9. PREVENTION IS BETTER THAN CURE.....**

Activity9A: Types of communicable diseases.....

Activity9B: Information sheet on communicable diseases.....

### **10. WASTE CAN HARM US.....**

Activity10A: Identification of types of waste.....

Activity10B: We are all waste generators.....

**WATER SAFETY.....**

**11. SWIM WHERE IT IS SAFE TO DO SO.....**

Activity 11A: The dangers of water.....

Activity 11B: Water safety / Emergency First Aid.....

**FORESTRY.....**

**12. THE VALUE OF TREES.....**

Activity12A: Trees are important, they must be protected.....

Activity12B: How communities destroy trees.....

Activity12C: Research on protected trees.....

**13. SOCIAL AND ECONOMIC IMPORTANCE OF THE FOREST.....**

Activity 13A: Social importance of the forest.....

Activity 13B: Economic importance of the forest.....

**ALIEN INVASIVE PLANTS.....**

**14. LAWS RELATED TO ALIEN INVASIVE PLANTS.....**

Activity14B: Interpretation of the cartoon.....

Activity14B: The CARA Laws regulation.....

Activity14C: Identifying Alien Invasive plants.....

**15.CAREERFAIR.....**

Activity 15A: Water related careers.....

Activity 15B: Programme for career fair exhibit.....

**BIBLIOGRAPHY**

**WATER IS  
LIFE**

## 1. Make every drop count

### ACTIVITY

Learners will be able to:

- Differentiate between cloud formations.
- Associate the clouds with the type of rain they bring.

### ACTIVITY 1A: THE DIFFERENCE BETWEEN EVAPORATION AND CONDENSATION

Read through information sheets individually and then answer the questions that follow.

#### INFORMATION SHEET: WHY DON'T ALL CLOUDS LOOK ALIKE?

Clouds are main sources of water. Clouds are formed when the sun heats the surface of the earth (moist) and the moisture in the soil evaporates back into the sky from the cloud(s). Clouds also condense (come together) to form small drops of water which fall to the ground as rainfall. There are many kinds of clouds and each kind has a name. Most clouds are named after their shape.

The clouds that look like great sheets pulled across the sky are called **stratus clouds**. These are the kinds of clouds that are closest to the ground. They form when the layer of warm air rolls over a layer of cooler air. Together they form a thick sheet like layer.

**STRATUS CLOUDS**  
(look like thin sheets)



**CUMULUS CLOUDS**  
(look like fluffy balls)



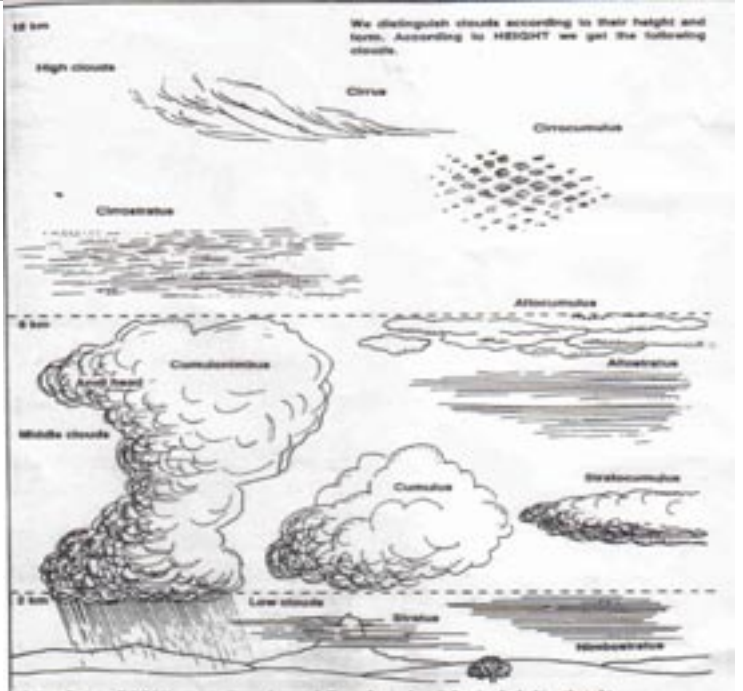
The clouds that are like fluffy balls of cotton wool or scoops of ice cream are called **cumulus clouds**. Cumulus clouds that rise high into the air and grow dark and heavy with rain are the kind of clouds that cause thunderstorms.

The highest of all look like thin wispy streaks or curls. They are so high up in the air, where the air is cold, that they are made up of ice droplets. These clouds are called **cirrus clouds**

**CIRRUS CLOUDS**  
(are thin and wispy)



**DIFFERENT CLOUDS**  
(in different heights)



Strato means "sheet like"  
 Cumulo means "pile"  
 Cirrus means "curl"

**Did you know?** The darker the clouds are, the more thunderstorm and rain we get.



## QUESTIONS

1. Look at the different cloud formations and tell which one will bring
  - (a) Light showers
  - (b) Thunderstorms
  
2. According to the information sheet some clouds are at lower levels than others. Which ones are
  - a. low clouds
  - b. high clouds
  
3. What is the height of the
  - a. low clouds
  - b. high clouds
  
4. According to your own observation the clouds that bring more rain are (dark coloured or light coloured)?

## Extension Activity

5. Answer the following questions:
  - On the day you are going to do this task go out and have a look at the sky.
    - (a) What types of clouds are visible?
    - (b) Is there any possibility of rain?
    - (c) If there is a possibility of rain, what preparations have you done to save rainwater in your school?

## ASSESSMENT

CATERGORIES	Not Achieved (1% - 35%) Level 1	Partially Achieved (36% - 39%) Level 2	Achieved (40% - 69%) Level 3	Outstanding/ Excellent Achievement (70% - 100%) Level 4
Knowledge / Understanding	The Learner:			
• Knowledge of facts and terms	• Demonstrates no or insufficient knowledge of facts and terms	• Demonstrates limited knowledge of facts and terms	• Demonstrates expected knowledge of facts and terms	• Demonstrates thorough knowledge of facts and terms

# WATER USE EFFICIENCY

# Water Use Efficiency

## 2. Always use water wisely



### ACTIVITY

You will be able to:

- Identify activities that people engage in that have a negative impact on their catchments areas and water quality of the wetlands
- Identify actions that show respect of and will sustain plant and animal life.
- Learn more about what wetlands are and how beneficial they are to us.

### Did you know?

Wetlands and their plants are an increasingly popular alternative for filtering wastewater from homes, factories, schools and businesses.



### ACTIVITY 2A

**WHAT TO DO:** Work in pairs for this activity.

- Name the sources of water.
- Brainstorm harmful activities that can be done by households, farmers, industries, mines to the water source.
- Read the passage and answer the questions that follow. You may use the dictionary for the vocabulary exercise.
- Exchange your books and mark each other as the whole class provides the correct answers.

### WISE UP ON WETLANDS

A case study to take you to the wetlands! Source: Envirokids volume 19. Text by Roberta Griffiths



Hi, I'm David Lindley. I am a conservation ecologist for the Wildlife and Environment Society, working on the Rennies Wetlands Project. I survey and record where our wetlands are, and help to conserve and promote their wise use. I use many neat 4 X 4 to reach mountain streams and dams on farmlands. I also spend time helping people to map and monitor wetlands. Using a set of booklets called "Wetland Fix" (written as part of my project), I can help farmers and the public to restore and use wetlands wisely.

**Why do I work on wetlands?**

It is a sad fact that the unsustainable use of land by people is the greatest threat to wetlands today. "Development" has already destroyed more than half our wetland areas, and many cannot be restored. Wetlands play an important role in cleansing, controlling and storing our country's water. We cannot afford to lose more wetlands, and must start fixing and protecting those that are left. Wetlands need our protection!

**What is a wetland?**

Any land that is wet is a wetland. Wetlands include mountain springs and bogs where rivers start, marshy places, rivers, vleis, lakes, estuaries, the sea shore, even coral reefs. Different wetlands have their own special vegetation types, like reeds and underwater plants. Some wetlands are constantly wet and under water, while others are temporary pans which dry up at certain times of the year. Others are simply areas of waterlogged soil where the water lies just below the surface e.g. bogs, marshes, and where mountain streams start. About 6 percent of the Earth's surface is covered by wetlands. These areas have a high diversity of plants and animals, and are among the Earth's most productive ecosystems.

**The importance of wetlands**

- Store water
- Purify water
- Erosion control
- Recreation
- Recharge groundwater
- Regulate floodwater and streams
- Conserve special plants and animals
- Environmental education



David Lindley worked for the Wild life and Environment Society on the Rennies Wetland Project. What have we learnt from his research?

A) Vocabulary: Work out the meaning of the following words from the passage or look from your dictionary.

**1. Ecologist:**

---

---

---

**2. Wetlands:**

---

---

---

**3. Monitor:**

---

---

4. Restore:

---

---

---

---

5. Sustainable:

---

---

---

---

**B) What is a Wetland?**

---

---

---

---

C) What is David so concerned about the wetlands?

---

---

---

---

D) Explain the importance of the wetlands

---

---

---

---

E) Will knowing more help us to protect the wetlands and change our attitudes? Why?

---

---

---

---

---

# Water Use Efficiency

## 3. You can be a water inspector



### ACTIVITY

You will be able to:

- Investigate how much water is used at home, for what purpose.
- Make observations and collect data
- Confirm findings of the collected data.
- Determine during which time of the day most water is used.

### Did you know?

30% of your indoor water is used in flushing the toilets. The average toilet uses 15 to 17 litres per flush, average dish 40 litres per load and the typical shower 40 litres per minute.



### You will need:

- a water meter box available at your home
- pencils

In this activity you will:

- Investigate how much water is used for what purpose at home.
- Inspect the water use at home in 24 hours.

1. Brainstorm with your partner the uses of water at home.
2. Re-draw the following table:

PURPOSE	FOR EACH TIME USED	TOTAL

3. List all the uses of water in the first column.
4. Place a tick on the second column every time you observe the water being used for a particular purpose at home.
5. After 24 hours calculate the number of times the water has been used for a particular purpose at home.

### ACTIVITY 3A: INSPECT THE WATER USED AT HOME

In this activity you shall determine which between a bath and shower uses more water:

1. Water in a bath basin.
2. Measure the depth of water, by a plastic ruler.
3. Record the depth of the water on your workbook.
4. Now place the basin or a bucket on the shower drainage.
5. Request someone to empty it when full.
6. Empty all the water collected from the shower in the bath basin.
7. Measure the depth of water.
8. Record on your answer book.

## Questions

1. Which requires more water, a bath or shower?
2. What measure do you think could be taken to save water at home?
3. Why is it important to measure water level when there is no person in the bath?

## Extension

(a) Imagine that you were the director responsible for water services in your municipality. You are experiencing severe shortage of water, which rules can you impose on communities to conserve water.

(b) Design a poster that will list the ways to save water using the following:

- Use of dirty water
- Leaks
- Dripping taps
- Leaking toilets
- Flushing toilets
- Showering
- Bathing
- Kitchen sink disposal
- Water pipes
- Watering lawns
- Washing cars
- Fertilisation of lawn
- Lawn cutting

## ACTIVITY 3B – When do people in your home use most water?

In this activity we shall explore the times that water is used the most.



You need to do this activity from Friday night through to Saturday night so that you can take all the five-meter readings over 24 hours. Or you could ask someone in your household to help you take the readings.

1. Take readings at the following times and fill in the number of units shown on the meter each time.

Reading 1 at mid-night on Friday	
Reading 2 at 6.00 a.m. on Saturday	
Reading 3 at noon on Saturday	
Reading 4 at 6.00 p.m. on Saturday	
Reading 5 at mid-night on Saturday	

2. Subtract the number of units in reading 1 from the number of units in reading 5 to get the total **consumption** over 24 hours.

.....

.....

.....

3. From the five-meter readings you can calculate the water consumption in your household in six-hour periods. Simply subtract one meter reading from the next, like this: Reading 2 – Reading 1 = consumption from midnight on Friday to 6.00 a.m. on Saturday. Do this for each six-hour period.

Midnight to 6.00 a.m.:	
6.00 am to noon:	
Noon to 6.00 p.m.:	
6.00 p.m. to midnight:	

4 Answer the following questions:

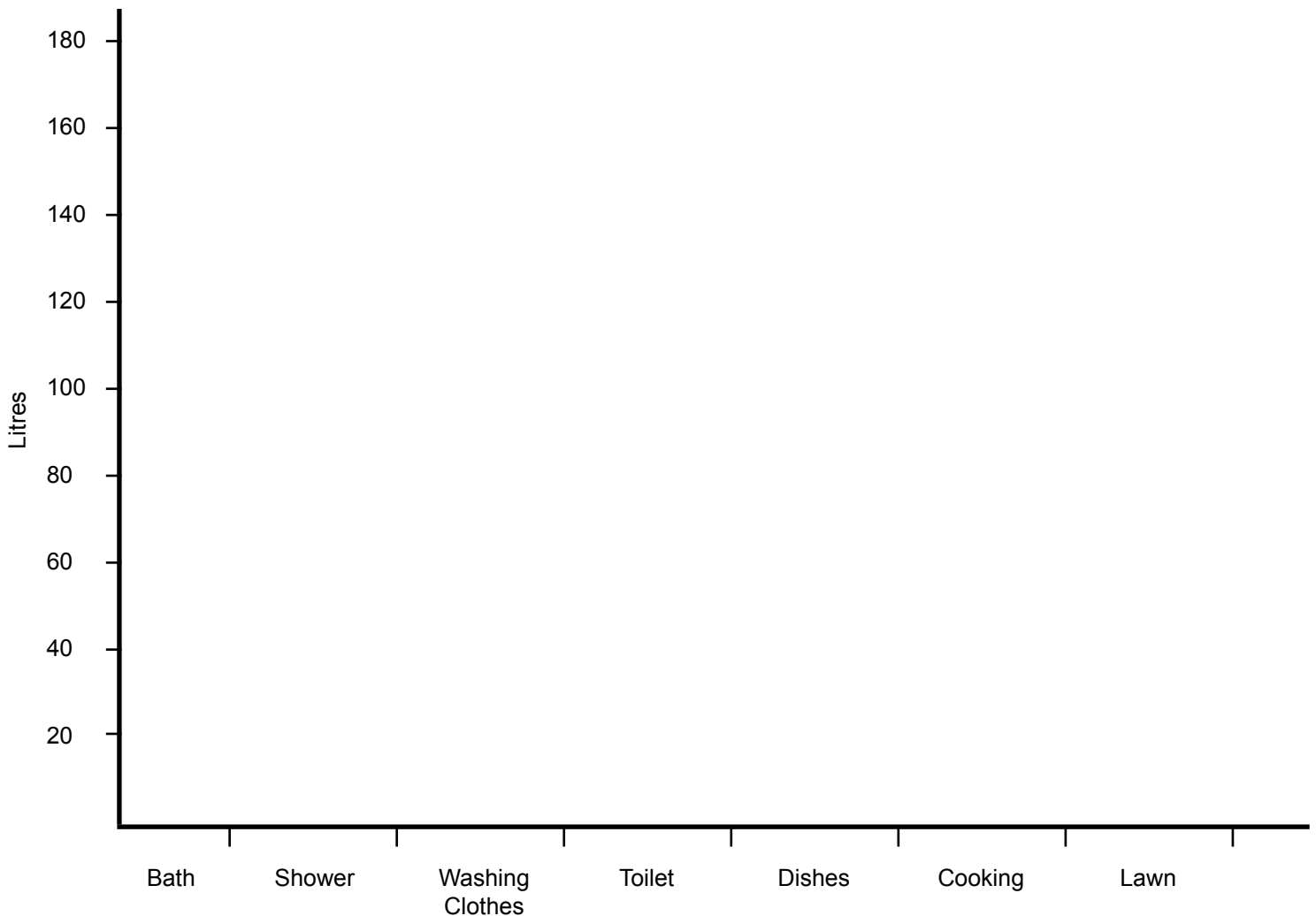
- (a) Which day did your family use more water?
  - (b) What could be the total amount used by your family during the week?
  - (c) What is the average amount used by each person in your family?
  - (d) Estimate a monthly average of water usage in your family.
5. Make suggestions about reducing water consumption in your homes based on the findings that you have obtained from your audit?
  6. Make a presentation answering the question at what time does your household use most water? And explain how you have found out the answer.

### Extension

The average household uses 800 litres of water per day. The approximate volumes of home water usage are as follows:

Water Usage	Approximate Litres
Bath	100 – 150 litres
Shower	20 litres
Washing clothes	75 – 100 litres
Flushing a toilet	10 – 15 litres
Dishwater	50 litres
Cooking	30 litres
Watering a lawn	40 litres

#### 1. Plot and colour the bar graph representing the above information



#### Questions

1. Which activity uses more water?
2. Which one uses less water?
3. How can we conserve water from the activities that uses more water?

## ASSESSMENT

<b>CATEGORIES</b>	<b>Not Achieved (1% - 35%) Level 1</b>	<b>Partially Achieved (36% - 49%) Level 2</b>	<b>Achieved (50% - 69%) Level 3</b>	<b>Outstanding/ Excellent Achievement (70% - 100%) Level 4</b>
Synthesis and Application	The Learner:			
• Evaluation and synthesis	• Reaches no or incomplete conclusions based on the evidence	• Reaches some conclusions based on the evidence	• Reaches the expected conclusions based on the evidence	• Reaches informed conclusions based on the evidence
• Transfer of concepts, skills and procedures in new contexts	• Transfers concepts, skills and procedures in new contexts with no limited effectiveness	• Transfers concepts, skills and procedures in new contexts with moderate effectiveness	• Transfers concepts, skills and procedures in new contexts with expected effectiveness	• Transfers concepts, skills and procedures in new contexts with a high degree of effectiveness

# Water Use Efficiency



## 4. Money from the rivers

### ACTIVITY

You will be able to:

- Identify the value of natural resources in boosting the economy and in contributing towards their development of their places.
- Explain how one can earn a living through the use of natural resources available in his/her locality.

### ACTIVITY 4A: NATURAL RESOURCES THAT ARE OF BENEFIT TO HUMAN ACTIVITIES

- Study each picture in the worksheet critically.
- Column 1 of the worksheet has pictures that show how different communities benefit from the healthy rivers that run along them.
- Explain in your own words in the opposite column how each community benefits from this important natural resource.

**WORKSHEET – QUESTION 1**

<b>PICTURE</b>	<b>BENEFIT TO COMMUNITY</b>
	
	
	
	



Taken from: Rural Communities and River Health Pamphlet, 2003

## QUESTION 2

- Choose any one of the above pictures and brainstorm as many ideas as possible about the type of business opportunity that can be derived from it in order to fight poverty and make money for the local community. In doing so you must take into consideration how these communities that are seen in these pictures can use the resources such that they can last longer or can ensure their sustainability.

For example: What can I do with fish from the river?

Use the following questions to evaluate each idea and see if it will work or not.

	YES	NO
1. Will this product / service satisfy the needs and wants of potential customers?		
2. Would the business have enough people to buy the product or service?		
3. Do you have or can you train to have knowledge and skills to produce the product / service?		
4. Do you have potential competition in this idea, if so do you have plans to outsmart your competition?		
5. Do you have resources to carry out this business idea, if not do you have plans?		
6. Will this business make a profit?		
7. Will this business contribute towards the development of the country / local community?		
8. Is your business idea viable?		
9. Would you like to change it to something else?		

- If you have answered yes to more than 5 of the above questions, that business idea is likely

to work, you can accept it. If you have answered no to more than 2 of the above questions, that business idea is not likely to work, reject it.

- Each group must choose the best idea amongst the accepted ones and write a paragraph to explain the business idea it have chosen and why. The explanation must be based on the above evaluation questions.

**ASSESSMENT:**

You will be assessed whether you:

- Can identify the economic advantage of the river in each picture.
- Can formulate a sound business idea that can contribute towards the development of local communities.



# Water Use Efficiency

## 5. We all play a role in the economic cycle

### ACTIVITY

You will be able to:

- Differentiate between roles played by the household, government and business in the economic cycle.
- Know why business and households should pay taxes and pay for services provided by the government.
- Know the purpose of using natural resources economically.
- Know the responsibility of each of the above participants in the production and consumption of resources and services.

### FUNCTIONS OF THE RESERVE BANK

- It is an official bank of government or state.
- Acts as a banker for other banks.
- It stores all the gold and other foreign reserves
- Controls the amount of money that is in circulation in the country.

### ACTIVITY 5A: HOW MONEY, GOODS AND SERVICES FLOW

- You will read and discuss the case study together with your educator.
- Work out the answers in pairs but each and every learner writes their answers individually.

### ECONOMIC CYCLE

An economic cycle is the flow of money, goods and services between households, businesses, government and foreign sector.

### B. CASE STUDY

Mr X owns a business “HOGSBACK WATERS” where he draws water from the natural spring in the mountain. In doing that he has to abide by the rules and regulations stated by the government as to how many litres of water he has to draw per month. The Government through the Department of Water Affairs and Forestry regulates the consumption of water so that cannot be wasted. During dry seasons government gives warnings and restrictions so as to save the little water that we have. This water is purified, bottled and sold in local shops. This business provides jobs for the local community as Mr. X employs 70 workers or labourers from various households within the community (factors of production). This business provides employment and reduces poverty, as the workers are paid wages and salaries. They save some of the money in banks. The banks then save some of the money in the Reserve bank and then some is issued out to businesses and people in the form of loans. Some of the money in the households is used to buy groceries. When buying groceries a certain amount of money is paid to government in the form of VAT (Value added tax). Mr. X also pays tax to the government. The government then saves the money in the Reserve Bank. The money that the government saves in the Reserve Bank is used

to provide services to various communities like clean drinking water at an affordable price provide accommodation and improve sanitation. The people have to pay for these services so that they can meet the government halfway. It is then the responsibility of each and everyone to save water as an important resource so that it can last longer and to pay for the services provided by the government.

### LET'S EXPLORE SOME NEW VOCABULARY!

**Enterprise:** a business or industry that provides goods and services in exchange for money in order to make a profit.

**Factors of production:** The four components required to produce goods and services, i.e. capital; natural resources; labour; entrepreneurship

**Households:** families and individuals

**Reserve Bank:** bank where other banks and government keeps its money

**Reserves:** assets kept readily available as cash, gold or foreign currency at the Reserve Bank.

**Salaries:** Monthly payments for labour

**Wages:** Weekly payments for labour

### QUESTION 1

Below is a list of responsibilities of households, business and government. Write down letters A – E and then next to it say whose responsibility is it to supply what is mentioned in the statement.

- A - Provide goods and services
- B - Pay for goods and services provided
- C - Pay taxes
- D - Set rules and regulations governing the use of resources
- E - Provide for the basic needs of the community

[More than one answer may be given for one statement –this is acceptable as long as is relevant]

### QUESTION 2

Give an example as it is given in the case study of:

- a. Services provided by the government to the households.
- b. Tax paid by individuals in the households.
- c. Goods provided by the businesses.
- d. What the households provide to the businesses.
- e. What the government provides to the businesses.

## ACTIVITY 5B

“Lets conserve rivers in order to get and save money “



Freshwater fishing makes rivers useful in the economy of the country. We need to conserve our rivers for our own economic benefit. Rivers can be important to the economy for other several reasons.

1. Give one or more reasons why rivers are important for each of the following
  - a. Farming
  - b. Tourism
  - c. Transport
  - d. Recreation (sport)

### ASSESSMENT

The achievement of the outcomes will be regarded as achieved when you are able to connect the roles and responsibilities of households, business and government towards the economy of the country and the purpose of conserving natural resources for the benefit of the society.



## 6. Roles and responsibilities in the management of water resources, sanitation and forestry

### BACKGROUND INFORMATION

Water and waste services are essential for health and life. They are also essential for business and industries. Efficient provision of these services can help to eradicate poverty and promote economic development.

**'Basic water supply service'** means the provision of a basic facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident) and the communication of good water – use, hygiene and related practices. (A basic water supply facility is defined as the infrastructure necessary to provide 25 litres of potable water per person per day within 200 metres of a household and within flow of 10 litres per minute.)

**'Basic sanitation service'** means the provision of a basic sanitation facility which is easily accessible to a household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices. (A basic sanitation facility is defined as the infrastructure necessary to provide a sanitation service which is safe, reliable, private, protected from weather, ventilated, keeps smells to the minimum, is easy to keep clean, minimizes the risk of the spread of disease carrying flies and pets, and enables safe and appropriate treatment and /or removal of human water and waste water in an environmentally sound manner.

The term **water services** mean water supply services and/or sanitation services or any part thereof.

Access to safe drinking water is a human right and essential to people's health. Water Services Authorities are required to ensure that drinking water quality complies with national drinking water standards. The primary responsibility for the provision of safe drinking water rests with (WSAs) Water services authorities. The WSAs have a legal responsibility to:

- Monitor the quality of drinking water provided to consumers.
- Compare the results to national drinking water standards and
- Communicate any health risk to consumers and appropriate authorities

**Water services authorities-** (some district municipalities and authorized local municipalities) are responsible for ensuring provision of water services within their area of jurisdiction.

Municipalities operate some local water resource infrastructure (such as dams and boreholes) and bulk water schemes, supply water and sanitation to consumers (household, businesses and industries) and operate wastewater collection and treatment systems.

## FOREST

Forests are integral to the quality of human life and the environment. They provide food, fuel, shelter, clean water, medicine and employment for people. Forests are home to 70% of the world's terrestrial animals and plants. Forests clean the air we breathe, keep sediments from entering rivers, lakes and protect against flooding and erosion. When managed in a sustainable way they continue to supply current and future generations with wide range of essential ecological, social and economic goods and services. The Department of Water Affairs and Forestry as the custodian of the government for water and forestry in South Africa has to ensure that South Africa's people use water and forest sustainable for the lasting benefit of all and also in a way that will benefit the environment.

## ACTIVITY

You will be able to:

- Know where a person can apply for water and sanitation.

### ACTIVITY 6A: HOW TO APPLY FOR WATER SERVICES

Where can I apply for water?



- Report to the councillor
- Go to the nearest municipality
- Ask for an application form, fill it in and submit it.
- The municipality will investigate if there is water near your premises.
- If there is water, they will ask you to pay a deposit.
- After the deposit is paid they will come and install a meter with a stand pipe with a tap just out side the fence.

## POINTS TO NOTE

- The reason why the water meter is outside is to be accessible to council when coming to read the meter for billing purposes.
- It is the responsibility of the owner to put it inside the yard and inside the house with his or her plumber.
- Every month the meter is read and the bill will be sent to the owner to pay for the water used for the previous month with all other services the council is providing to you. e.g. refuse, electricity and sewerage. Municipality will send information on the letter, which indicate where you can pay, when having problems with all the services the council is providing.

- You can enquire about any thing on the services, which might be account, water problems, sewerage blockages and electricity outages.
- All problems that happen inside your yard are regarded as private problems and you will need to solve it yourself.
- But anything outside your property is municipality problem; they will solve it at their cost.

### Borehole

- For the borehole application the household needs to have an infrastructure for yard connection.
- Drill a borehole and then go to DWAF regional offices and register the borehole.

This is the basic process of installing a borehole:

- Assess for underground water availability
- Drill a borehole to the depth of the water table
- Install pipes
- Install pump



### WHAT TO DO?

- Try to visit any local municipality and request some application forms for water and sanitation activities.
- Complete the application form and make sure that all the above processes are demonstrated.
- Also make sure that you get hold of the invoices or statements for electricity and water which indicates the charges per consumption rate.
- Estimate how much it will cost that particular family you have chosen per month if the consumption and the rates remain the same.

# WATER QUALITY



## 7. How human activity impacts on the quality of water ?

### ACTIVITY

You will be able to:

- Value rivers, take care of and not pollute them.
- See the dangers created by human beings to the environment and to their own health.
- Exercise care when using rivers and know that they are sole beneficiaries of those rivers.
- Change their attitude towards littering.

**Read the following background information.**

POLLUTION is anything that reduces the ability of the environment to support life. It is the poisoning of our LAND, AIR, FRESHWATER AND OCEANS (MARINE POLLUTION)

### FORMS OF POLLUTION

1. WATER/RIVER POLLUTION: Diseases such as cholera are carried in polluted water and are the major cause of illness and death. MAIN SOURCE: Sewage – inadequate sanitation; Fertilizers from agriculture; Silt from agriculture, construction & mining; Pesticides from agriculture and health services; Toxic metals from industries. Pollutants dissolve in rainwater. Then polluted rainwater drains off underground and pollute underground water and surface water supply.
2. MARINE POLLUTION: The main sources of pollutants in the ocean are oil spills and waste disposal to oceans from coastal towns. Other sources are sewage, fertilizers, plastics and pesticides.
3. AIR POLLUTION: Certain industries produce a lot of air pollution, which affects the health of many people and the environment. Major air polluters include chemical manufacture, iron and steel plants, cement manufacture, thermal electric power stations, vehicle emissions, burning coal, asbestos dust and CFC's from aerosols, refrigeration and air-conditioning.
4. LAND POLLUTION: Solid waste is classified as hazardous (radioactive, pesticides, medical poisons) or non hazardous (domestic, urban, plastics, industrial and scrap metals)
5. NOISE POLLUTION: Machines from industries, motor vehicles and powerful sound systems.

### WHAT TO DO:

Assess how much the learners know about pollution. All forms of pollution need to be mentioned. Then put more emphasis on water / river pollution. Learners are required to give some ideas of how people pollute rivers.

**ACTIVITY 7A- ALWAYS KEEP WATER SAFE AND CLEAN**

The following pictures show scenario of how human activities can pollute rivers and destroy its healthy status.

- Choose an effect of human activity to the quality of water from those listed below.
- Write it in an appropriate space next to the picture. i.e. match the picture with the appropriate effect.

**EFFECTS OF HUMAN ACTIVITY TO THE QUALITY OF WATER**

- Farming on the river banks and on steep slopes along the river can increase the rate of erosion thus cause too much sediments (sand and soil) in the river – (gills of fish can be clogged and they will suffocate and die) Secondly pesticides and fertilizers can wash into the river (fish & humans get sick)
- Cutting of trees along the riverbanks for firewood is a bad practice because it removes indigenous plants that help to stabilize the riverbanks and prevent sediments and waste material from entering the river during rainy seasons and floods (Alien plants invade and grow along the river banks and they consume plenty of water).
- Catching fish with shade nets prevent small fish from escaping through the holes to get a chance to grow breed and be large so that constant supply of fish is ensured. (Small fish will remain in the river breed and grow so that we can have a constant supply).
- Some detergents that we use to wash our clothes contain chemicals that are harmful to aquatic life (fish & insects) in the river. (Fetch water from the river with a bucket and wash your clothes away from the river).
- Waste material (litter thrown into the river are not only unsightly but also unhealthy, it can cut you or mosquitoes can breed there. (risk of contracting diseases like malaria) Waste like urine, faeces, dishwashing water, laundry water, bath/shower water from informal settlements where dry on site systems like pit toilets are used can be dangerous to people’s health if they are not disposed of carefully

**Adapted from: Rural Communities and River Health, 2003**

**PICTURE**

**EFFECT OF HUMAN ACTIVITY**



## **ASSESSMENT**

- Assessment will be done by your educator and also self-assessment as the relevant answers are provided.

## **PROJECT: ADOPT A SPOT**

- You should study the environment around home or school.
- Identify the spot where there are activities that have a negative impact on water quality.
- Form a group (at least of four) and discuss how you are going to protect that identified environment by adopting it.
- You need to present your plan to the teacher and the class on:
  - (a) What is the problem?
  - (b) What are the negative effects identified?
  - (c) How do you plan to protect that spot (activities)?
  - (d) Which stakeholders were to be involved?
  - (e) What resources are needed?

You will be assessed on the following:

- (a) Ability to describe the problem areas.
- (b) Ability to identify negative impacts of human activities on that spot.
- (c) The viability of the plan. How possible is the implementation of the plan?

## Glossary of terms

- Silt:** The fine sand, soil or mud which is carried along by the river.
- Sediment:** Solid materials that settle at the bottom of a liquid, especially earth and pieces of rock that have been carried along and left somewhere by the water, ice or wind.
- Sewage:** It is a waste matter such as feaces and dirty water from homes and factories which flows away through sewers.
- Pesticides:** Chemicals which farmers put in their crops to kill harmful insects.
- Emission:** Release of gas or radiation into the atmosphere.
- Aerosols:** It is a small container in which liquid such as paint or deodorant is kept under pressure. If you press a button, the liquid is forced out as spray or foam.
- Hazardous:** Something that is dangerous for people's health or safety.
- Suffocate:** To kill or die through lack of oxygen, such as by blockage of the air passage.
- Aquatic:** Growing or living in water.
- Indgenous plants:** Plants that originate or occuring naturally in a country or area.

# SANITATION, HEALTH AND HYGIENE



## 8. Always protect yourself from germs.

### ACTIVITY

You will be able to:

- See how easy one can find hand-washing facilities within reach, (next to toilets, next to classrooms near the kitchen or dining room).
- Construct a hand washing facility.
- Explore means to improve hygiene.
- Write down environmental effects associated with hand washing facility.
- See the importance of washing hands.

You will need:

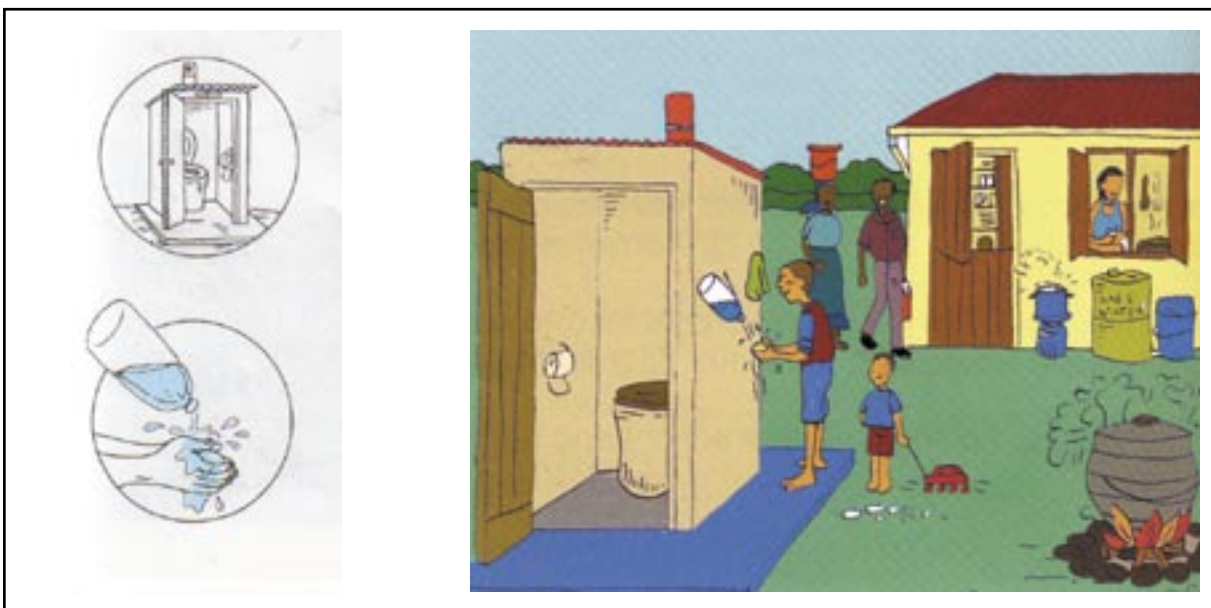
- string/chord/wire
- liquid antibacterial soap
- empty plastic bottles with air tight lids / nozzles

### BACKGROUND INFORMATION

Most rural communities use pit toilets, which are not flushed. This is due to the fact that water is a scarce commodity. In most cases pit toilets are situated far away from houses and other facilities like water is purely for hygiene purposes. This creates a high risk of contaminating diseases since the users do not normally wash their hands.

### PREPARATION

- Start collecting different plastic bottles preferably with “clip fast nozzle” like of Energade or Powerade drinks about a week before the activity. Two litre cool drink plastic bottles can also be used as they can carry larger quantities of water but the string to hold it must be stronger.
- You will be divided into groups so that you can make the bottle hand washer for the school toilets and classrooms.



## ACTIVITY 8A- CONSTRUCTING A HAND WASHING FACILITY

### METHOD

1. Look at the above picture and devise your own hand washing facility. You can work in groups for this activity.
2. Hang a plastic bottle preferably the one with the clip fast nozzle as shown in the picture.
3. You may use Energade or Powerade plastic bottle, a string or wire to hang your bottle.
4. Hang one next to your classroom for washing hands before eating.
5. Hang one next to the toilet for washing hands after using toilet.

STEP 1: Pour 1 teaspoon of liquid soap in a small bottle, it may be more for the bigger bottles and fill it with water.

STEP 2: Devise your own hanging device with a string or wire

### HOW TO USE:

- Depending on the nozzle type of your bottle it can be clipped and left open so that water can be squeezed out when needed.
  - In another variation the nozzle will need to be clipped shut after using.
  - The lid should be airtight when closing it so that no water evaporates from the bottle.
  - If you do not have any liquid soap, a bar soap in a nylon stocking can be used to further encourage a good habit related to hand washing.
- You will be monitored periodically by your educator, how often you use the devise.

## ACTIVITY 8B – SPREAD THE WORD

- The study shows that most people do not wash their hands after visiting the toilet.
- Brainstorm with your partners what are the effects of not washing hands after visiting the toilet.
- Discuss with your group members if it is worth having the washing facility at home or at school.
  1. Design a plan that you can use to educate other learners at school and in your community about the importance of washing hands after visiting the toilet.

### ASSESSMENT

In groups look at the hand washing facility that you have just made and evaluate it.

In the assessment the following will be assessed:

- The originality of the device.
- Fitness for purpose.
- The ability of the devise to sustain.



## 9. Prevention is better than cure

### ACTIVITY

You will be able to:

- Read about 3 different diseases that are harmful to man i.e. HIV / AIDS; Cholera & Bilharzia.
- Summarise the information relating to these diseases.
- Discuss in a group their symptoms, preventive strategies and the role of water in the diseases.
- Identify the value of clean water in the prevention of and managing all communicable disease.

You will need:

- Pieces of coloured paper with numbers 1, 2 or 3
- Information sheet

In this activity you will:

- Read about three different diseases that are harmful to man i.e. HIV/AIDS; Cholera and Bilharzia.
- Summarise the information relating to these diseases.
- Discuss in a group their symptoms, preventative strategies and the role of water.

### ACTIVITY 9A: TYPES OF COMMUNICABLE DISEASES

#### STEP 1:

- You will be divided into three groups called home groups
- Each one in a group will choose a piece of paper numbered 1, 2 or 3
- All 1's will now form an expert group representing HIV/AIDS, 2's will represent CHOLERA and 3's BILHARZIA

#### STEP 2:

- Each expert group will read about their disease from the information sheet below and discuss:
  - o Its symptoms or effects e.g. Diarrhoea, loss of energy, dehydration etc.
  - o Available cures and prevention strategies.
  - o The role in the water diseases.
  - o The importance of the hygienic practices.
- Learners are welcome to give their own ideas during the discussions.
- You are then required to go back to your mother group and present your findings.
- It is important that you gather as much information as possible since you are the only expert in that group.

#### STEP 3:

- In the home groups, experts will give a report back or teach other members of the group about what they have learnt from their respective expert groups.
- When all the experts have given reports in their home groups, each group should select a presenter who will present in brief about all the diseases.
- There will also be a scribe who will write down all what is to be presented.

### PRESENTATIONS WILL FOCUS ON:

- Common symptoms or effects of the diseases e.g. Diarrhoea, loss of energy, dehydration etc.
- Available cures and prevention strategies.
- The role of water in all the diseases.
- The importance of hygienic practices.
- What they have learnt from the lesson.
- What changes in their lives and of the community will be brought about by this lesson.

### EXTENSION ACTIVITY: Community outreach programme.

1. Conduct a snap survey particularly at the nearest clinic about the number of children that are treated for the following diseases:

- (a) Cholera
- (b) Bilharzia
- (c) HIV/AIDS

In your research you may use the following data collection instrument.

Name of the clinic.

Location (Rural/urban/township).

Name of the nurse interviewed (optional).

Date the research conducted.

### Questions

A. Has there been any patient treated for the following diseases:

Disease	Yes	No
• Cholera		
• Bilharzia		
• HIV/AIDS		

B. How many cases of:

Disease	Number
• Cholera	
• Bilharzia	
• HIV/AIDS	

C. Ages of the patients.

Between 10-15	Between 15-20	Under 10
• Cholera		
• Bilharzia		
• HIV/AIDS		

D. Where is the majority coming from? (Rural / Urban / Township).

E. How many:

- a. Girls.....
- b. Boys.....

2. Discuss the results with your partners staying next to you.

3. Identify the most common disease and design a programme that you will use to educate the community about the disease.

- What is the disease?
- Symptoms.
- Preventive measures.
- Where it is found?

### INFORMATION SHEET ON COMMUNICABLE DISEASES

<b>HIV/AIDS</b>	<b>CHOLERA</b>	<b>BILHARZIA</b>
In South Africa the communicable disease that is infecting and killing many of our people is HIV/AIDS. The letters 'HIV' stands for Human Immuno-deficiency Virus. A virus that causes Acquired Immune Deficiency Syndrome, abbreviated as AIDS. The HI virus slowly damages the person's defense or immune system, which person becomes weaker and weaker and gets sick from many different germs. These germs cause them to lose weight, have bad diarrhoea, develop coughs, sores in their mouth, pneumonia, TB, fever and various other diseases.	Cholera is a bacteria infection, which is contracted by drinking contaminated water or by eating food, which has been in contact with contaminated water, flies or soiled hands. The germs, which cause cholera, can be found in the stools of human being. People with cholera often get diarrhoea, get dehydrated because of losing lots water through vomiting and watery stools.	Bilharzia is a disease caused by parasitic worms. It occurs when your skin comes into contact with contaminated fresh water in which contains types of snails that carry schistosomes (worm eggs) are living. Within days of becoming infected, you may develop a rash or itchy skin. Fever, chills, cough and muscle aches can begin within 1-2 months of infection. From people who are repeatedly infected for many years, the parasite can damage the liver, bladder, lungs and intestines.

<p><b>CAUSES:</b></p> <ul style="list-style-type: none"> <li>- Transmitted through coming into contact with body fluids like blood, semen, vaginal fluid &amp; breast milk of a person with HIV/AIDS</li> </ul> <p>One can get it by:</p> <ul style="list-style-type: none"> <li>-transfusion of infected blood</li> <li>- on syringes, needles used for injection that were used by an infected person.</li> <li>- coming into contact with things (like razors, needles, knives), which have an HIV positive person's blood through their skin.</li> <li>- using things used by an HIV positive person who have sores without thoroughly washing or disinfecting them.</li> <li>- having sexual intercourse with an infected person.</li> </ul>	<p><b>CAUSES:</b></p> <ul style="list-style-type: none"> <li>- Drinking water that is contaminated with human feaces (cholera germs are in feaces of affected people)</li> <li>- This happens when sanitation is poor and when people defecate near water sources or wash infected baby's nappies in drinking water sources.</li> <li>- Eating food, which has been in contact with contaminated water, flies or soiled hands.</li> </ul>	<p><b>CAUSES:</b></p> <ul style="list-style-type: none"> <li>- Fresh water becomes contaminated by schistosoma eggs when an infected person urinates or defecate in the water</li> <li>- the worm eggs that are in the urine hatch and go into snails</li> <li>- young worms leave the snails and penetrates the skin of another person swimming, wading, bathing or washing in the contaminated water source</li> <li>- the parasites can also enter through the lining of the mouth or intestinal tract of people who drink untreated water.</li> </ul>
<p><b>AVAILABLE CURES:</b></p> <ul style="list-style-type: none"> <li>• No cure is available for HIV/AIDS</li> <li>• There are measures that an HIV positive person can take in order to prevent further infection and getting more weak and sick. These are:</li> <li>• Using Anti-retroviral drugs to boost the immune system and thus slow down the rate at which the virus spreads in their bodies.</li> <li>• Living a healthy lifestyle (i.e. eat healthy and fresh food, get plenty of fresh air, rest do not smoke or drink)</li> <li>• Keep their bodies and environment clean and free of germs and drink or consume clean safe water.</li> </ul>	<p><b>AVAILABLE CURES:</b></p> <ul style="list-style-type: none"> <li>• Prepare a home solution of 8 teaspoons of sugar and half a teaspoon of salt in 1 litre of water</li> <li>• People with diarrhoea should drink fluids as often as possible, prepared with clean and safe water</li> <li>• Get medical attention</li> </ul>	<p><b>AVAILABLE CURES:</b></p> <ul style="list-style-type: none"> <li>• Safe and effective drugs are available for the treatment of bilharzias, visit your doctor.</li> </ul>

THINGS TO TAKE SERIOUSLY:	THINGS TO TAKE SERIOUSLY:	THINGS TO TAKE SERIOUSLY:
<ul style="list-style-type: none"> <li>• Do not touch other person's blood in case your skin is broken</li> <li>• Cover wounds or open skin</li> <li>• Ensure good hygienic practices especially for people who are HIV positive</li> <li>• Make the right and informed choices</li> <li>• Its okay to say "NO"</li> <li>• No sex before marriage</li> <li>• Take responsibility for your own body (use a condom)</li> </ul>	<ul style="list-style-type: none"> <li>• Everybody should use proper toilet facilities and wash hands after use</li> <li>• Dispose of human faeces away from water sources</li> <li>• Keep household water clean and safe</li> <li>• Treat or boil drinking water</li> <li>• Purify water from rivers before drinking it</li> <li>• Wash food and cooking utensils with treated or boiled water</li> <li>• Cook food very well</li> <li>• Protect food from fly contamination</li> <li>• Washing hands must become a habit – before preparing food, after using a toilet and after changing the baby's nappy</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid swimming or wading in fresh water when you are in countries in which bilharzias occurs.</li> <li>• Drink safe treated water</li> <li>• Bath water should be heated for 5 minutes or held in a storage tank for 48 hours before use.</li> <li>• Vigorous towel drying after accidental, very brief water exposure may help to prevent the parasite from penetrating the skin.</li> </ul>

## GLOSSARY OF TERMS

- Communicable diseases:** An infectious disease that is passed from one person to another.
- Virus:** It is a kind of germ that can cause diseases.
- Immune System:** All organs in your body that defend you from sickness or illness.
- Pneumonia:** It is serious disease that affects your lungs and makes it difficult to breathe.
- Semen:** It is a liquid containing sperm that is produced by sex organs of men and male animals.
- Vaginal fluids:** Fluids produced by the vagina.
- Transfusion:** A process in which blood is injected in the body of a person who is injured badly or ill.
- Disinfecting:** To clean something using substance that kills germs.
- Bacteria:** A very small organism that cause disease.
- Dehydrated:** Loss of too much water from the body that can result in illness of feeling weak.
- Feaces:** A solid waste substance that people and animals pass through their bodies through the anus.
- Sanitation:** A process of keeping places clean and healthy, especially by providing sewage system and clean water supply.
- Wading:** To walk through something that makes it difficult to walk e.g. water or mud.



## 10. Waste can harm us!

### ACTIVITY

You will be able to:

- Identify any type of waste in the school premises
- Learn how to manage waste.
- Learn both short-term and long-term harmful effects of unmanaged waste.

The aim of this lesson is to make you aware that waste can be harmful if not managed properly. We are all responsible for managing our waste so that it does not cause pollution.

### ACTIVITY 10A: IDENTIFICATION OF TYPES OF WASTE

- Look at the picture below.
- Discuss with your partners what do you see in the picture.
- Identify the type of waste by placing a tick (✓) on the type found and a (X) on the ones not found.



*We are all waste generators!*

Type of waste	√	X
⊙ Paper		
⊙ Plastic		
⊙ Steel		
⊙ Bottles		
⊙ Cans		
⊙ Rubber		
⊙		
⊙		

- Conduct a small trip to the school premises.
- Identify any of the waste in the premises?
- Discuss with your partner how you can solve the problem of waste disposal at your school.

### READ THE FOLLOWING BACKGROUND INFORMATION

Waste is the rubbish and unwanted things that we throw out of our homes, offices and industries everyday. It may just be ordinary garbage in dustbins or it may be a large amount of dry or wet industrial waste. We all generate waste when we throw away packaging, food or other things. We also to make industrial waste when we buy and use products like toothpaste, a comb, a cassette tape or a motorcar. This is because waste was created when the product was made.

If waste is not controlled and is just dumped anywhere, it can harm us. We must dispose of it in a place where it will not pollute soil or water and where people will not be exposed to it. This applies especially to dangerous waste like rotting food or medical and poisonous waste. Because we all create waste, we are all responsible for managing our waste so that it does not cause pollution. Our elected officials and waste management specialists help us to manage our waste. Usually we store waste in bins or bags and our local or regional authorities remove and transport it to a landfill. Waste must not be accidentally spilled, or dumped illegally into a hole, a stream or in the veld. Whoever handles, transports or disposes of waste must be qualified and trustworthy, so that the waste does not indeed reach the landfill.

### ACTIVITY 10B: WE ARE ALL WASTE GENERATORS

#### OUTCOMES FOR THIS ACTIVITY

- Identify the causes of waste.
- Discuss the health problems associated with waste.

#### WHAT TO DO:

- 1) Look at the picture below.
- 2) What is wrong with the picture?
- 3) What are the problems that could be experienced in that environment?
- 4) What type of pollution is shown in this picture?



**Hey! You kids, don't mess my yard with that rubbish. Move away!**

**Sipho, don't play in that dirt.**

**Wow!! Jenny, look at this. Let's play here.**

- List all the health related problems associated with the waste.
- What can you do about this situation?
- Declare “war on waste”.
- Find out all you can about pollution and protest loudly when you see it happening.
- Report water pollution to the Department of Water Affairs and Forestry.

**Assessment:**

Your educator will check if the you have mentioned some of these things.

<b>Some of the harmful short-term effects of unmanaged waste are that:</b>	<b>Yes</b>	<b>No</b>
The environment looks bad and smells bad.		
Flies, rats and other pests breed and spread disease.		
Plants, animals and humans are poisoned.		
The air and water becomes polluted.		

<b>Long-term harmful effects include:</b>	<b>Yes</b>	<b>No</b>
Poisonous chemicals stays in the environment and do not break down.		
Damage our natural resources like soil and water.		
Cancer and birth defects.		

**EXPLANATION OF TERMS**

**Corrosive:** Substances that can eat away at metals or living things.

**General Waste:** Waste that is not dangerous unless it is badly managed.

**Hazardous Waste:** Waste that is dangerous, poisonous, infectious, explosive, corrosive or flammable.

# WATER SAFETY



## 11. Swim where it is safe to do so

### ACTIVITY

You will be able to:

- Identify the dangers in safety measures around water.
- Arrange the words in an alphabetical order.

### BACKGROUND INFORMATION

Many people like to swim or take part in water sports such as canoeing, surfing and waterskiing. But, every year we hear about people who have drowned or have been injured in accidents in water. To prevent these tragedies, it is essential we know about water safety.

- Read the article on the Berg River drowning accident and then answer the questions.

### Teens drown in Berg River

A canoeing trip on the Berg River ended in tragedy for a Western Cape family when their canoe capsized and a teenage brother and sister disappeared.

The brother (17) and sister (14) and their mother had set out in an inflatable canoe. All of them were good swimmers. But they did not realise how fast the river was flowing. Their combined weight in the canoe made it less buoyant. The boat capsized when it went into rough water and eventually wrapped itself around a tree in the river. The teens and their mother were flung out.

The boy was swept away by the force of the river and the body of his sister was found underwater, tangled in the lower branches of the tree underneath the canoe. Their mother grabbed onto the tree and later swam to safety. None of the three were wearing life jackets or helmets.

A spokesperson for the Metro Rescue team said the river was flowing 'incredibly fast' and was extremely dangerous. He warned people not to go on rivers after heavy rain when the river is full and flowing strongly.

He added that it is essential that people always wear life jackets when taking part in



With courtesy of the *Cape Times*

water sports. Helmets prevent head injuries which also lead to drowning.

## ACTIVITY 11A: THE DANGERS OF WATER

You can work in pairs for this activity.

- I.
  - (a) Identify three things that made the river outing dangerous for the family.
  - (b) What safety measures did the family take? What should they have done? Talk about it with your partner.
2. Why should people wear life jackets and helmets when canoeing on an open river?
3. Find out the meaning of these words:
  - (a) Capsized
  - (b) Buoyant
  - (c) Inflatable.

## ACTIVITY 11B- WATER SAFETY

Read the following information and answer the questions.

The Royal Society for the Prevention of Accidents publishes the following Water Safety Code:

### 1. Spot the dangers

Water can look safe, but it can be dangerous. Learn to spot and keep away from dangers.

### 2. Know the difference

You may be able to swim in a warm indoor pool, but that does not mean that you will be able to swim in cold outdoor water.

### 3. Check new places

New places that you visit may have hidden dangers that you do not know about. Always ask somebody who knows.

### 4. Take safety advice

Special flags and notices may warn you of danger. Know what the sign mean and do what they tell you.

### 5. Go with a grown-up

Children should always go out with a grown-up, not by themselves. A grown-up can point out dangers or help if somebody gets into trouble.

### 6. Learn how to help

You may be able to help yourself and others if you do know what to do in an emergency.

## EMERGENCY FIRST – AID

Here is some practical advice for what to do in emergencies involving water.

Drowning	Hypothermia
<p>Drowning is a form of suffocation. The supply of air to the lungs is cut off completely by water. This cut off does not create an immediate lack of oxygen in the body. There is a small reserve in the lungs and in the blood which can sustain life for up to six minutes or longer at low temperatures.</p> <ul style="list-style-type: none"><li>• A victim of drowning should be removed from the water as quickly as possible.</li><li>• Emergency services should be called immediately.</li><li>• If there is someone trained in first –aid present, he or she should begin artificial respiration. If not, wait for the emergency services to arrive.</li></ul>	<p>Hypothermia is the cooling of the entire body to dangerous levels. First, the victim will shiver, then he or she will become drowsy, before drowsy, before eventually falling unconscious.</p> <ul style="list-style-type: none"><li>• Get the victim out of the elements (wind, rain, snow, cold, etc.)</li><li>• Remove all wet clothing.</li><li>• Wrap the victim in blankets, making sure that the blankets are under, as well as over, the victim.</li><li>• To keep the victim warm, build a fire or place heat packs, electric heating pads, hot water bottles, or even another rescuer in the blankets with the victim. <b>Do not warm the victim too quickly.</b></li><li>• Get the victim to a medical facility as soon as possible.</li></ul>

### QUIZ

State whether the following statements are True or False:

1. A victim of drowning should not be removed from the water as quickly as possible.
2. Special flags and notices may warn you of danger.
3. Drowning is a form of swimming.
4. Children should not always be accompanied by grown-up when going to swim.
5. Hypothermia is the cooling of the entire body to dangerous levels.
6. You may be able to help yourself and others if you do know what to do in an emergency.

Arrange the following words in an alphabetical order:

- Respiration
- Emergency
- Hypothermia
- Unconscious
- Drowning
- Temperatures
- Water
- Always
- Children
- Dangerous

### ASSESSMENT

You will be assessed whether you were able to:

- Identify the dangers in safety measures around water.
- Arrange the words in an alphabetical order.

# FORESTRY



## 12. The value of trees

### ACTIVITY

In this activity, we will:

- Investigate the dangers of not protecting trees.
- Discover activities that are dangerous to trees.
- Discuss the effect of human activities on the value of trees.

Trees are important resources in our lives. Without trees many things will go wrong. A treeless community could be a challenged community. Therefore trees should be protected due to their sentimental value in our lives.

### ACTIVITY 12A: TREES ARE IMPORTANT, THEY MUST BE PROTECTED

- Read the following information on uses of trees.
- Work in groups for this activity.
- Design a poster, they can draw, cut and paste newspaper pictures to highlight the uses of trees. Pictures must be labeled.

### ASSESSMENT

- Group assessment

### Rubric

	1	2	3	4
1. The poster has a topic				
2. Pictures relates to the topic.				
3. Pictures have labels.				
4. The poster has a border.				
5. Words and pictures on the poster are big enough to see from a distance of at least 2 meters				

## USES OF TREES

Trees are our heritage. Some trees are hundreds of years old. If trees could talk, they would be able to relate the history of our environment. Our country's very own diverse cultures had their important meetings and gatherings under trees. Trees have many uses and we should look after them.

Other reasons why we should plant more trees in our community, schools and at home.

- Wood for fire, heat and warmth,
- Wood for furniture / ornaments
- To build houses,
- Nests for birds and insects,
- For medicinal purposes,
- Shade for people and animals,
- Food for people and animals,
- They supply us with oxygen,
- They use the poisonous carbon dioxide in the air.



Wood for fire

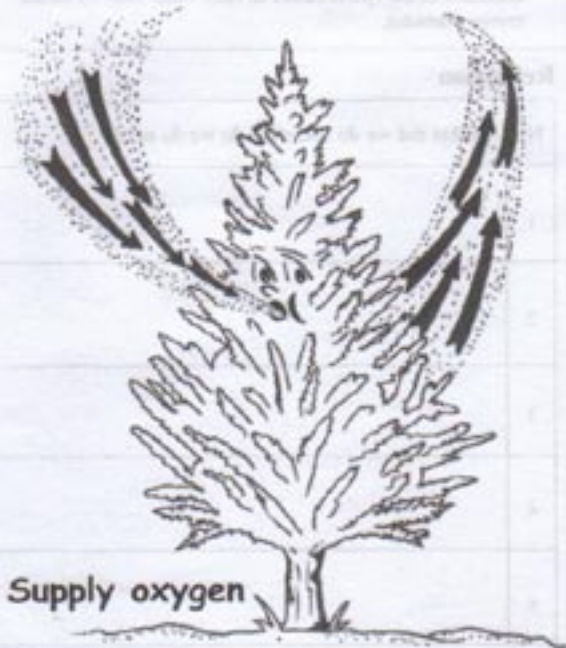


Provide shade

Furniture





Nest for birds



Supply oxygen

### What to do

- Look at the following picture of the two communities leaving in more or less the same area.

COMMUNITY A	COMMUNITY B
	

**ACTIVITY 12B: HOW COMMUNITIES DESTROY TREES**

Ask learners to discuss with their partners what do they notice in the pictures.

Let them refer to the picture to answer the following:

(a) Which community is doing the wrong thing?

-----

(b) List all the human actions that disturb the value of trees in the picture.

- 
- 
- 
- 
- 

-----

(c) What should that community do to protect the value of plants/ trees?

- 
- 
- 
- 
-

**Did you know?**

Some trees are protected by law, through provincial legislation or National Forests Act (No 84 of 1998). In 2005, 47 trees species have been declared Protected trees under the National Forest Act.

**ACTIVITY 12C: Research on protected trees****What is a protected tree?**

A protected tree can either be an individual tree or a tree species that is protected by law. Trees can either be protected through Provincial legislation or the National Forests Act (No 84 of 1998). In 2005, 47 tree species have been declared Protected Trees under the National Forests Act. Examples of protected trees are the Boabab, Camel Thorn, Stinkwood and Wild Teak trees. Some indigenous trees have been declared as protected tree species because there are few of them left in South Africa. In some cases trees are protected because they are heavily utilized. In some provinces all trees are protected through conservation legislation of the Province.

- Conduct a research about the protected trees.
- Find out about the following:
  - (a) List of indigenous tree species that have been declared Protected Tree species.
  - (b) Examples of protected tree species.
  - (c) The value of at least 3 examples of the protected tree species were declared protected trees species.
  - (d) The reason why these tree species were declared protected.

-You may get information from the copy of the Act and/ or in the libraries near you.

-Use your exercise book to write the research.

# Forestry



## 13 Social and economic importance of the forest

### ACTIVITY

You will be able to:

- Learn both socially and economic importance of the forest.

### ACTIVITY 13A – SOCIAL IMPORTANCE OF FORESTRY

#### WHAT TO DO:

- Ask learners to read the information on Social and Economic Importance of the forest, and answer the questions that follow.

# Social importance of forests

Most forests occur around the rural areas of South Africa. Due to low job opportunities and underdevelopment in rural areas, most of people living in these areas are poor.

Because of this, the rural people rely on the forest resources for their daily survival. They depend on forests for the following:

1. **Basic needs of survival** - many rural people depend on forests for their daily living:
  - Medicinal plants - traditional herbal medicines harvested from the forests for primary health care.
  - Poles - timber poles are used for building, fencing etc.



- Wild fruits and animals - they form an important source of nutrients and contribute to the food security of the rural households
  - Firewood - for cooking purposes
2. **Money saving** - the following options are created by forests:
    - Using medicinal plants instead of buying medicines from a pharmacy
    - Firewood instead of paying for electricity for cooking and heaters
    - Harvesting wild fruits instead of buying from supermarkets
  3. **During times of adversity** rural communities often sell forest products to earn a daily living.

- Match the following sentences

A	B
a. Medicinal plants	1. Rely on the forest resources for their daily survival.
b. Fire wood	2. Are used for building, fencing etc.
c. Wild and animals	3. Traditional herbal medicines harvested from the forest for primary health care.
d. Rural people	4. They form an important source of nutrients and contribute to food security of the rural household.
e. Timber poles	5. For cooking purposes.

- Answer the following questions:

1. Where does most forest occur around South Africa?

-----

2. What is the money saving options that are created by forest?

-----

-----

-----

3. What do the rural people do during times of adversity?

-----

4. Give one example of a trade company that benefits from timber pole market and explain how?

-----

Total marks: 11

## ASSESSMENT

Learner's	Code	Marks allocated
Performance has exceeded the requirements of the learning outcome of this grade.	4	10-11 Marks
Performance has satisfied the requirements of the learning outcome of this grade.	3	6-9 Marks
Performance has partially satisfied the requirements of the learning outcome of this grade.	2	4-5
Performance has not satisfied the requirements of the learning outcome of this grade.	1	Under 4 marks

## Economic importance of forests

Forest resources provide ample business opportunities, such as:

### Medicinal plants trade

Medicinal plants are used by many people in South Africa. Medicinal plants are also processed to produce herbal medicines which could be bought at herbal shops. If medicinal plants are harvested sustainably they can provide a generous income to harvesters and traders.



### Manufactured timber products

Trees are used to make furniture, coffins etc. All these are needed by humans, as such many people buy these products and traders generate money from selling these products.

### The timber pole market

The poles are used to build houses, fencing, fixed telephone lines etc. Traders can sell different poles for example Telkom for telephone lines, builders for building of mainly wooden houses etc



- Answer the following questions:

1. What are the business opportunities that forest resources provide? Mention any four.

-----  
-----  
-----  
-----

2. What can medicinal plants provide?

-----

3. What can we use trees for?

-----  
-----  
-----

4. Who generates money from selling the products that we get from trees?

-----

5. What are the poles used for?

-----

6. What are other key benefits that are associated with formal employment?

-----

7. What is the environmental importance of forest?

-----

- Say whether the following statements are true or false.

1. Medicinal plants are used by few people in South Africa.
2. Charcoal can be sold in South Africa or overseas.
3. Wild fruits can be harvested from the forest.
4. The formal forestry sectors employ more than 500 people mostly in urban areas.
5. Forests reduce soil erosion and maintain soil fertility.

Total marks: 17

## ASSESSMENT

<b>Learner's</b>	<b>Code</b>	<b>Marks allocated</b>
Performance has exceeded the requirements of the learning outcome of this grade.	4	14-17 Marks
Performance has satisfied the requirements of the learning outcome of this grade.	3	10-13 Marks
Performance has partially satisfied the requirements of the learning outcome of this grade.	2	6-9
Performance has not satisfied the requirements of the learning outcome of this grade.	1	Under 5 marks

# INVASIVE ALIEN PLANTS



## 14. Laws related to invasive alien plan

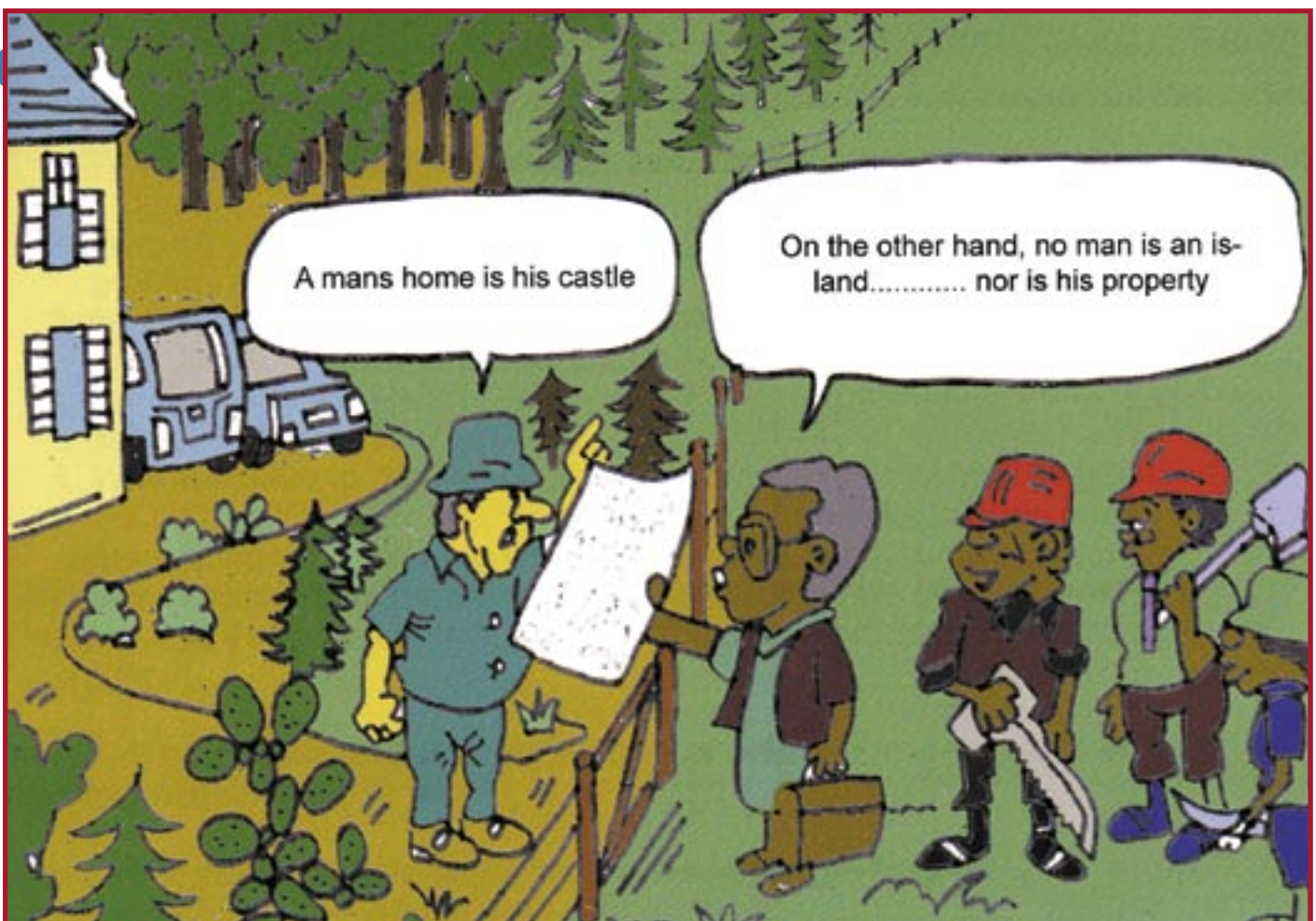
### ACTIVITY

You will be able to:

- Discuss about the position of the alien invasive plants in the school grounds by referring to the map.
- Interpret the cartoon and answer questions by referring to it.

### ACTIVITY 14A: KNOW THE LAWS

- Take a good look at the cartoon below and answer the following questions:



1. What do you think is happening in the picture?
2. What law has the owner of this house broken?
3. What does the home owner mean when he says “A man’s home is his castle?”
4. What does the Department official mean when he says “On the other hand, no man is an island.”
5. Do the forestry workers have the right to cut down the trees?

### ACTIVITY 14B – CARA REGULATIONS

Do a brief discussion of the position of any Invasive alien Plants on the school grounds by referring to the map (visit actual sites on the school grounds)

Explain the CARA regulations and what they imply by referring to the worksheet.

## **BE WARNED! GET THE INVADING ALIEN PLANTS BEFORE THE LAW GETS YOU!**

CARA – Conservation of Agricultural Resources Act (Act No 43 of 1983)

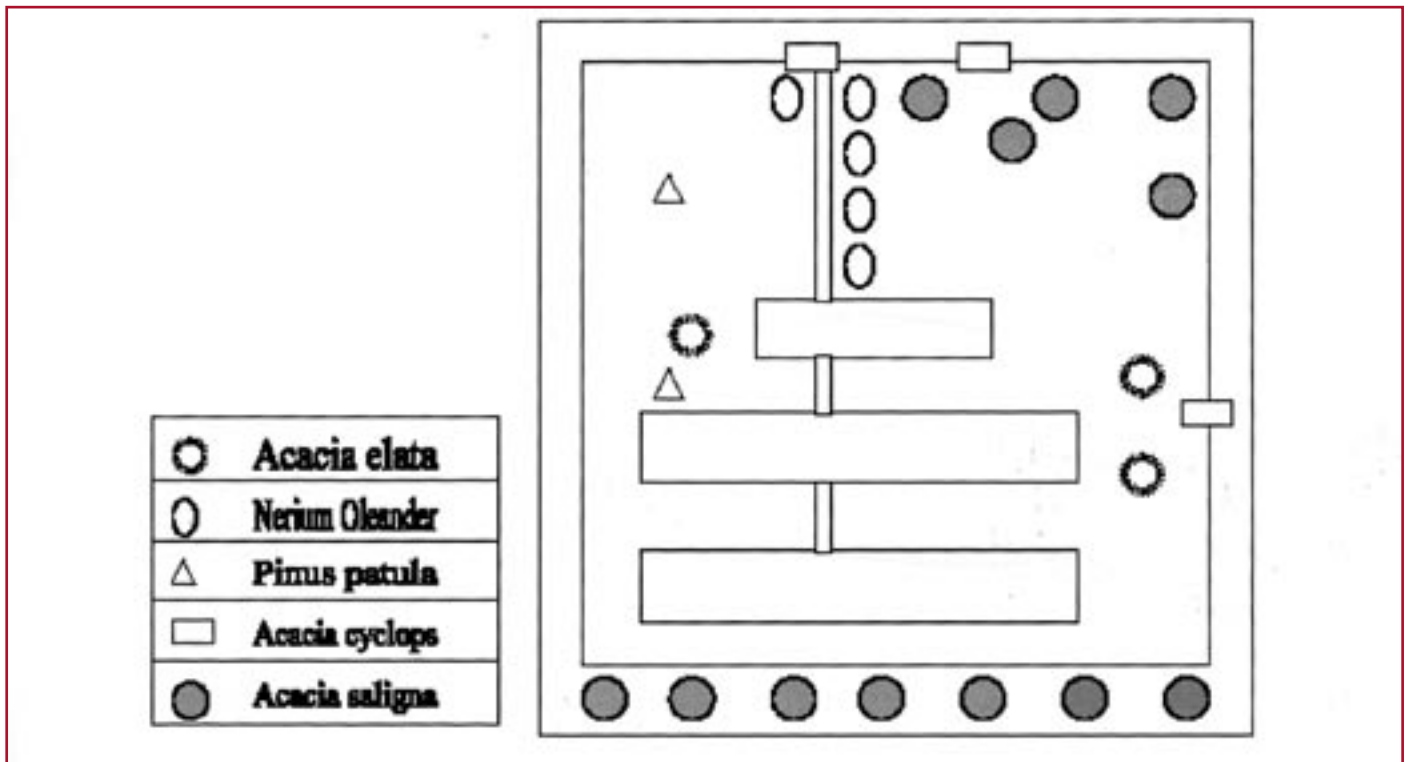
### **SOME OF THE LAWS**

1. It is the duty of a land user or owner to remove IAP’s from their property and control the spread of IAP’s on their property.
2. Generally it is unlawful to:
  - Have certain IAP’s on your property
  - Grow certain IAP’s in sensitive areas (e.g. riverine/ wetland areas)
  - Have IAP’s on property if they are a fire hazard and increase wild fires
  - Bring IAP’s into the country
  - Sell certain IAP’s
  - Sell your property if infested with IAP’s
  - Let seeds of IAP’s spread to your neighbours property
3. If found guilty – fine of R10 000 or 4 years imprisonment or both.

## ACTIVITY 14C – IDENTIFYING ALIEN INVASIVE PLANTS

Ask the learners to study the map of the school grounds and answer the questions concerning the CARA Laws.

Map:



1. Who should be held responsible for removing alien plant invaders from their property?
2. Why do you think the trees outside the school grounds can become a problem?
3. Do the neighbours at the front gate have the right to complain about the tall Port Jackson tree? Give reasons.
4. What category does the Oleander fall under and what is the duty of the school in this regard?
5. Who will have to pay the bill if the council has to remove the plants?

We have to make land - users responsible for the alien plant invaders they shelter ... so if your neighbour's property is full of invader plants, you can now take action.

At last! A new earth law for South Africa that will help us in the fight against invading alien plants.

And if your land is full of invader plants, and you don't get rid of them, the Act allows us to clear the land at your cost.



## 15. Career Fair

### ACTIVITY

You will be able to:

- Identify different water related careers.
- Design career fair exhibit that will show case water- related careers.

### BACKGROUND INFORMATION

Our lives are surrounded and maintained by water. Therefore learning more about water, its origins maintaining its quality, protecting and conserving it, is important to all of us. Hence water related career is probably one of the most important careers to choose.

### ACTIVITY 15A: FORESTRY RELATED

#### What to do:

Visit your nearest library and request your librarian to show you books that discuss about forestry related careers.

1. List all those careers, making a summary of the following topics:
  - Job Title
  - Educational background
  - Daily duties / responsibilities
  - Work opportunities
2. Collect as many magazines as possible. Cut as many pictures relating to forestry career.
3. Design a poster or background that provides information about forestry career, by pasting the pictures/ photos you have collected.
4. In your poster a summary of each job career must be written under or adjacent to each picture.
5. You may like to do this project individually or as a group.

### ACTIVITY 15B: FORESTRY RELATED CAREERS

#### A CAREER FAIR EXHIBIT

In this activity we will:

- Plan a programme to exhibit your posters.
- Draft a letter to invite guest speakers who knows more about the career.
- Exhibit own posters to other fellow learners.

**INVITATION TO THE CAREER FAIR EXHIBIT.**

Your address

Date

Name of the person you are writing to.

Address

Dear Sir/Madam (or his/her name if known)

INVITATION TO THE CAREER FAIR EXHIBIT.

Our school will be hosting a career fair exhibit on..... At.....

The programme will start at..... and end at.....

We would like to invite you to grace the occasion and make a presentation on forestry related career.

Attached is a programme reflecting the times at which your presentation will be done.

Your attendance to this exhibition will be appreciated.

Yours Sincerely

## BIBLIOGRAPHY

- CARA – Conservation of Agricultural Resources Act (Act No 43 of 1983).
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Additional Language.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Economic and Management Sciences.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Home Language.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Life Orientation.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Mathematics.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Natural Sciences.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Social Sciences.
- Department of Education. Pretoria (2002). Revised National curriculum statement (Grades R – 9), Technology.
- Effects of human activity to the quality of water. Rural communities and river health, 2003.
- Envirokids volume 19. Roberta Griffiths. Wise up on wetlands.
- Joy, P (2004). *Considering Conservation: The world's Water*. Dryad Press Limited: London.
- Oxford Successful Life Orientation
- Swimming South Africa