

Telematic Schools Project



2022 SUBJECT WORKBOOK Grade 11



GEOGRAPHY

A joint initiative between the Western Cape Education Department and Stellenbosch University.



Western Cape
Government

Education



Stellenbosch

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saam vorentoe



BROADCAST SESSIONS

GRADE 11

GEOGRAPHY

Grade	Date	Time	Topic
11	25 October 2021	16h00-17h00	Pressure belts and map skills



INTRODUCTION

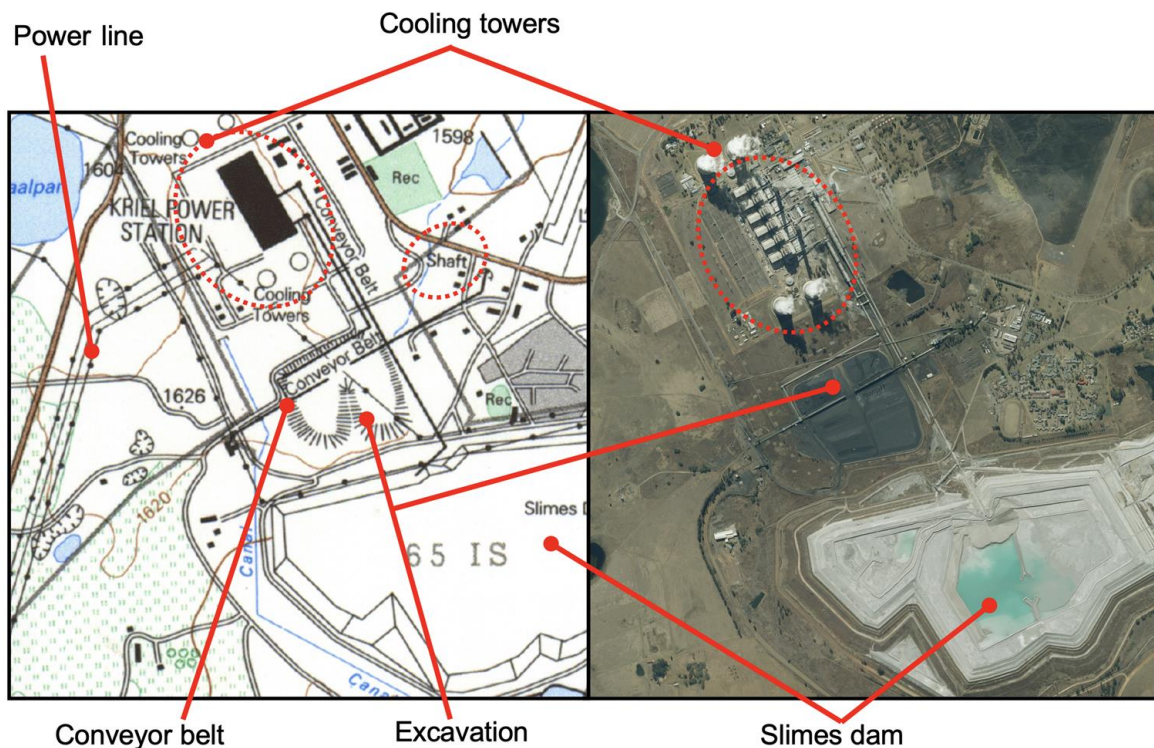
Dear Grade 11 Learner

The Telematics Teaching Project stems from cooperation between the Western Cape Education Department and the Stellenbosch University. To be able to have success at the end of the year it will be very important to keep on learning and applying the prescribed key concepts/processes and process skills in the different knowledge areas throughout the year.

Make sure that you are able to analyse and interpret geography related concepts in newspapers and magazines to the concepts and content you have discussed in the classroom. In addition, spend at least a few hours per week studying / reading / making summaries about the four components in the theory section and attempt to integrate it with the mapwork section.

This year our broadcasts will concentrate on World pressure belts and the application and interpretation section of mapwork. Remember that mapwork is tested in question 3 of both question papers 1 and 2 in the new structure of the Geography question papers. Telematics will concentrate on the integration of the content of especially Geomorphology with mapwork. The content in this workbook will appear on the maps/photos as in the example below

Conventional energy sources on map and photo



The same integrated approach will be followed in the telematic broadcasts. We choose and discuss topics in mostly Geomorphology and integrate it with mapwork.

This should empower you to analyze, interpret and answer other questions in the application and interpretation of Question 3 (mapwork) as well. This workbook also follows an integrated approach



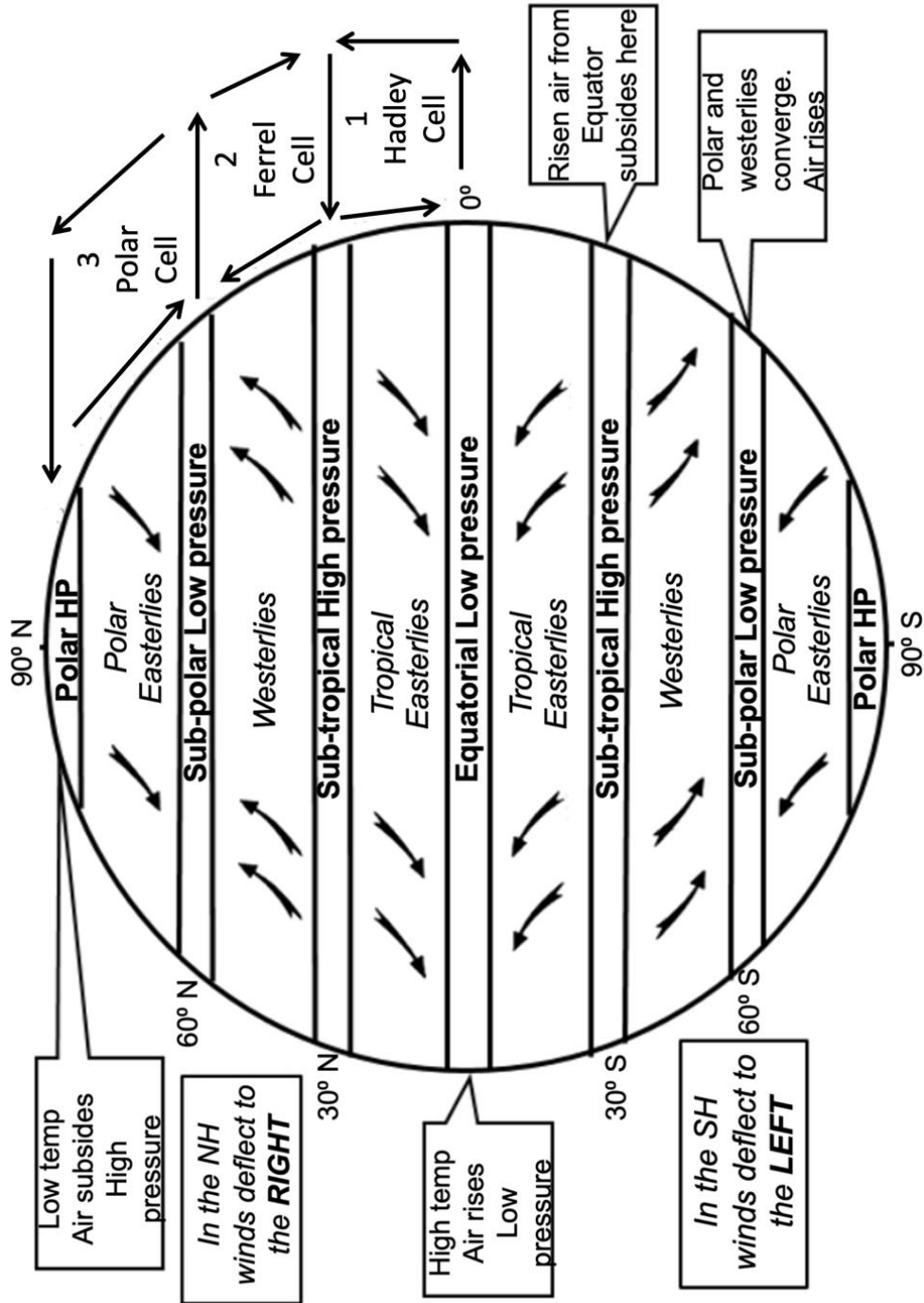
1 | WORLD AIR PRESSURE BELTS



SUMMARY

WHAT YOU SHOULD KNOW

This is very important as it serves as base for grade 12 climate topics. Make sure that you know and understand the movement of air around high and low pressures



YOU MUST KNOW THE FOLLOWING:

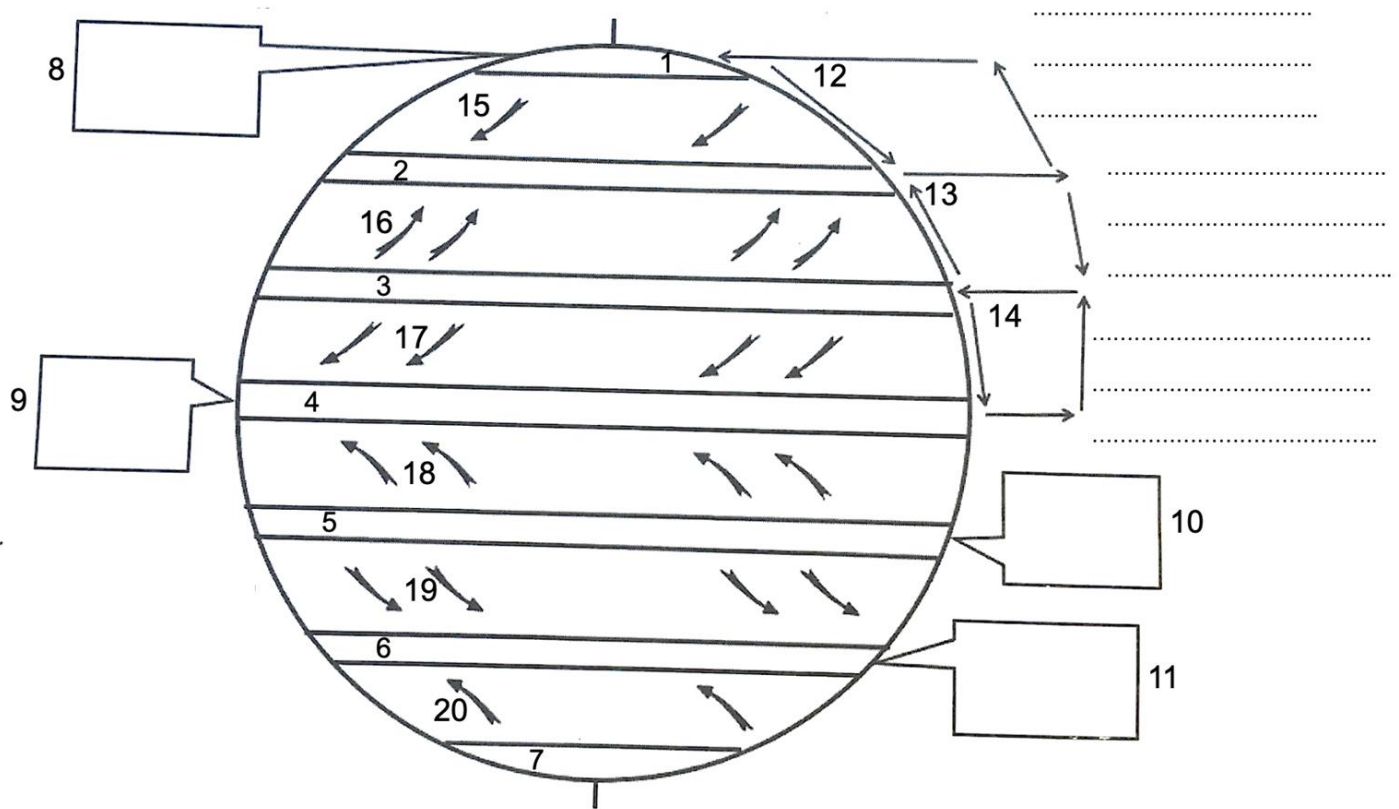
- The names of each of the pressure belts
- Are the pressure belts High or Low pressure
- How each of the pressure belts are formed
- The winds found at each of the belts
- Deflection of the winds and why
- The names of each of tri-cellular cells
- How each of the cells are formed



1 | WORLD AIR PRESSURE BELTS

Add the following to the diagram:

- The pressure belts 1-7 (state Low- or High pressure)
- How the pressure belts 8-11 were formed
- The cells 12-14 and how they were formed
- The winds 15-20



HOW TO STUDY THIS SECTION

You must know ...

This is the best way to study and understand this section. Do not only study content, but APPLY it on this diagram. You will be able to work out the high- and low pressures yourself




TAKE NOTE: READING OF TOPOGRAPHIC MAP

It is a good idea to use at least 5 minutes to study the topographic map. In so doing, you will get a mental image of the map.

All map interpretation in examinations and this workbook is based on the questions that you need to answer while reading the topographic map

HOW TO STUDY THIS SECTION

You must know ...

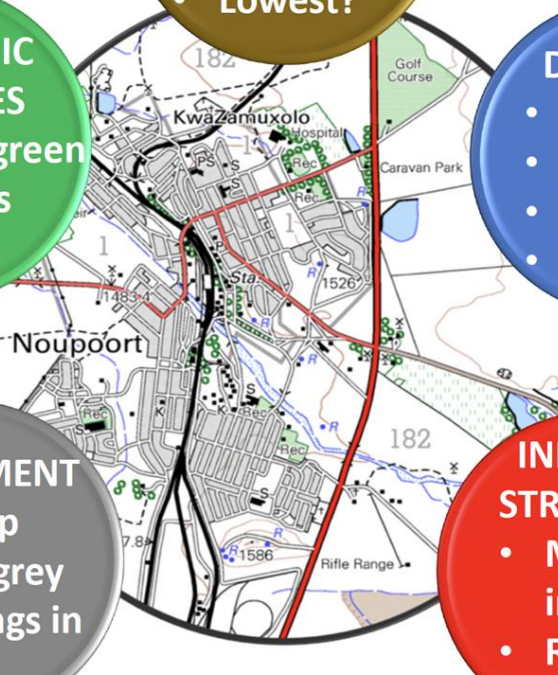



Ask the following questions when reading a map:

- What is it?
- Where is it?
- Why is it there?
- What are the relationships between the colours?

Getting a mental image of the map

RDISE





RELIEF


- Mountains
- Valleys
- Highest?
- Lowest?

ECONOMIC ACTIVITIES

- Farming green
- Industries black

DRAINAGE

- Rivers types
- Dams
- Sea
- Climate?




SETTLEMENT

- Built up areas-grey
- Buildings in black

INFRA-STRUCTURE

- Main roads in red
- Railway in black



NB Relationships between all the colours



2 | TOPOGRAPHY ASSOCIATED WITH HORIZONTAL LAYERED ROCKS

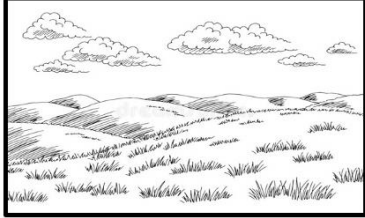


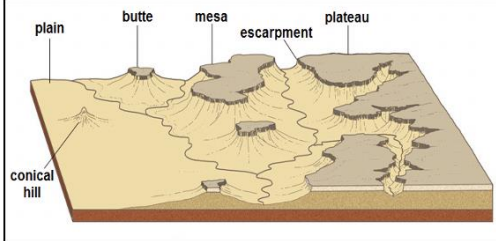


SUMMARY

WHAT YOU SHOULD KNOW

You must be able to identify each of the landscapes on diagrams and photos and explain how they develop

Identify each of the landforms associated with horizontal layered rocks and explain how they are formed

What is it?	What does it look like
<p>Hilly landscapes</p> <ul style="list-style-type: none"> • Consist of rounded hills and gentle slopes • Form in warm humid areas with high rainfall 	
<p>Basaltic plateau</p> <p>They are built up over millions of years by lava repeatedly pouring through long narrow cracks in the ground.</p>	
<p>Canyon Landscapes</p> <ul style="list-style-type: none"> • Canyon landscapes develop where horizontal layers erode at different rates. • Initially the land is level, but running water soon finds weak places in the hard surface layer. • The rivers erode vertically into the land and form deep valleys. 	
<p>Karoo landscapes</p> <ul style="list-style-type: none"> • Karoo landscapes develop out of canyon landscapes • Consist of landforms like mesas, buttes and conical hills 	

YOU MUST KNOW THE FOLLOWING:

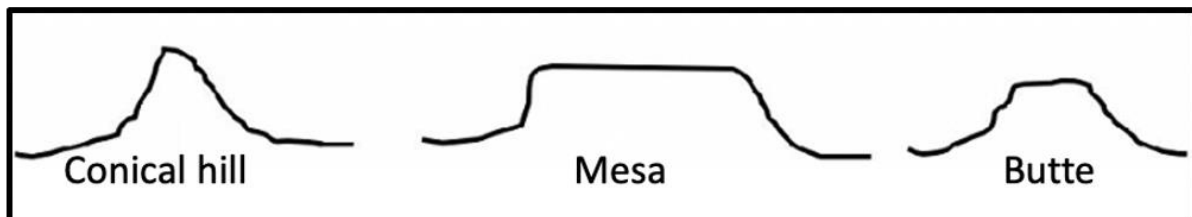
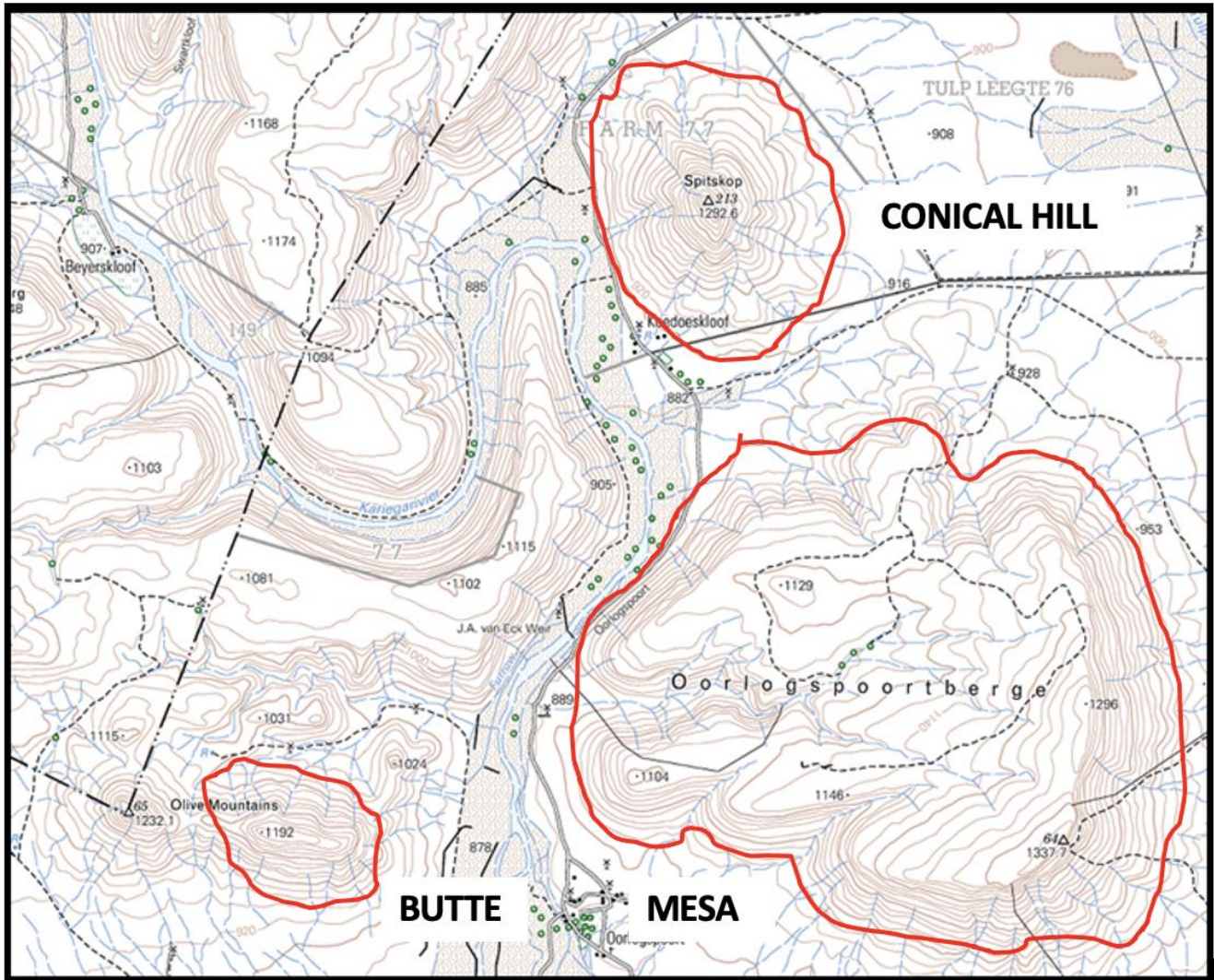
- The names of each of the horizontal layers
- How they are formed
- What do they look like
- The different landforms of Karoo landscapes
- You must be able to draw rough diagrams of landforms
- What do the landforms look like on topographic maps



2 | HORIZONTAL LAYERS: APPLICATION ON TOPOGRAPHIC MAPS

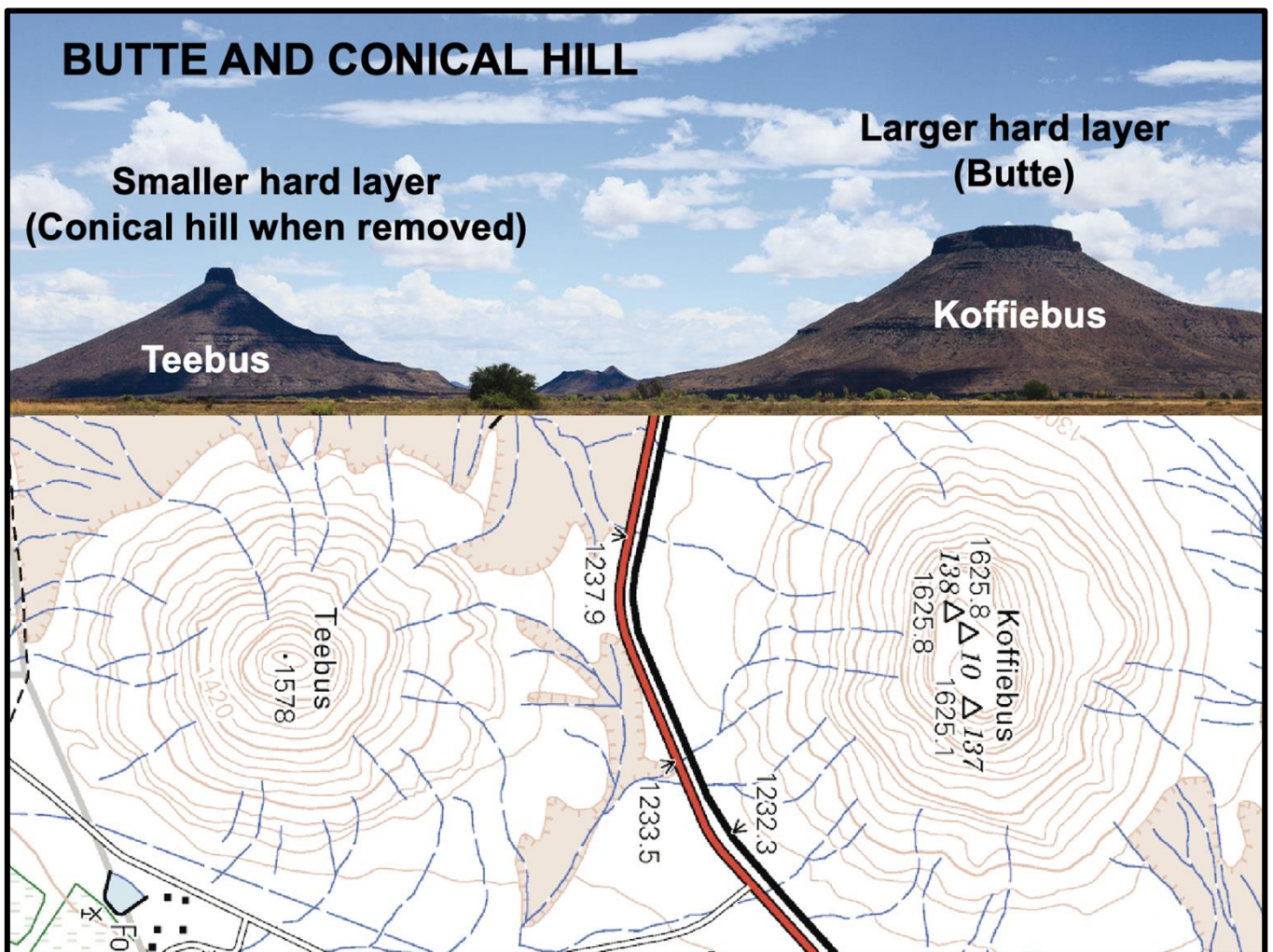
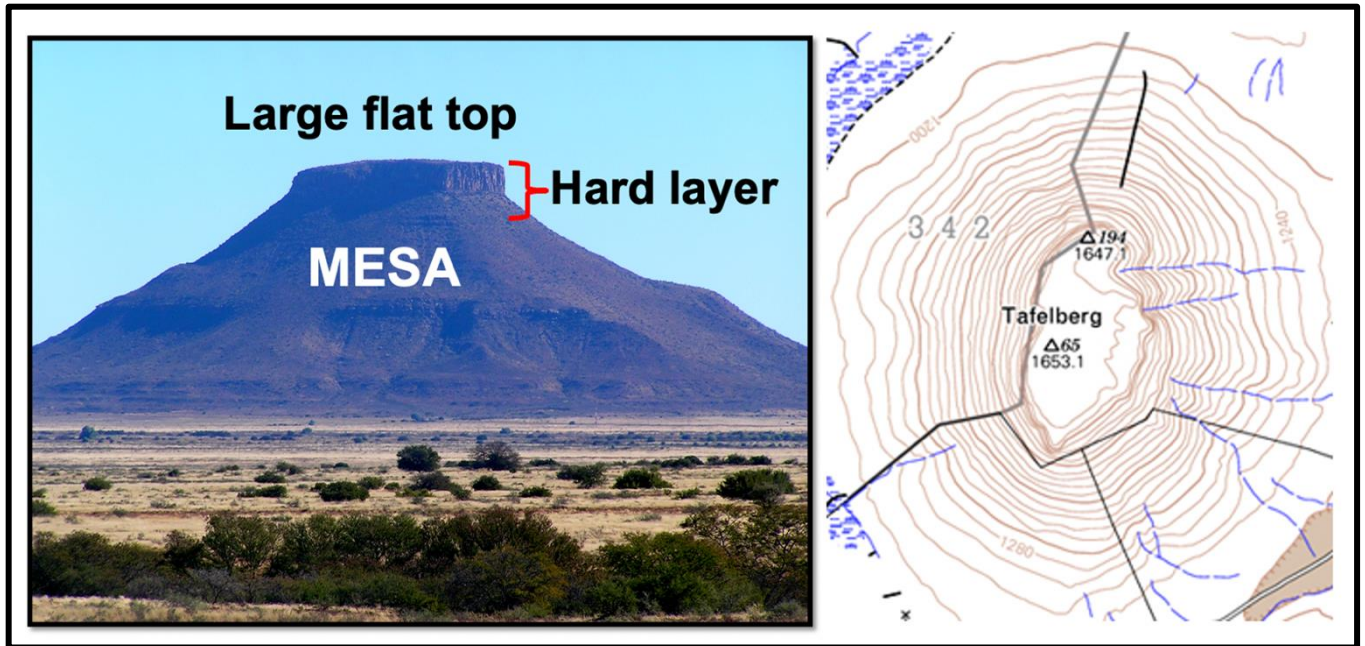
Take note of the following

- You must be able to identify the mesa, butte and conical hill on the topographic map
- You must be able to draw or identify cross-sections of each of the landforms.
- Integrate the content of Karoo landscapes with the topographic map below.





2 | HORIZONTAL LAYERS: APPLICATION ON TOPOGRAPHIC MAPS





3 | TOPOGRAPHY ASSOCIATED WITH INCLINED ROCK STRATA



SUMMARY

WHAT YOU SHOULD KNOW

You must be able to identify the different homoclinal ridges on topographic maps and photos, and explain their characteristics

TOPIC

What are the different homoclinal ridges?

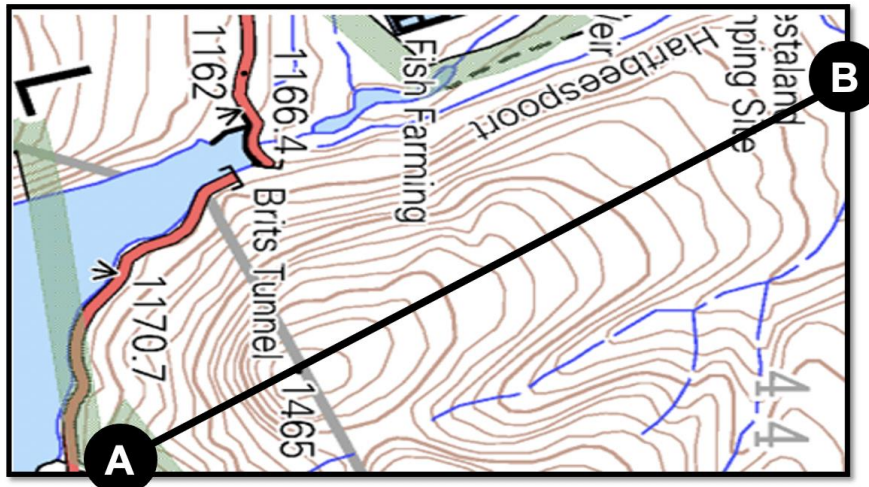
Study with these questions in mind	
<p>What is it?</p> <ul style="list-style-type: none"> Inclined strata are layers of rock below the Earth's surface which tilt at an angle. The tilting was caused by tectonic forces Hard and soft layers are exposed at the surface 	<p>Where is it?</p> <ul style="list-style-type: none"> Large areas of South Africa have tilted or inclined sedimentary rock. For example the Magaliesberg See example of Magaliesberg in Mapwork section on the following page
<p>Why are there different homoclinal ridges? What do they look like?</p> <ul style="list-style-type: none"> Cuesta: Inclined strata dip gradually 10°-25° Homoclinal ridges dip 25°-45° Hogsback ridges, steepest Dip 45°+ 	
<p>What landscapes form?</p> <ul style="list-style-type: none"> Cuesta Homoclinal ridge Hogsback ridge Cuesta basin Cuesta dome 	<p>How do we manage the impact of these landscapes?</p> <ul style="list-style-type: none"> Harder layers provide less fertile soil. Slopes may be suitable for forestry Cuestas are usually low – no traffic obstacles Can trap underground water and oil

Take note of the following:

- Identify steep slope – contours closer together
- Identify the gradual slope – contours further apart
- Identify the dip slope and escarp
- Resistant (hard) layer will be on the dip slope (gentle slope)
- The escarp will be on the softer layers (steep slope)



3 | INCLINED STRATA: INTEGRATION WITH TOPOGRAPHIC MAPS



Which one of the diagrams represents a cross-section from A to B?



- Steep slope
- Softer layer
- Escarp

- Gentle slope
- Resistant layer
- Dip slope

INCLINED LAYERS

Aerial photo and topographical map of Magaliesberg



4 | TOPOGRAPHY ASSOCIATED WITH MASSIVE IGNEOUS ROCKS

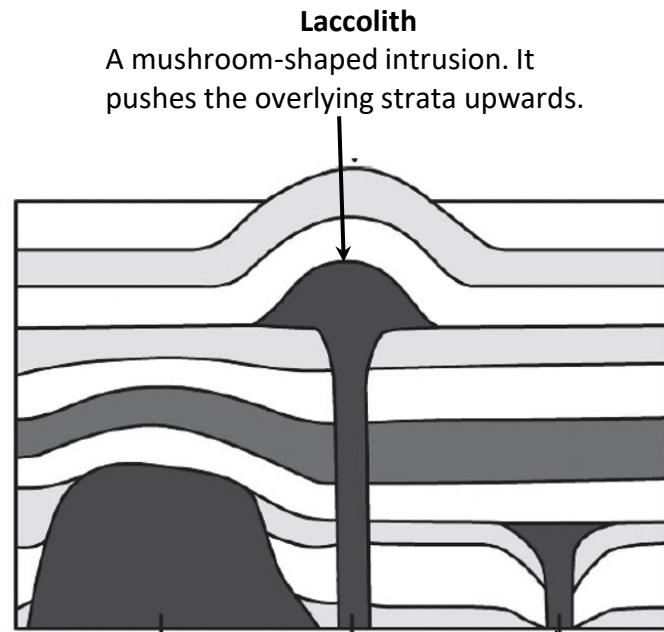


SUMMARY

WHAT YOU SHOULD KNOW

You must know the names of the landforms associated with massive igneous rocks, explain how they are formed and identify it on diagrams, photos and topographic maps

Explain how the different types of massive igneous intrusions are formed



Laccolith

A mushroom-shaped intrusion. It pushes the overlying strata upwards.

Batholith

Largest of all intrusive forms. It is usually made of granite.

Lopolith

Magma intrudes between sedimentary layers. The layer underneath cannot support the weight and sinks down. A saucer-shaped intrusion is formed.

Explain how granite domes and tors are formed

Granite domes



Granite domes are formed when batholiths are pushed up to the surface. The covering rock layers are then eroded away

Tors



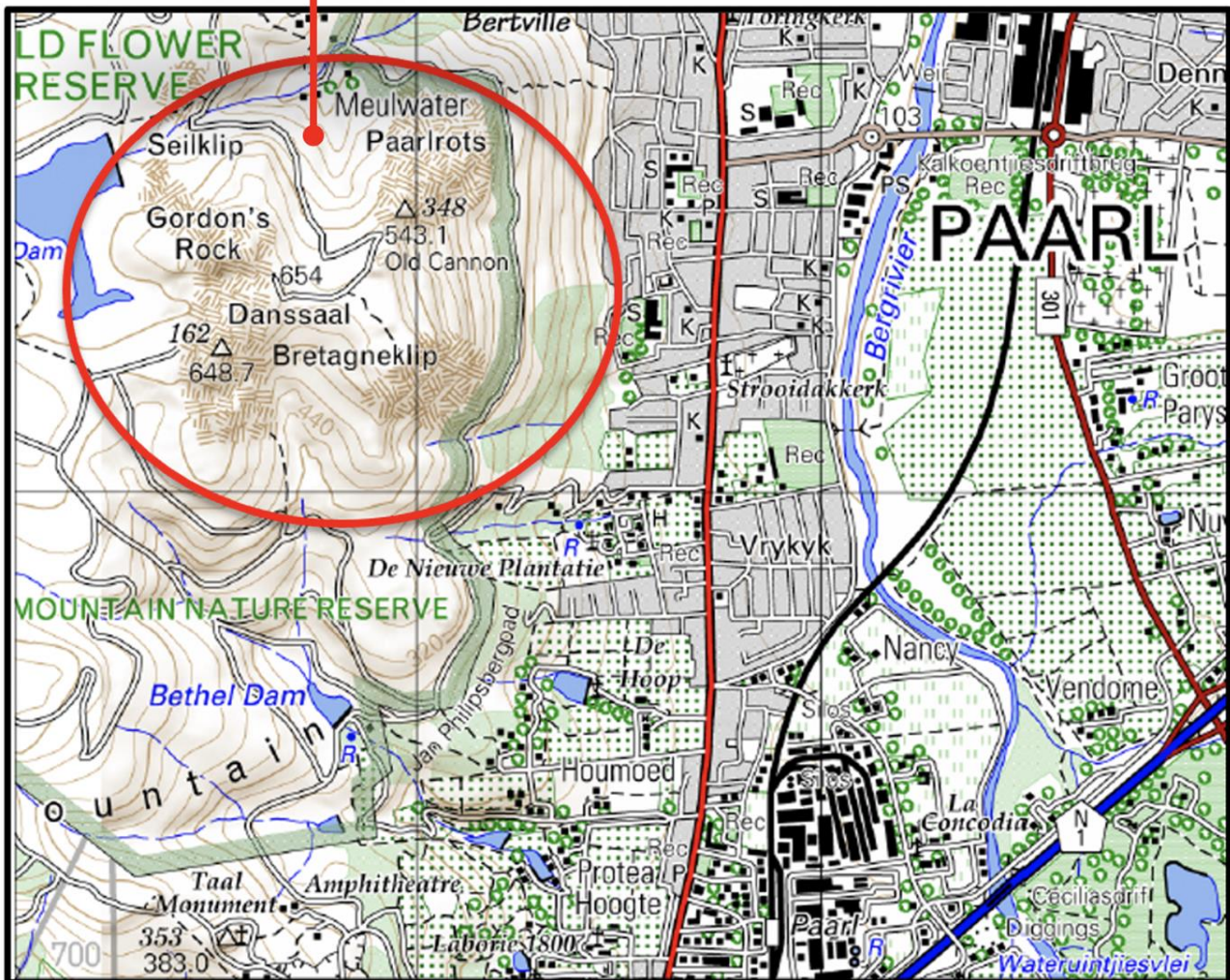
Tors are formed when a jointed granite batholite is weathered along its joints. A pile of core stones are left behind.



4 | MASSIVE IGNEOUS ROCKS INTEGRATION WITH TOPOGRAPHIC MAPS



Paarl Rock is a granite dome. Because of its rounded shape, the indigenous Khoi called it "Tortoise Mountain"



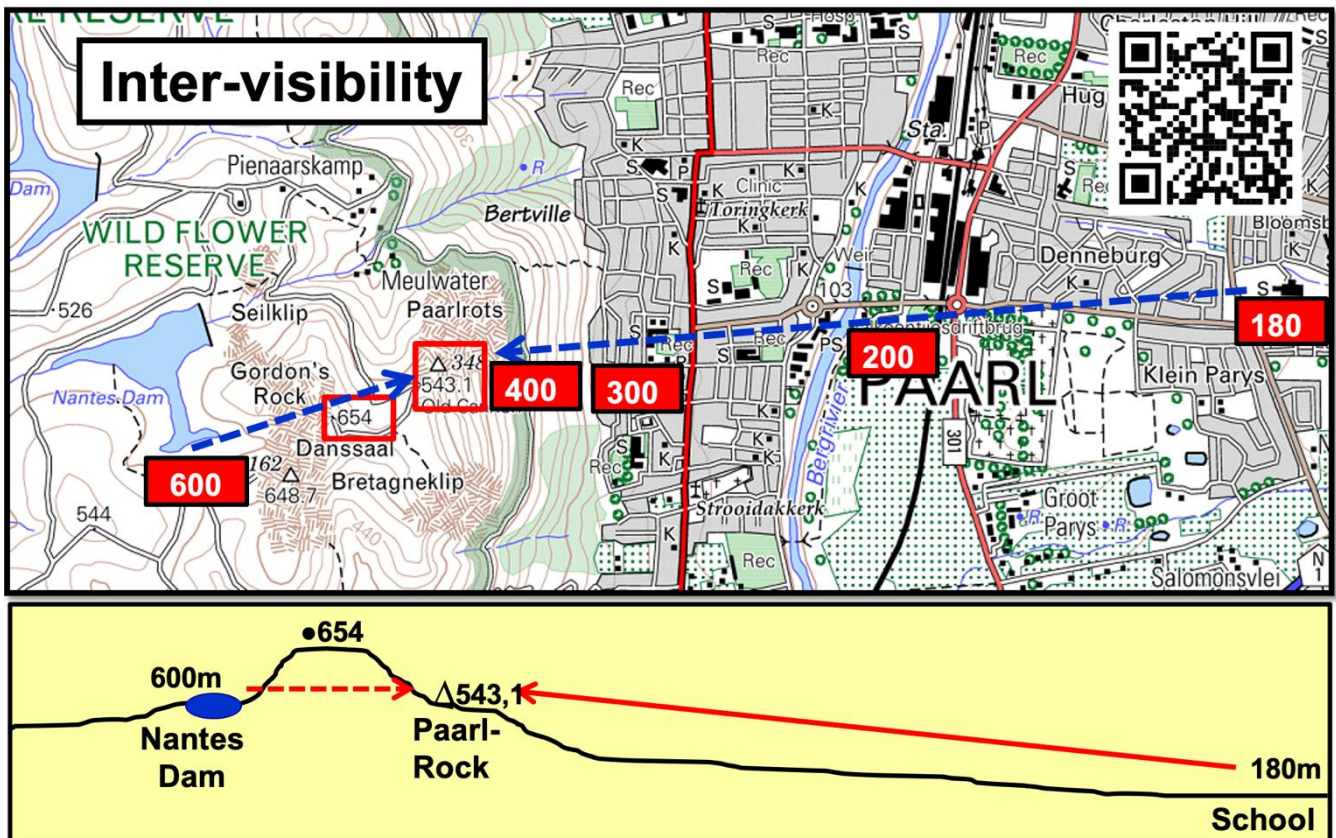


4 | MASSIVE IGNEOUS ROCKS INTERVISIBILITY

Intervisibility on topographic maps.

Cross-sections also provide a way to see which geographical features are visible from each other. When there is no blocking feature between any two features these features are intervisible. If an object occurs between these two features, they are not intervisible,

Cross sections are the best way to determine intervisibility. The Example below shows how a granite dome causes two features not to be intervisible.



Paarl Rock is not inter visible from the dam

Paarl Rock is inter visible from the school

You must know ...

IMPORTANT MAP SKILL

Intervisibility is a very popular map skill tested in examinations. Give reasons from the map why a feature is intervisible or not. Practice to draw cross-sections regularly



5 | IMPACT OF CONVENTIONAL ENERGY SOURCES



SUMMARY

WHAT YOU SHOULD KNOW

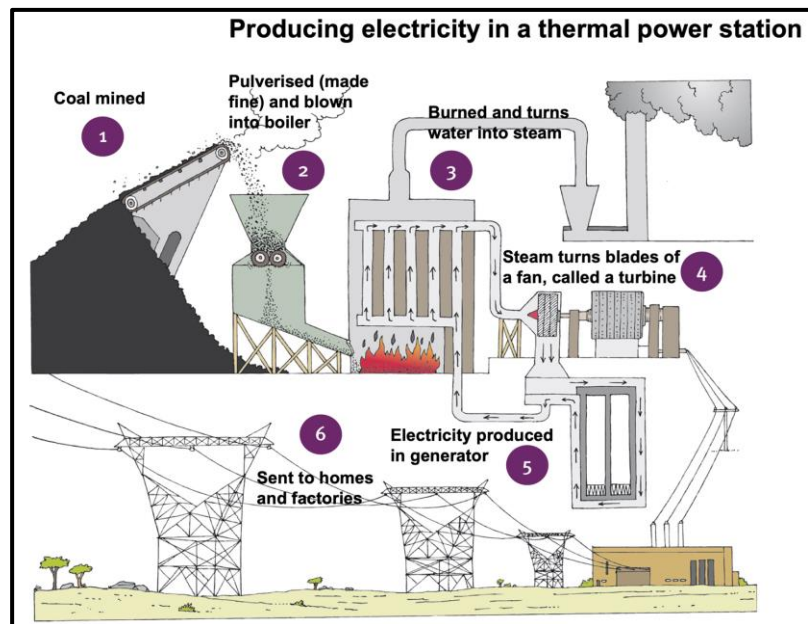
Both conventional and non-conventional energy sources are important for examination purposes.

You must be able to apply the content of conventional energy sources on topographic maps. The impact of coal mining and thermal power stations on the mapped area are popular examination questions.

THE IMPACT OF COAL MINING



- Open cast mining scars the landscape.
- Land covered by mine dumps.
- Ecosystems are disrupted.
- Dust from mining reaches the atmosphere.
- Noise pollution.



THE IMPACT OF THERMAL POWER STATIONS

- Power stations are unsightly.
- Takes up large areas.
- Use large amount of water.
- Produce greenhouse gasses.
- Produces harmful acid rain.

You must know...

PLEASE REMEMBER

- You must know the impact of coal mining and thermal power stations
- Your syllabus also includes non-conventional energy sources and their impact



5 | IMPACT OF CONVENTIONAL ENERGY SOURCES

