Revision and Assessment

Key issues

1 There are many different types of landscapes on the surface of the Earth. These landscapes are continually being formed and changed over time. Tectonic forces build up landscapes and weathering and erosion break them down. Different landforms have different impacts on the types of human activities that take place in an area.
2 Horizontally laid strata forms hilly landscapes, basaltic plateaus, canyon landscapes and the mesas, buttes and conical hills of the Karoo landscape. These landscapes are worn down by erosion or worn back through the process of scarp retreat.
3 Inclined strata form different types of homoclinal ridges, depending on steepness of the scarp slope and dip slope. Cuestas, hogsbacks, cuesta domes and cuesta basins are all examples of landscapes and landforms that are formed when strata is tilted at an angle.
4 When igneous rock cools below the surface, it is known as intrusive igneous rock and it forms batholiths, laccoliths, lopoliths, dykes, sills and pipes. These landforms are highly resistant and so form inselbergs that remain as features on the landscape as the rest of landscape is eroded away. Over time, the igneous mass is weathered and eroded along shrinkage joints to form tors and castle koppies
5 The topography of South Africa comprises of the plateau, escarpment and coastal lowlands. The Cape Fold Mountains are found within the coastal lowlands. The escarpment is retreating backwards along its scarp, which is eroding the plateau and increasing the size of the coastal lowlands.
6 Slopes are a main component of all landscapes and have four main elements, namely the crest, cliff, talus and pediment that are worn down or worn back depending on tectonic processes, climate, vegetation and rock type. The different theories about slope development also determine whether scientists think that slopes are worn down or worn back.
7 Mass movements are the slow or rapid movement of material down a slope under the force of gravity or moving water. Weathering and erosion wear down the parent material that moves downslope causing soil creep, solifluction, landslides, rock falls, mudflows and slumps. Mass movements can have a dramatic impact on people and the environment when they happen fast and over a large scale. The management of vegetation and catchments, as well as the development on and the use of slopes can reduce the risk of mass movement.
8 Landscapes provide many different opportunities and constraints to human development. Landforms can create barriers to development, but they can also provide fertile valleys and spaces for human activity. Mineral resources are found in different types of landscapes. These landscapes are therefore very important for economic development and the supply of mineral and energy resources.
9 Mapwork and GIS are very useful for describing, understanding and explaining different types of landscapes and topography. Topographical maps, contours, cross-sections and gradient, as well as vector and raster data in GIS, can be used to analyse landscapes.

Assessment

Time: Questions 1–6: 3 hours Question 7: 3 hours **Total:** 128 marks

1 Figures 2.95 a, b and c show the process of landscape formation associated with horizontally layered rocks.

1.1 Describe the changes that have taken place in this landscape over time. (3 × 2)

1.2 Explain why the landscape has changed in this way. (2 × 2)

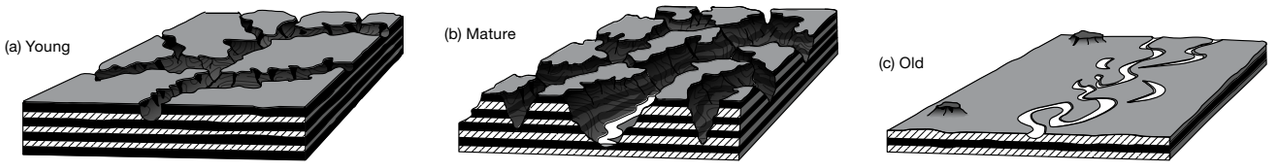

Figure 2.95 Landscapes associated with horizontally layered rocks

2 The Blyde River Canyon may be the largest "green canyon" in the world due to its lush subtropical vegetation. It is found on the eastern escarpment of South Africa.

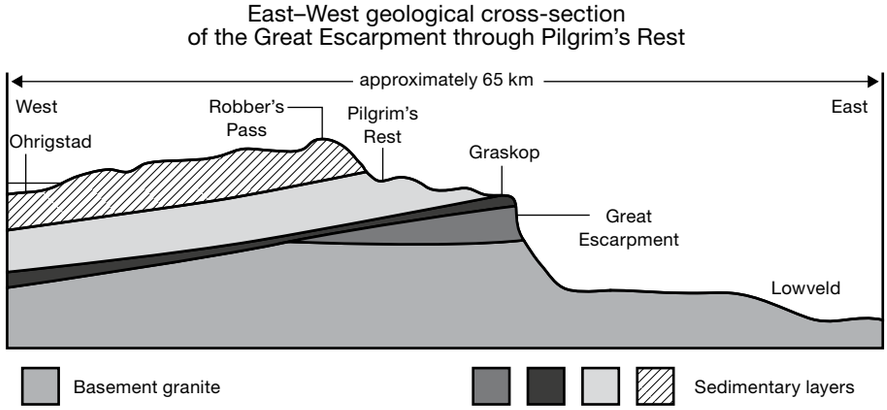

Figure 2.96 The eastern escarpment

2.1 What type of rock has formed this landscape? Give reasons for your answer. (3)

2.2 Is the Great Escarpment at Graskop an example of slope retreat? Explain your answer. (1 + 2 × 2)

2.3 How has the climate of the area influenced the landscapes and landforms that have developed here? (3)

2.4 Redraw the cross-section of this area and label all the slope elements. (5)

2.5 How does this area form part of the main topographical zones in South Africa? (2)

3 Figure 2.97 shows a cross-section and map of the Paris Basin. The Argonne Forest is famous for the battles that took place there during World War 1.

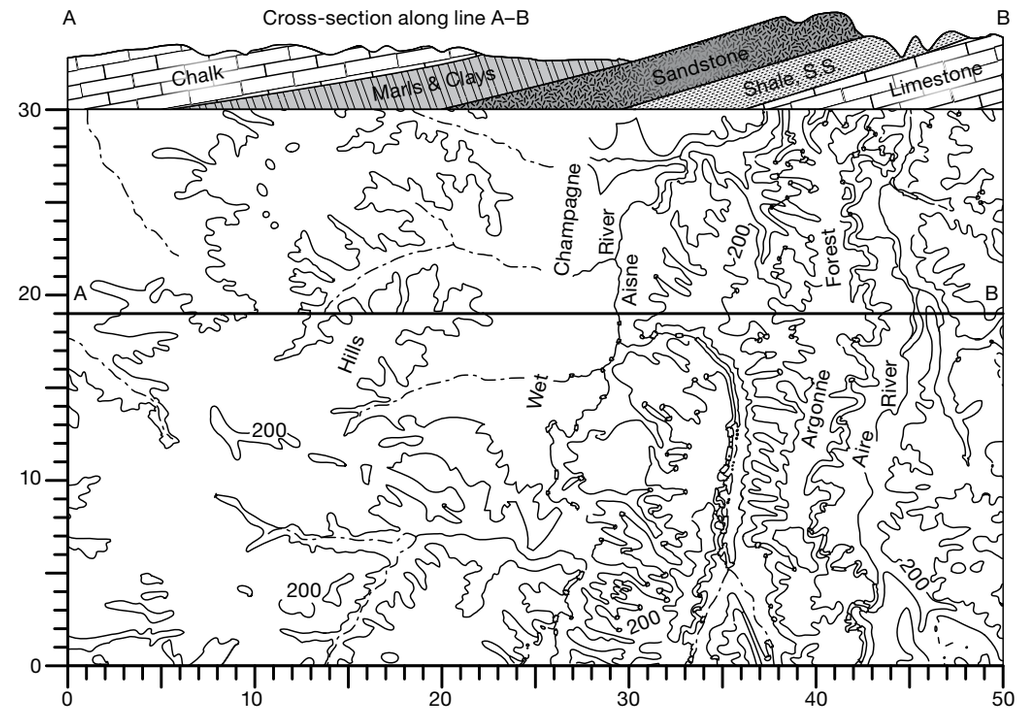

Figure 2.97 The Paris Basin

3.1 Use an atlas to locate the regions of the Paris Basin. What is the land in this region used for? (2)

3.2 What type of landform is C? Give reasons for your answer. (2 × 2)

3.3 Draw a cross-section from C to D on the map. Label all the slope elements on your cross-section. (10)

3.4 Calculate the vertical exaggeration for the cross-section. (5)

3.5 Is the Argonne Forest visible from the Aisne River? Use evidence from your cross-section to explain your answer. (3)

3.6 Calculate the gradient from point E on the Aisne River to point F. Is this a dip slope or a scarp slope? Give reasons for your answer. (6 + 3)

3.7 Calculate the gradient from point F to point G on the Aire River. Is this a scarp slope or a dip slope? (6 + 3)

3.8 Compare your answers for 3.6 and 3.7. Provide reasons for the differences in the gradient. (3)

3.9 What roles have the Aisne River and Aire River played in the formation of this landscape? (2)

3.10 How does the cross-section you have drawn relate to the cross-section diagram in Figure 2.97? (4)

4 Refer to Figure 2.98.

4.1 What type of rock has formed this landscape? (9)

4.2 What type of landform are the San Francisco Peaks and how were they formed? (3)

4.3 What type of landform is found at Zion and how was it formed? (3)

4.4 Which landform is more resistant and why: the San Francisco Peaks or the Bryce Canyon? (3)

4.5 Where would you expect to find mesas and buttes in this diagram? Give reasons for your answer. (4)

4.6 Why has the vertical scale been exaggerated in this diagram? (2)

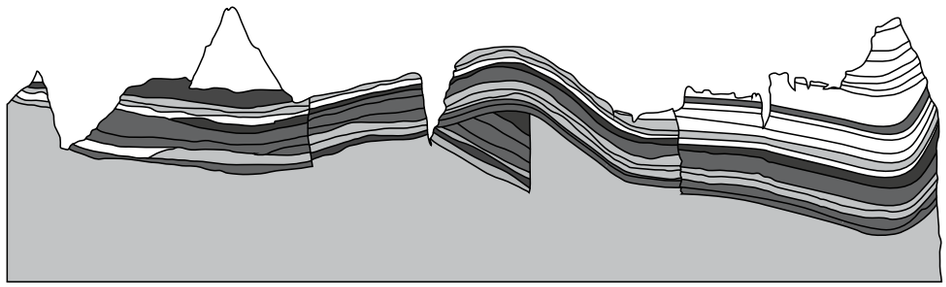

Figure 2.98 Grand Canyon rock layers throughout the Colorado Plateau (vertical scale has been exaggerated)

5 Refer to Figure 2.99.

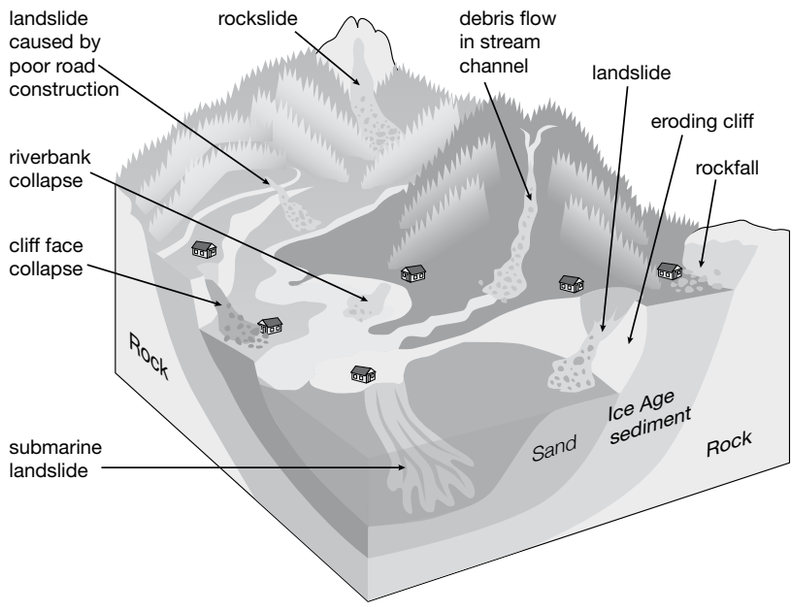

Figure 2.99 Mass movement in the landscape

5.1 Label each type of mass movement marked A to F. (6)

5.2 Explain what causes each type of mass movement shown in the diagram (A to F). (6 × 3)

5.3 Which type of mass movement is most destructive? Give reasons for your answer. (3)

6 Refer to Figure 2.100 (on the next page).
- 6.1 Explain what type of mass movement has taken place in Turtle Mountain. (2)
- 6.2 How did this mass movement occur? (3)
- 6.3 Draw a cross-section from A to B. Calculate the vertical exaggeration of this cross-section. (10)
- 6.4 Calculate the gradient from A to B. How did this gradient contribute to the event that occurred in Turtle Mountain? (6 + 2)
- 6.5 Use information from the shape and form of the contour lines to describe the slopes from C to D and from E to F. (2 + 2)
  - 6.5.1 Which slope is concave and which one is convex? (2)
  - 6.5.2 Why does each slope have the form that it does? (2 × 2)
- 6.6 Use evidence from the map to explain the impact of this event on human activities in the area. (4 × 2)

7 **Fieldwork activity** (60)

For this fieldwork activity you will work in your local neighbourhood to identify evidence of mass movement. You will use a notebook and a camera (use your cell phone camera if you have one) to record your field notes. (If you do not have a camera or a cell phone, make neat freehand sketches.)
- 7.1 Find an area in your neighbourhood where there is evidence of mass movement or the risk of mass movement.
- 7.2 Define the type of mass movement in your study site or the type that is likely to occur. Explain why this type of mass movement has occurred or is likely to occur.
- 7.3 What environmental characteristics of the area have contributed to the process (or likelihood) of mass movement in this area?
- 7.4 Draw a field sketch of the area. Use the *Geographical skills and techniques information* to help you. Label the evidence or potential for mass movement on your map.
- 7.5 Take photographs (or make sketches) of your study site that provide evidence of mass movement (or the likelihood) and the environmental characteristics that increase the risk of mass movement.
- 7.6 Discuss what could be done to reduce the risk of mass movement in your study site. Draw sketches of interventions that could be put in place and **annotate** these sketches.

[Total: 220 marks]

New words

annotate
add notes to a diagram that provide explanations

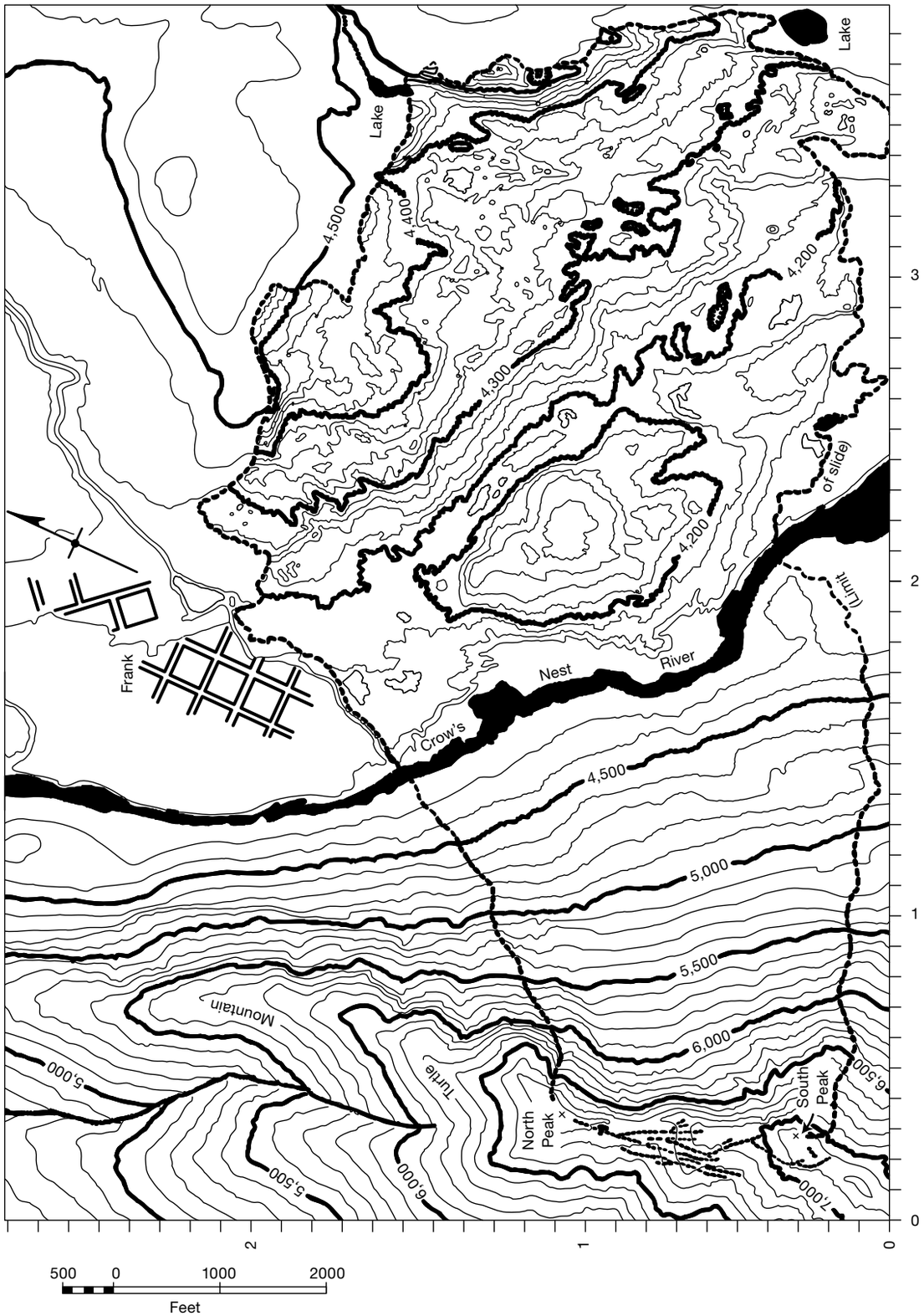

Figure 2.100 A representation of a landslide

Geographical skills and techniques

Conducting fieldwork

When you conduct fieldwork you do four things: observe, measure, record and analyse data. These steps are shown in Figure 2.101.

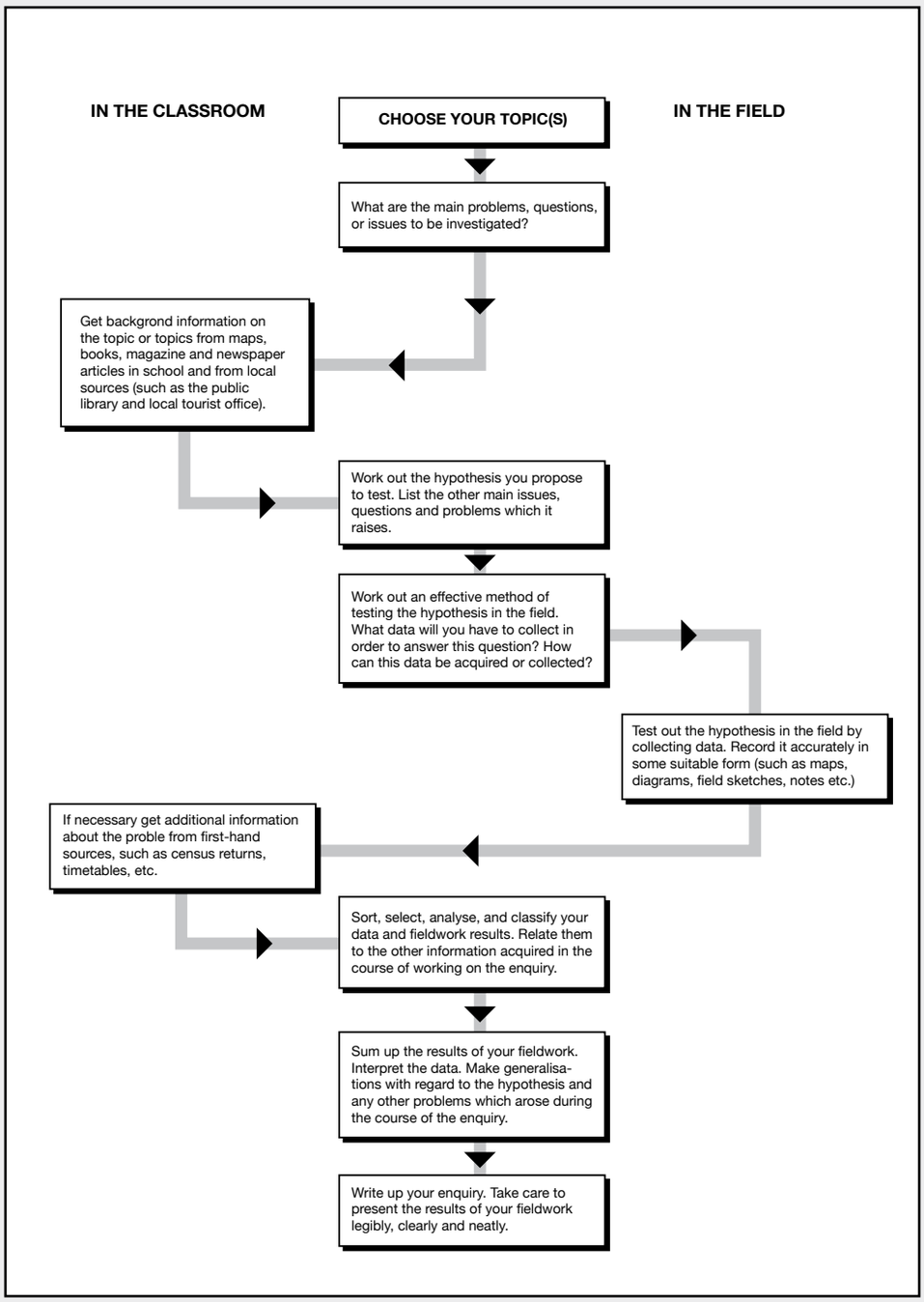

Figure 2.101 Conducting fieldwork

Drawing a field map

A field map or field sketch is a diagram of the area you are studying. It is drawn roughly to scale. A field sketch shows what the study area looks like on the ground, whereas a map shows what the study area looks like from above. Field maps or sketches are useful in showing the relationship between physical and human elements on the landscape.

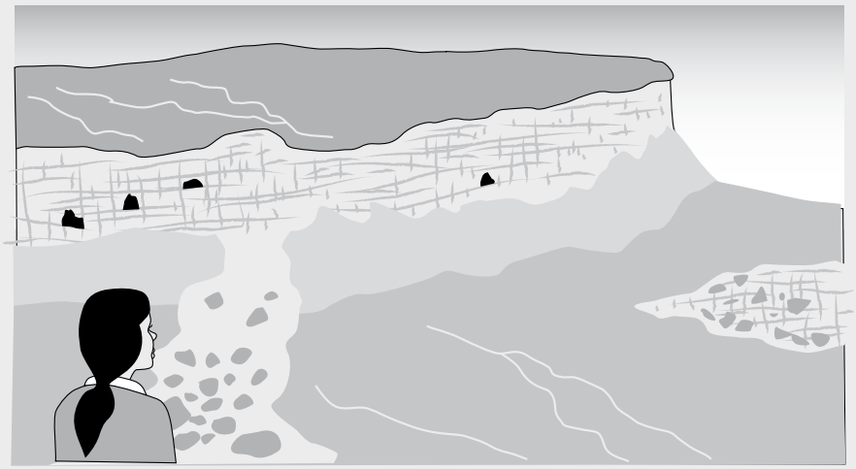

Figure 2.102 Observe the environment before you sketch it.

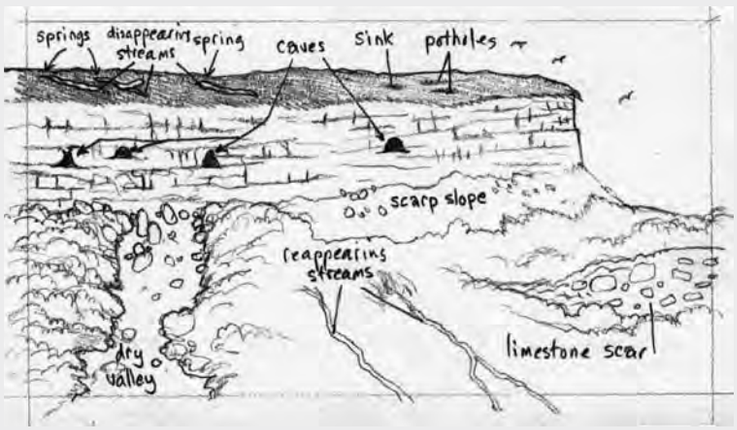

Figure 2.103 Example of a field sketch

1 Work in pencil, keep you sketch or map simple and neat, and add in the details of the landscape that are important and relevant to the issue you are studying. You must provide labels and measurements on the sketch or map.
2 Sketch the outline of the area you are studying. Fill in and annotate the main features.
3 Pace out the measurements of your study area and convert these paces to metres. Label the measurements on your map. This introduces a scale to your field map.