



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**GEOGRAPHY P1**

**NOVEMBER 2009**

**ANNEXURE**

**MARKS: 300**

**TIME: 3 hours**

**This annexure consists of 14 pages.**



FIGURE 1.1

FIGUUR 1.1

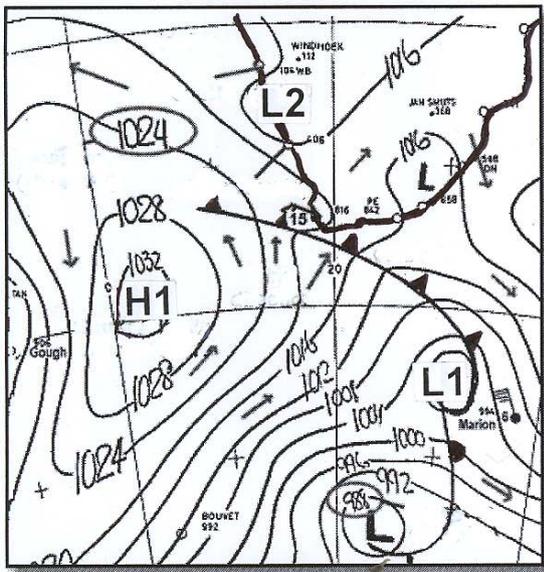


FIGURE 1.2

FIGUUR 1.2

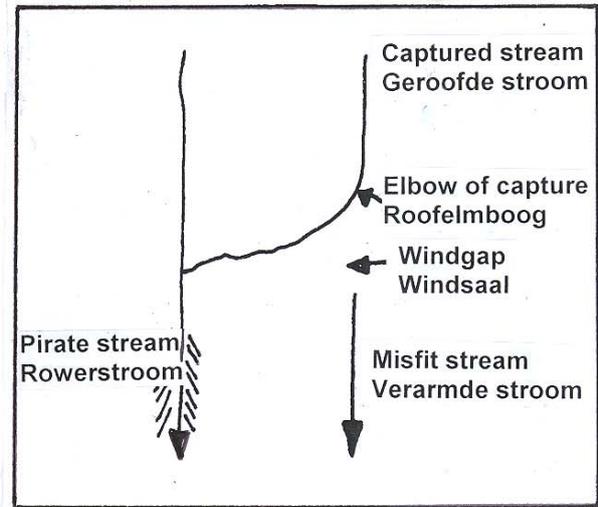
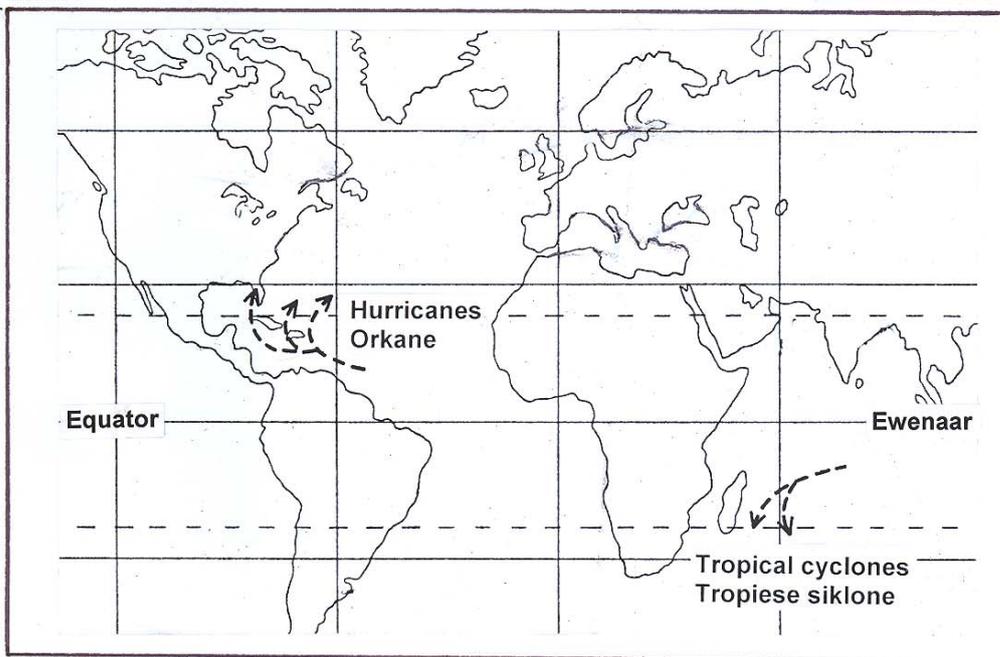


FIGURE 1.3A

FIGUUR 1.3A



**FIGURE 1.3B****HURRICANE IKE**

On 10 September, US President George W Bush made an emergency declaration for Texas in advance of Hurricane Ike, making more federal help available for preparations and evacuations.

State rural water associations activated mutual aid networks to prepare for the landfall of Hurricane Hanna and Hurricane Ike while still providing assistance to areas impacted by Hurricane Gustav. The Texas Rural Water Association held meetings with state agencies on Tuesday, 9 September, to plan for landfall along the Texas gulf coast.

On 11 September, forecasting models began to show Ike making landfall just south of Galveston. City Manager Steve LeBlanc issued a mandatory evacuation order late Wednesday for the low-lying west end of Galveston Island. Later, the mandatory evacuation order was extended to the entire island of Galveston, as well as low-lying areas around Houston, Texas.

Also on 11 September, at 20:19, the National Weather Service in Houston/Galveston, issued a strongly worded bulletin, regarding storm surge along the shoreline of Galveston Bay. The bulletin advised that residents living in single-family homes in some parts of coastal Texas may face "certain death" if they do not heed orders to evacuate. Reports said as many as 40 percent of Galveston's citizens may have not paid attention to the warnings. It was feared to be much the same in Port Arthur.

Hurricane Ike was the ninth named storm, fifth hurricane and third major hurricane of the 2008 Atlantic hurricane season. The satellite image below shows Hurricane Ike at peak intensity.

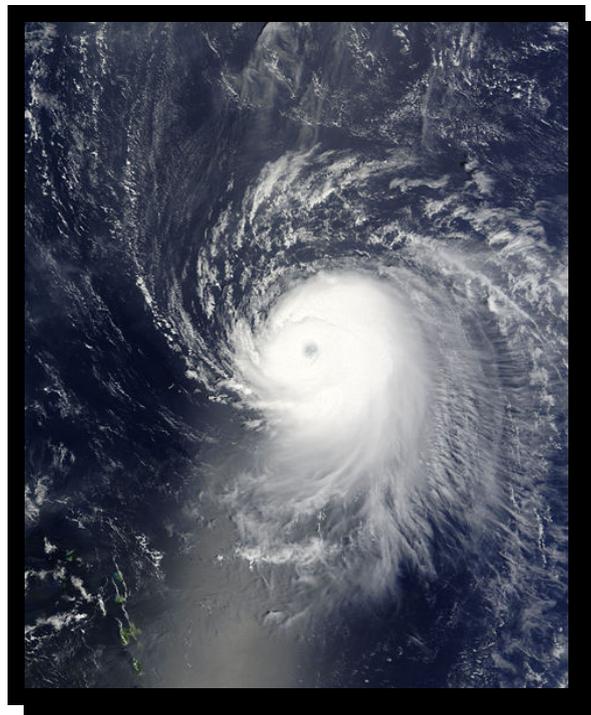


FIGURE 1.4

FIGUUR 1.4

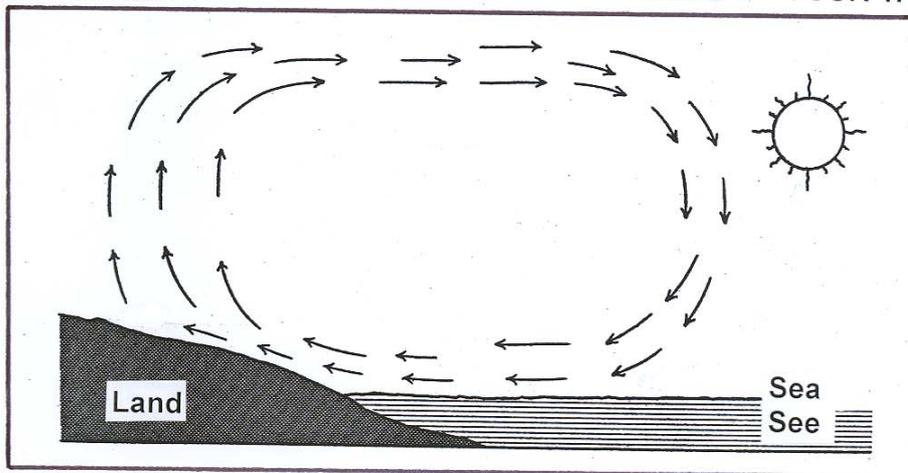
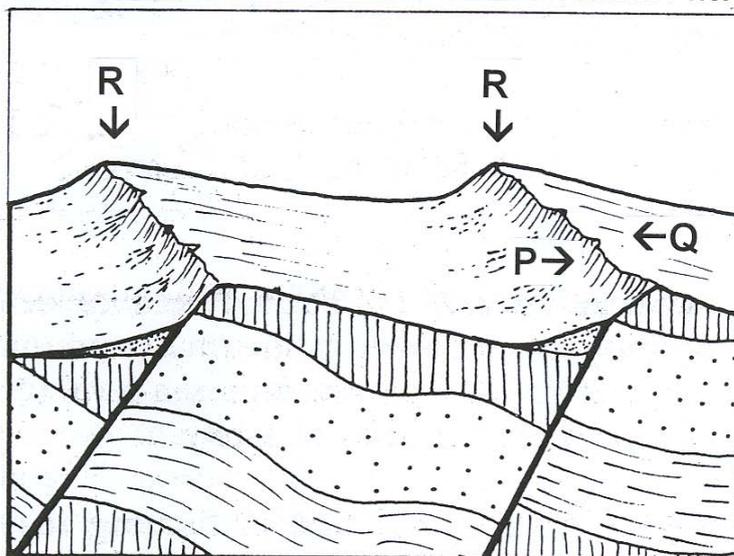


FIGURE 1.5A

FIGUUR 1.5A

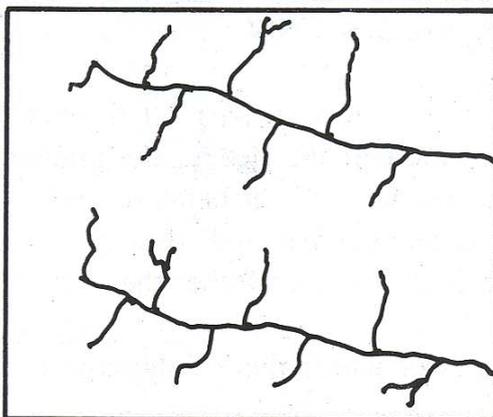


Key / Sleutel

-  Soft rock
-  Sagte rots
-  Resistant rock
-  Weerstandbiedende rots
-  Fault line
-  Verskuiwingslyn

FIGURE 1.5B

FIGUUR 1.5B



**FIGURE 1.5C**

**CAUSE AND MANAGEMENT OF MASS MOVEMENTS**

Landslides cause destruction of lives and property and also displacement of large numbers of people. There are instances where whole villages have been totally destroyed by landslides.

Apart from the natural factors, man's unwarranted intervention with the environment by way of deforestation, cultivation on slopes, non-engineered construction, obstructing natural drainage, improper drainage, mining and quarrying causing artificial vibration coupled with continuous heavy rainfall or excessive rainfall, may lead to landslides.

The National Building Research Organisation (NBRO) of Sri Lanka is an institution responsible for giving timely information of an impending landslide. In order to identify landslide-prone areas, a Landslide Hazard Zonation Mapping project is in progress in this country. Research has been undertaken in respect of hydrology, geology, slope and soil types for identification of different hazard potential. The NBRO promotes the following:

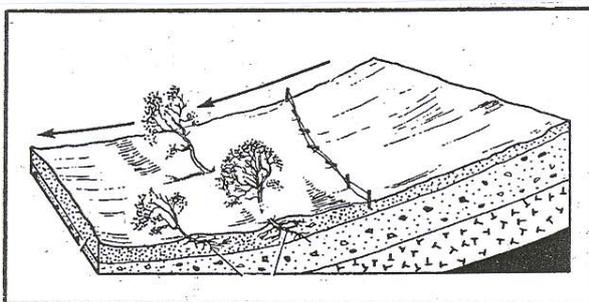
- Mapping of the distribution of landslides hazard potential in the highlands of Sri Lanka.
- Introduction of standard guidelines and codes on practices for planning human settlements and infrastructure in the landslide-prone areas.
- Establishment of sustained long-term and short-term mechanisms for landslide disaster management in Sri Lanka.

Landslide occurrences are closely associated with rainfall. Therefore, the Meteorology Department also plays an important role by providing weather-related information.

The NBRO also promotes the creation of public awareness about causative factors of landslides. The factors that should be considered, while being watchful during heavy rainfall, can be summarised as follows:

- Big boulders would start moving.
- Trees would slant towards the slope.
- Cracks would appear on the walls and other structures.
- Springs and water spouts would appear and there will be a rise in the water level.
- The earth itself would show cracks and fractures.

**Sketch (i)**



" " "	Cultivated land Bewerkte landerye
■	Impermeable rock Nie-deurlaatbare rots

**Sketch (ii)**

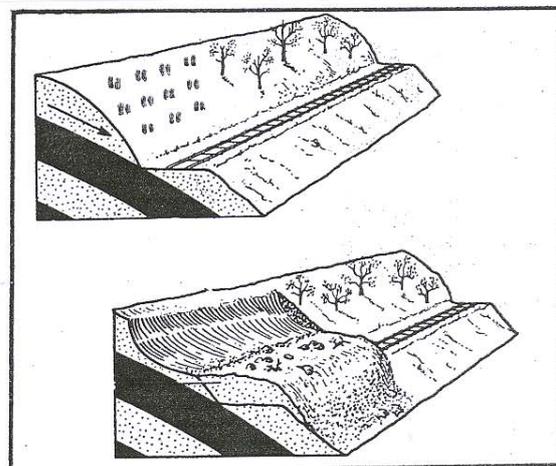


FIGURE 2.1

FIGUUR 2.1

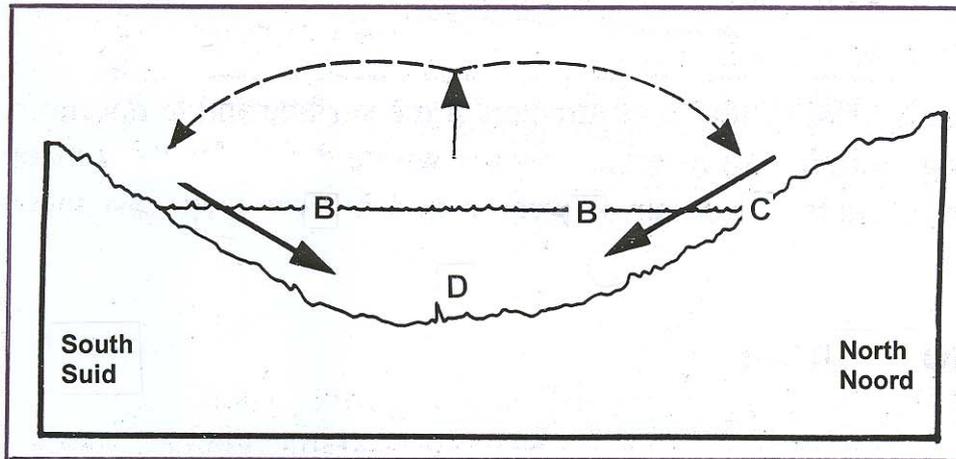
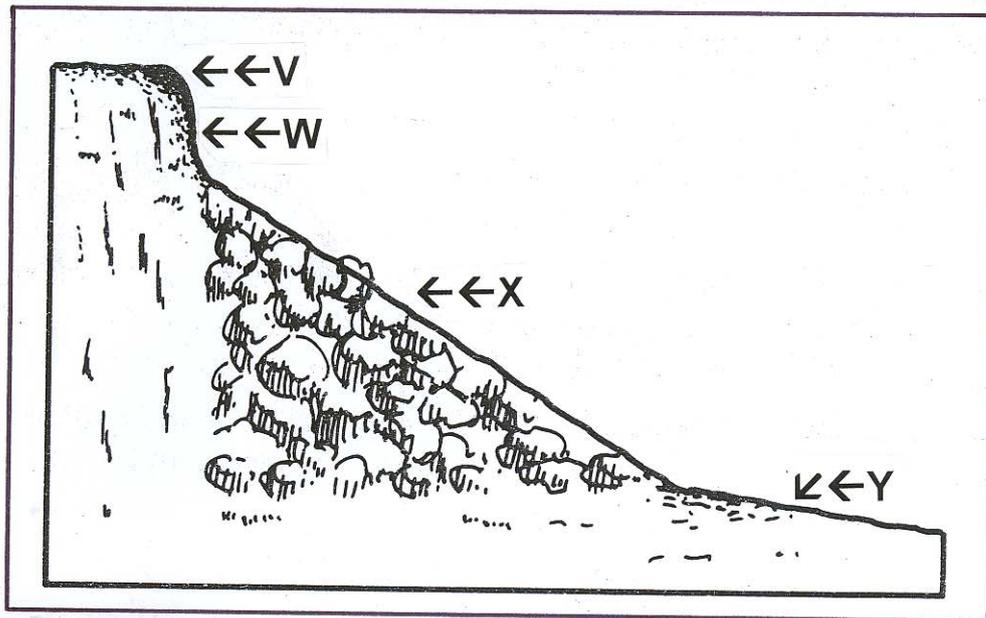


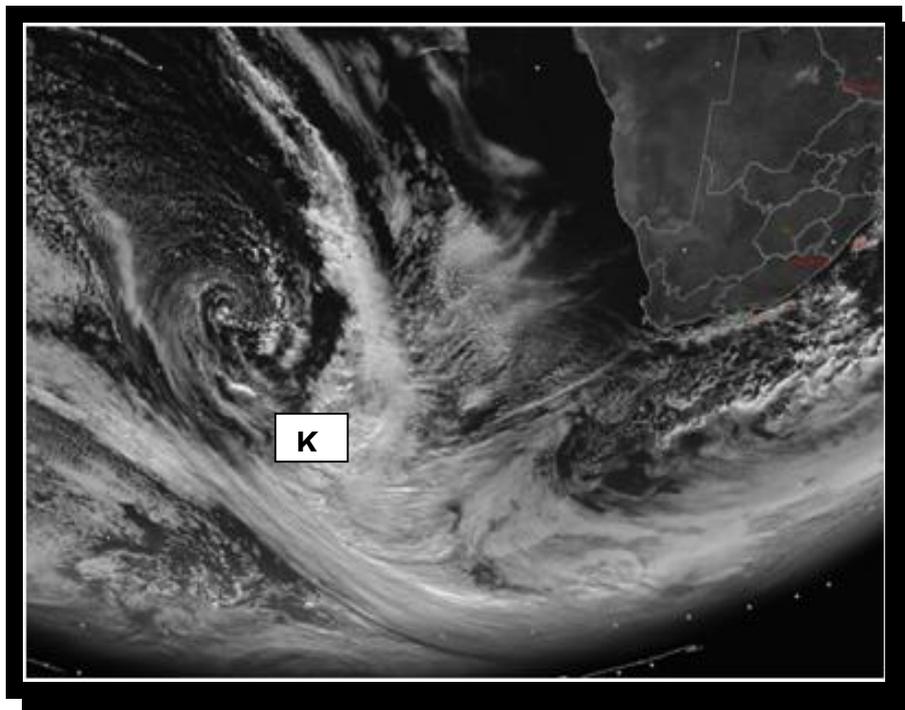
FIGURE 2.2

FIGUUR 2.2



**FIGURE 2.3****KEEP YOUR WINTER WOOLIES OUT (Tuesday, 1 July 2008)**

Nice clear skies with cool temperatures can be expected for Tuesday and Wednesday, but people in the Western Cape need to brace themselves for another few cold, wet and windy days from Thursday the 3rd of July 2008.



Satellite image showing the approaching low-pressure system on Monday the 30th June 2008 (Image courtesy Eumetsat, 2008).

The South African Weather Service has been issuing advisories for this approaching system since the beginning of the week. On Thursday gale-force northerly to north-westerly winds are expected between Cape Columbine and Cape Agulhas, accompanied by very rough seas, with wave heights in excess of 5 m. Very cold conditions over the western interior of the Western and Northern Cape, spreading to the northern interior of the Eastern Cape and southern Free State, can be expected.

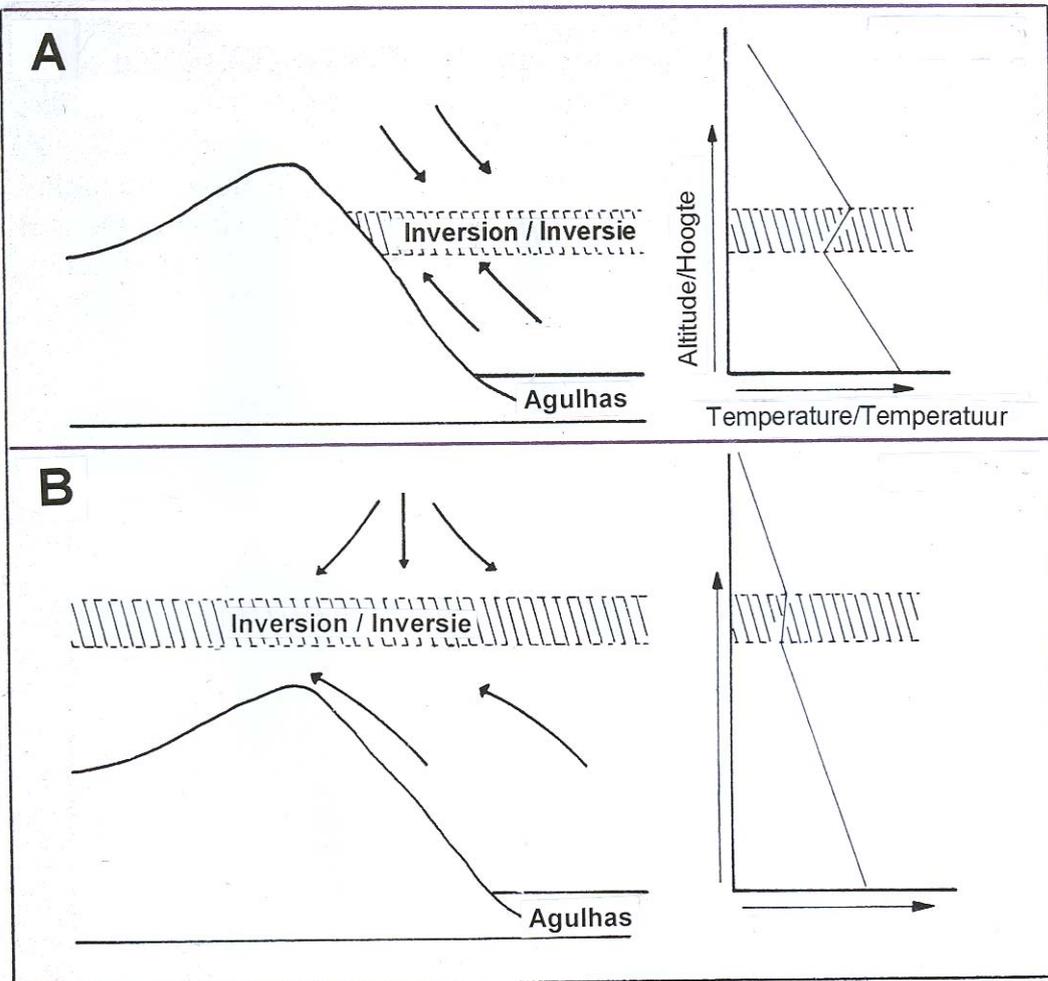
The colder conditions are expected to reach the north-eastern parts of the country on Saturday, with temperatures falling into the cold category.

Isolated heavy falls of rain which could lead to localised flooding are expected over the Peninsula, Boland and Overberg areas on Thursday and Friday.

The South African Weather Service appeals to the public to forward to us any reports or confirmation of significant weather events such as snowfalls, hailstorms, heavy rain, damaging winds etc, when they are observed. Such information can also be used for further research that will contribute to the improvement of weather predictions for that particular area.

FIGURE 2.4

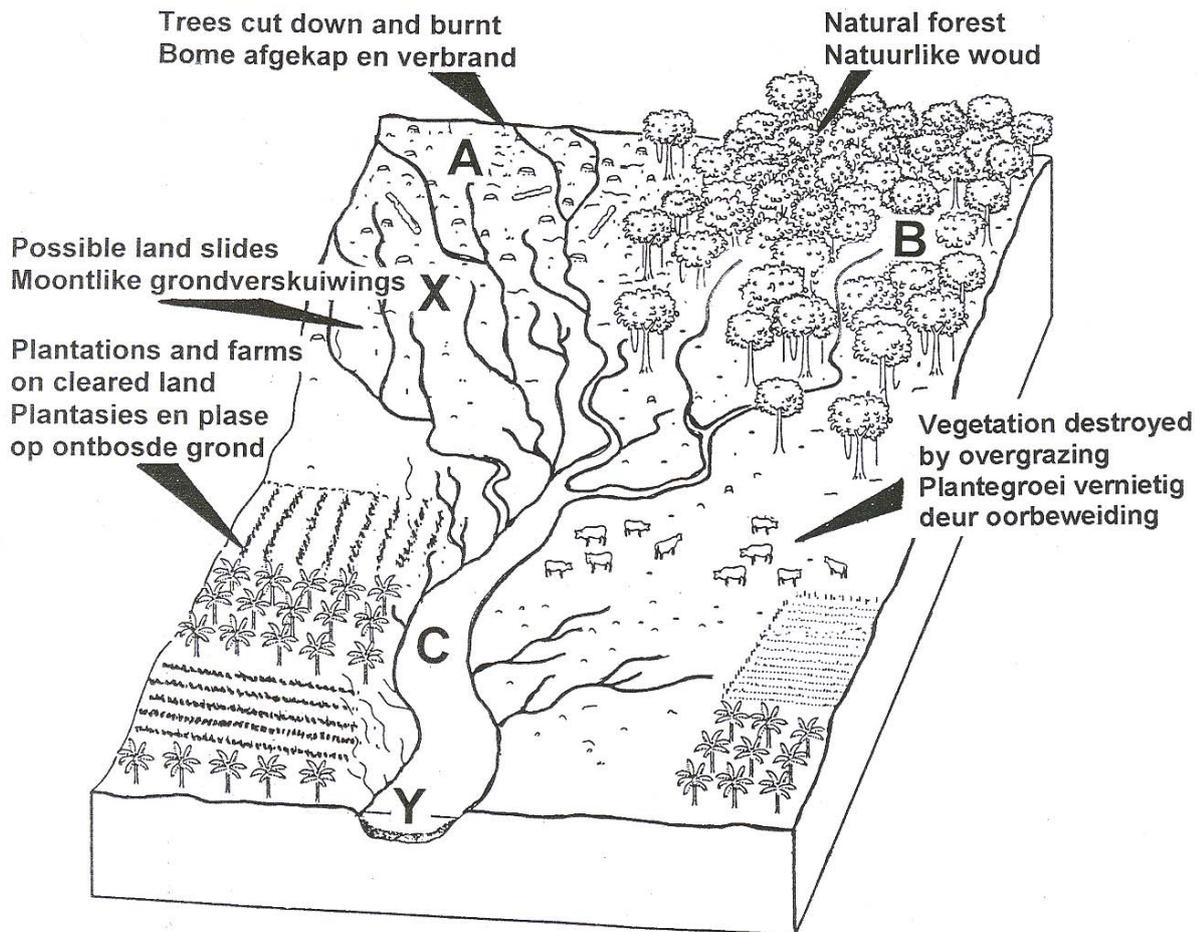
FIGUUR 2.4



**FIGURE 2.5**

**DRAINAGE BASIN MANAGEMENT**

In hydrology, the drainage basin is a logical unit of focus for studying the movement of water within the hydrological cycle, because the majority of water that discharges from the basin outlet originated as precipitation falling on the basin. A portion of the water that enters the groundwater system beneath the drainage basin may flow towards the outlet of another drainage basin, because groundwater flow directions do not always match those of their overlying drainage network.



Drainage basins are important elements to consider, also in ecology. As water flows over the ground and along rivers it can pick up nutrients, sediment, and pollutants. Like the water, they get transported towards the outlet of the basin, and can affect the ecological processes along the way as well as in the receiving water body.

Modern usage of artificial fertilisers, containing nitrogen, phosphorus, and potassium, has affected the mouths of drainage basins. The minerals will be carried by the river system to the mouth and accumulate there, disturbing the natural mineral balance.

FIGURE 3.1

FIGUUR 3.1

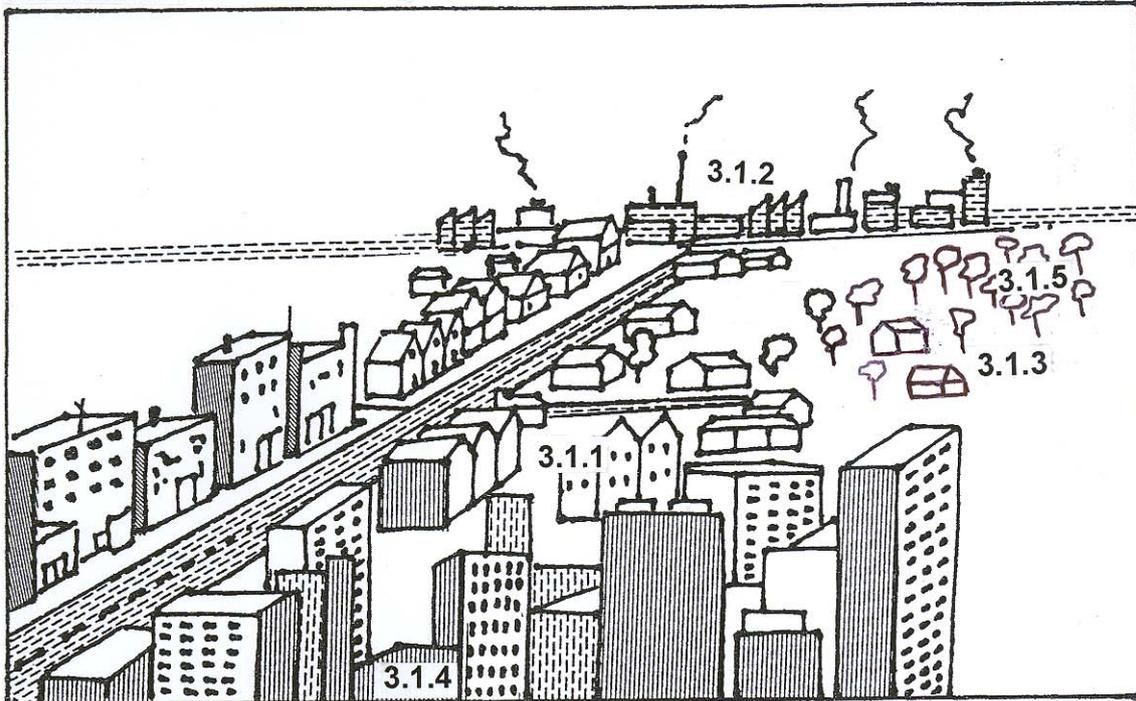


FIGURE 3.2

FIGUUR 3.2

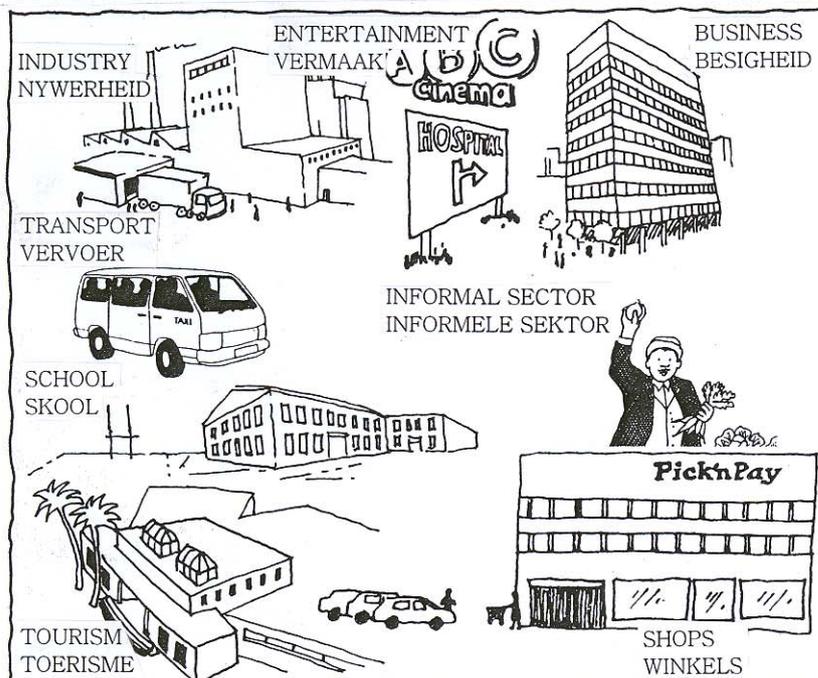


FIGURE 3.3

FIGUUR 3.3

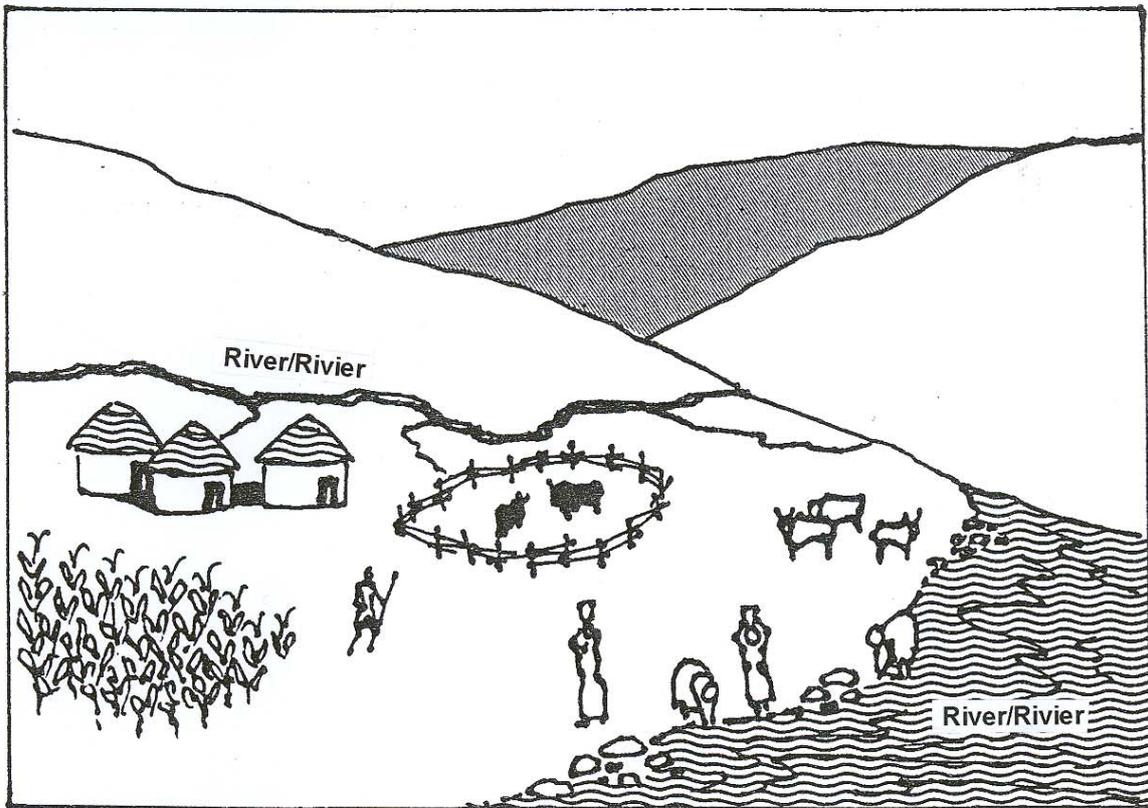


FIGURE 3.4

FIGUUR 3.4

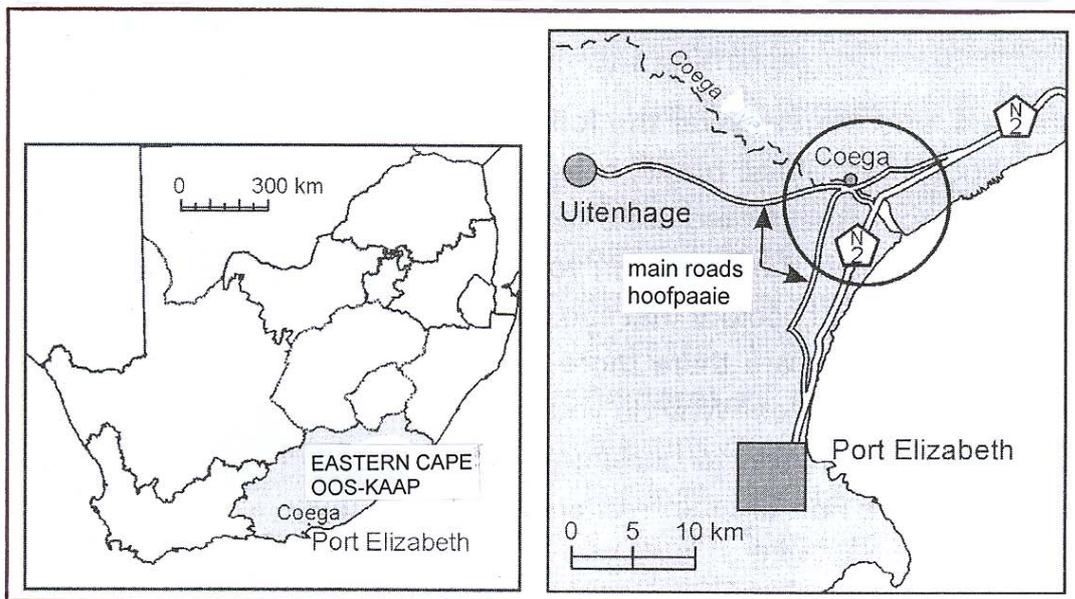


FIGURE 4.1

FIGUUR 4.1

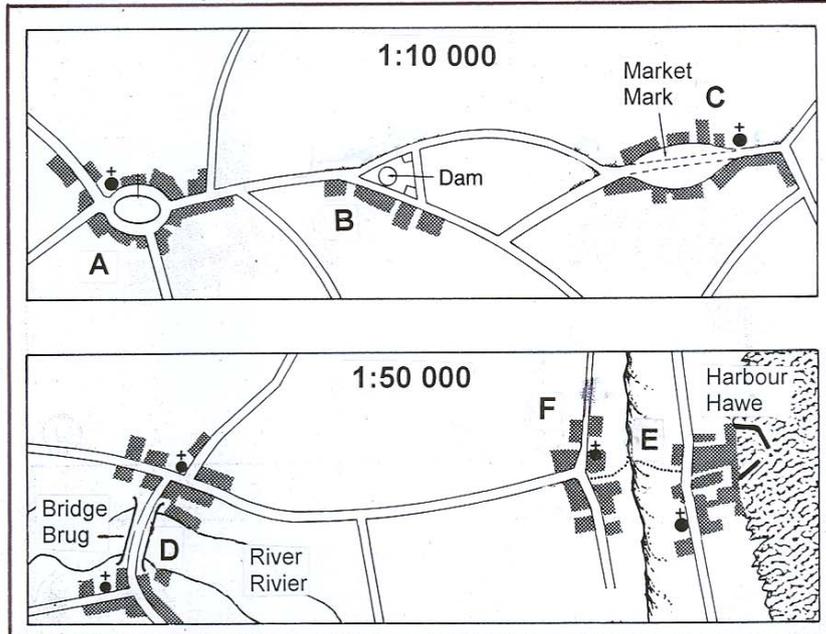


FIGURE 4.2

FIGUUR 4.2

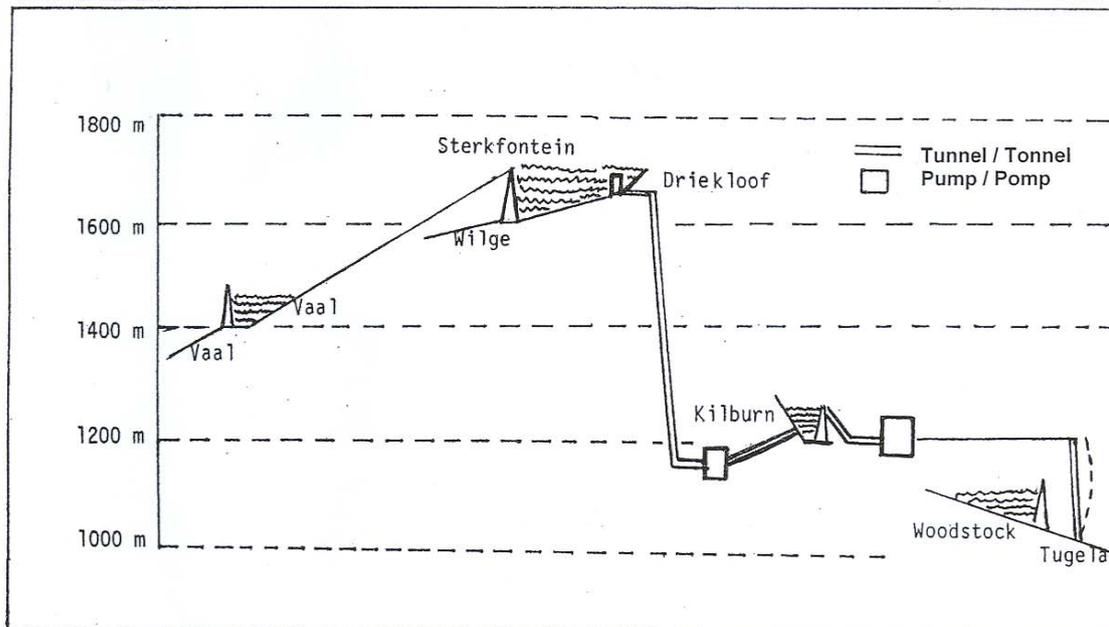


FIGURE 4.3

FIGUUR 4.3

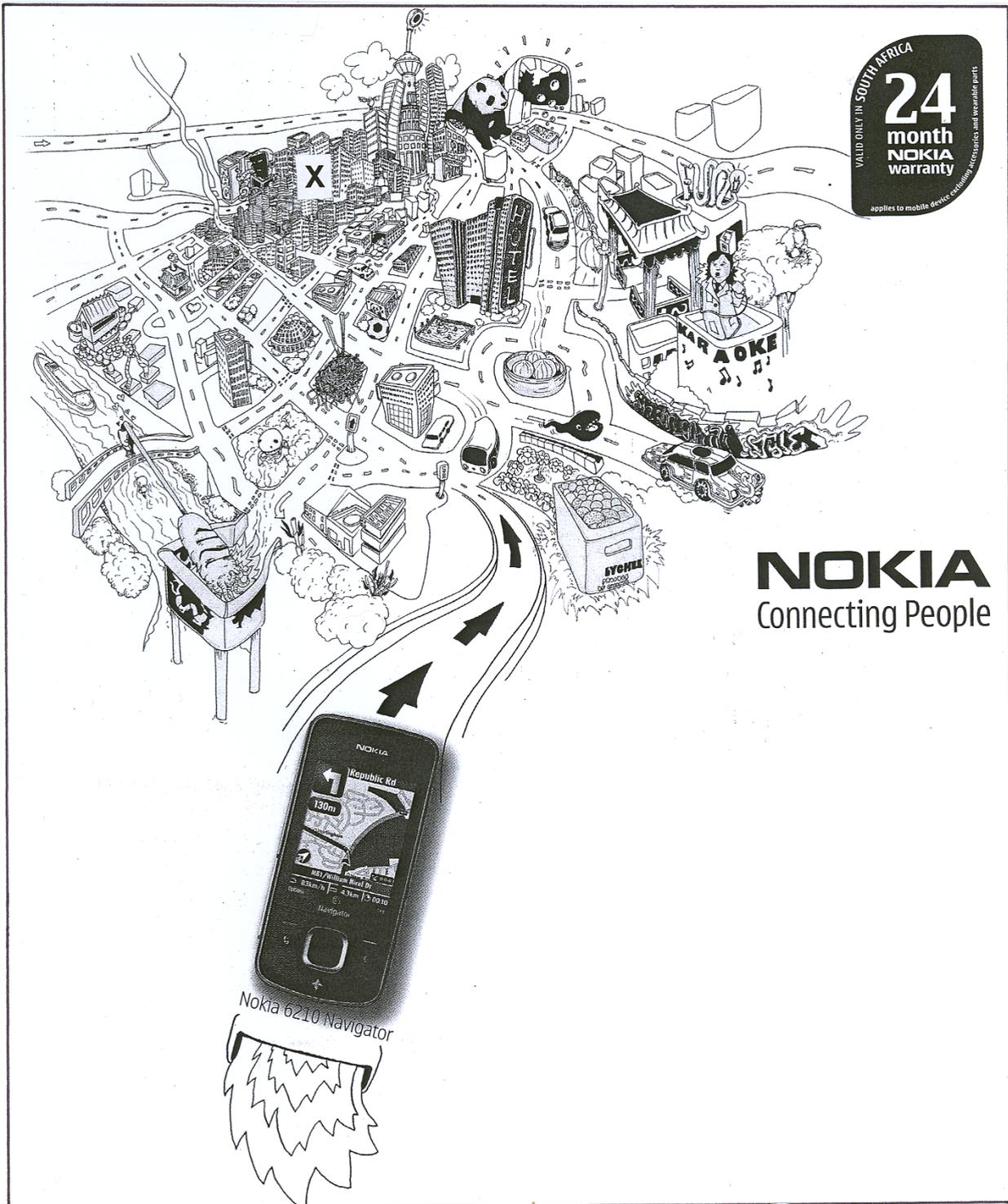
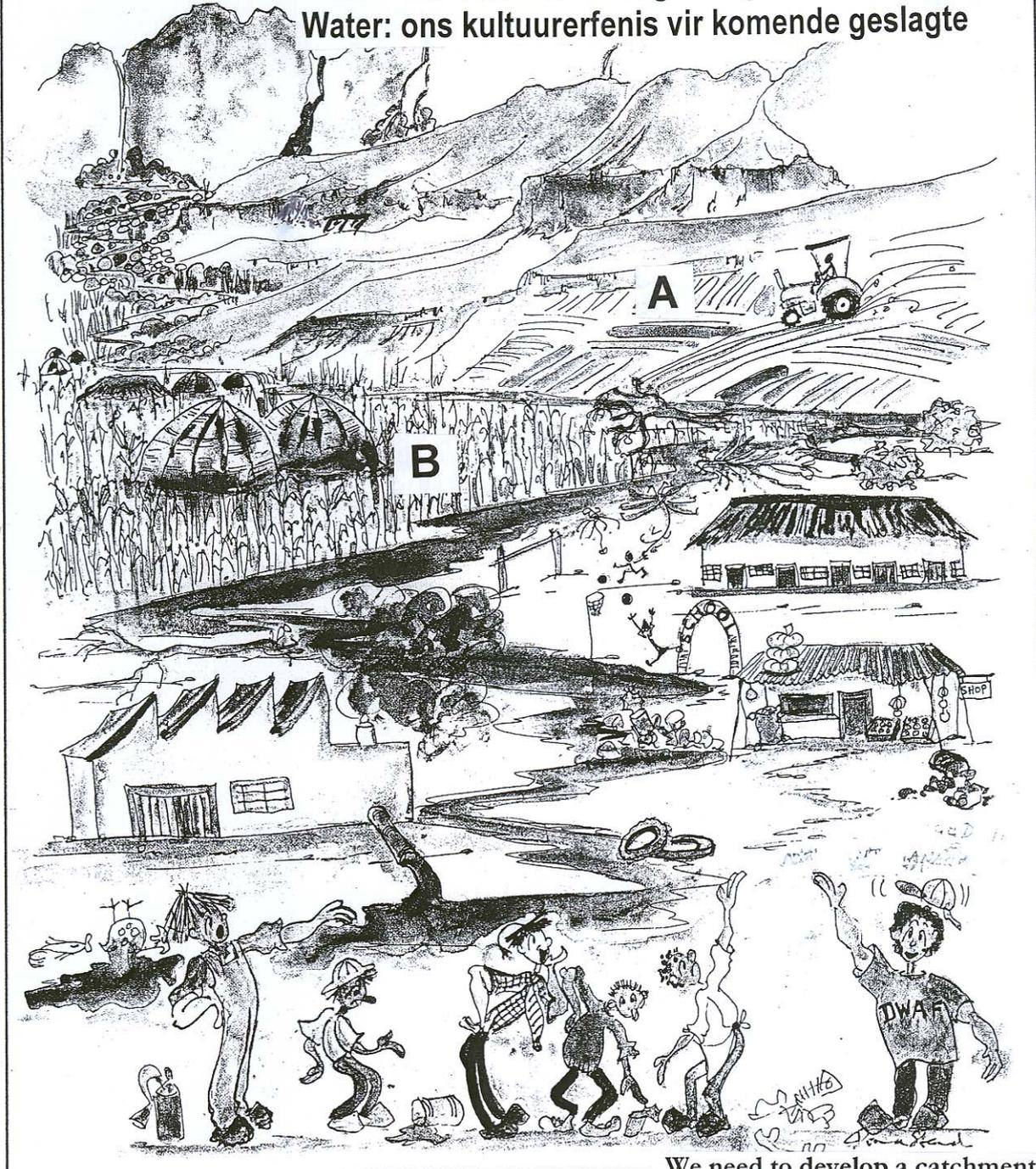


FIGURE 4.4

FIGUUR 4.4

**Water: our cultural heritage for generations to come**  
**Water: ons kultuurerfenis vir komende geslagte**



**We need to develop a catchment management strategy!**  
**Ons moet 'n opvangsbestuurstrategie ontwikkel!**