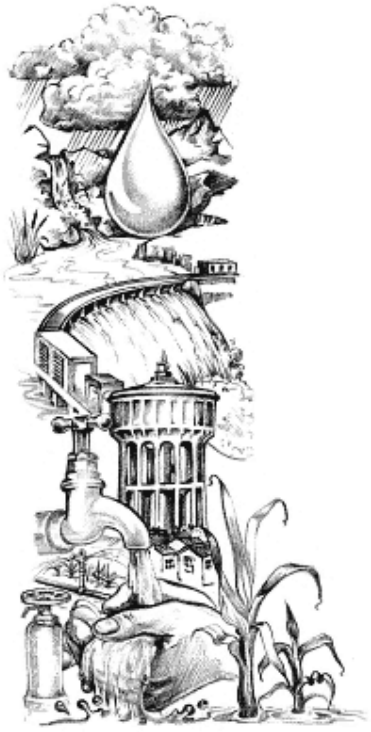
ACTIVITY ONE: FINDING OUT ABOUT THE WATER SITUATION IN SOUTH AFRICA

How healthy are our rivers? This LANGUAGES research and writing activity looks at water quality in South Africa. Learners research the topic of water quality, using a wide range of sources and methods. They then write up their information in essay format.

Hand out the following information on pages 1 and 2 to your learners:



Water in South Africa

South Africa is extraordinarily rich in natural resources - except for water. Water is a vital but scarce resource, distributed unevenly in time (frequent droughts alternate with periods of good rainfall) and space (the eastern half of the country is markedly wetter than the western half). Increasing demand for water, and decreasing water quality make careful water management a priority in our country. It has been estimated that by the year 2025 South Africa's human population will have doubled, and there will be insufficient water for domestic use, agriculture, and industry.

- **Rainfall**: Our average rainfall is less than 500 mm a year, with the driest part of the country receiving less than 200 mm/year and the wettest receiving more than 2 500 mm/year! Rain does not always fall where it is most needed, and some areas of high demand, such as Gauteng, receive less water than they need. Most rain falls in the narrow belt along the eastern and southern coasts. The rest of the country receives only 27% of South Africa's total rainfall. In addition, hot, dry conditions result in a high evaporation rate.

- **Rivers**: There are few natural lakes in South Africa. We depend on rivers, dams and underground water for our water supply. Approximately 75% of the water flowing from South Africa into the sea occurs along the eastern and southern seaboards, where many short rivers occur. Flowing from east to west is the largest river in the country, the Orange River, which drains most of the rest of the country. Its water comes from sources in the Drakensberg and Maluti Mountains, and it flows into the Atlantic Ocean on the west coast.

- **Dams**: About half of South Africa's annual rainfall is stored in dams. We have about 550 government dams in South Africa, with a total capacity of more than 37 000 million m^3.

  Dams have both positive and negative impacts. They can be beneficial for people in that they regulate the flow of a river, reducing flood damage and contributing to perennial rather than seasonal flow. In addition, sediment is deposited in a dam, and the growth of aquatic plants means that nutrients are removed from the water. Thus water leaving a dam may be cleaner than water entering it. The riverine

ecosystem is usually affected negatively by a dam. Alterations in flow regime (quantity of water and timing of periods of high and low flow), temperature and water quality may cause reductions in biodiversity of riverine organisms below dams. Reduction in water flow reduces the river's scouring ability and this can lead to silting of estuaries.

South Africa's landscape is not well suited to dams. There are few deep valleys and gorges, with the result that most dams are shallow with a large surface area. Together with the hot, dry climate, this results in much water evaporating from dams. In addition, the high silt load (a result of an arid climate, steep river gradients and poor farming methods) of our rivers means that the capacity of South Africa's dams is quickly reduced as they become silted. The rivers of the Western Cape carry relatively less silt than those in the rest of the country.

- **Water abstraction**: A growing problem for South Africa's rivers is a lack of water! Reduction in river flow, owing to abstraction (removal), and damming, has affected many of our rivers, for example those flowing through the Kruger National Park.

- **Intercatchment transfer of water**: This involves the transfer of water from catchments with good supplies and low demand, to those where demand for water is high and the supply is poor. There are numerous intercatchment transfer schemes already in operation, and more are under construction or proposed. A major scheme is the Orange-Fish River scheme, where water gravitates from the Orange River at the Gariep Dam, and is piped through tunnels and canals to the Sundays and then the Fish Rivers in the Eastern Cape. Transfers of this nature will have far-reaching ecological, political and socio-economic implications. As yet, little research has been carried out to establish the ecological consequences of intercatchment water transfers. However, areas of concern include reducing streamflow and water levels in one system, changes in water temperature and chemistry, and the transfer of invasive species between catchments.

- **Water pollution**: Industrial and agricultural pollutants common in South Africa include agricultural fertilizers, silt, toxic metals, litter and pesticides. These pollutants affect aquatic ecosystems and human health. Disease-producing bacteria are common in urban waste water, particularly from informal settlements that lack sewage and water purification facilities. For example, typhoid, cholera and gastroenteritis are transmitted by water contaminated with untreated sewage. Gastroenteritis is one of three main causes of death in South African children under the age of five.

Water Quality

Healthy streams and rivers support a wide variety of water life. Rainwater and cool, tumbling mountain streams contain high levels of oxygen. Low concentrations of nutrient substances which are washed into the system provide both key growth chemicals (such as nitrates) and food (like rotting plants – detritus). Water plants, in turn, photosynthesise to provide more life supporting oxygen and food sources for water organisms. All of these factors interact as a complex web of life both within the river itself and in its surrounding catchment. Much human activity has unfortunately disrupted these ecological processes and degraded water quality.

ACTIVITY:
How healthy are our rivers?

1. Learners research the water quality situation in South Africa. They need to use at least five different sources (excluding the fact sheet on 'Water in South Africa') to gather information. These can include, but are not limited to, books, journals, newspapers, the Internet, interviews, visits to local water suppliers (such as Umgeni Water or Rand Water) or documentaries. Once the research has been completed, learners present their findings in an essay.

2. The following points need to be considered when writing an essay:
3.
    - The **introduction** should be designed to attract the reader's attention and give the person an idea of the essay's focus. You could begin your introduction with an attention grabber such as startling information (which must be true) or even an anecdote (a story which illustrates a point) – but make sure your anecdote is short, to the point and relevant to your topic.

    - Each main idea will become one of the **body paragraphs**. If you had three or four main ideas, you will have three or four body paragraphs. The topic can now be explained, described, or argued.

    - The **conclusion** sums up your points or provides a final perspective on your topic. All the conclusion needs is three or four strong sentences which do not need to follow any set formula. Simply review the main points (being careful not to restate them exactly) or briefly describe your feelings about the topic. Sometimes, even an anecdote can end your essay in a useful way.

Remember to:

- Read and reread your essay.

- Does it make logical sense?

- Leave it for a few hours and then read it again. Does it still make logical sense?

- Do the sentences flow smoothly from one to another?
  If not, try to add some words and phrases to help connect them. Transition words, such as "therefore" or "however," sometimes help. Also, you might refer in one sentence to a thought in the previous sentence. This is especially useful when you move from one paragraph to another.

- Finally, have you checked your spelling?

Criteria to assess learners during this languages lesson

Criteria	Outstanding	Meritorious	Satisfactory	Adequate	Partial	Inadequate
The learner used at least five sources when researching 'how healthy are our rivers'						
The learner organised and integrated their information into a concise, well-presented essay						
The essay had an introduction, paragraphs and conclusion and was in a logical order						
The final essay was neatly written and presented						